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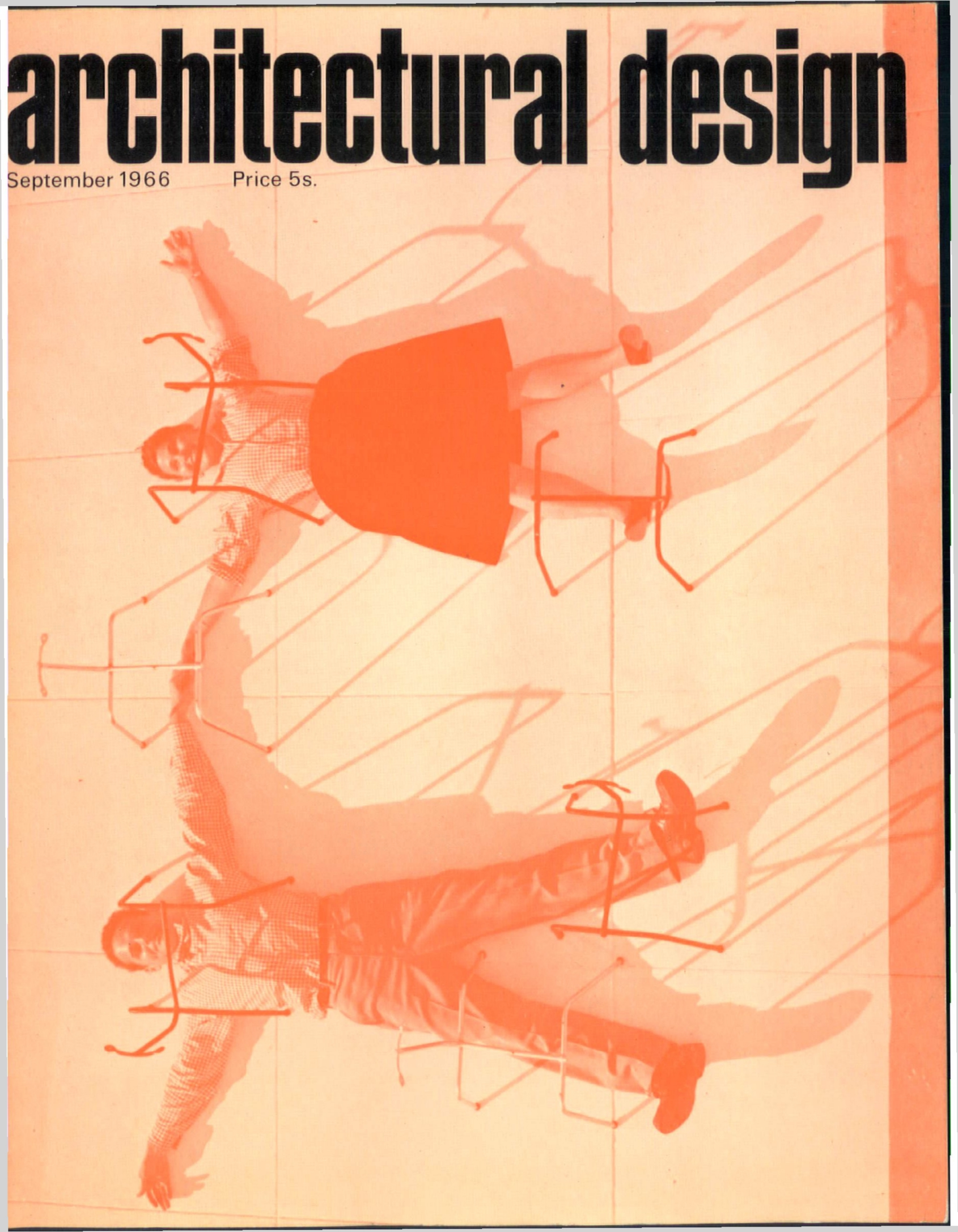

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SSIDA STEEL SHEET

Volume XXXVI **September 1966** **9**

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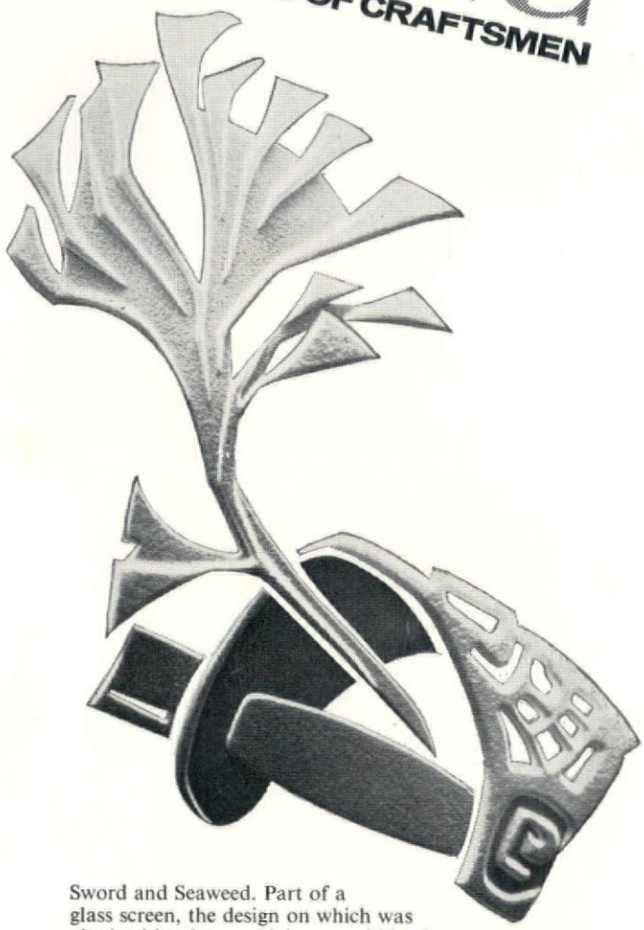

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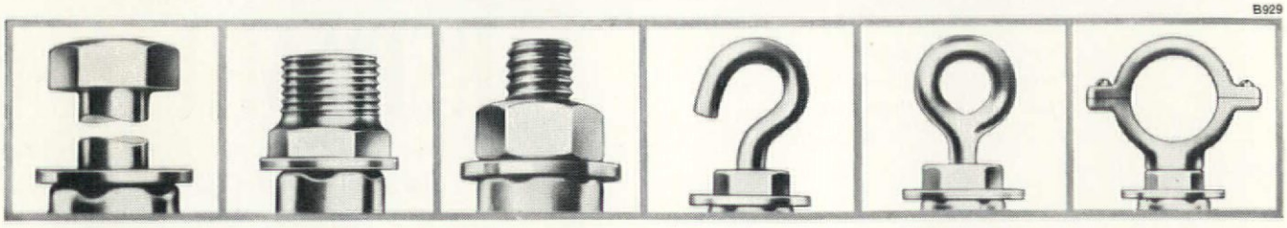
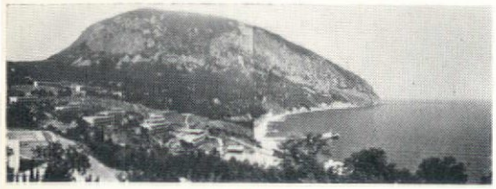




School camp in the Crimea

Nicolas Kolli

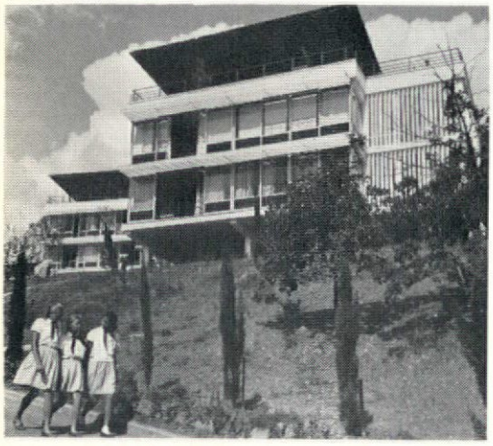
In the last five or six years a large complex of Crimean pioneer camps, for education, recreation and holidays, for Soviet as well as foreign schoolboys and girls, has been built alongside the Black Sea, on the picturesque slopes of Artek, near Mount Ajudag.

The complex consists of six camps, quite far apart and separated by natural boundaries—rocks, brooks and open spaces.

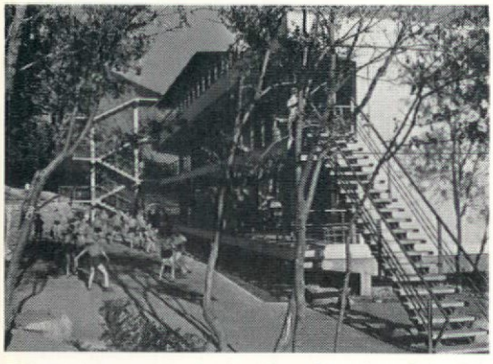
A group of shared social buildings includes a Palace of Cosmonautics and Scientific Ideas, and a centre of science, technology, art and sport. Also a medical group and an economics and services department.

The 'Seashore' camp (one of the complex) can accommodate 2272 children and occupies a site of 36 hectares. It is divided into 4 'houses' with five dormitory blocks per 'house'.

All dormitory rooms face the sea, with large sliding windows open to the sea on one side and to the park on the other.



Light open staircases connect the different levels and lead to the roof terraces.



The camp is provided with cultural and health buildings, libraries, sport grounds, open-air terraces, swimming pool and so forth.

A modular system based on six prefabricated elements was designed for the main buildings, while prefabricated reinforced concrete mushrooms are used to shelter the refectory and meeting places in a free form arrangement.

The authors of the complex are :

Architects A. T. Poliansky (chief architect), W. W. Belov, U. N. Minayev, D. S. Vitoukhina, W. W. Mironov, M. A. Leefatov, E. Sergeyev.

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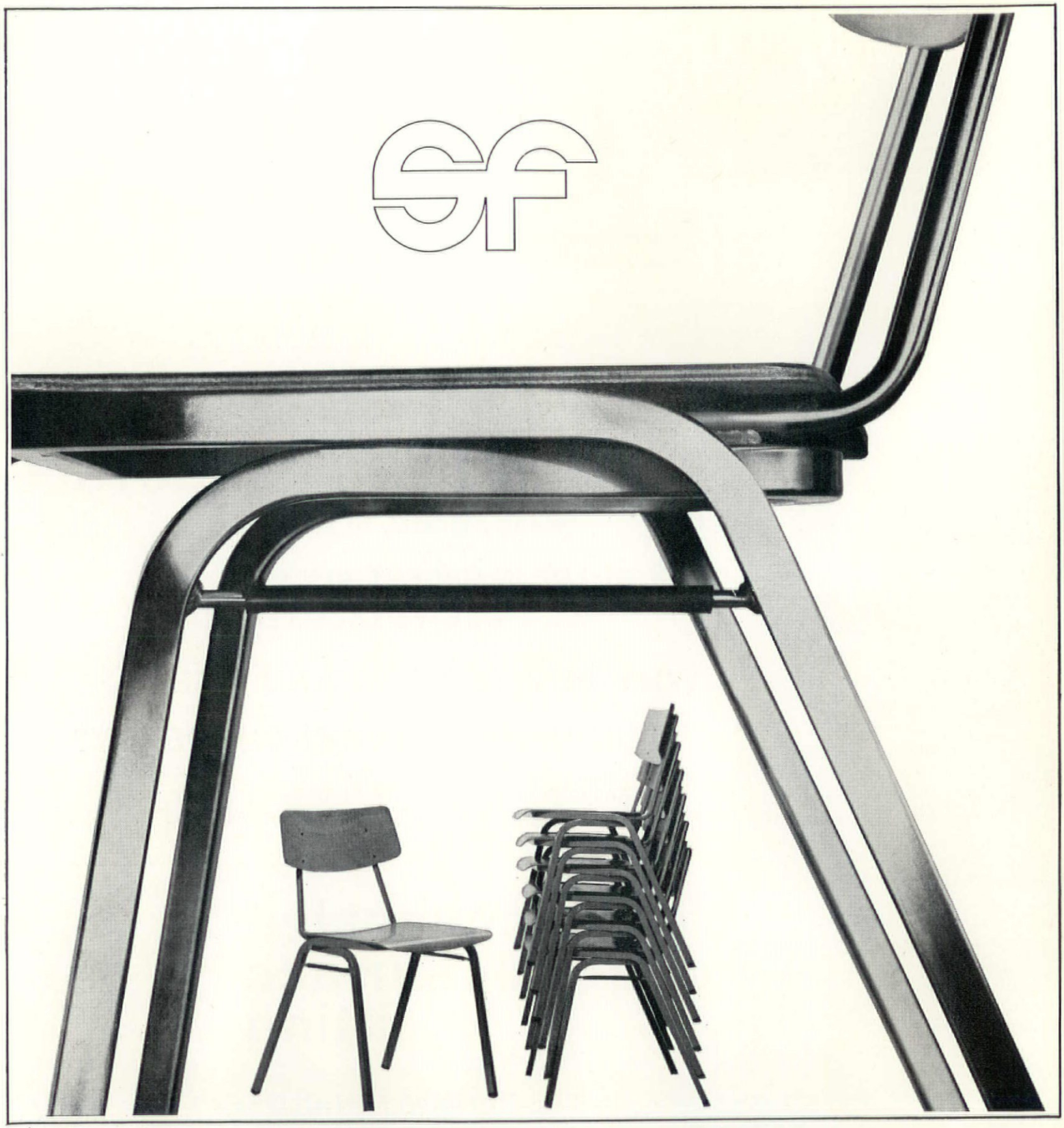

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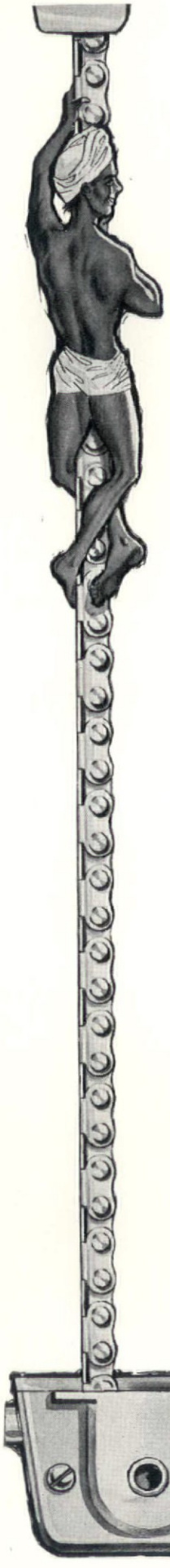



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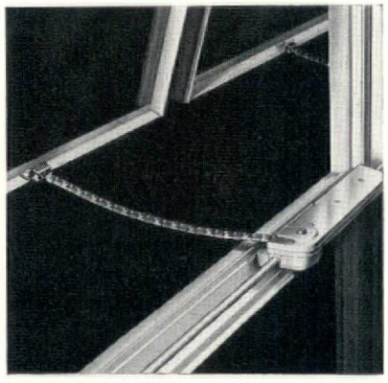

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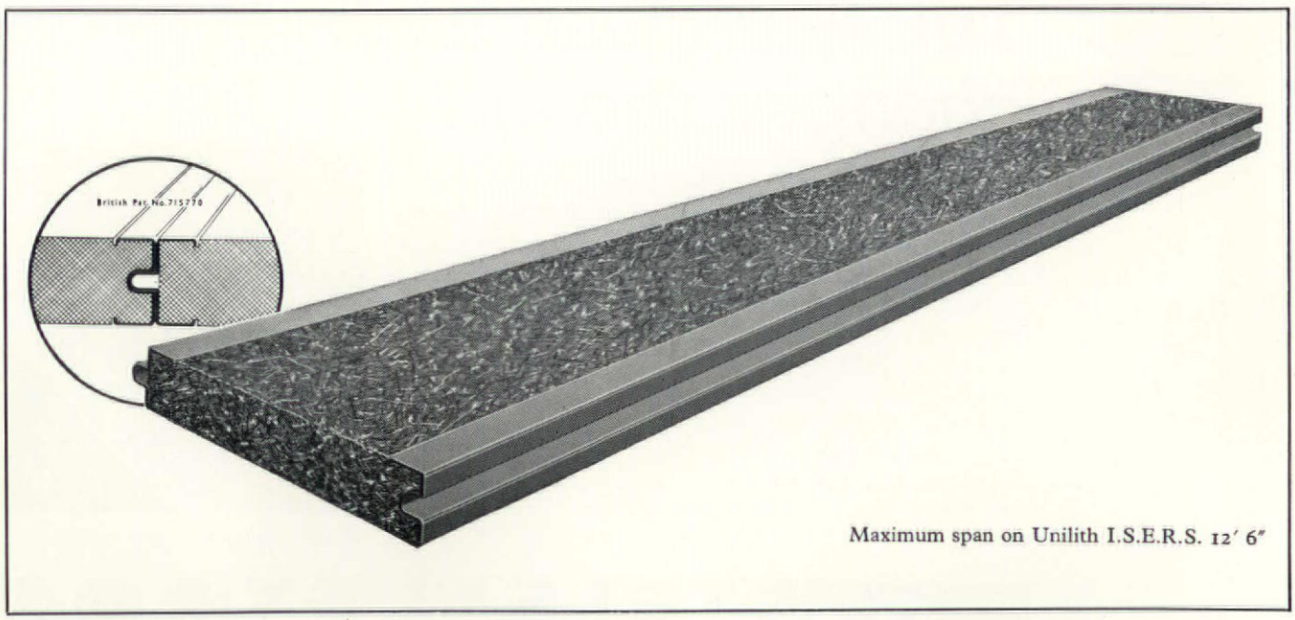

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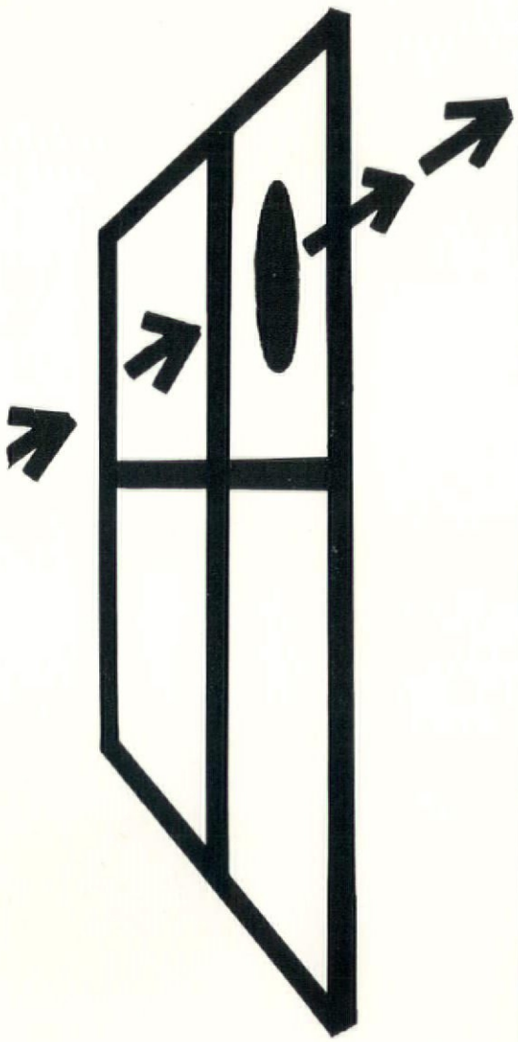

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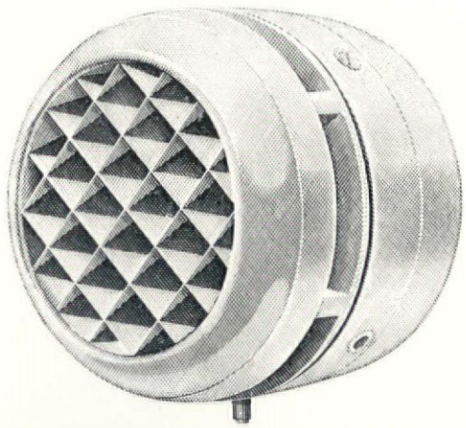

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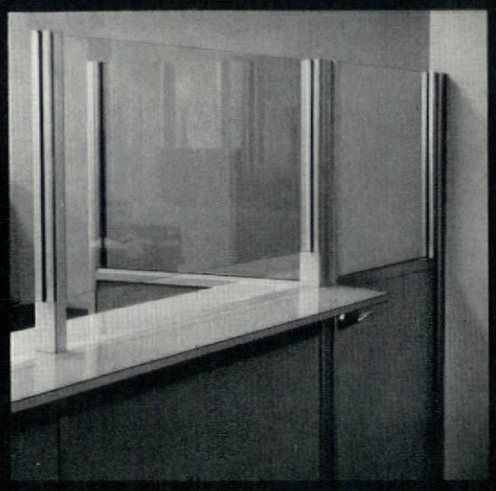
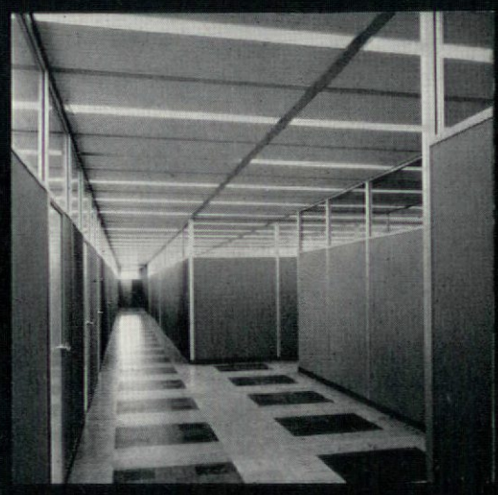
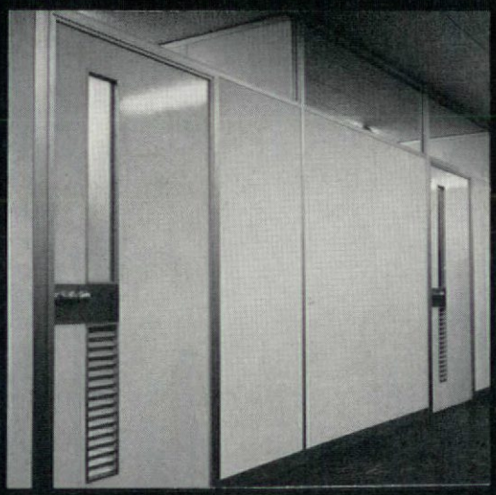

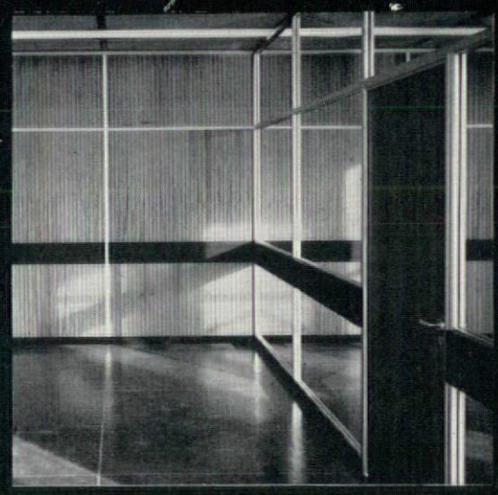

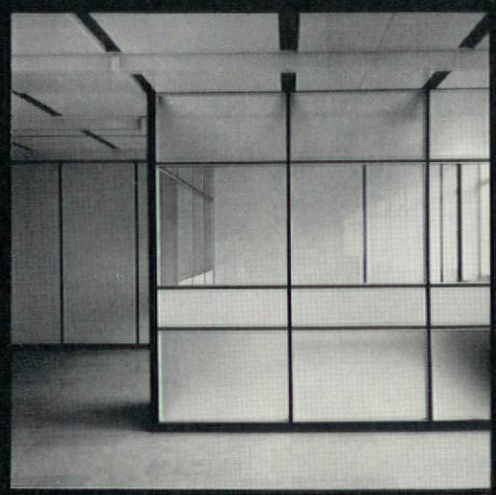
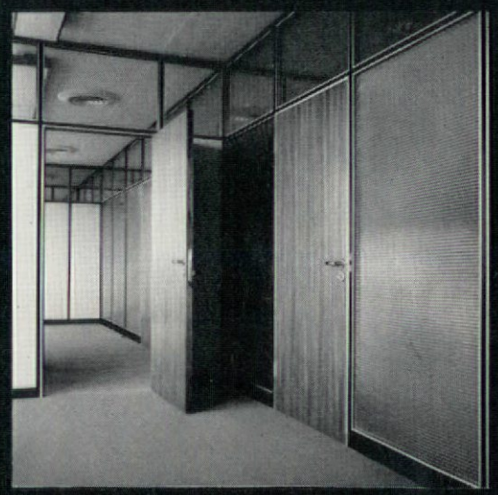

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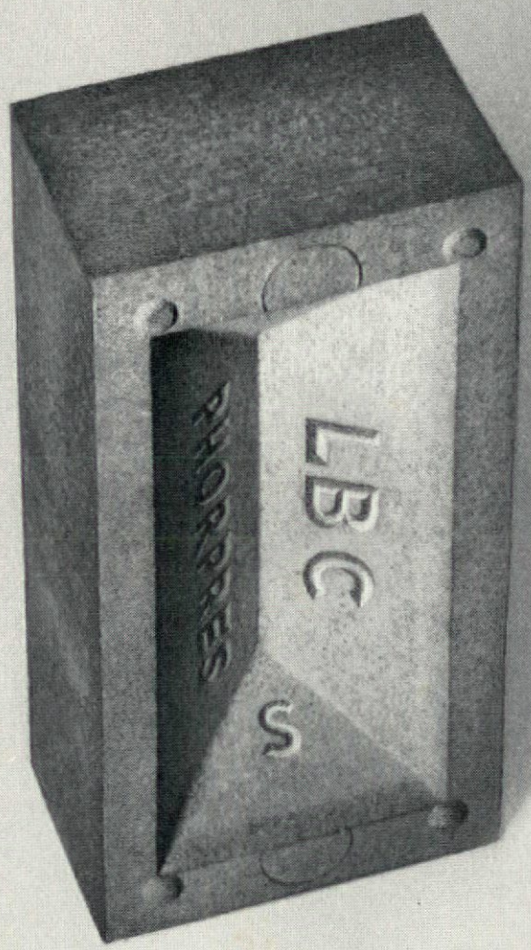

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SHOP WINDOW DESIGN

SFB (92)
UDC 725·21

This information sheet reviews some of the problems encountered in shop window design from the point of view of reflections and condensation on the glass, and examines briefly some possible solutions.

Causes of reflections

Reflections on window glass are particularly noticeable when the light outside is stronger than within. This is most marked when the sun is shining or when light is cast onto the glass from streetlamps, vehicle lights, light from other buildings, etc. Windows which suffer most from reflections are those facing north looking onto other buildings facing into the sun, especially when such buildings are light coloured.

Providing that the light is at right angles to the glass, clean window panes allow approximately 92 per cent of visible light to pass through. But in service, taking into account accumulated dirt or dust, light absorption by glass, and the oblique angles with which light mostly strikes the glass to cause some of it to be reflected, this figure is reduced. Depending on its thickness, some 5-8 per cent of incident light is absorbed by the glass and some 8-10 per cent is reflected. Thus, including the light 'lost' through dirt, only some 80-85 per cent of available light actually passes through the window.

Light is reflected from glass, incidentally, due to the difference between the refractive index of glass (1.52) and air (1.0).

Sky reflections

With vertical windows, without an awning or canopy, the most pronounced reflections come from the sky and from the pavement levels. In sketch **1a** the plan of a typical vertical window XY is shown. The eye of the observer is at E. If the line of sight is oblique to the glass (EA) then objects in the direction AB will be reflected. Their brightness will depend on their strength of illumination. AB is easily plotted for any given position of E as the angle of incidence (i) of a light ray is equal to the angle of reflection (r). When the line of sight is at right-angles to the glass (EC) incident and reflected light rays coincide and the observer sees his own image.

A very useful way of simulating likely reflections is to replace the window glass with a mirror. While this is hardly practicable in the full size it can often be a very helpful aid to the designer when examined on the scale of model studies.

In sketch **1b** the section through a typical vertical window XY is shown. The eye is again at E but the height of this will obviously vary from observer to observer. It will also vary according to the dominant age group likely to make most use of the window. For general design E will probably be between 4 feet and 6 feet above the floor or pavement. While opinions vary on this it seems that the height range most accepted for adults lies between 5 ft 4 in and 5 ft 8 in. The optimum viewing distance in front of the glass, or dwarf wall if there is one, appears to lie between 10 in to 12 in. In the sketch, if the observer looks upwards he will see reflections from the direction BA. If there is no canopy or blind these will probably be from the sky. Looking downwards, in the direction EC, the pavement or floor D will be seen.

Control of reflections

While the theory as outlined above is simple the control of reflections in practice is far from easy. So many variables have to be taken into account that total success is seldom possible. The greater the success the more expensive the window is likely to be.

Essentially, the most elementary approach is to try to modify the contrast between outside and inside light. This can be done both by raising the intensity of illumination inside the display space and by the provision of blinds, awnings or canopies to reduce the strength of the light outside. Raising inside light, however, is not always favoured by modern window dressers who often seek dramatic shop window effects by overall subdued lighting with the objects themselves picked out by spotlights. Blinds, awnings and canopies may also be cumbersome and expensive. They must also comply with by-laws which usually lay down a limit of at least 8 feet height above the sidewalk.

A very practical type of design, which is also economic, is shown in sketch **2.** This outlines a showspace with a vertical window which is shielded by a canopy and is also lit from overhead by laylights.

In narrow streets

In narrow streets where the incident light comes from a high angle, one effective method of increasing the internal illumination with natural light is to provide a floor to the showspace of dull grey Rough Cast silvered glass. While this will not produce obvious reflections, as will a mirror floor, it can provide a very subtle upward light which will enhance free-standing displays by throwing them into relief. The glass panels should be laid on hard felt backing to prevent cracking if walked on. When it comes to more expensive solutions, varying degrees of success are possible with tilted, curved or faceted glass. These generally rely on the provision of a non-reflective surface, such as a matt black painted soffit of a canopy or the back of a dwarf wall, towards which the window, or part of it, is focused. Thus, while they do of course reflect, the image which the observer sees is of their light absorbent surface and providing this is properly maintained and cleaned, no distracting reflections in the normal sense are apparent.

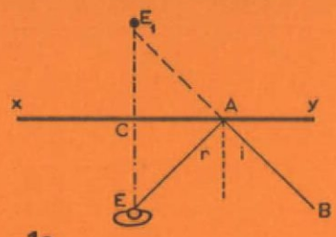
Some of these solutions are outlined below. Several of the most effective examples, it should be pointed out, are either proprietary products or are protected by patent rights.

Forward tilted glass

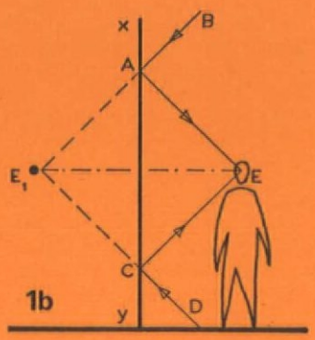
Shown in sketch **3a** is a window with the glass tilted forward towards the observer. This solution does not require a canopy and will produce a non-reflecting zone in the glass from the foot of the window to about eye-level—that is, the zone varies according to eye level height. The height of the zone also varies with the inclination of the glass. This type of window is most suited to objects which are likely to be displayed at a low level, its major disadvantage is that both the dwarf wall and the steepness of the inclination oblige the observer to stand away from the displayed goods, which is considered undesirable by the majority of shopkeepers.

While this design may be the least effective of those listed here, it may be of use to examine the geometry of the reflections to assist those designers wishing to carry out their own studies. As shown in the sketch, the window shopper's eye (E) looking in the direction EA will see by reflection point B. As this point is on the absorbent surface of the matt painted trough, no reflections should result. This trough, however, must be kept clean constantly as dust, stray paper, etc., apart from being unsightly, will also throw up a distracting image into the glass of the window.

The highest non-reflecting point in the glass (C) corresponds to the point where the reflection of the top of the dwarf wall (D) is to be found. It thus follows that the higher the dwarf wall, the higher will be the non-



1a



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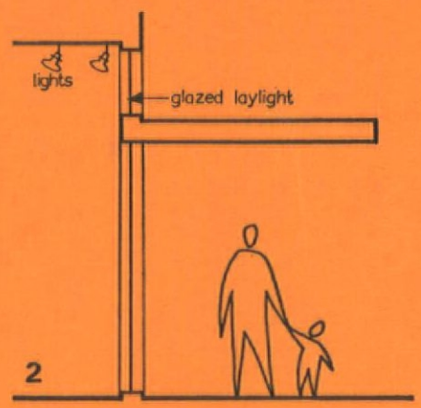

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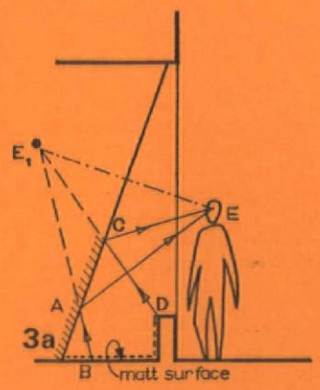
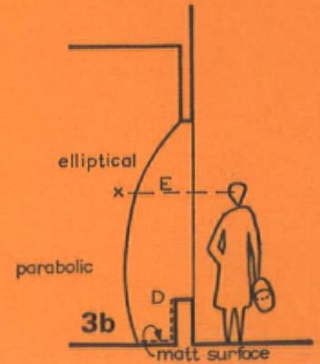


3a



3b

reflecting zone, shown hatched in the drawing. Even so, to raise this zone to much above head level entails having an unreasonably high wall.

The maximum effect is obtained by tilting the glass to at least 20° from the vertical. If this is not done the non-reflecting zone will not rise above eye level. Increasing the angle of tilt within practical limits (say up to 30°) thereafter will only give marginal improvements. The optimum position for the viewer's eye is generally about 12 in in front of the dwarf wall which is shown here set about 3 feet out from the foot of the glass. The further away the eye, the less will be the height of the non-reflecting zone, but, again, this change is slight and is most noticeable up to 5-10 ft in front of the dwarf wall. As has already been suggested, incidentally, it by no means follows that people of different heights will enjoy the same non-reflective zone. Looking in from the same distance in front of the glass, in fact, a child will see less of a non-reflecting zone than an adult.

Shown in sketches **3b** and **3c** are possible variations of the forward tilted window. Both are more expensive than the flat inclined pane but both can improve the limit of the non-reflective zone to some extent. In **3b**, the glass above eye level of an adult is bent in an elliptical trough with the foci at E and D (the top of the dwarf wall), and below eye level, in a parabolic curve with the axis horizontal and the focus at D.

Backward tilted glass

Shown in sketch **4** is a backward sloping window used in conjunction with an overhead canopy. The soffit of this is painted matt black, or is treated in some other non-reflecting manner. In contrast to the example in **3a**, the limit of the non-reflecting zone, which is again shown hatched, is from the top of the window downwards. It thus follows that this design is best for exhibits at medium or high level. The downward limit of the non-reflecting zone is governed by the width of the canopy and increases most significantly with a wide overhang. A more acute angle of tilt will also slightly increase the limit of the zone as, too, will distance of the window shopper from the glass.

The major advantage of such a design is that it allows the shopper to come close to the glass to examine the display, a factor which is much favoured by many shopkeepers.

Bent or curved glass

Elliptically curved glass sheets, in various combinations, were first introduced in the 1920's and were very popular in the 1930's and in the period up to the early 1950's. One type is shown in sketch **5**. Broadly speaking, these combine the attributes of the tilted glasses already mentioned. Some have seen many years of successful service. Indeed, the Pollard patent non-reflecting curved window at Simpson's in Piccadilly is world famous. Unfortunately, these window types are also very expensive today, due mainly to the cost of bending the glass, and seem to be infrequently installed. Probably their greatest advantage is their fostering of the illusion of there being no window at all between the viewer and the shop interior. On the other hand, the curved sheets are limited in size and are not always popular due to the space they take up in front of displays thus holding the shopper back from close examination of the window's contents. Another point of criticism is the way the non-reflecting trough quickly becomes a bin for stray rubbish. On the other hand, shop owners who can afford the price of such a window are unlikely to stint on window cleaning!

Faceted windows

In the moderately priced range, the faceted window, such as is shown in sketch **6**, is very effective. Such windows must, however, be properly designed, the correct angles at which the glass panes are set being vital to success. The sketch shown here is based on the non-reflecting display window patented in 1953 by the architects Rolf Hellberg and Maurice Harris and used by them with the greatest of skill at their Owen Owen store in Coventry—which was so much one of the precursors of recent modern architecture in this country.

This design has the dual advantage of eliminating the rubbish-collecting dwarf wall thus bringing the displayed objects very close to the eye of the shopper, while taking advantage, in the lower pane, of the usefulness of a forward tilt for low-level displays. The main viewing pane, on the other hand, takes advantage of backward tilt. It also incorporates a handrail at the junction of the two lower sheets to protect the window and has lights set on the facia of the non-reflecting canopy to illuminate the sidewalk at night. These lamps are set so as not to scatter stray light onto the window glass. The showspace is lit from above by an illuminated ceiling and the primary object of the topmost sheet of glass is to reflect any stray light from this away from the main viewing window.

Condensation

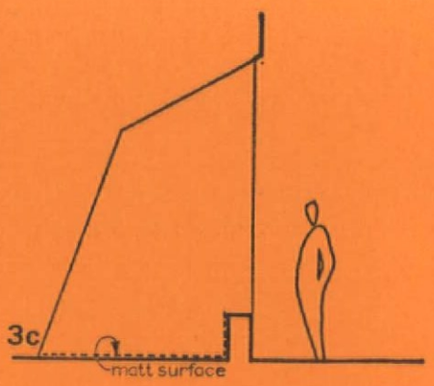
Apart from the reflection problem outlined above, condensation on the window glass, too, can be a great nuisance. As a general rule, internal condensation is due to the difference in the air temperature on the two sides of the glass and the humidity of the air inside. The general principle to observe to reduce the risk of condensation is to ensure that the temperature of the inside face of the glass is not below the dew point of the contained air. In the well-heated interiors which are common, and obligatory in shops, today, this situation is fairly easy to achieve. This presumably explains why the condensation problem appears to have lessened in recent years. On the other hand, heat loss has certainly increased.

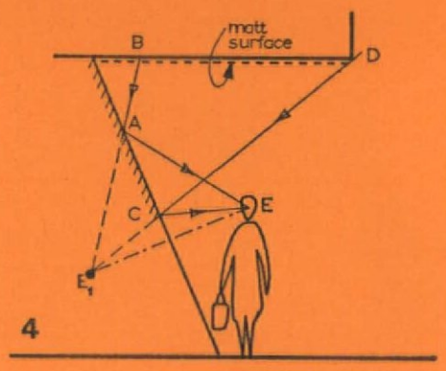
Double glazing

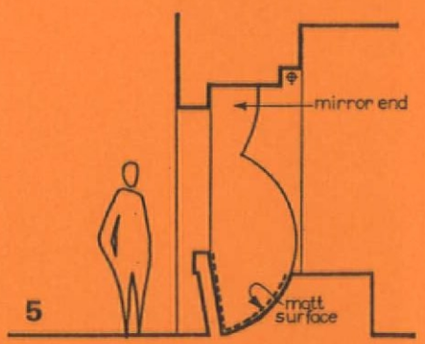
With modern methods of open shop design, where separate show windows are little used, the shop window itself becomes the external window wall of the interior itself. The obvious solution to both the condensation and the wasteful heat-loss problem is to double glaze the window. It is significant that, as fuel costs rise, yet window walls become bigger, many very large double glazed units have been installed in shops and other commercial enterprises up and down the country in the last year or two. These tend to be very much more numerous and larger than we have encountered hitherto.

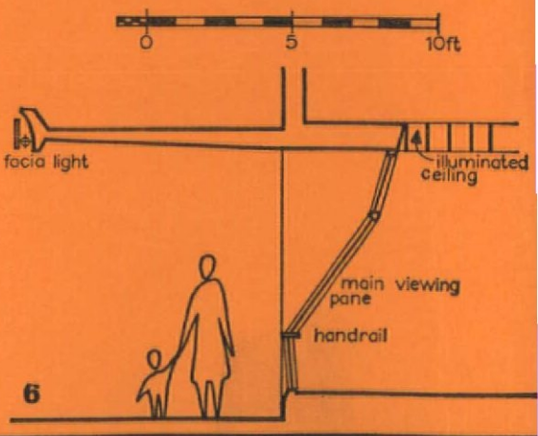
Where the window can be isolated from the rest of the shop by an enclosed display space, and where it is not double glazed, the inside face of a single glass sheet can be vented to the outside air at head and cill level. This technique, however, is rather old-fashioned now and brings with it the problems of the ingress of dirt, cold air and noise. By far a better solution is to position radiators or warm air grilles at the foot of the glass to carry a stream of warm air up the inside face to keep it above the dew point of the contained air.

It should be pointed out that while such a solution may solve the condensation problem inside shops with non-perishable displays, it is of little use in perishable goods shops. In conditions where humidity is present, the water curtain percolating down the glass is a useful solution. But this does distort vision and, by far the best plan is to double glaze the window at the outset.









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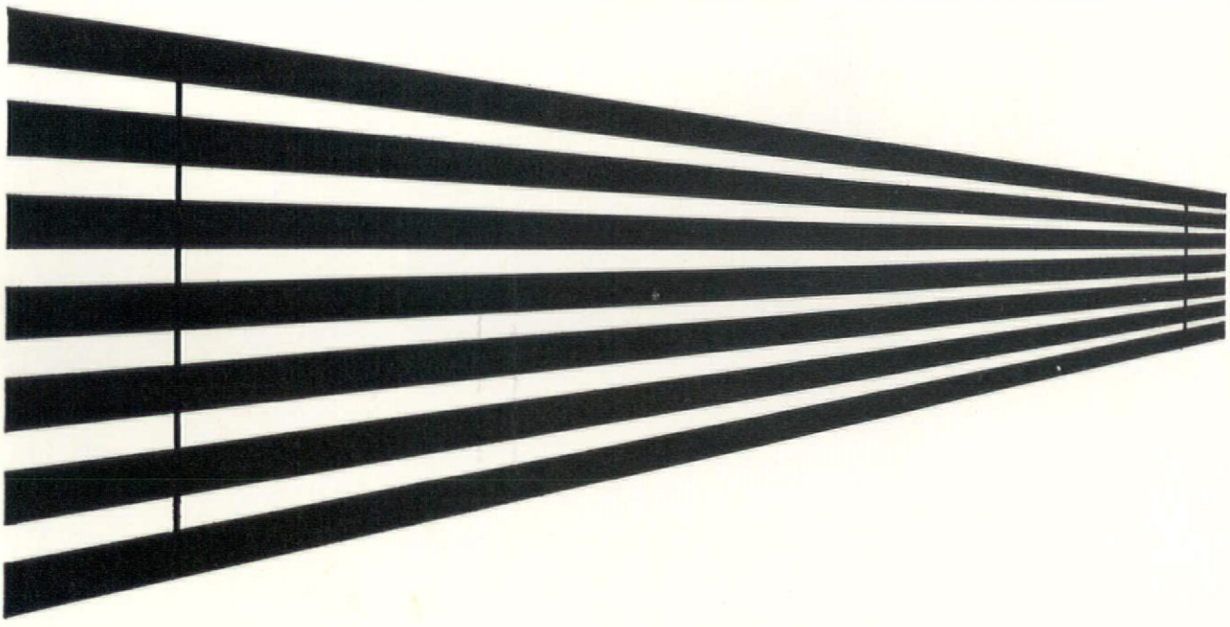

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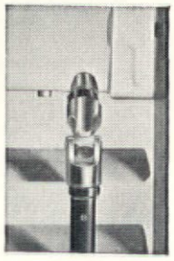

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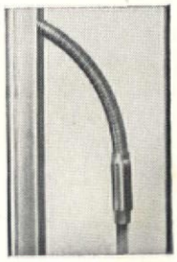

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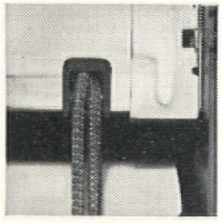

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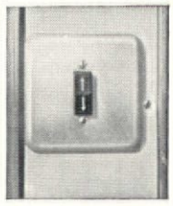

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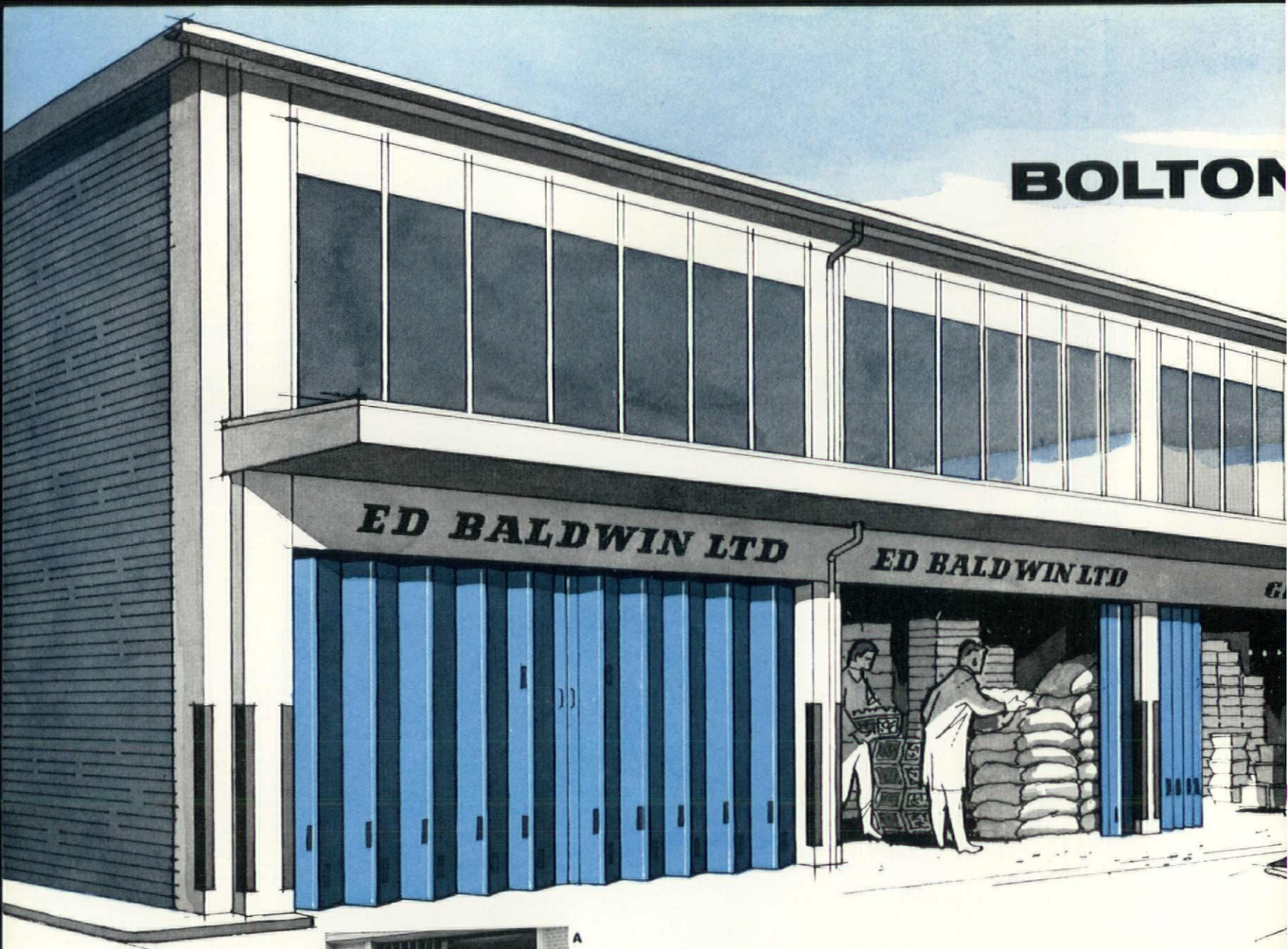
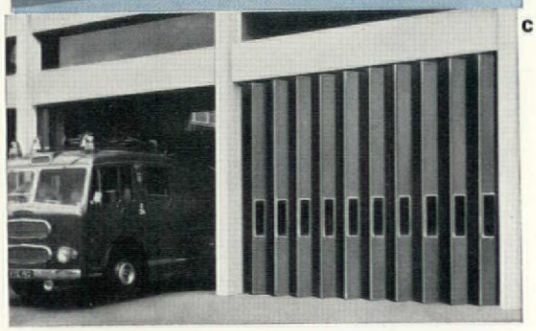








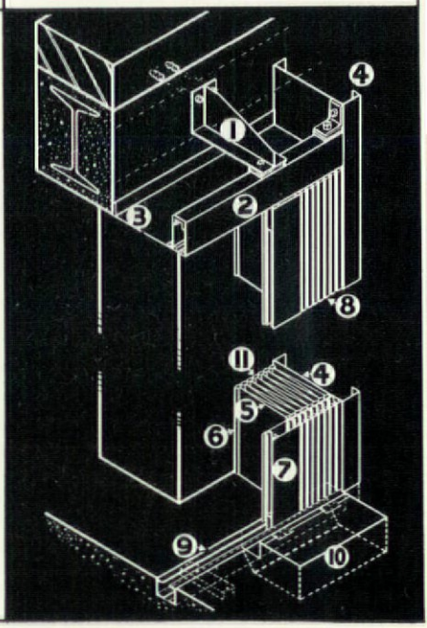
A *A factory installation of Bolton photo-cell controlled Shutter Doors.*

B *Bolton Shutter Doors installed in BEA Freight sheds, N. Ireland.*

C *Bolton Electrically operated Shutter Doors at Shoreditch Fire Station. Architects: Architect to the Greater London Council, Hubert Bennett, F.R.I.B.A.*

This isometric drawing shows the ideal fixing for Bolton Shutter Doors. Suspending the box track from the inside face of the lintel allows the doors to bunch clear of the opening by folding behind the walls. The cover plate (3) and the end panels (4) make the installation draught-resisting.

1. Welded mild steel suspension bracket.
2. BOLTON patent, totally-enclosed box-type top track.
3. Mild steel cover plate for the exclusion of draught.
4. Mild steel end panels.
5. 16's gauge (1.63 mm.) mild steel shutter leaves, Sherardised against corrosion.
6. Non-ferrous hinging strip.
7. Rigid front to accommodate locking arrangement.
8. Steel pickets on which the door is built.
9. Self-cleaning bottom track, built up from rolled steel channels.
10. Mild steel sump-box with hinged lid to facilitate cleaning out.
11. Shutter leaves rolled round $\frac{1}{8}$" (3.2 mm.) diameter wire reinforcement to give great vertical strength.



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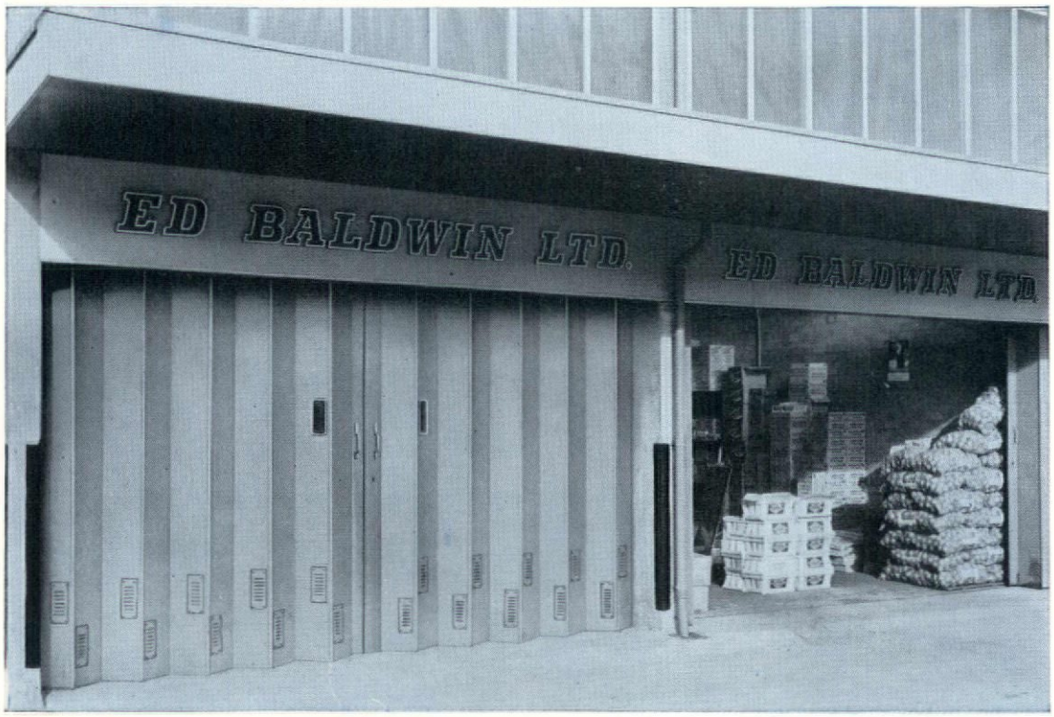

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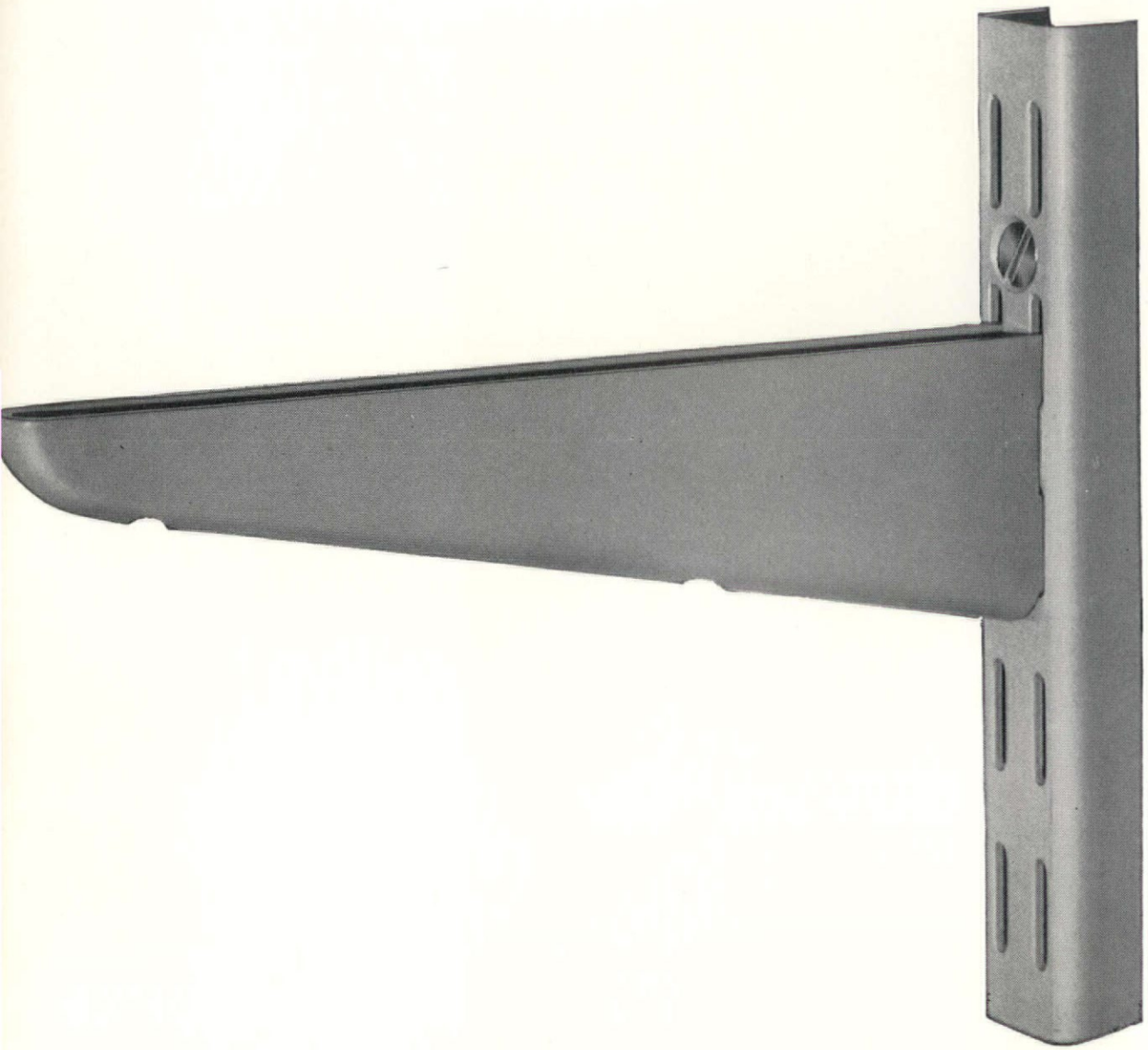

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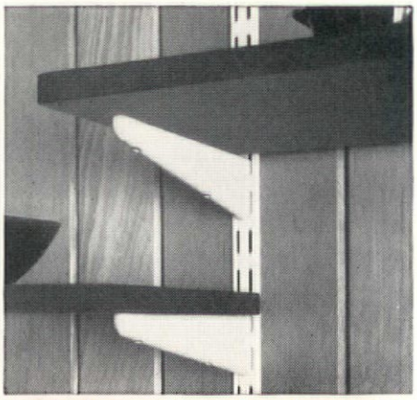

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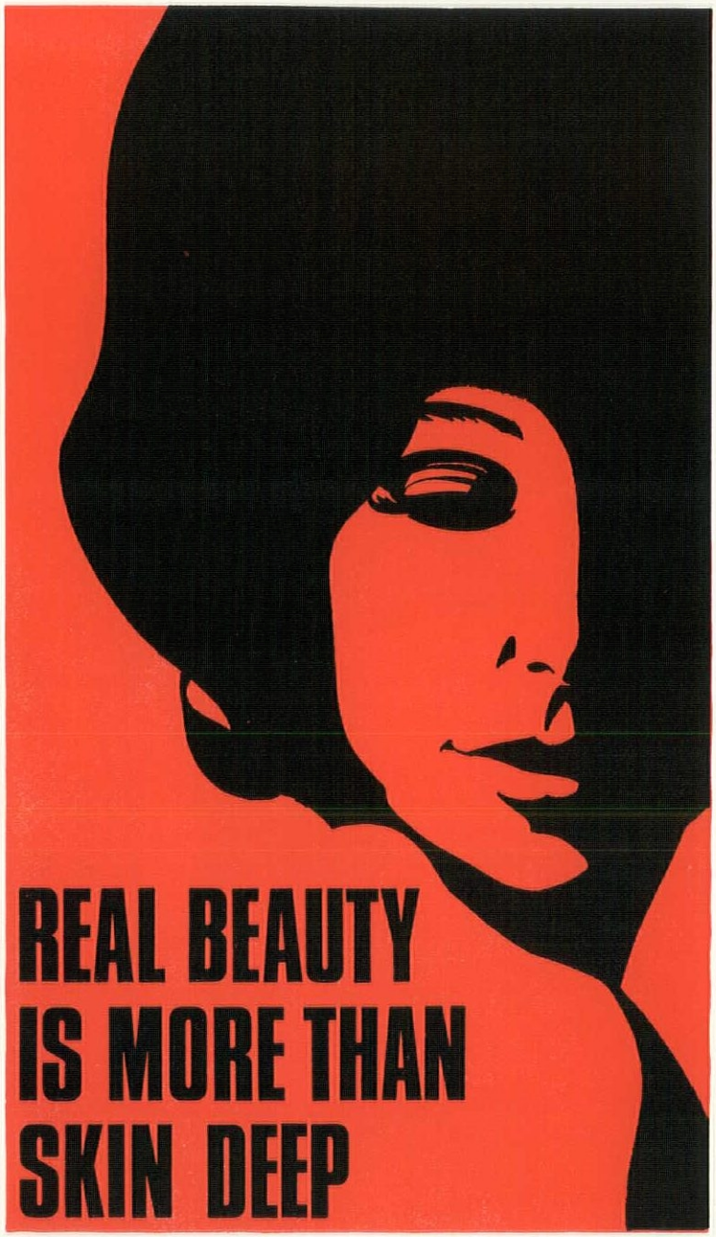

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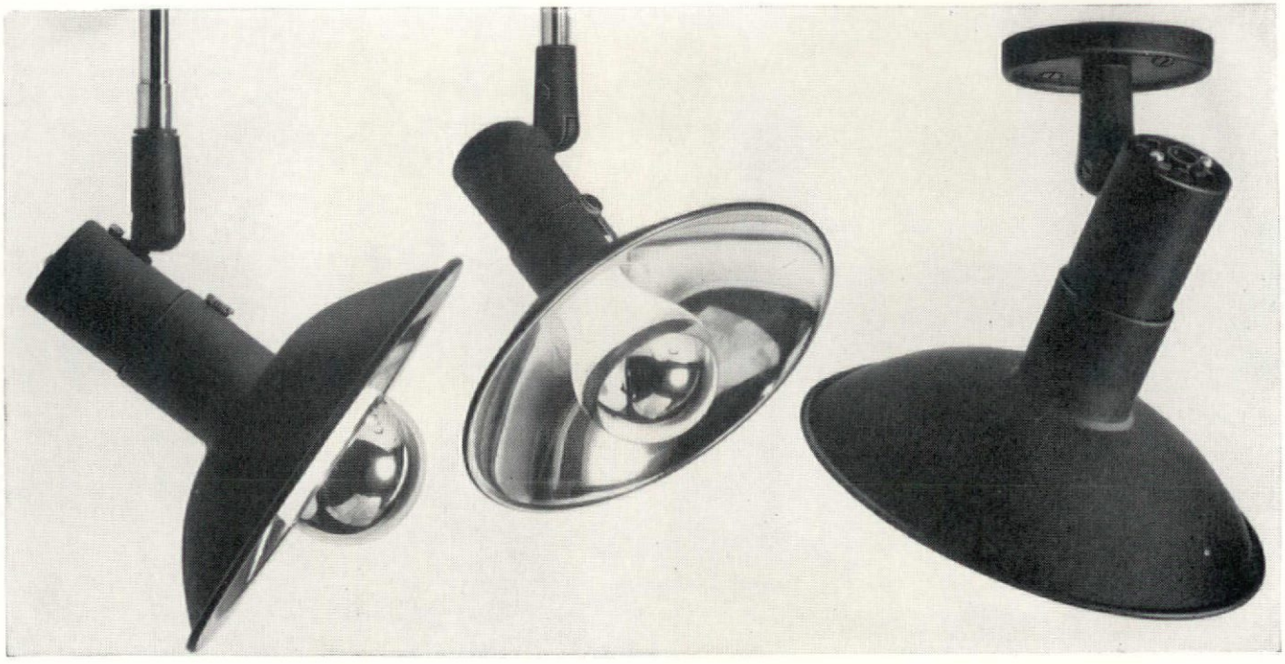

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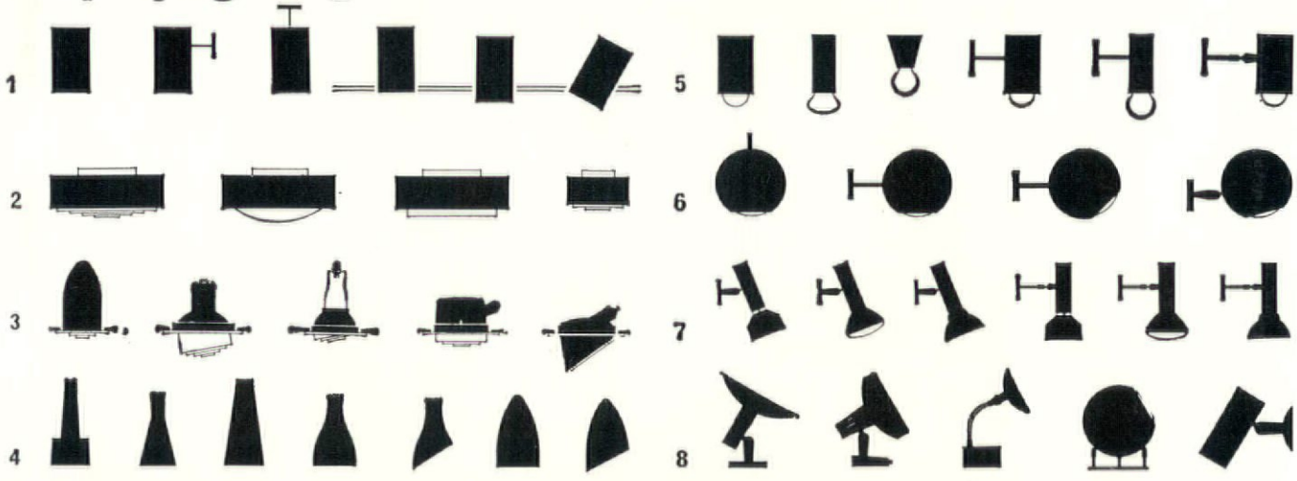
Display lighting



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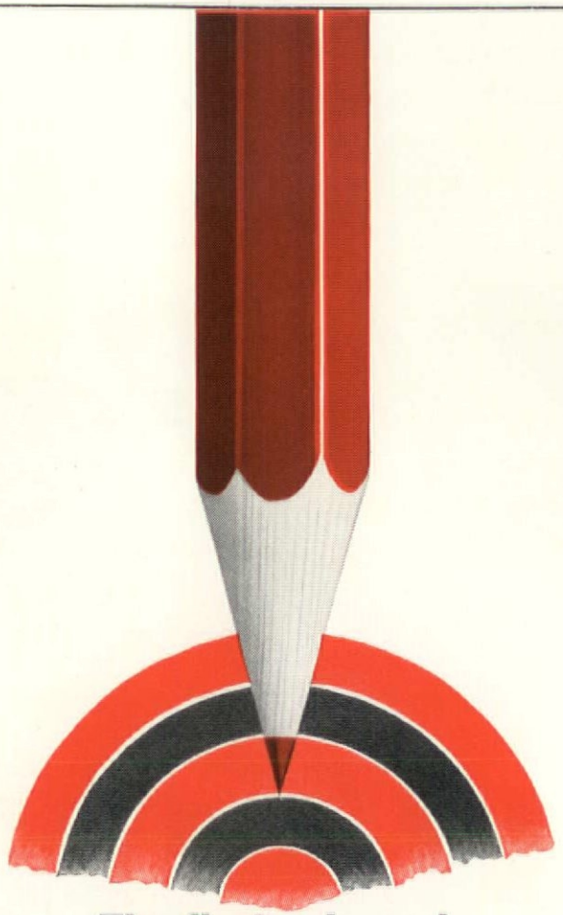

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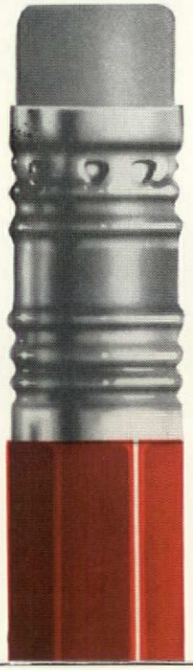

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CRC II

Cosmorama

The month in Britain

Michael Manser

Another Holford scheme for Piccadilly was received with little enthusiasm. Piccadilly cannot be re-arranged in isolation and the problem is not going to disappear if the authorities look the other way. (Unfortunately the best people do not go in for politics.)

London reeled under the impact of the World Cup and reeled even more when the home team won.

The Design Centre opened a Swedish Exhibition in London until mid-September. The University of York Institute of Advanced Architectural Studies published their 1966–67 programme of courses which include 'Building Economics and Advanced Management' this year, and 'Project Management for the Smaller Office' and 'Restoration of Buildings in Towns' next year. The latter should be quite a draw, with the Ministry of Building and Public Works list of scheduled buildings running at 90,000. Especially as Lord Kennet announced that over the last eight years, statutorily listed buildings have been destroyed at the rate of more than one per day. Listed buildings are a laughable hazard to hick developers who have only to let the yobs and arsonist in to legally proceed. A Bill now before Parliament lists punitive deterrents like prison for wilful destructors. What is more important is that preservation order issuers realize that a new use for an old building provides instant security. Better to alter and use than statutorily preserve uselessness for which no one wishes to pay.

The RIBA said it was not going to be so easy to go metric by the end of 1966; and decided to encourage and monitor pilot projects in the use of CBC developed by Bjørn Bindslev and his brother Knud to computer-code building information. J. G. L. Poulson, Pontefract architects, ordered a computer.

West Suffolk approved a by-law forbidding people to sleep in their public libraries. Brighton Town Planning Committee suffered the chagrin of seeing completed the University Meeting House they once refused to approve. Nelson's famous boat shed at Chatham burned down and his 163-year-old barge sank at Chiswick.

A scheme was announced by Miles Aviation for 'container' type aircraft fuselages, monorail-borne from city centre to airport; and a mile wide asteroid was reported to be on a collision course with the Earth.

More immediately unnerving was the country's collision course with bankruptcy and an immediate wages and prices freeze; the RIBA offered its co-operation.

A Ministry of Public Building and Works QS, said that to meet demand we would need another 60 Nottinghams in the next forty years, and Lord Robens said: 'Perhaps the time has come when we should accept the town as the natural place for men to live'. Mr Crossman approved an application by the GLC for 18,000 houses in the green belt at Lea Valley.

The Leatherhead Theatre Club's thriving repertory movement got a £250,000 boost into new premises; and some competitions were announced to boost flagging spirits: the 8th European House Competition with £3600 total prize money (particulars from the RIBA library), and a tableware design contest with 1500 gns. total prize money (particulars from Viners Ltd., PO Box 13, Broomhall Street, Sheffield 3).

World Man Centre

The President of Cyprus, Archbishop Makarios, announced on July 7th at Nicosia, that he is willing to undertake at the earliest possible moment to cede to a world authority a 200-acre property in the vicinity of the ancient Abbey of Peace known as Belle Pais in the district of Kyrenia, provided others cooperate with him in making such a start towards accommodation of the social trend towards world oneness.

Archbishop Makarios requires that the World Man area be operated for 50 years under a trusteeship of the highest order of intellectual and scientific capability—as for instance, by the World Academy of Art and Science which has signified its interest in the Cyprus event. He also requires that others provide monies to build a structure on the land, suitable for the housing of World Congresses of the many organizations now working towards—or already operating under—full world responsibility.

Archbishop Makarios has already received substantial offers of support. He made his announcement as he received Mrs Caresse Crosby, originator and long-time protagonist of such a World Man autonomy, and the scientist-architect Dr Buckminster Fuller, who came to Cyprus at his invitation to confer on the prospective construction of a building to house World Congresses of all those dedicated to world peace.

It is estimated the conference building will cost about one million dollars. The Archbishop is contributing two hundred thousand dollars to the cost. The two hundred acres which he is ceding also belong to him, which facilitates the deeding as well as the ceding.

International lawyers of the United Nations have stated that such ceding of land by a sovereign government to World Man—somewhat as the United States ceded a unit of its sovereign land to the United Nations in New York City—could readily constitute a legally sustainable, though utterly unprecedented act. The international lawyers point out that the lands of sovereign nations as yet account for only 20 per cent of the earth's surface, 71 per cent being covered by non-territorial waters and another nine per cent being as yet 'open' Antarctic territory. Recognition of the open, one-world centre for World Man on Cyprus by other sovereign nations—as recognition has been accorded to the Papal State or Vatican City in Rome—is now in order.

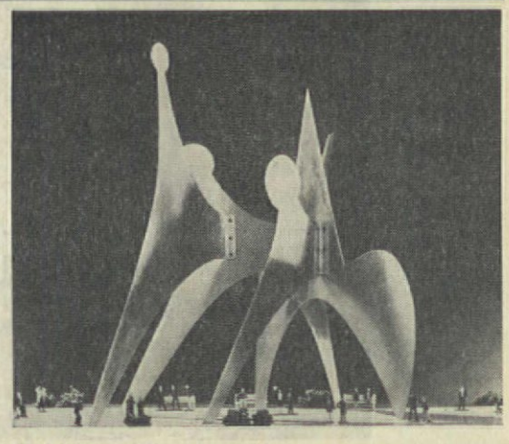
Le Corbusier symposium

The Architectural Association is organizing a Le Corbusier symposium at the RIBA, London, on the 13th and 14th October, both sessions beginning at 6 pm. Experts from each side of the Channel are being invited to speak. Exhibitions are also being prepared, the principal one assembled by James Madge and Paul Oliver.

LC at MoMA

An exhibition documenting the destruction by neglect of the Villa Savoye built by Le Corbusier in 1930 outside Paris, was on view at New York's Museum of Modern Art during July. The Museum shortly after receiving photographs in June and deciding to exhibit them, was informed that workmen had appeared at the Villa to patch up the exterior stucco.

At a meeting in Paris in June, André Wogensky, José Luis Sert and others conferred with representatives of the Ministry of Culture on plans to establish the Villa Savoye as a museum of Le Corbusier's work. May they be successful!



Calder stabile

Alexander Calder has designed a gigantic stainless steel stabile sculpture for Expo 67 in Montreal. The stabile will be known as 'Man', and will be 67ft high, 94ft long, weighing approximately 46 tons.



The recently completed Bank of London and South America in Buenos Aires. Architects Sánchez Elía, Peralta Ramos and Agostini, in association with painter sculptor Clorindo Testa

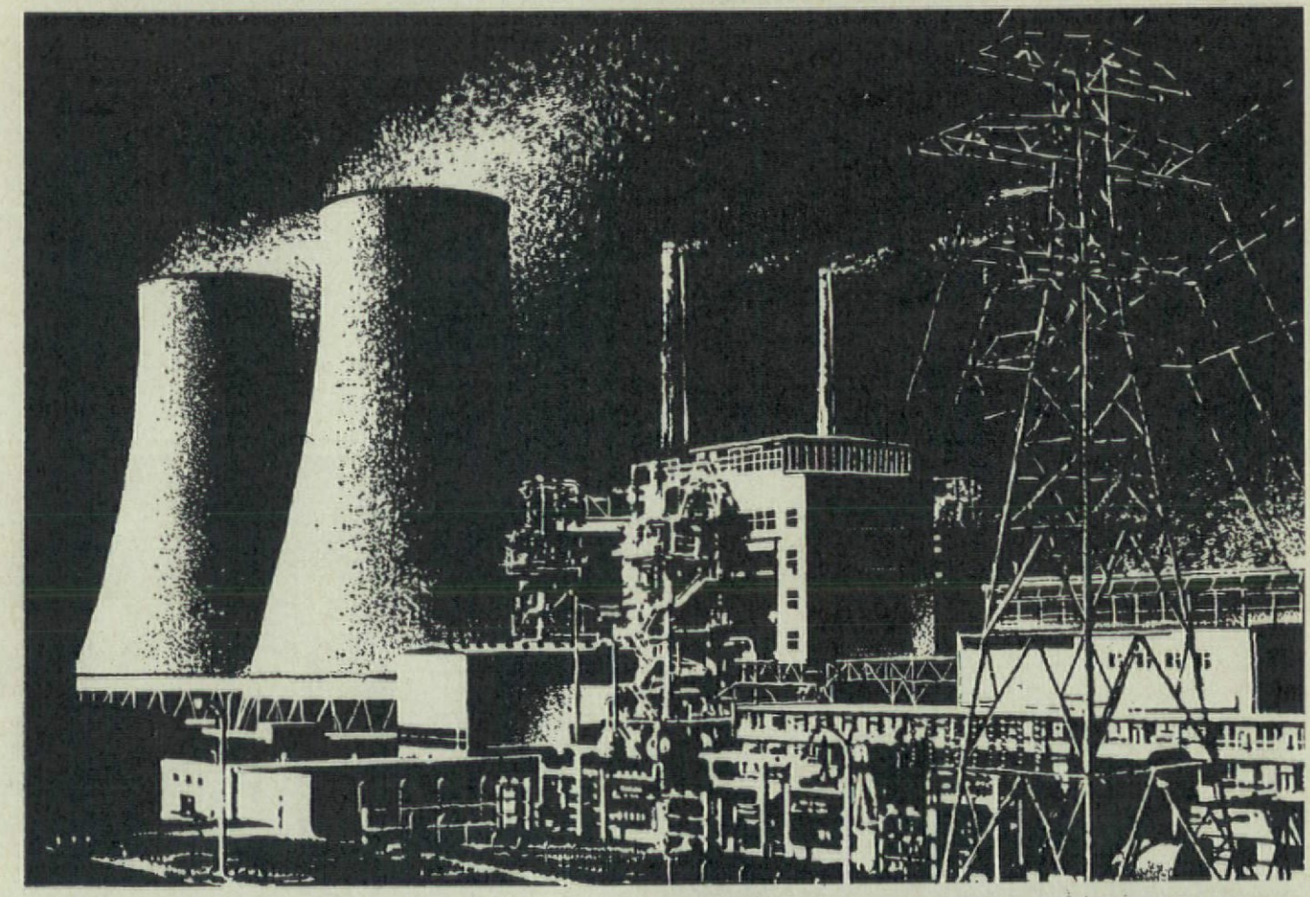
Architects 'terrorised'

On July 29th police forced an entry into Buenos Aires' Faculty of Architecture and other faculties, destroyed work being done, and formed a cordon outside through which they drove students, professors and staff alike, striking at them with truncheons or guns. The engineer Fernandez Long, Rector of the University of Buenos Aires and structural consultant for the new building for the Bank of London and South America, was virtually sacked from his post along with all the Universities' authorities. (According to *La Razón*, all have resigned in protest.)

Spain set a pattern on March 9th when, at a Barcelona students/professionals' meeting, invading police arrested Antonio de Moragas, President of the Catalan College of Architects, and the architects Oriol Bohigas, Luís Domenech and José Maria Matorell. They were released after three days (according to *L'Architettura* 129) on payment of heavy fines.

(Shades of Hitler!)

window controls for industrial buildings



BUILDINGS OF TODAY

Calder Hall,
Britain's first Nuclear Power
Station, is fitted with
Newmans Window Opening Gear

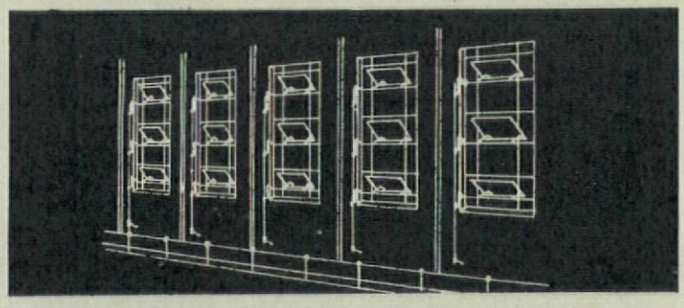


Illustration above is of the shaft and lever gear used at Calder Hall. This gear is neat and inconspicuous, and requires less maintenance than any other type.

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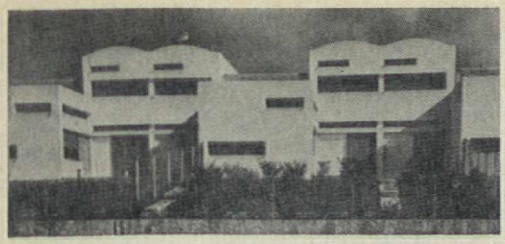


1

Agadir

On February 29th 1960 Agadir was destroyed by an earthquake, and in March 1960 Le Corbusier was consulted about the rebuilding. The area was studied geologically and it was found that after eliminating the danger-zones, enough land was left inside the municipal boundaries to reconstruct the town on part of its old site. Certain areas suffered only partial damage—the port, the southern industrial area, and a mixed residential area.

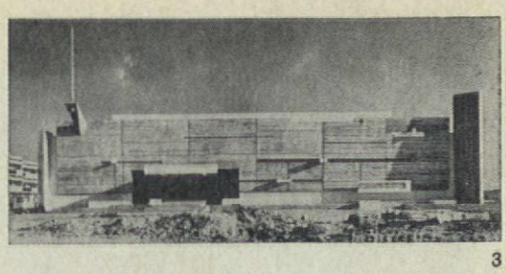


2

The site for the new town was divided into two by a wadi, which was partially filled with debris and levelled out.

The catastrophe in which 15,000 people lost their lives, made possible a full scale development of an architecture suitable to a particular geological condition, a particular climate and a distinct way of life.

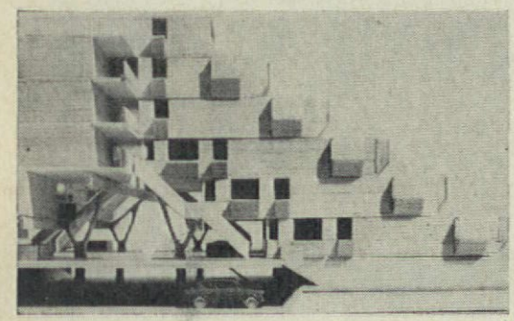
What, in fact, has been built is a group of monuments to the individual architects—Riou



3

and Tastemain, Azagury (administrative centre **2**), Zevaco (main post office **3**), Faraou and de Mazieres (row houses **1**), Lenz and Leoncavallo, Verdugo, Ichter and Embarck—none without merit, all undertaken with sincerity and devotion, and mostly in the stages of near-completion by the end of 1965. However, in their purely visual appeal, none add to the knowledge needed for solving the special problems of this and similar areas.

A + U, no 4, 1966



1

Stepped within a system

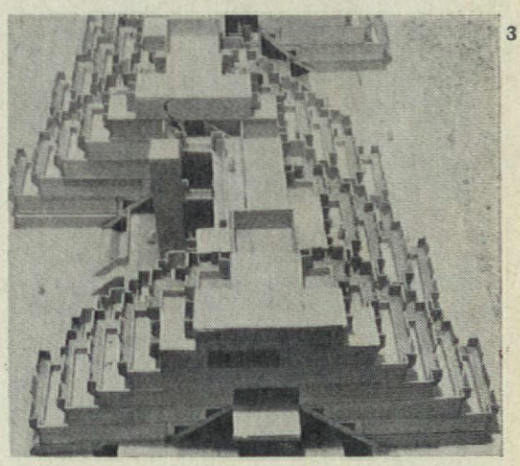
Third-year students at the school of architecture at Cambridge (UK) were set an exercise in applying three aspects of current housing



2

theory to a site in the town: Parker-Morris, Buchanan, and the IBIS building system. A number of their designs are shown in *World Architecture 3*, and include high- and low-rise high density schemes as well as terraced like Lindsay's **3** and Crowther's **1, 2** shown here. The students, as well as Raymond Wilson who comments on IBIS, favour industrialized components rather than systems.

Studio Vista, London. 84s.



3

Best buy housing

Basic systems building has been used as a starting-off point for mixed development, high density low-rise housing at Basildon.

Planned by Basildon Development Corporation architects' department under D. Galloway, chief architect, the scheme creates a more than pleasant living environment at a realistic cost.

86·5 acres have 1531 dwellings (18·7 dwellings to the acre). Four storeys is the highest building and the development consists of flats and maisonettes, old people's homes and court houses.

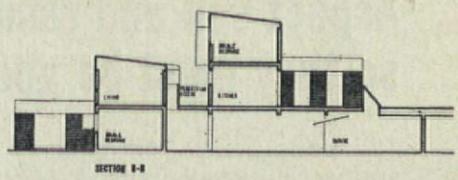
On studying the layout what makes it exceptional seems to be, not the segregation of pedestrians and traffic, not the provision of a large open central area ($\frac{1}{2}$ mile × 100 yards) and interleading courtyards, nor the careful placing of old people's homes along the pedestrian route and near to the larger family units. All these things are praiseworthy but have been achieved before. It is rather that the mixed development has a clear discipline which links all the units into one, beginning with the complex deck access dwellings in the east, through the rambling courtyard houses to the split-level dwellings in the west. Each dwelling in the development is joined by continuity of thought and design to the whole and the whole to the contours of the site.

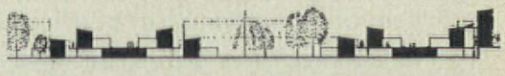
In detail, the HSSB system of box frame structures (maximum weight $2\frac{1}{2}$ tons) has been used. The court houses consist of a basic area of 39ft 0in × 39ft 0in × 15ft 0in deep living space. Apart from stair and 3ft 0in plumbing strip it is fully flexible.

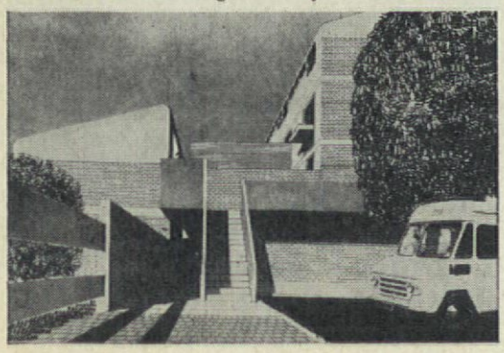
The deck access dwellings contain units of different sizes, compactly assembled over garages. Split-level planning has been used to give greater privacy.

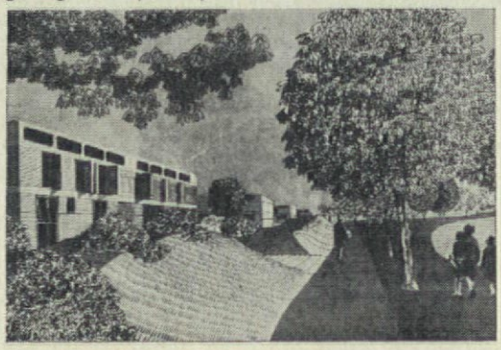
The architects, while using mostly traditional materials, are hoping to use an all-in-one plastic cap for the roof, and also possibly a prefabricated heat unit if cost permits.

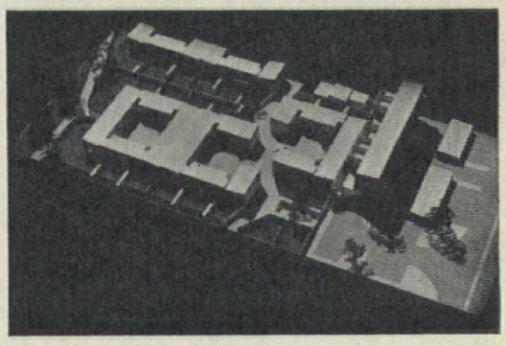
If a criticism were to be aimed at the scheme it would be that possibly the deck-access housing of the east could be used more often throughout the area to make the whole more compact.

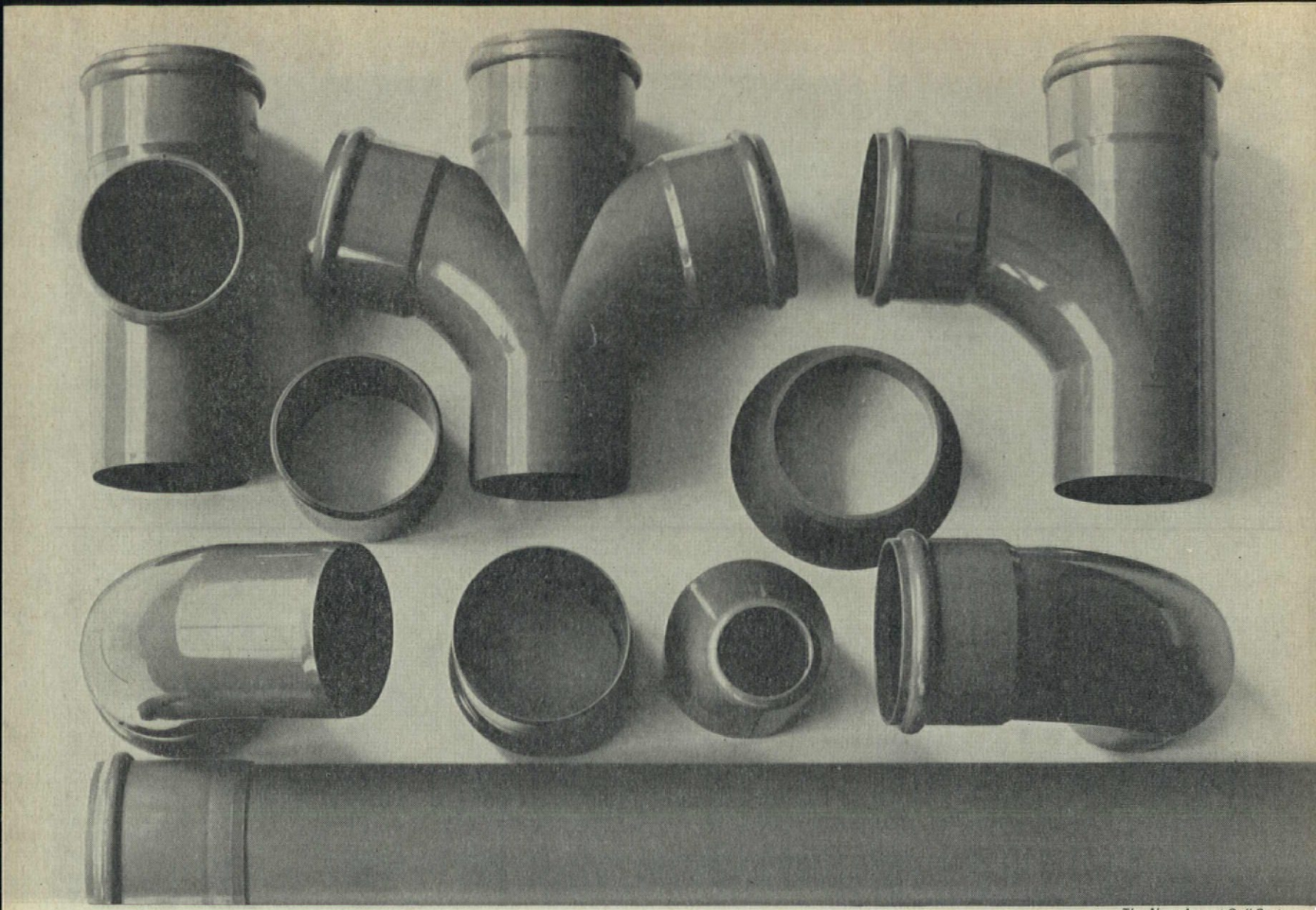












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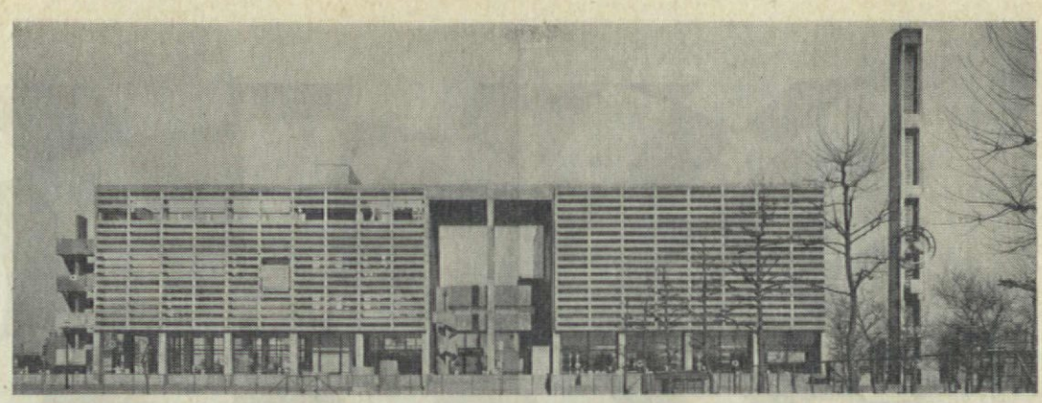
Japan—straight up and down

Simplicity—or rather apparent simplicity—and drama are combined in one of the rare city halls in Japan that is not motivated by municipal egotism and the architect's desire to make a flash, flamboyant gesture in concrete. The meeting rooms and reception rooms that form one element of the Koto Hall in Tokyo, are clearly and straightforwardly separated from the main auditorium that forms the other, but the break far from being crudely expressed is made the unifying link. It is at once isolated but integral to the whole.

Japan Architect, November 1965

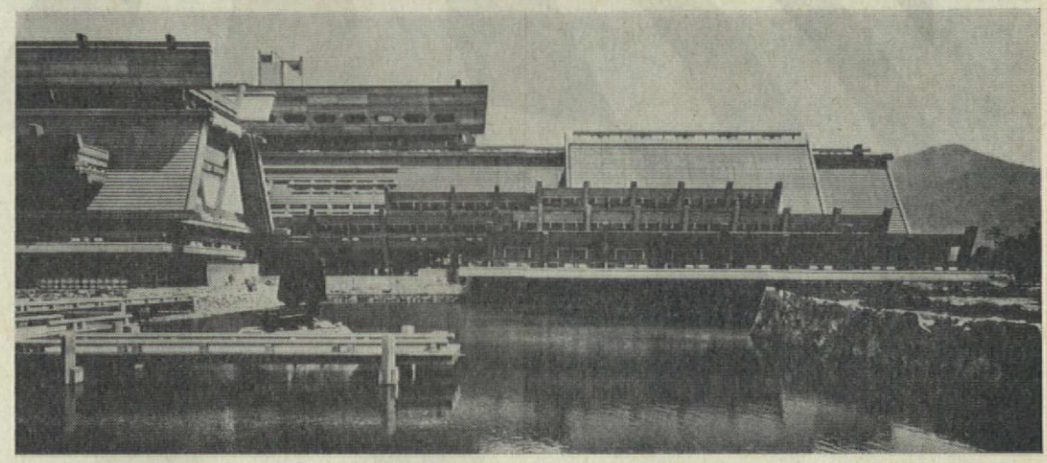


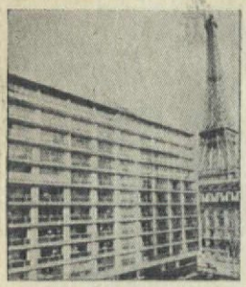
Death blow to Katsura elegance

Kyoto International Conference Hall, completed three years after Sachio Otani's design won the open competition, is in the north of the city near the hills and Lake Takaragaike. It has a total floor area of 27,080m², and contains a large hall, a medium one, and two small ones; with equipment comparable to that of the UN in New York. The form of the building is based on combined trapezoids.

Otani's main works are the Tokyo Culture Centre and the HQ of the Tensho Katai Jingu sect.

Kokusai-Kentiku, July 1966







The Hilton way of life

Hilton Hotels were once the harbingers of a brave new way of life. SOM's Istanbul Hilton seemed, for all its facile glitter, to expand the amenities of that town, to offer a sense of ease and comfort not only for those who could afford to pay for the air-conditioning, but even to those who were passing enviously by. The halcyon days are over. Hilton's have now become a scourge. The Nile Hilton first revealed that tight, withdrawn and nasty quality they have come to effuse—ease locked in and squalor locked out. Since then they have assumed a positively destructive force: the Athens Hilton forms an ugly gash even in that unlovely town and the London Hilton annihilates much of the cultivation of Hyde Park. Now it is Paris's turn: a banal block has been built in the shadow of the Eiffel Tower, complete with 'Le Western', the first restaurant of its kind in Paris.

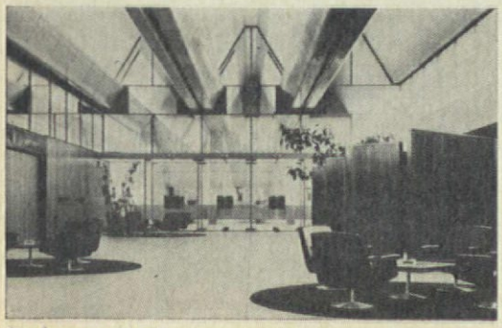
Progressive Architecture, June 1966



Model



Completed



Conference block

Van den Broek and Bakema: recent works

Waldo Camini

Town hall at Marl (left)

The nature of 'town hall' still evades us. At Marl a brave attempt; offices/public access departments/civic rooms, clearly stated, but somehow it's not there. The language is muddled and the artyness of the 'civic' part actively painful.

The towers look interestingly knotty, like those unrealized, jointy, Kahn parking-towers ('the beginning of decoration is in the joint').

DBZ, February 1966

Architektur und Wohnform February 1966

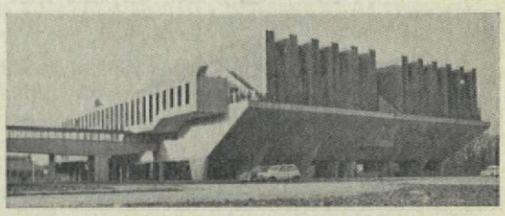
Delft Technical High School Aula (right)

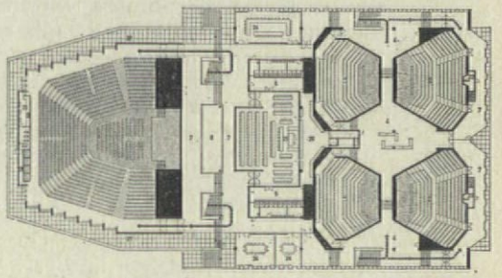
Here the partnership (or should one say dynasty) returns to the big simple sweeps up and down of the department store at the end of the Lijnbahn in Rotterdam.

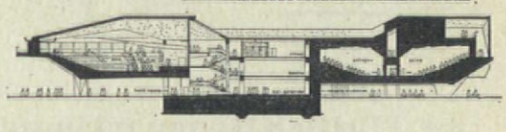
A clear plan, plain workaday language, the scale exactly right for the mass-function.

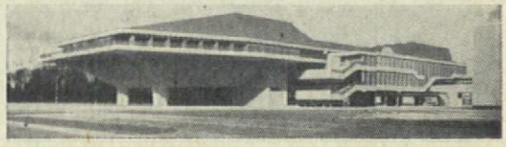
Bouwkundig Weekblad, 12th April 1966

A paradox here, for I feel that Van den Broek and Bakema's language for handling the two- and three-storey operation is well developed, but repetition and multi-storey throws them (eg Montessori School/Study for a newspaper office in Amsterdam, but at Marl the towers are the best bit).











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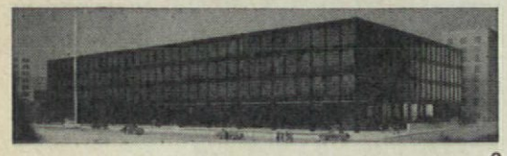

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4

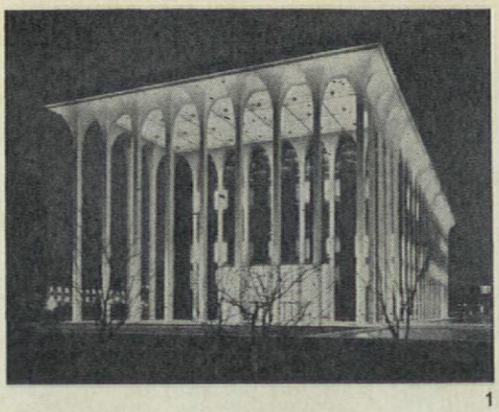
Mies van der Rohe

Ken Frampton

'Baukunst' is a German expression for which we have no parallel either in our language or in our architectural tradition. It is this foreign aspect that no doubt continues to inhibit the influence of Mies van der Rohe in England. In America, however, the concept has 'roots' going back, certainly, to the early nineteenth century, and these remain alive.

The result is that at the age of 80, Mies van der Rohe is more active than ever before, not only in America but also in his native Germany. In Chicago he is well on the way to the realization of a major down-town public space in his now partially complete Federal Centre project **1** (*AD*, January 1964). The 30-storey courthouse is in use and the adjacent block awaits development as a public plaza.

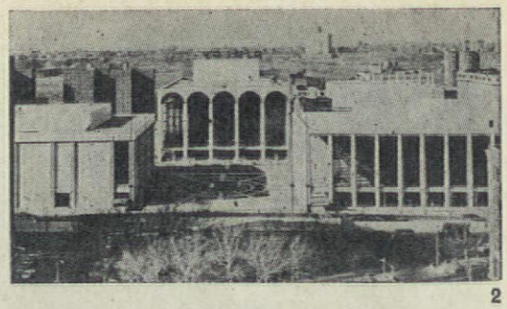
In his more recent work Mies continues to propagate his generic ideal of columns as the impassive container of an assortment of programmes. The Central Library building for Washington, DC **2**, and the Science Centre **3, 4** for Duquesne University, Pittsburgh, are both three-storey rectilinear boxes raised on peristyles with little to distinguish them one from the other, save subtle modulations to the fenestration and the base. The drive towards simplicity is implacable—lecture halls which were once conceivable as free-standing elements, as in the IIT campus project of 1939, are now housed in the naos. The emphasis remains, as always, upon the act of building as a technical achievement and as the occasion for a conscious and carefully wrought human abstraction.



1

Ornamental architecture

The pursuit of prestige makes much American architecture dull, inert and ludicrously slick and expensive. The prime embodiments of the ideal are isolated, symmetrical structures, formal in appearance, hinting at a remote, dimly classical past where all was noble and bland. Neo-classical would be a misnomer for such architecture. Apologists of Minoru Yamasaki's Northwestern National Life Insurance building **1** in Minneapolis talk, in any case, of a 'Gothic majesty'. Such buildings are too effete to be linked with any known architectural past. It would be nice to think that there was a vital and extravagant urge to break away from the accepted ideals of the Modern Movement in this hybrid architecture. Could dark forces, nameless influences and indeterminable spiritual upheavals lie at the root of this prestige style? Probably not. Such buildings are the outcome of architects adapting themselves to



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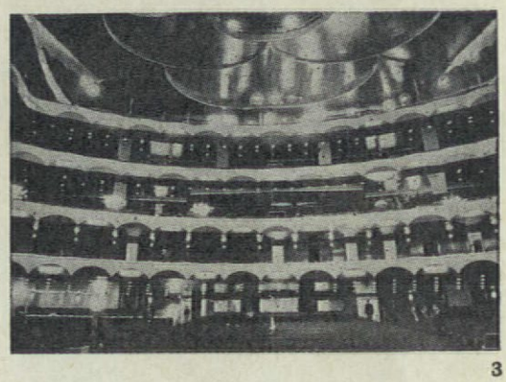

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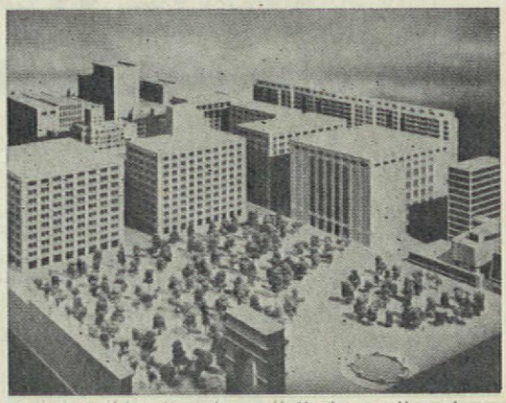
dubious dreams of grandeur. The whole of the Lincoln Centre in New York was promoted in this interest and even the latest addition to the complex, by Harrison and Abromovitz, the Metropolitan Opera House **2, 3**, furthers this hollow fantasy. Surely prestige in architecture is something that has long since ceased to matter.

Interiors, January 1966; *Architectural Record*, May 1966

Washington Square take-over

Washington Square long ago lost its air of coherence and what Henry James called its established repose, but it still has what he recognized as 'the look of having had something of social history'. It is open, informal and rather motley in its architecture, but it has a quality at once diffuse, gregarious and diverse, essential to Greenwich Village. This is threatened by the expansion of New York University, one of the largest private universities in the country ('one of America's great second rate universities'), with 41,000 students but plans for more. The university has a Five Year Plan, supported by the Ford Foundation, for spending $60,000,000 on architecture. During the last twenty years they have bought up most of the property in the area east of Washington Square. The buildings put up there have been unremarkable. But in the face of vociferous opposition from the householders of Greenwich Village, who regard the university as an immoral and altogether ruthless institution, unconcerned with its gradual obliteration of all local vitality, Philip Johnson and Richard Foster were called in to lend their prestige to the gross expansionist programme and to prepare a master plan. Johnson's plans include several tall buildings on or near the square, a library, an extended and refaced commerce building, a replacement of the education building with a new science building to match and a closed galleria over existing streets, extending three blocks in length, two in width. The galleria will probably not be built. Opposition has been focused on Johnson's glossy cover-up for the whole operation—the library. 'They are fairly anonymous buildings,' Johnson has said, 'maybe even



dull, but I'd rather have it that way than have them be pushy.' Dull they certainly seem, the library no less than the others, but lack of interest hasn't prevented them from being big and pushy—the permitted cornice height is to be raised from 60ft to 150ft. 'All the glamour of Philip Johnson,' Jane Jacobs has kindly judged, 'won't save that corner of the park from gloom,' and further remarked that the shadows on the presentation model were cast, oddly, from the north—that is away from the square. But it is not the aesthetic merits of Johnson's building that are in question, it is whether or not this great expanding university is not destroying more than it is capable of creating. Already it has wiped out all the oddity and diversity of the hat industry, now it seeks to wreck the texture of Greenwich Village and to institutionalize Washington Square. Last year the Washington conference on natural beauty judged two elements to be the most destructive of urban parks—highways and institutions.

Progressive Architecture, June 1966



Greater London Council - National Recreation Centre, Crystal Palace.

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Around Britain—8

Glasgow

Frank Arneil Walker

Imagine this report fifty or sixty years ago. Glasgow at the turn of the century—second city of the Empire—capitalism booming in the steelworks and the shipyards—socialism bringing out the tanks as Red Clydeside riots—the industrial slums deteriorating as the Victorian city centre receives its finishing touches from Salmon, Gillespie and above all Mackintosh—a comprehensive *art nouveau* architecture to shock all Europe.

But the good bad old days have gone. Today Glasgow is a depressed city. The older heavy industries no longer dominate—Rootes come to Linwood while the shipyards turn to shopfitting. In George Square there are no Maxtons now to harangue the lunch-time crowds. Indeed few would listen, for politics have long since left the street corner. Across the square a Labour administration that seems to go on and on tackles the real problem—housing.

With the post-war schemes pressing hard against the city boundaries and here and there threatening to turn abruptly into contemporary slums, a first organized attempt to coordinate the solution of the housing problem and the future shape of the city appeared in the 1960 Glasgow Development Plan. Three principles emerged. Overspill—estimated as high as quarter of a million—would take Glaswegians to new homes not just in the new towns, but in a number of older communities throughout Scotland. Urban renewal—29 CDAs were designated and the worn out inner suburbs will be reshaped at 150 ppa to rehouse 40 per cent of the population who would lose their Victorian tenemented homes. Traffic-preliminary proposals appeared with the promise of further comment. All this developed the 1946 Clyde Valley Regional Plan which had made it known that one seventh of Scotland's population lived in three square miles of central Glasgow. Now the LA proposals are interwoven with the governmental Scottish Central Regional Plan.

The Glasgow Plan has begun to change the city's face, if not its image. In place of the black four-storey cliffs of tenements the equally gaunt but Rockall scale point blocks. By 1984, that year of doom, Glasgow will have 200 of them. Architecturally there seems little to look forward to, for most of these square towers are no better and doubtless no worse than those elsewhere. In Gorbals, Matthew and Spence have both had their fling—without being asked to dance again. One group seems flimsy while the other is obsessed with concrete guts—neither looks like wearing. On the credit side is the work of Boswell, Mitchell and Johnston at Pollokshaws and Woodside **1**. Here with large-scale use of industrialized building techniques has produced an architecture unexciting, measured and convincing.

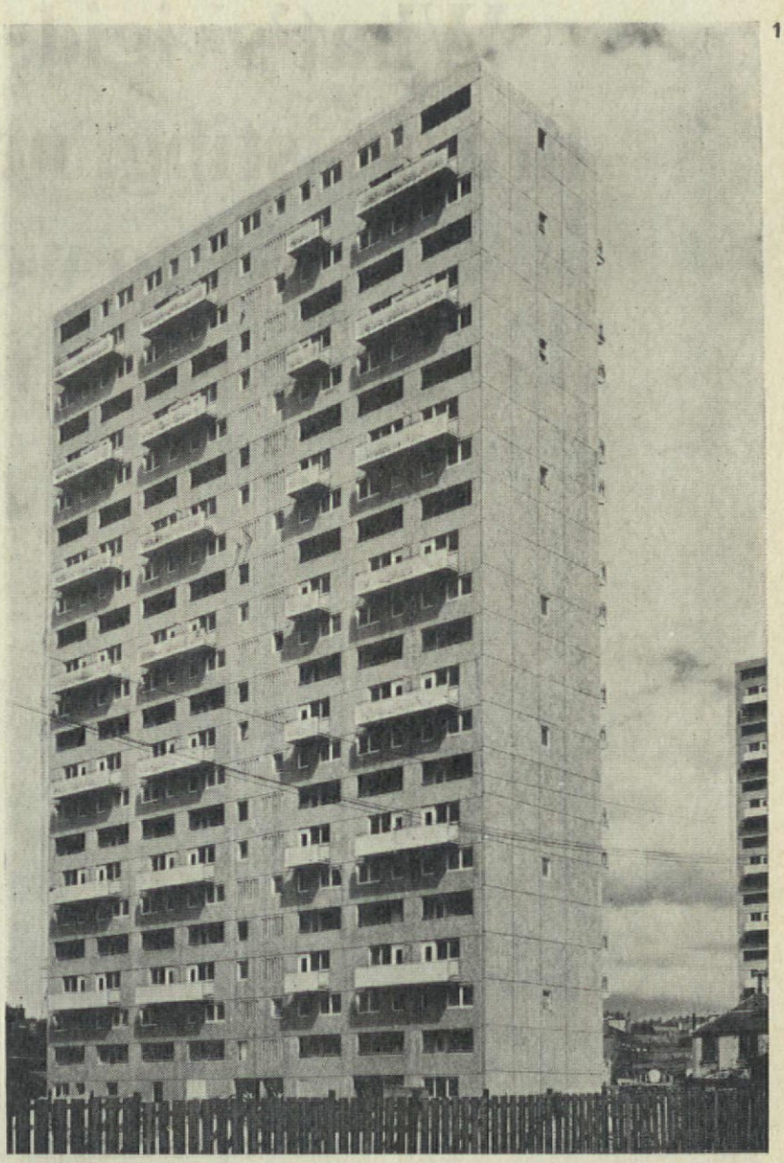
As work on the CDAs progresses, the old gridiron plan characteristic of so much of Glasgow gradually disappears. Its inadequacies for this century's traffic have long been apparent, and now with the publication this year of the Highways Plan foreshadowed in 1960, Glasgow has responded to this need too. A £218 million scheme will provide 97 miles of urban highway linked to the Edinburgh motorway, the new road to Glasgow's airport **4** at Abbotsinch, and the main arterial routes in the west of Scotland. A formidable programme, but one vital to the whole economy of central Scotland. Around central Glasgow an inner ring, its six lanes coursing at times forty feet above the city, will cut through those CDAs already given building priority—Gorbals, Laurieston, Shields Road, Anderston, Woodside, Cowcaddens,Townhead and Glasgow Cross. By 1980 these eight areas will be complete. The Ring itself, already begun at the Townhead Interchange, together with the remainder of the Highways Programme, should be ready by 1990.

The Universities too have their plans. At Glasgow, Wilson and Womersley have taken over from J. L. Gleave, and inherit as a basis for future development the University Library and Art Gallery **2** now taking its 11-storey Kahn-indebted shape opposite Gilbert Scott's mock Gothic buildings. At Strathclyde, Matthew and Johnson-Marshall have produced a tight development plan on which work has started on a steeply sloping central site.

This last scheme constitutes one of the few planned attempts at reshaping central Glasgow. There are others for the redevelopment of Queen Street station, and around the £4 million Cultural Centre which ought to, but doesn't, merit any attention. But this is piecemeal stuff, and none of it copes with the real problem in central Glasgow—an inheritance from those far-off nineteenth-century days when capitalism was in full gallop. For while the city struggles to rehouse an urban proletariat still living in appalling conditions, and tries to cope with too many motor cars on horse-and-cart streets, the astonishing Victorian heart of Glasgow goes by default. As yet no-one seems to have produced a comprehensive proposal for the central square mile—that part of the city which figures as much now in the minds of its newly found architectural admirers, as it has always done less consciously and for different reasons perhaps in those of Glaswegians themselves.

Bit by bit commercial development, admittedly less extensive here than in the south, nibbles away at the sandstone fabric of the city. Recent office building has been bad. With one notable exception (Royal Exchange Assurance House **3**), it contributes nothing but bathos to a city centre which only just manages to preserve the taut proud intensity that confidence gave it. Today there seems to be a lack of confidence both in the buildings themselves, and in this inability to grasp what might be. The significance of bodies such as the New Glasgow Society is not that they are valiantly trying to hold back the demolishers, but that they are little concerned with the possibilities or the exciting potential of the future. The exaggerated sanctity with which preservationists imbue the past makes it almost heresy to be concerned over the future.

Preoccupation with the Victorian comparison is understandable for no-one would advocate quite the same lack of respect that was shown then for the medieval town. But already the implications of the future are apparent—in the CDAs, the Ring Road and in speculative redevelopment. Sooner or later the central co-ordination of all this will have to be achieved. In another Plan?



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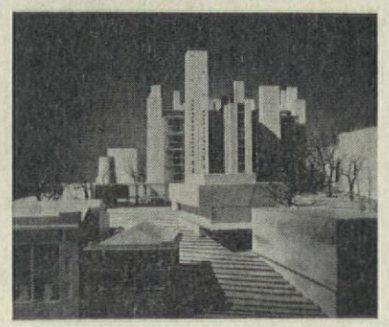



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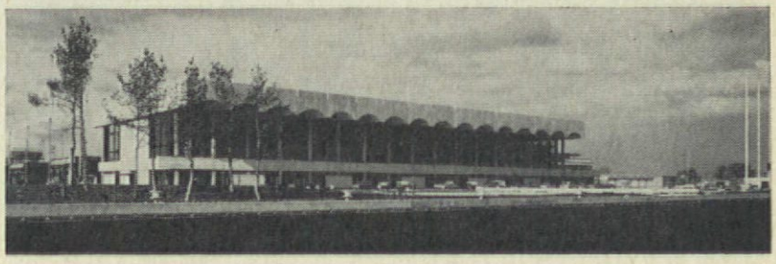

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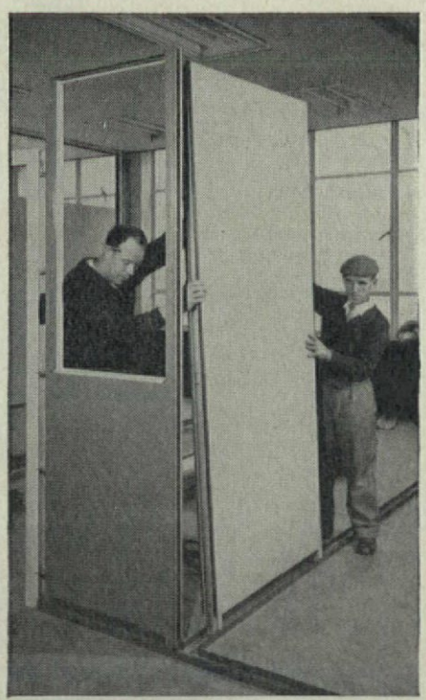

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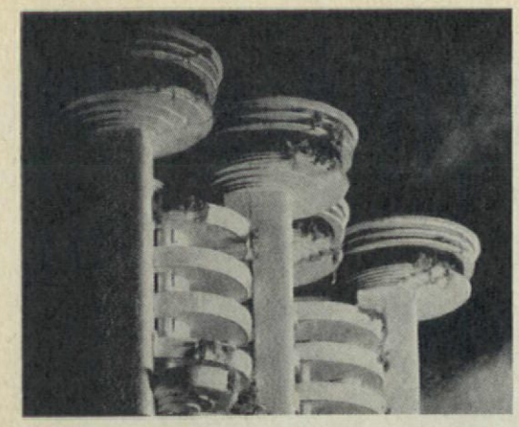
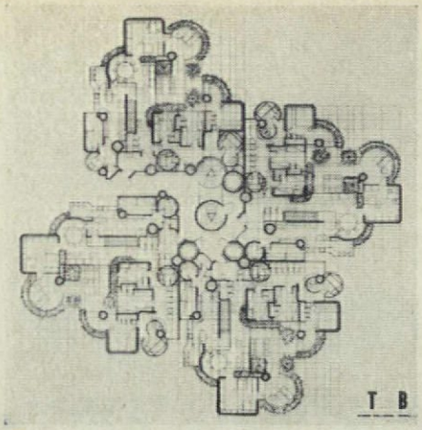






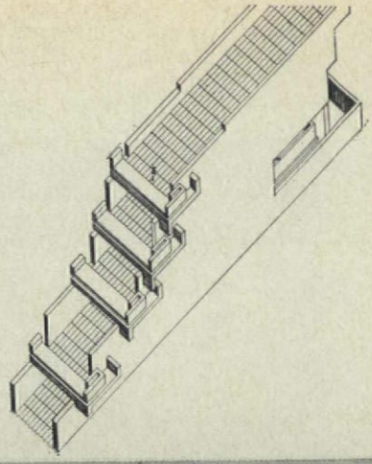
Torres Blancas flats, Madrid

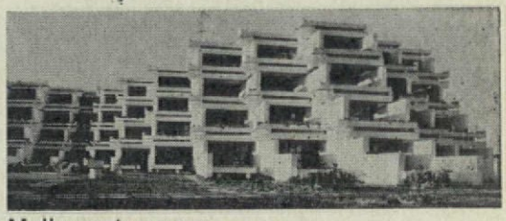
Carlos Flores

The 26-storey vertical 'garden-city' designed by architect Francisco Sáenz de Oiza has its social and commercial centre on the top two floors, and space for 100 cars in the basement.

The 100 flats are grouped four per floor, some on two levels, with a large variety of plan types and sizes.

The architect sought to avoid curtain wall glass boxes and to bring nature into the building by designing each flat round a large terrace. The structure consists of load-bearing reinforced concrete hollow columns, large enough to enclose living-spaces or services. These columns are tied horizontally by r.c. floor slabs. The concrete surface will be exposed as the only structural material, and left untreated. The engineers are Fernández Casado and J. Manterola.





Mallorca terraces

The current issue of *Zodiac* (15)* is entirely devoted to Spain (text in Spanish with English translations) and examines in depth the architectural situation, with articles by Carlos Flores, Bohigas, Bofill, and many other Spanish experts. The Torres Blancas flats are featured in the section on recent work. Another project included by the same architect is the already-built first phase of seaside terraced flats at Alcudia in Mallorca. The amenity value and privacy of the terracing is obvious. Access to the flats is by internal helical staircases.

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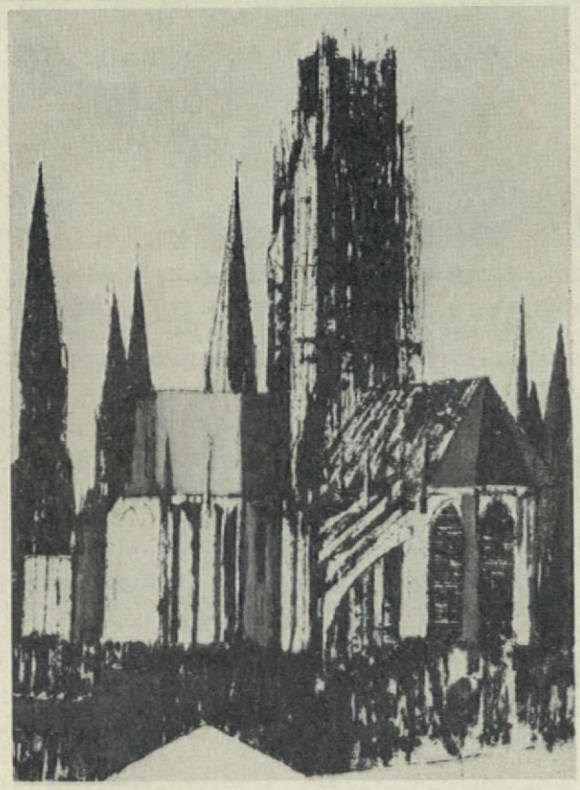

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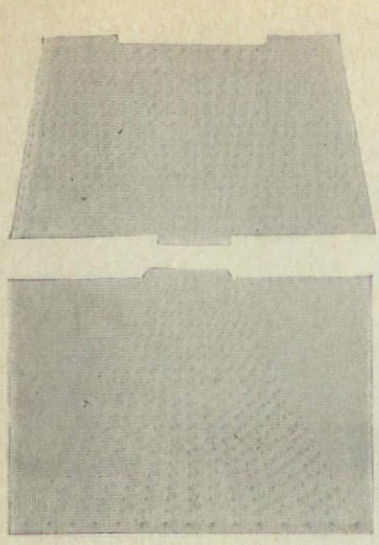

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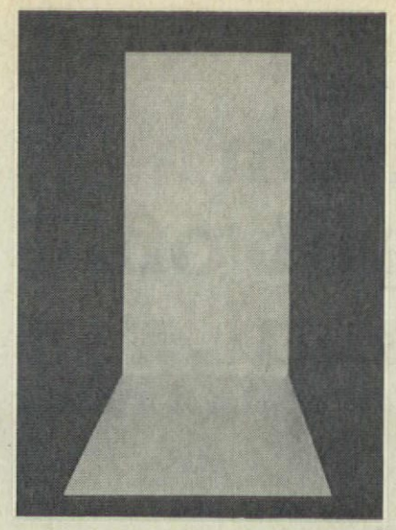

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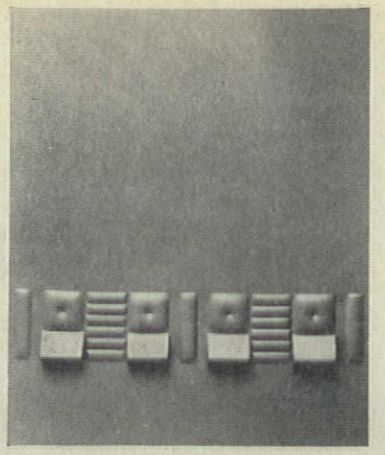

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1
Enrico Castellani: White surface no. 31, 1966

2
Enrico Castellani: White surface no. 32, 1966

3
Ellsworth Kelly: White Angle, 1966. Painted aluminium, 72in × 36in × 72in

4
Agostino Bonalumi: Red IZ, 1966

White in Venice

Jasia Reichardt

Although both the atmosphere and the work changes quite emphatically with each succeeding Biennale—the disparity between the best works and those which bring neither quality nor originality, remains relatively constant. Also, among the 37 countries represented there are as usual some remarkable omissions, eg Australia and Nigeria. Venice is not the place to find new talent or unknown artists. Most countries choose to be represented by artists who already have an international reputation and whose names are familiar to those professionally concerned with art. The aspect for which the Biennale is unique is the opportunity it gives to see the mainstream trends and preoccupations in various parts of the world simultaneously, which break down any national barriers in both approaches and techniques. This year one of the more interesting trends manifested throughout several pavilions could perhaps be described as an emphasis on reduction, simplicity and purity in form, technique and image. Fontana's contribution, for instance, consisted of an egg-shaped room in which several canvases with central slits were mounted on rectangular stands and spaced at different intervals. The entire construction was painted dead white. Enrico Castellani showed a number of entirely white paintings with geometric surface patterns made by stretching the canvas over nails attached to the base and nailing it down in between the protrusions. The resulting immaculate ripples provided both the form and the image of the painting. Another artist working entirely with stretched canvas images was Bonalumi, whose forms are perhaps less rigorous than those of Castellani and are furthermore painted in one overall colour like blue or brown. Other essays in white were provided by the Brazilian Sergio Camargo's wall reliefs, and an extraordinary structure by Ellsworth Kelly consisting entirely of two identical aluminium rectangles (longest side 6 ft), placed at right angles to each other and standing on the floor like a bookend. These works are not only about expression through minimal means, rejection of paint surface and colour relationships—they deal specifically with that uneasy area that exists between two-dimensional and three-dimensional work. Objects that relate themselves to the wall and yet are not paintings in the strict sense—works that deal with space and exist in space without being primarily concerned with volume. These are among the most extreme examples of this tendency which originates in painting rather than constructivism. Seen as isolated examples throughout the various galleries in Europe and USA, this was the first time that these works were represented in sufficiently large numbers to make an impact in Venice. Fontana and Castellani were among the prize-winners.

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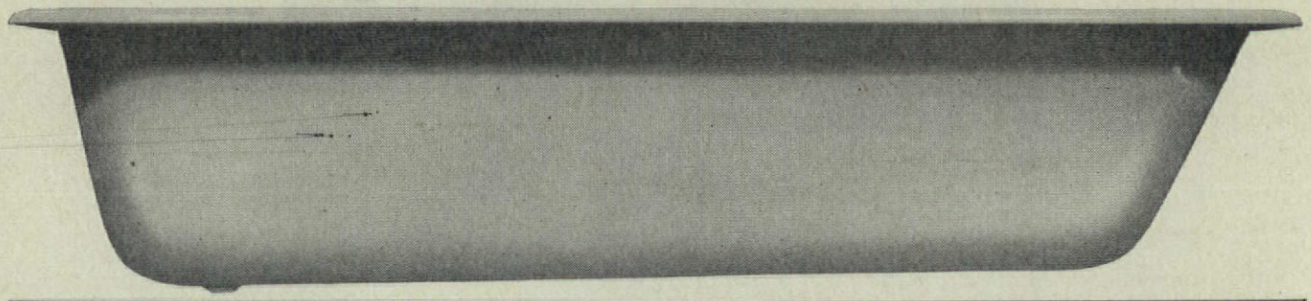

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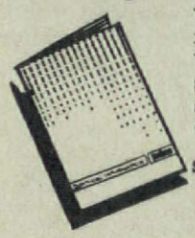

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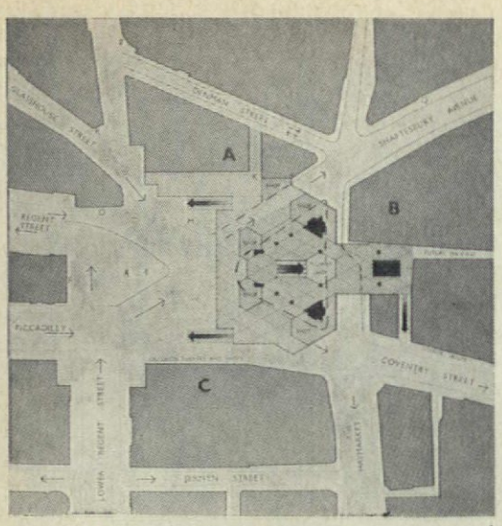

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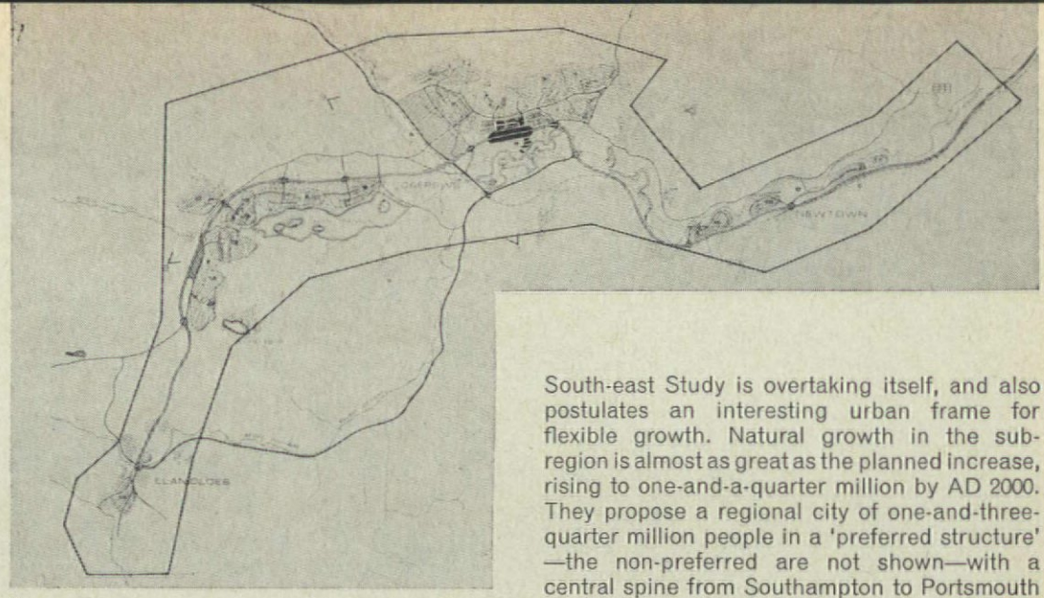


2

Plethora of plans

Squaring the Circus, or X=O

The brief for this third report by Lord Holford should never have been accepted: the three reports which followed the LCC's 1956 Advisory scheme and the Monico Enquiry three years later are a classic study in the complexities of simplification, but they also demonstrate the dangers of being too ingenious. This latest proposal **1** has a new clarity, owes much to Ove Arup's cantilevered deck which frees the structure from privately owned adjoining sites, and architecturally completes the squaring of the circus begun on the western side by Blomfoeld in 1924.

But in accepting the MOT requirement for a 50 per cent traffic increase now solved with an 'x' crossing of routes, it does nothing to solve the overall control of traffic in inner London: the more traffic individual projects cater for, the worse will become the total situation. The pedestrian deck with the re-developed London Pavilion is a delightful idea presenting opportunities for links that could make it the hub for a West End deck system. But below will be a great traffic pit—Eros captive and inaccessible within it—and the stink and noise of the traffic may well make the new circus unbearable for outdoor sightseeing. Electric vehicles may eventually come, but even so we need a circus both architecturally acceptable—as this one certainly could be—but also socially desirable to be in, and not sacrificed to the present *laissez-aller* policy of ruinous traffic management schemes in central London. The Thames was called the Big Stink in the nineteenth century. Soon Piccadilly and its circus will deserve this title.

Piccadilly Circus and the New London Pavilion, July 66
Report by Lord Holford to the Westminster and Greater London Councils

Cambridge shopping

Re-development of the Lion Yard site in the heart of Cambridge was held up by the Ministry who told the City to re-think the expansion of its shopping centre elsewhere. Now Gordon Logie proposes with the backing of an eminent working party to do this over the southern end of Christ's Pieces, in return extending this northwards over existing old development to Jesus Lane. Architecturally and commercially it seems quite an acceptable scheme, well explained with alternatives in a lucid report. In terms of Town and Gown it is probably unacceptable, but even apart from that one wonders if Town and County couldn't get together to think again about a regional centre outside Cambridge altogether. This would be in line with previous county policy on population decentralization as well as educational policy. Why not an Impington experiment in shopping centres? The educational experiment succeeded.

Shopping growth in Cambridge
Report by the City Architect and Planning Officer, July 1966, together with
Cambridge Town Centre Map—Interim Report
Cambridgeshire and Isle of Ely County Council, July 1966

Harvest of New Town reports

The Northampton, Southampton and Portsmouth, Warrington and Mid-Wales new town reports have now emerged from HMSO. Present designation procedures take time and until these are altered MoHLG is asking consultants to prepare possible designation areas in their reports prior to actually designing the town. In fact, no good planner could possibly do this without a great deal of 'bottom drawer planning', so in spite of the diagrammatic nature of the proposals outlined some idea of future urban forms emerge. *Northampton*[1], by Wilson and Womersley, is a logical outcome of their previous regional study[2], suggesting the expansion from 131,000 to 220,000 should take place in units lineally arranged eastwards towards Wellingborough and southwards to the M1. *Warrington*'s expansion from 126,000 to 200,000 plus, by the Austin Smith, Salmon and Lord Ptnrs[3], is part of the MoHLG and DEA strategy for expansion in the north-west, including the need to house future Mancunians whose earlier accommodation had been suggested by Manchester for Lymm and Mobberley. The concentration of a Manchester Ship Canal urban belt emerges very strongly in the report rather than expansion over the Cheshire plain, using the investment of expansion to assist in the urban renewal of Warrington's not uninteresting centre with its eighteenth century background. Site restrictions are tough, relations with Widnes and Runcorn New Town and the crossroads of the M6 with new east-west routes, and the possibilities of using old war-time lands at Risley and Burtonwood all influence a plan that disposes a pattern of urban units in such a way that they become a whole city. *The South Hampshire Study*[4] by Buchanan & Ptnrs, shows how rapidly the South-east Study is overtaking itself, and also postulates an interesting urban frame for flexible growth. Natural growth in the sub-region is almost as great as the planned increase, rising to one-and-a-quarter million by AD 2000. They propose a regional city of one-and-three-quarter million people in a 'preferred structure' —the non-preferred are not shown—with a central spine from Southampton to Portsmouth serving a belt of central area and industrial uses, with a three-mile wide belt on either side divided into a grid. Within each of the frames a variety of densities, uses and activities are possible, enabling a flexible pattern to evolve in accordance with the needs of a given period in the future rather than fixed to a present plan: like the expandable Northampton scheme the design demonstrates the new thinking away from 'master plans' towards 'action plans' on a regional scale.

The proposal for a *new town in Mid-Wales*[5] is outlined by a formidable team including Tom Hancock on the architectural side, Peter Hall on general concepts and Tom McKitterick on the economics aspects. Their idea for a string of 17 'villages' is more fully detailed than any of the other reports presented now. These units range from 2500 to 5000 population, with Caersws as a centre with 10,000, making a total town between Llanidloes to Newtown of 60,000 to 70,000 people. The 'villages', **2** on south facing slopes of the upper Severn, Afon Garno and Afon Trannon valleys are designed to relate this growth to the small scale linear characteristics of Welsh villages. The 'cluster town' will act as gateway to National Parks and coastal recreation areas, so its industrial structure, less than that of the usual new town, will have a different and important service element for employment purposes. This is gone into in some detail. But, is such a new town needed? The West Midlands overspill needs can be met on the Borders, a new town to achieve real growth for Wales would probably best be sited in relation to expansion in south Wales, say beyond Llanelly. Full employment needed in mid-Wales could easily be provided by giving Plaid Cymru a monthly dynamite supply that would make the construction industry just boom.

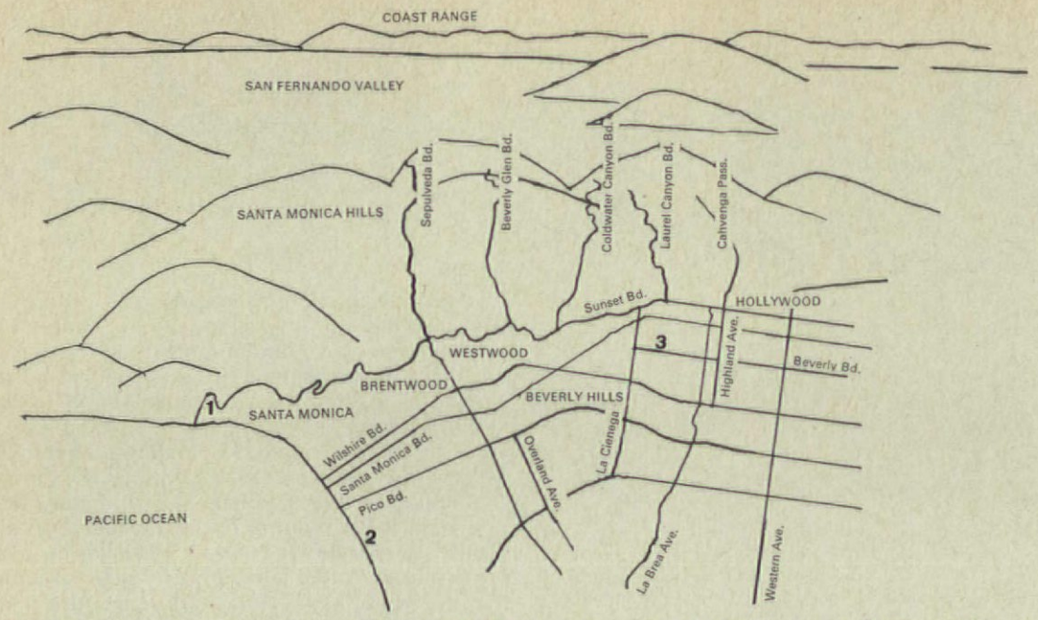
[1] *Expansion of Northampton*
Consultants proposals for designation. By H. Wilson and L Womersley
HMSO for MoHLG. July 1966. 13*s* 6*d*.

[2] Northampton, Bedford and North Bucks study—see *AD*, March, p. 109

[3] *Expansion of Warrington*
Consultants proposals for designation. By The Austin Smith, Salmon, Lord Partnership.
HMSO for MoHLG. August 1966. 12*s* 6*d*.

[4] *South Hampshire Study*
Report on feasibility of Major Urban Growth.
By Colin Buchanan & Ptnrs in association with Economic Consultants Ltd.
HMSO for MoHLG. July 1966. £2 10*s*.

[5] *A new town in Mid-Wales*
Consultants proposals. By Economic Associates Ltd.
HMSO for the Welsh Office. July 1966. £2 10*s*.



Map of the Santa Monica area showing the Eames' house at Santa Monica **1**, their studio on Washington Bd **2**, and the Herman Miller showrooms **3**

Designing a Lota

Extract from a report made by Charles Eames to the Government of India 'recommending a programme of training in the area of design which would serve as an aid to the small industries'.

Designing a Lota
Of all the objects we have seen and admired during our visit to India, the Lota, that simple vessel of everyday use, stands out as perhaps the greatest, the most beautiful—the village women have a process which, with the use of tamarind and ash, each day turns this brass into gold.
But how would one go about designing a Lota?*
First one would have to shut out all preconceived ideas on the subject and then begin to consider factor after factor:
The optimum amount of liquid to be fetched, carried, poured, and stored in a prescribed set of circumstances.
The size and strength and gender of the hands (if hands) that would manipulate it.
The way it is to be transported—head, hip, hand, basket, or cart.
The balance, the centre of gravity, when empty, when full, its balance when rotated for pouring.
The fluid dynamics of the problem not only when pouring, but when filling and cleaning, and under the complicated motions of head carrying—slow and fast.
Its sculpture as it fits the palm of the hand, the curve of the hip.
Its sculpture as complement to the rhythmic motion of walking or a static pose at the well.
The relation of opening to volume in terms of storage uses—and objects other than liquid.
The size of the opening and inner contour in terms of cleaning.
The texture inside and out in terms of cleaning and feeling.
Heat transfer—can it be grasped if the liquid is hot?
How pleasant does it feel, eyes closed, eyes open?
How pleasant does it sound when it strikes another vessel, is set down on ground or stone, empty or full—or being poured into?
What is the possible material?
What is its cost in terms of working?
What is its cost in terms of ultimate service?
What kind of an investment does the material provide, as product, as salvage?
How will the material affect the contents, etc., etc.?
How will it look as the sun reflects off its surface?
How does it feel to possess it, to sell it, to give it?
Of course, no one man could have possibly designed the Lota. The number of combinations of factors to be considered gets to be astronomical—no one man designed the Lota, but many men over many generations. Many individuals represented in their own way through something they may have added or may have removed, or through some quality of which they were particularly aware.
The simplest problem of environment has a list of aspects that makes the list we have given for the Lota small by comparison. The roster of disciplines we have suggested can bring about measurable answers to some measurable aspects of the problem, but in addition they must provide the trainee with a questioning approach and a smell for appropriateness; a concern for quality which will help him through the immeasurable relationships.

*Small metal water container for toilet use.

Acknowledgement

In addition to all the material supplied by Charles and Ray Eames, we gratefully acknowledge the help given to us by Frank Newby, Brian Richards, James Mellor, Alexander Knox and Margaret Harris.

All photos Eames unless otherwise credited









Eames celebration

The essays on the work of Charles and Ray Eames which make up this issue are very personal, and the impulse behind them was to repay the debt the authors felt they owed to the Eames in a way that would be both pleasurable and useful to the Eames themselves.

There has been much reflection in England on the Eames House. For the Eames House was a cultural gift parcel received here at a particularly useful time.

The bright wrapper has made most people—especially Americans—throw the content away as not sustaining.

But we have been brooding on it—working on it—feeding from it.

It has sustained a collective interior dialogue which has been going on for years and this accounts for the over-lapping of the edges of the thoughts in the essays.



The groundwork on the chronology which follows overleaf was done as seriously as possible. Geoffrey Holroyd talked to people who knew the Eames in their pre-splint period, and re-read all the available literature especially of the immediate post-war period. The chronology has been checked by the Eames after a special visit by Ray Eames to England in May of this year. It may be regarded therefore as reasonably definitive, and is certainly the first attempt to show the pattern of their work as a whole. With the chronology are pictures of early work previously not easily available (if published at all) and reminder pictures of the later work.

A. & P. Smithson

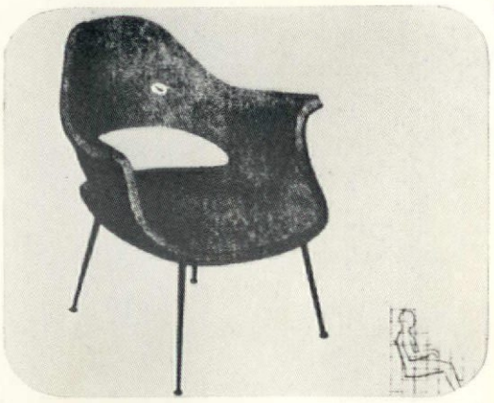
Chronological table

The left hand column **of the table lists events in the lives of Charles and Ray Eames. Originally compiled by Geoffrey Holroyd, the list has been checked and amplified by Charles Eames**

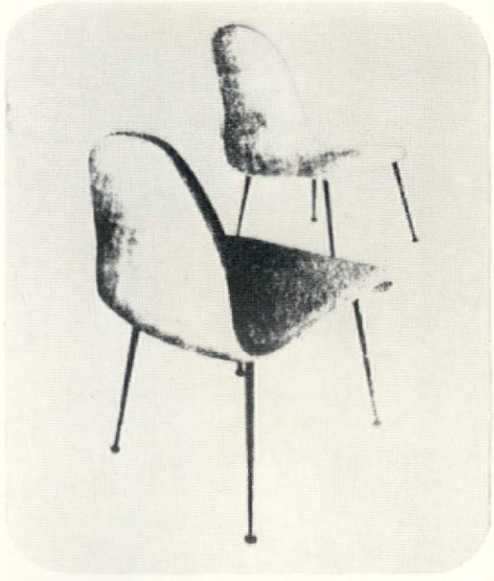
The right hand column **shows parallel significant architectural events in the USA up to 1940. After that the column is used to show the development of Eames' films from 1950 onwards.**

The bold numerals refer to the pictures on the same page. The numerals in brackets refer to other page references.

	Eames, Charles, born St Louis, Missouri. His father an amateur photographer and painter.	
1917	First job—Upton S. Cody, printer.	
1918	Hyke and Ebler, grocers.	
1919	Father dies.	
1920	Ernst Niemoller, druggist.	Frank Lloyd Wright *completes Imperial Hotel, Tokyo.*
	Comes upon cache of father's old photographic material, and discovers photography via the wet plate.	
1921	Through high school years (Captain, football team. President, Senior Class) works for Laclide Steel Co., Venice, Illinois—first as labourer, then as draughtsman; becomes interested in engineering, then architecture.	*Schindler House, Los Angeles by* R. M. Schindler *with removable screens and glass walls.*
1923		Richard Neutra *arrives in USA.* *Spirit of suppression and elimination of creative artists (writes Siegfried Giedion) radically different from situation in 1890–1900 when* Adolf Loos *was in USA.* Elien Saarinen *arrives in USA to teach design at the School of Architecture, University of Michigan.* Sullivan *had been banned from all architectural activity.* Frank Lloyd Wright *designs Millard House, Pasadena, California.* *Lloyd House, La Jolla by* R. M. Schindler. *Beach patio house.* *Lowes House, Eagle Rock by* R. M. Schindler.
1924	Receives scholarship to study architecture at Washington University—a Beaux Arts School. President, Freshman Class.	*Death of* Louis Sullivan. *Occasion of* Neutra *meeting* Frank Lloyd Wright. *Wrightwood House by* R. M. Schindler, *Timber and glass Mountain Cabin.*
1925	Works summer in Kansas wheat fields. Autumn, starts work for *Trueblood & Graf,* architects, St Louis.	
1926	Returns to Washington University.	*Lovell Beach House, Newport Beach by* R. M. Schindler. William Wurster *opens office in San Francisco.*
1927	Now as a designer at *Trueblood & Graf,* architects. Starts interest in lithography.	Buckminster Fuller *designs first prefabricated Dymaxion House.*
1928		*Restoration of Williamsburg, Virginia, by* John D. Rockefeller. *Completed 1936.* Clarence Stein *and* Henry Wright *design Radburn, New Jersey, the first American garden city called 'Town for the Motor Age'.* *Wolfe House, Catalina Island, California by* R. M. Schindler.
1929	Visit to Europe. Weissenhof Exposition, Stuttgart. Sees work of *Mies Van der Rohe, Gropius, Le Corbusier, Van de Velde,* for first time—in or out of books. Stock market crash.	*The Depression.* Neutra *designs a series of houses beginning in 1929 with the Health House, Griffith Park, Los Angeles. All steel frame structures, exploiting climate and topography of California.*
1930	Returns home—marries. Opens own office of *Gray and Eames* in St Louis.	*Daily News Building, New York, by* Raymond Hood. Catherine Bauer *working with* Clarence Stein.
1931		*McGraw Hill skyscraper, New York, by* Raymond Hood. *Philadelphia skyscraper by* Howe *and* Lescaze. Philip Johnson *and* Henry Russell Hitchcock *appointed to initiate the Department of Architecture in the Museum of Modern Art, New York.*
1932		*International Exhibition of Modern Architecture, Museum of Modern Art. Term 'International Style' used by* Philip Johnson *and* Henry Russell Hitchcock. *Foundation of Taliesin Fellowship by* Frank Lloyd Wright. Harwell Hamilton Harris *working with* Neutra, *collaborating on CIAM projects.* *Van der Leeuw Research House by* Neutra *in Los Angeles, commissioned from Holland. Aluminium coated sheet steel panels originally intended for floor construction used for walls.* Raphael Soriano *working with* Neutra. *Rockefeller Centre, New York, by* Raymond Hood *etc. Completed 1940.* Gregory Ain *working with* Neutra. President Franklin D. Roosevelt *initiates New Deal.*









1-4 Drawings of winning designs in Organic Furniture competition—'conversation', 'reclining', 'dining' chairs and 'sofa'

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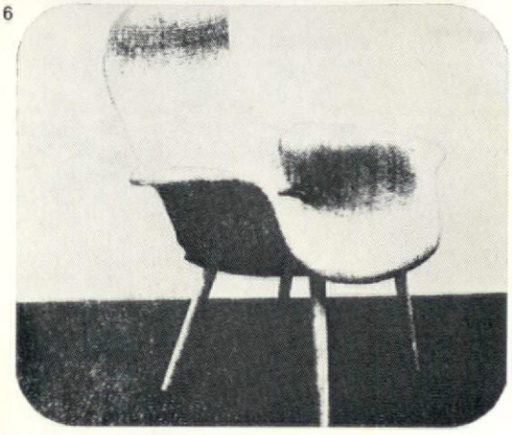

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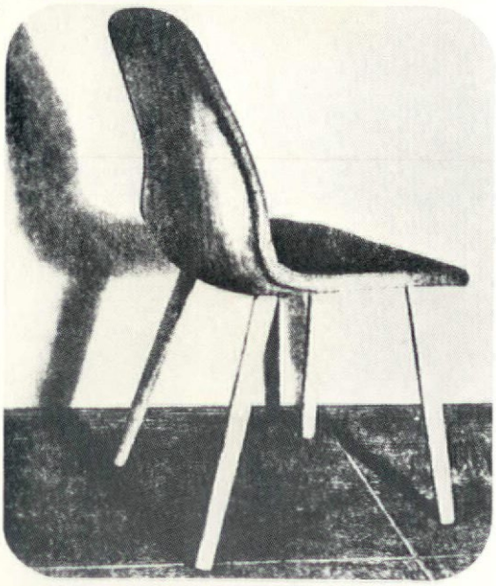

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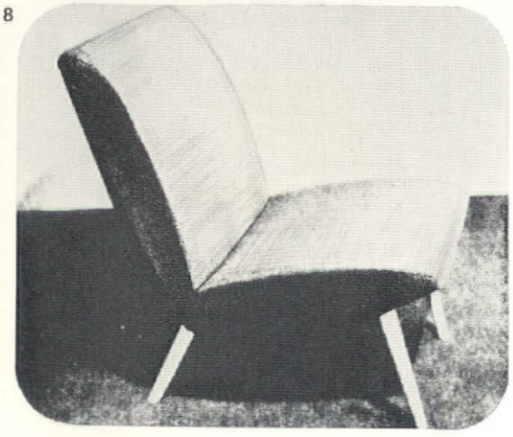

5–8 Prototypes made up from the designs shown opposite

1933	Designs sets for municipal outdoor theatre. Works in stained glass and mosaic with Emil Frei. *Ray Kaiser*, born in Sacramento, California, finishes school in East and begins study with *Hans Hoffman* first year of his New York School, continuing to study and paint with him in New York, Gloucester and Provincetown until 1939.	*Century of Progress Exhibition in Chicago. First statement of modern architecture in USA.* *Golden Gate Bridge completed, San Francisco.* *Aero-dynamic car of* Buckminster Fuller. Josef Albers *teaching at Black Mountain College, North Carolina.*
1934	Depression deepens—some work on WPA Historical buildings. Leaves St Louis for Mexico—paints, takes odd jobs.	Walter Curt Behrendt *arrives in USA to become Professor of Housing and City Planning, Dartmouth College.* *Henry Hudson Parkway, New York, completed. New York is responsible for development of the idea of the Parkway, defined as an attenuated park with a road through it.* *Experimental School, Los Angeles, by* Neutra. Catherine Bauer (*Mrs William Wurster*) *publishes 'Modern Housing'.*
1935	Returns to St Louis. New architectural firm—*Eames & Walsh.* Does residences and some small churches, designing also the lighting fixtures, vestments, vessels. Begins to feel Swedish influence.	*William Beard House, Altadena, California, by* Neutra. *All metal house; received a Gold Medal.*
1936	First work published by *Howard Meyer*, 'Architectural Forum'. Designing furniture, rugs and fixtures. Built own pottery kiln. *Eliel Saarinen* offers fellowship to Cranbrook Academy of Art.	*Von Sternberg House, San Fernando Valley, California, by* Neutra, *all steel house. Fishers Island House, New York, by* Neutra; *included two prefabricated bathrooms utilizing silver-antimon coated copper, designed in collaboration with* Buckminster Fuller. Vernon de Mars *designs Co-operative Farm Community Buildings, Chandler, Arizona.* Frank Lloyd Wright *designs Falling Water, Kaufman House, Pennsylvania.* *Triborough Bridge Cloverleaf approach, New York.* Moholy Nagy *arrives in USA.* Josef Albers *teaches one year at Harvard University Graduate School of Design.*
1937	Meets *Eero Saarinen*, who has just returned from working with *Norman Bel Geddes* (after graduating from Yale). Others at Cranbrook at same time: *Florence Shust Knoll, Ed Bacon, Harry Weese, Marianne Strengel, Ben Baldwin, Jack Spaeth, Ralph Rapson, Harry Bertoia.* Accepts teaching post as Head of Department of Experimental Design. *Ray* (a founding member of American Abstract Artists in autumn 1936) shows with AAA in first group show at Riverside Museum.	Moholy Nagy *becomes Director of Institute of Design, Chicago.* Mies van der Rohe *arrives in USA to design house for Stanley Resor.* Walter Gropius *invited to Harvard University by* Joseph Hudnut *to replan the Graduate School of Design.* Marcel Breuer *joins* Gropius, *together with* Herbert Bayer *and* Lionel Feininger. Neutra *designs Beckstrand House, Palos Verdes, California. Also Malcolmson House, Santa Monica.* *Summer Camp, Bushkill, Pennsylvania by* William Lescaze. *'American Abstract Artists' Exhibition held in New York in an empty office building. Followed an exhibition at the Museum of Modern Art 'Cubist and Abstract' (1936) which included no American paintings at all.*
1938 to 1939	*Charles* teaching and working on architectural projects with *Eliel and Eero Saarinen*—Kleinhaus Music Hall, Winetke School, Smithsonian competition. Works with *Carl Milles* on settings for sculpture and fountains. *Alvar Aalto* has also become an influence.	Mies van der Rohe *invited by* John Holabird *to become Director and Professor of the Department of Architecture, Armour Institute of Technology, Chicago.* Frank Lloyd Wright *begins Taliesin West at Mariscopa Mesa, Paradise Valley, Arizona.* Siegfried Giedion *appointed Charles Eliot Norton Professor of Harvard. Lectures assembled in 'Space, Time and Architecture'.* Erich Mendelsohn *arrives in USA.* *First Houses in New England by* Walter Gropius *and* Marcel Breuer, *on a basis derived from traditional wood structures with fieldstone chimneys of the region.* *Dodge Factory in Detroit by* Albert Kahn. *Columbia Broadcasting System Building, Los Angeles by* William Lescaze. *Museum of Modern Art, New York, designed by* Philip Goodwin *and* Edward Stone. *Church at Columbus, Indiana by* Eliel *and* Eero Saarinen. *Merrit Parkway, New York.* *Berger House, Hollywood, by* Neutra. *Increased activities of Federal Public Housing Authorities and US Public Health Service.* *New York World Fair.* Teague, Bel Geddes, Raymond Loewy.
1940	*Charles* and *Eero Saarinen* (with *Ray's* assistance) collaborate on designs for the Museum of Modern Art's Organic Furniture Competition. They win the first prize in each of the two main categories **1–8**.	*Organic Design Competition held by the Museum of Modern Art, New York (open to North and South American designers only).*

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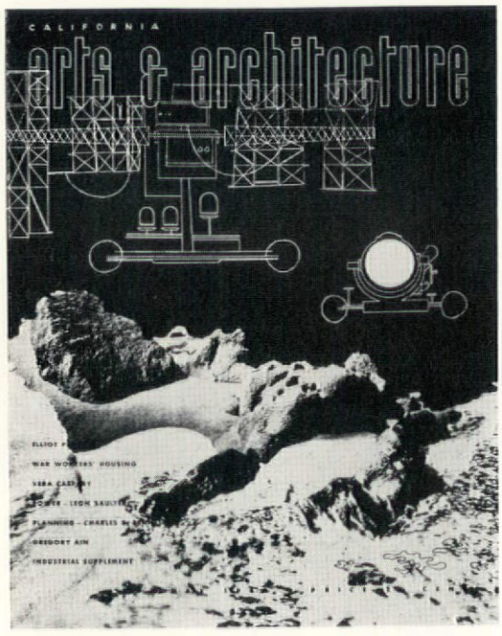

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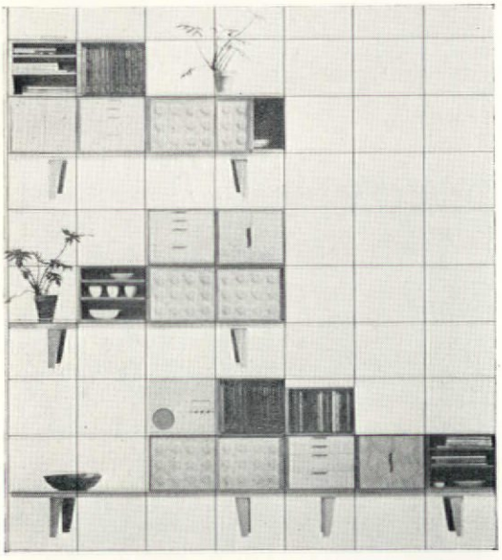

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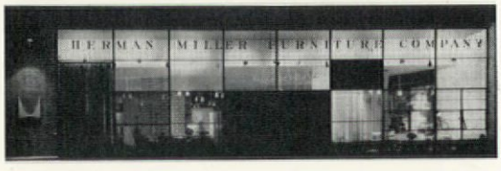

9 *Arts and Architecture* cover design by Ray Eames **10** Unit storage furniture *(Arts and Architecture,* Sept. 1946) **11** Moulded ply splint being fitted **12** Herman Miller showroom, Los Angeles

1940 cont

Edgar Kaufmann involved in Museum of Modern Art as one of the sponsors of the Organic Furniture competition.
Eliot Noyes as Director of Industrial Design, Museum of Modern Art.
It is a condition of the competition that the winning design be constructed and offered for sale.
Completely new techniques are involved: the first bonding of metal to wood; the compound curvature of the moulded shells.
At great expense and effort a few models are made but the War stops that.

Ray to Cranbrook for four months.

School at Winetka, Illinois, by Eliel *and* Eero Saarinen.

Wartime Housing by Walter Gropius *and* Marcel Breuer *at New Kensington, Pennsylvania.*

Sidney Kahn House, Telegraph Hill, San Francisco, by Neutra.

Stern Dormitory, University of California, by William Wurster.

1941

Charles and *Ray* marry and move to Southern California.

Charles works in the Art Department of MGM film studios.

Privately they begin experiments in low cost lamination of wood veneers into compound curves **15**—all in an unofficial workshop in their apartment, a building designed by Richard Neutra in 1938.

Ray starts doing covers for *John Entenza*'s 'Arts and Architecture' magazine **9**.

Office Building in Washington, by William Lescaze.
Cliffside House, Berkeley, California, by Harwell Hamilton Harris.

1942

They start their own development laboratory associated with *John Entenza, Gregory Ain, Margaret Harris, Griswald Raetze.*

Group receives Navy Commission to produce moulded plywood splints and stretchers which the *Eames*' have already developed **11** (453).

Charles pursues photographic recording in earnest.

Ray works on first moulded plywood sculpture, also continues magazine covers.

1943

Work on experimental glider parts.

Herbert Matter, and later, *Harry Bertoia* join the group.

1944

Moulded plywood splints, rudder skins, stabilizers and sculpture in 'Design for Use' Exhibition at Museum of Modern Art.

Charles and *Ray* form Molded Plywood Division of Evans Products Company.
Again begin some furniture experiments.

Starts using fast slide techniques in lectures.

1945

Intense work on furniture development moulding and bonding of rubber shock mounts.
Development and building of tools for production moulding of plywood furniture **13–19** (453/4).

Don Albinson returns from service and joins office.

Tooling and moulding of children's group.

Shoots the main part of the circus photos.

Meet *Alexander Girard*.

1946

The first One-Man Furniture Show at the Museum of Modern Art in January.

Eliot Noyes (then of the Museum) describes the state of the *Eames* furniture art in 'Arts and Architecture' magazine **13–19** (453/4).

George Nelson, newly-appointed director of design for *Herman Miller, Inc.*, recommends that Herman Miller produce the group of chairs, which they proceed to do.

Introduction of high-frequency bonding to shock mounts.

Hans Knoll Associated *forms 'Planning Unit', a collaborative for paying individual designers for a piece of furniture.*
'Planning Unit' includes wall dividers, unit furniture systems, closets, chairs, tables by:
Jens Risom—*from Denmark to USA in 1939.*
Sorenson—*from Denmark in 1938.*
Ralph Rapson—*at Cranbrook, working in the office of* Eliel *and* Eero Saarinen.
Eames *and* Eero Saarinen—*at Cranbrook.*
George Nakashima—*from Seattle; worked with* Antonin Raymond *in Japan.*

1947

Moulded plywood chairs being produced on the tools designed and built in the *Eames Office.*

Development of folding tables and moulded plywood screens.

First design for the house in Santa Monica—a box between two steel trusses held suspended above a meadow **20** (449).

Design for the *Herman Miller* showroom in Beverley Hills is completed **12** (449, 462, 469, 470).

▷437

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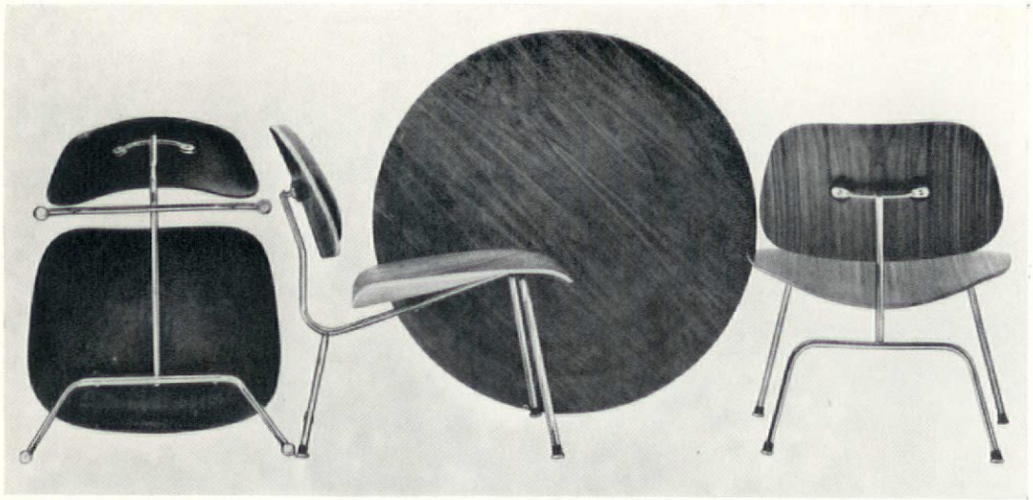

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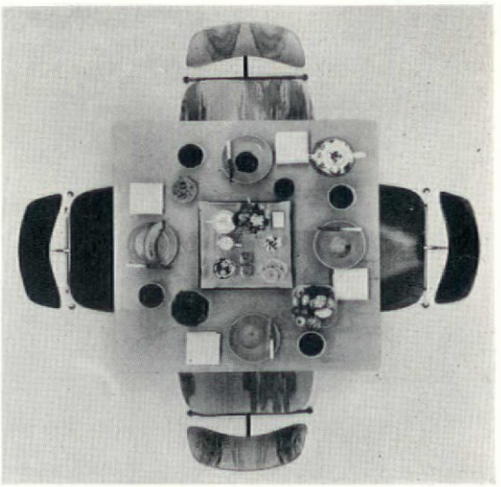

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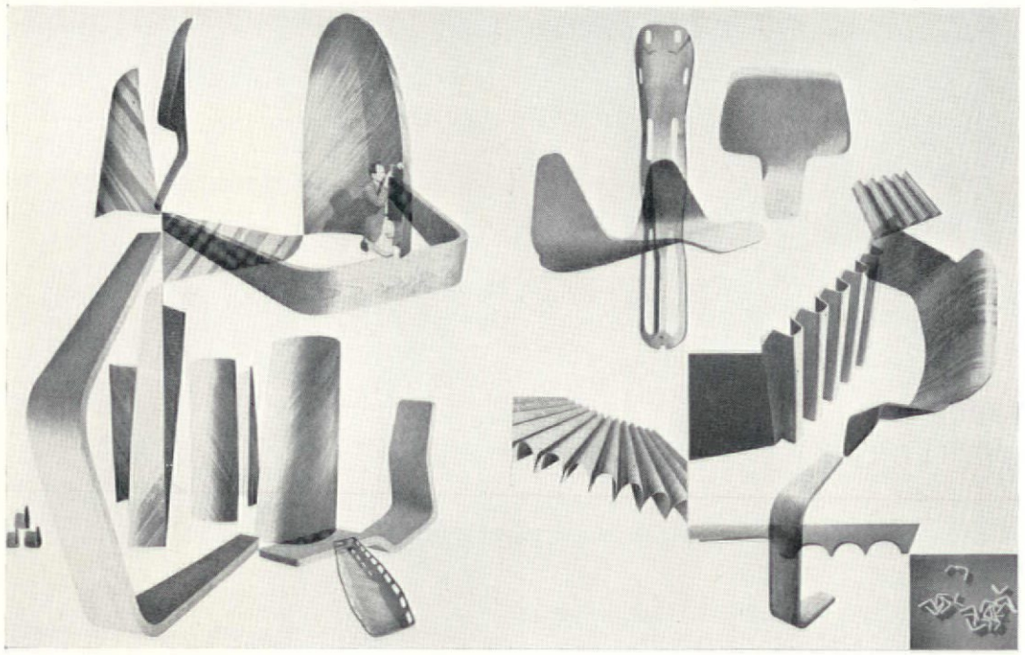

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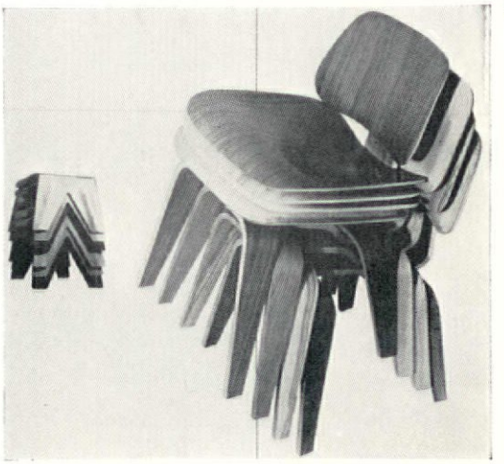

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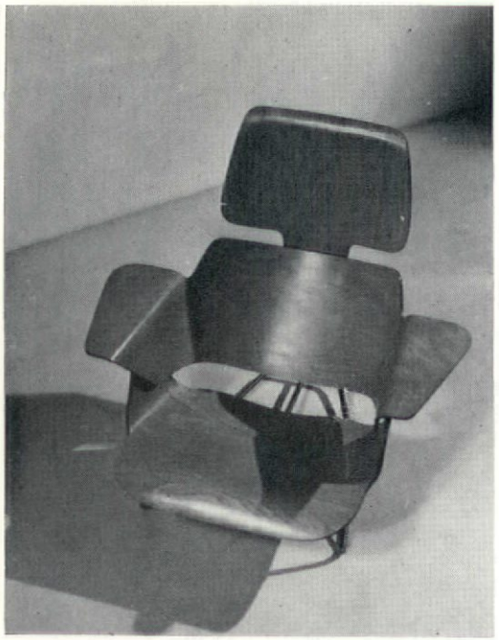


19



20



13, 14 Moulded ply tables and chairs with metal legs **15** Moulded ply shapes (*Arts and Architecture* Sept. 1946) **16** Ply chairs and table

17 Moulded ply stacking chair with wooden legs **18, 19** Moulded ply armchair **20** First design for Santa Monica house

◁435

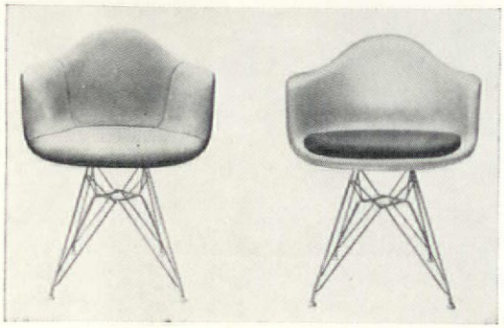
21



22



23



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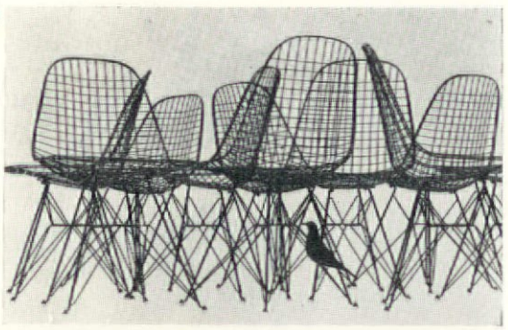

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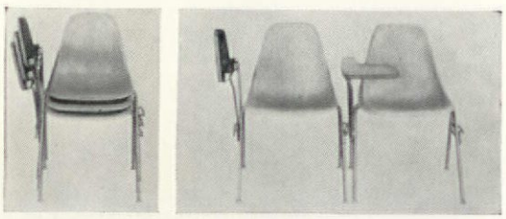

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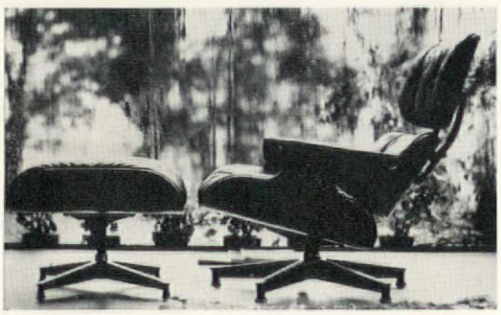


21 Santa Monica house **22** Eames Storage Units, 1950 **23** Plastic armchair **24** Wire chair **25** Plastic stacking chair **26** Lounge chair

1948 Second design for Santa Monica house, using the same material that was delivered to the site for the first house, except this time enclosing a near maximum amount of volume.

Low Cost Furniture Competition, the Museum of Modern Art.

The beginnings of experiment with reinforced plastic (455).

Ray starts magazine ads for *Herman Miller*.

Design showroom displays for *Herman Miller*.

1949 Santa Monica house occupied Christmas Eve **21** (444, 446, 450–452, 463–467).

With *Eero Saarinen*, designed house for *John Entenza*.

Storage units introduced in room designed for Alexander Girard's Exhibition 'For Modern Living' at Detroit Institute of Arts.

Design and install in Chicago the first 'Good Design Show' for the Museum of Modern Art. *Edgar Kaufmann*, head of Industrial Design Department.

Herman Miller starts production of fibreglass reinforced plastic armchairs **23** (456). The first consumer application of this material.

1950 'Good Design Show'—design and install in Museum of Modern Art, New York.

Models and drawings of house for *Billy Wilder* **34**.

Design for a low-cost timber house (not built), **27, 28**.

ESU (Eames Storage Units) produced by *Herman Miller* **22**.

Development of stacking chair **25** (455).

Continue ads for *Herman Miller*.

Consultant to Rockefeller Foundation.

Eames films commence

'Travelling Boy'.

Begin work on:
'Blacktop',
'Parade'.

1951 First National Industrial Designers Institute Award Medal for the design of the plastic chair.

Design of 'The Toy' **31** (471).

A carton village in which furniture cartons could be turned into playhouses.

1952 Home Fashions League 'Trail Blazer Award'.

Develop wire chair **24** (445/7, 456) and wire sofa.

Showroom design for *Herman Miller*.

Design a toy 'House of Cards' picture deck and pattern deck **32** (443, 448, 462).

The 'Little Toy' **30** (471).

'Communications' segments.

'Bread'.

1953 First upholstered plastic chairs **23** (456).

Education experiment: 'A Rough Sketch for a Sample Lesson for a Hypothetical Course' based on subject 'communications' presented at Athens, Georgia, University of Georgia, in collaboration with *George Nelson* and *Alexander Girard* **33** (458).
'Sample Lesson' presented also at the University of California at Los Angeles.

Basic Design Course for beginning architecture, University of California at Berkeley (1953 and 1954).

Produced 'Giant House of Cards'.

Deborah Sussman joined office.

'A Communications Primer' **36** (461).

1954 Diploma di Medaglia d'Oro, Triennale di Milano.

Sofa compact produced.

Stacking chairs.

Guest of the German State Department cultural exchange programme.

Edinburgh International Film Festival *Award* for: 'Blacktop' and 'Parade'.

'Sofa Compact'.

1955 Honorary Doctor of Fine Arts, Kansas City Art Institute.

Work on lounge chair **26** (457).

Design of ad for lounge chair.

Colouring toy **29**.

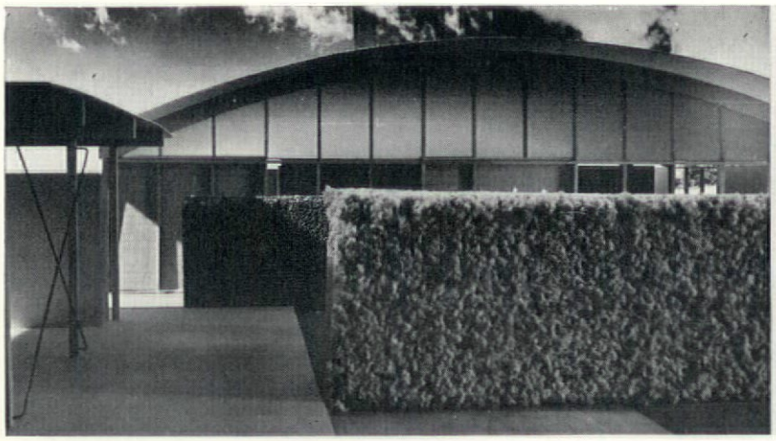
'Two Baroque Churches in Germany' **35**.

'House' (after five years living).

'Textiles and Ornamental Arts of India'.

▷439

27



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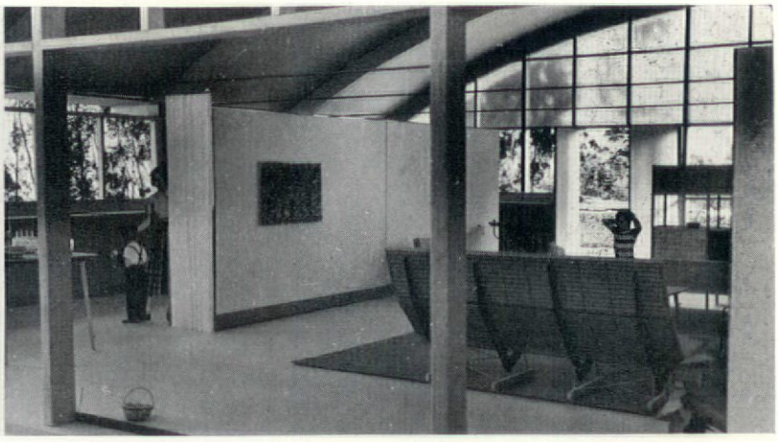

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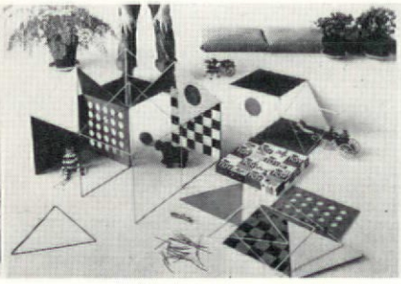

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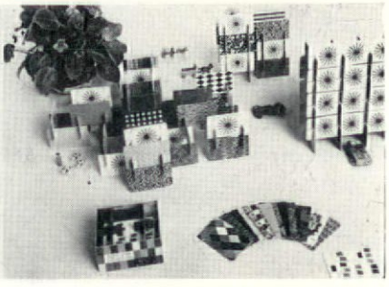

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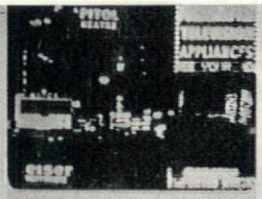


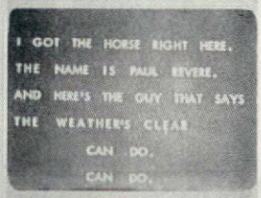
A sample lesson: subject **"COMMUNICATION"**

Excerpts from a visual lesson prepared by Charles Eames and George Nelson from original and borrowed films and slides; presented at the University of Georgia and U.C.L.A.



1 Introduction

Opening film (10 minutes) makes one point: the completion of a communication requires not only a message and a transmitter, but a receiver capable of tuning in.



Message: song from "Guys and Dolls,"



"Receivers" include student in American history (not used to thinking of Paul Revere as a horse).



constructed in the form of a fugue.



bookie, who knows all about race horses, nothing about fugues,

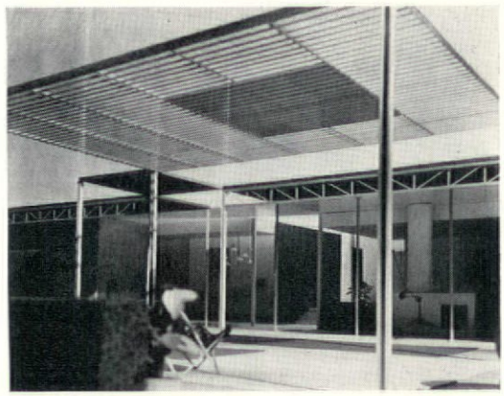


specialist in oriental literature, who does not speak English.

Each can receive only a portion of the apparently simple message.

20

34



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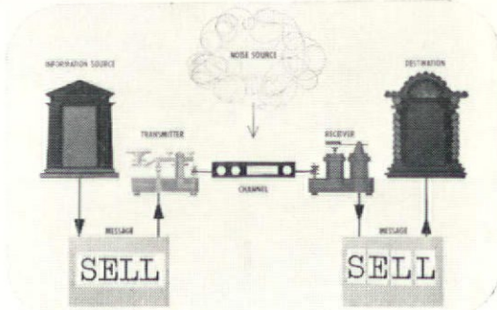
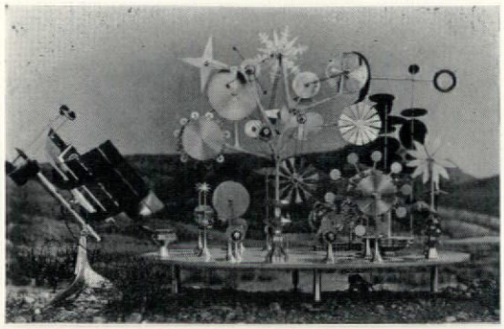


27, 28 Low cost prototype timber house **29** Colouring toy **30** The Little Toy **31** The Toy **32** House of cards **33** A Sample Lesson. (Page out of George Nelson's book *Problems of Design*). (Whitney, NY) **34** Model of house for Billy Wilder **35** Frame from film 'Two Baroque churches in Germany' **36** Frame from film 'Communications Primer'

37



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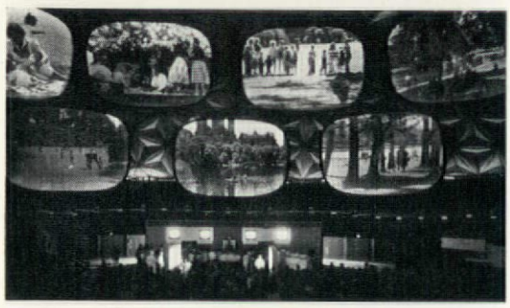

39



40







37 Solar toy **38** Multi-screen films at Moscow World Fair **39** Aluminium group of furniture **40** La Fonda restaurant group furniture **41** Time/Life lobby chairs

1956

American Institute of Decorators—Citation of Merit for Excellence in Furniture Design.

Completion of lounge chair.

Work on solar toy **37**.

Taught at, lectured, or served as consultant to:
University of California, Los Angeles.
University of California, Berkeley.
Public Schools in Los Angeles.
University of Georgia, Athens.
Yale University.
California Institute of Technology.

'Lounge Chair' (black and white).

Sequences for Warner Brothers film 'The Spirit of St. Louis'.

1957

Diploma di Gran Premio, Eleventh Triennale di Milano.

Gold Medal for 'Craftsmanship'—100th anniversary, American Institute of Architects.

Completion of solar toy (do nothing machine) for Alcoa Aluminium **37**.

Design of buildings and graphics for a one-fifth scale railroad at Griffith Park, Los Angeles.

Robert Staples joined office.

Edinburgh International Film Festival *Award* for:
'Toccata for Toy Trains'
(used to open the festival).

'Day of the Dead'.

'Toccata for Toy Trains' **43, 44**.

1958

Alumni Award, Washington University, St Louis.

Aluminium group of furniture **39** (446, 457).

Visit to India for the Indian Government—made recommendations on problems of design, were instrumental in setting up the National Design Institute at Ahmedabad, produced the India Report.

Toy—doll house.

Seventh Melbourne Film Festival *Award* for:
'Toccata for Toy Trains'.

San Francisco International Film Festival *Award* for:
'Day of the Dead'.

Edinburgh International Film Festival *Award* for:
'The Information Machine'.

'The Information Machine'
(for IBM for Brussels World Fair).

'The Expanding Airport'.

'Herman Miller, Brussels'.

'De Gaulle Sketch'.

1959

National Industrial Design Council of Canada Award for Stacking Chairs.

Alcoa Industrial Design Award.

Delivered the Lethaby Lectures at the Royal College of Art and the Annual Discourse to the Royal Institute of British Architects.

Twentieth Century Design Show, Museum of Modern Art, New York.

American Film Festival Trophy *Award* for:
"Toccata for Toy Trains'.

'Glimpses of USA'.
(Multi-screen film—Introduction to the United States exhibit at Moscow World Fair) **38**.

1960

First Annual Kaufmann International Design Award.

Fellow of The Royal College of Art (Charles).

Royal Designer for Industry (Charles).

Benjamin Franklin Fellow of the Royal Society of Arts (Charles).

Design Award, Philadelphia Museum College of Art.

Twentieth Century Design Show, Museum of Modern Art, New York.

Design of turned wood stool.

Time/Life lobby chairs **41**.

La Fonda Restaurant group furniture **40**.

Exhibit in Time/Life lobby.

Glen Fleck joined office.

Scholastic Teachers' 11th Annual Film *Award* for:
'Toccata for Toy Trains'.

Emmy Award—Graphics—for 'Fabulous Fifties CBS TV'.

'Introduction to Feedback'.

'Fabulous Fifties' CBS (black and white) sequences for this television special include:
Music Sequence.
Dead Sequence.
De Gaulle.
Gift from the Sea.
The Comics.
Where did you go—out.

1961

Development of Eames Contract Storage **45**.

'Mathematica'—a mathematical exhibit for IBM at the Museum of Science and Industry, Los Angeles **46**.

Festival International du Film de Montréal *Award* for:
'Math Peep Shows'.
'House' and 'Introduction to Feedback'.

Internationale Filmwoche, Mannheim, Germany *Award* for:
'Introduction to Feedback'.
'Kaleidoscope'.

'Kaleidoscope Shop'.

'Math Peep Shows' (for Mathematica).

'Eames Contract Storage'.

1962

Honorary Doctor of Fine Arts, California College of Arts and Crafts, Oakland, California (Charles).

National Home Fashions League Award.

Development of Eames tandem seating: first installed at O'Hare International Airport, Chicago, and Dulles International Airport, Washington, DC.

Design of Herman Miller symbol and stock certificate.

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42





43
44



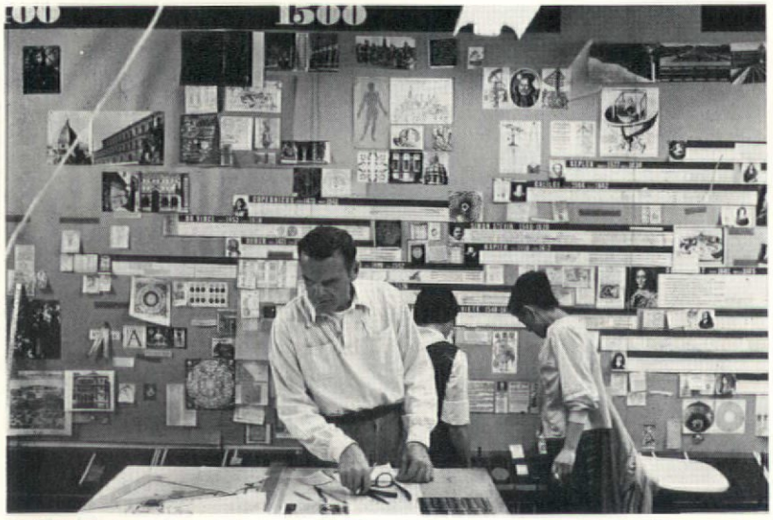
45



46



47



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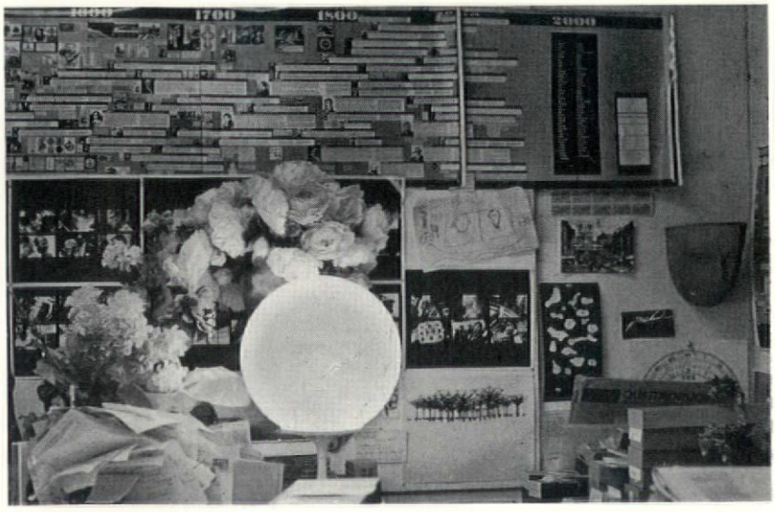
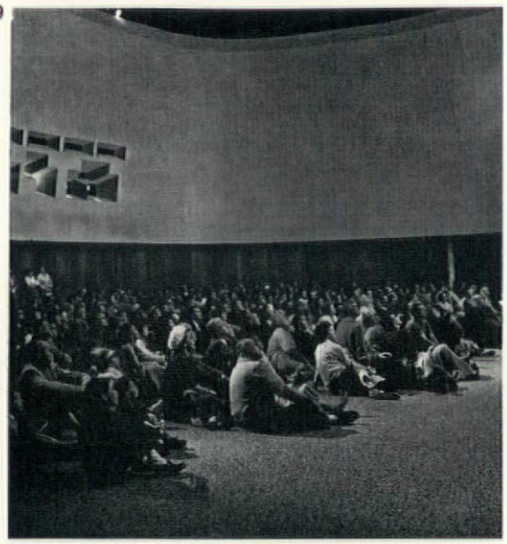


42 Aluminium tandem seating **43, 44** 'Toccata for Toy Trains'. Model in which the film was shot; and pamphlet **45** Contract storage furniture **46** 'Mathematica' exhibition for IBM **47, 48** Preparation of the 'Mathematica' exhibition. Charles Eames at work. Ray Eames' room

49



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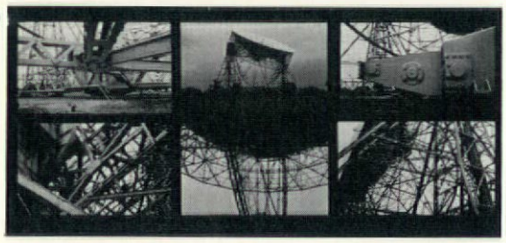
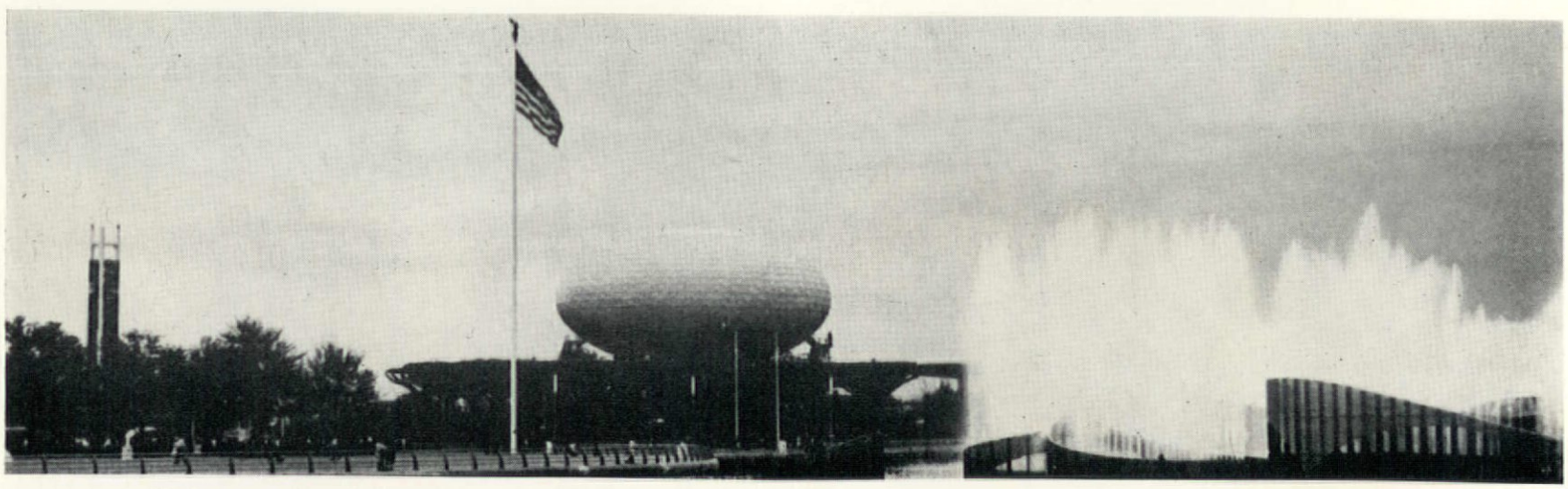


49, 50 US Science Exhibit at Seattle World Fair 1962. Multi-screen film **51–53** Exhibition 'Nehru, his life and his India'. *(Photos Sam Lambert)* **51** Entrance to the exhibition **52** Explanatory leaflet **53** History wall **54–56** IBM Exhibit, New York World Fair 1964

1962 cont	Design of the theatre and the multi-screen film 'House of Science' done for the US Government for the Seattle World's Fair **49, 50** (459, 460, 462). Has become a permanent exhibit called *Eames Theatre*.	'House of Science'. (Multi-screen film introduction to the US Science Exhibit at Seattle World Fair)' **49, 50** (459, 460, 462). 'IBM Presentation Film'. 'Before the Fair'. 'The Good Years' (black and white) sequences for this CBS Television Special include: St Louis Exposition. San Francisco Fire. Panic on Wall Street. The Comics.
1963	First Domus Obelisk Award. Lithographers and Printers National Association Inc. Annual Award for Herman Miller Stock Certificate. Design of school seating. Herman Miller Showroom display design at Los Angeles.	London Film Festival *Award* for: 'Math Peep Shows'. Melbourne Film Festival *Award* for: 'Introduction to Feedback'. 'The Information Machine'. Revised 'IBM Presentation Film' (of Pavilion for the New York World Fair).
1964	Honorary Doctor of Fine Arts, Pratt Institute, Brooklyn, New York (Charles). IBM Exhibit, New York World's Fair, including: Garden of steel trees **55, 56.** Ovoid theatre with multi-screen film entitled 'Think' **54** (460, 462). People wall. Electronically operated puppet shows entitled: 'Sherlock Holmes in "The Singular Case of the Plural Green Mustache" '. 'Computer Day at Midvale'. 'The Cast of Characters'. Antique computer display. Scholar's walk. Projective geometry display. All graphics, seating, etc., etc. New York Chapter of the American Institute of Architects. Award for excellence in design to *Eero Saarinen* & Associates and *Charles Eames* for the IBM Pavilion at the New York World's Fair, 1964.	'Think' (Multi-screen film at IBM Pavilion, New York World's Fair) **54** (460, 462). 'IBM Puppet Shows'—films of electronically operated Puppet Shows entitled: 'Sherlock Holmes in "The Singular Case of the Plural Green Mustache" '. 'Computer Day at Midvale'. at IBM Pavilion at New York World Fair.
1965	Art Directors Club, New York. President's Medal of Honour. Exhibition: 'Nehru, his life and his India'. Designed for the Indian Government, at the National Design Institute, Ahmedabad, India. At the Union Carbide Building, New York, in January. The Royal Festival Hall, London, in June **51–53.** The Smithsonian Institution, Washington, DC, in October.	'Think'—revised for second year of New York World's Fair. 'Westinghouse' in Alphabetical Order. 'The Smithsonian Institution' (black and white) made for the Smithsonian Bicentennial Celebration in September 1965.
1966	Exhibition: 'Nehru, his life and his India'. At the Museum of Science & Industry, Los Angeles, April.	Work begun on film of Nehru Exhibit. 'Horizontes'—opening and end titles for series of Latin-American films for USIA. Work begun on Tops film.

54





51


JAWAHARLAL
NEHRU
HIS LIFE AND HIS INDIA
जवाहरलाल
नेहरू
JAWAHARLAL
NEHRU
HIS LIFE AND HIS INDIA
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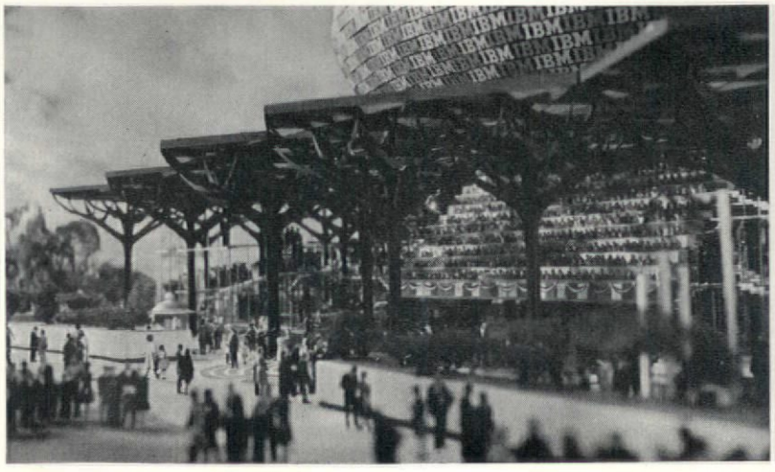
2


1900
1920
1940
1960

53


IBM

5



55

Just a few chairs and a house: an essay on the Eames-aesthetic

Peter Smithson

In the 1950s the whole design climate was permanently changed by the work of Charles and Ray Eames. By a few chairs and a house.

Now chairs have always been the forward-runners of design-change. They have for some mysterious reason the capacity of establishing a new sense of style almost overnight.

Rietveld established a whole new design mode with a chair. So did Macintosh with his.

In the 1950s the Eames' moved design away from the machine aesthetic and bicycle technology, on which it had lived since the 1920s, into the world of the cinema-eye and the technology of the production aircraft; from the world of the painters into the world of the layout-men.

In a sense both the machine-aesthetic and the Eames-aesthetic are art-forms of ordinary life and ordinary objects seen with an eye that sees the ordinary as also magical.[1]

The machine-aesthetic selected with care those objects from ordinary life that were based on simple geometries—on cones, on spheres, on 'engineers' profiles' **1**; objects whose commonalty was 'composable', ie pictures could be made from their arrangement, and out of which and art-discipline could be erected[2] **2, 3, 4.**

The Eames-aesthetic, made definitive in the House at Santa Monica Canyon, California, 1949 (as the machine-aesthetic was given canonical form in the 'dwelling unit' in the Esprit Nouveau Pavilion, Decorative Arts Exposition, in Paris, 1925), is based on an equally careful selection, but with extra-cultural surprise, rather than harmony of profile, as its criteria. A kind of wide-eyed wonder of seeing the culturally disparate together and so happy with each other **5.** This sounds like whimsy, but the basic vehicle—the steel lattice frame and in the case of the house, the colour film and colour processing in the graphics work, the pressings and mouldings in the case of the furniture—are ordinary to the culture **6, 7.**

And this is what separates the Eames' 'selection and juxtaposition' technique from neo-victorian screen-making and pop art forms of either the Barbara Jones or Peter Blake sorts.

Charles Eames is a natural Californian Man, using his native resources and know-how—of the film-making, the aircraft and the advertising industries—as others drink water; that is almost

▷445

1



2



3



4



1
Geometric solids. From *Vers une architecture*, by Le Corbusier

2
Bottles and glasses in the L'Esprit Nouveau Pavilion, Paris 1925. From *New World of Space*, by Le Corbusier

3
Bottles and glasses. Painting by Jeanneret, 1919. From Le Corbusier Palazzo Strozzi catalogue 1963

4
Advertisement for yellow-cake mix

5
A group of Eames cards. (See also pages 443, 448, 462)

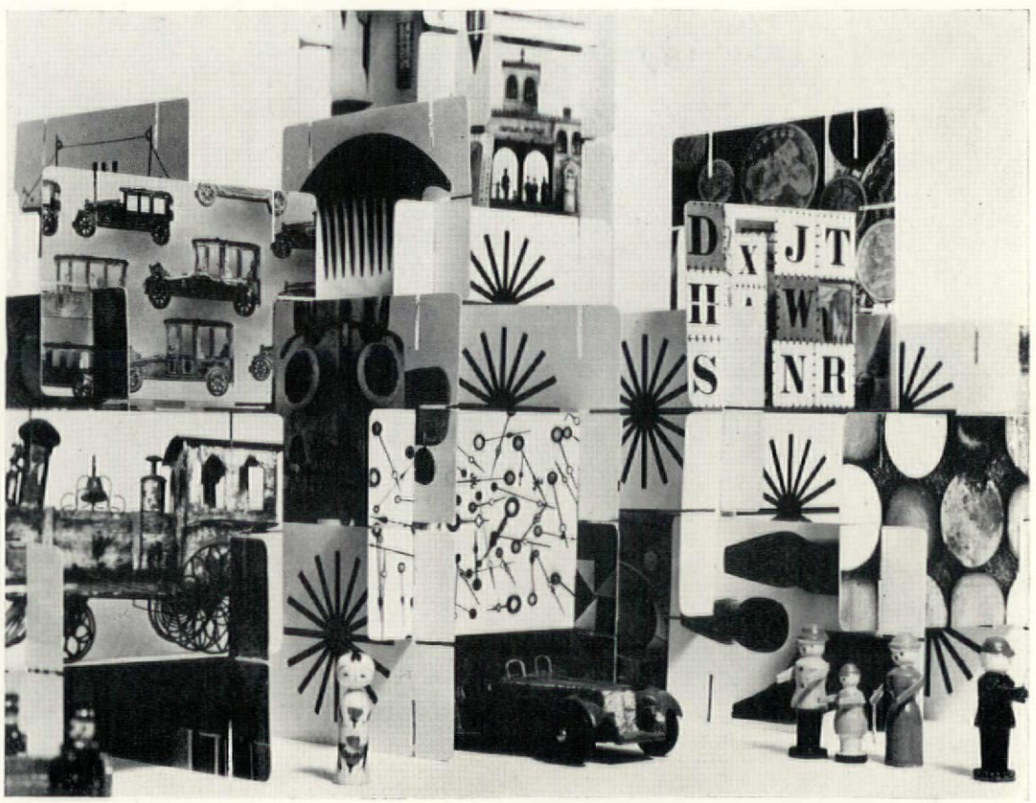
6
Santa Monica house with reflection of the slope of the hill

7
Santa Monica house, wall detail. (See also overleaf and pages 444, 446, 450–52, 463–67)

[1] This sounds like a description of the role of Hollywood film as myth-maker to America.

[2] See Ozenfant's *The Foundations of Modern Art.*

5



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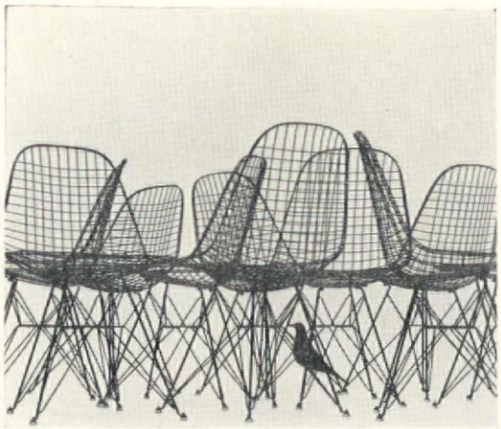


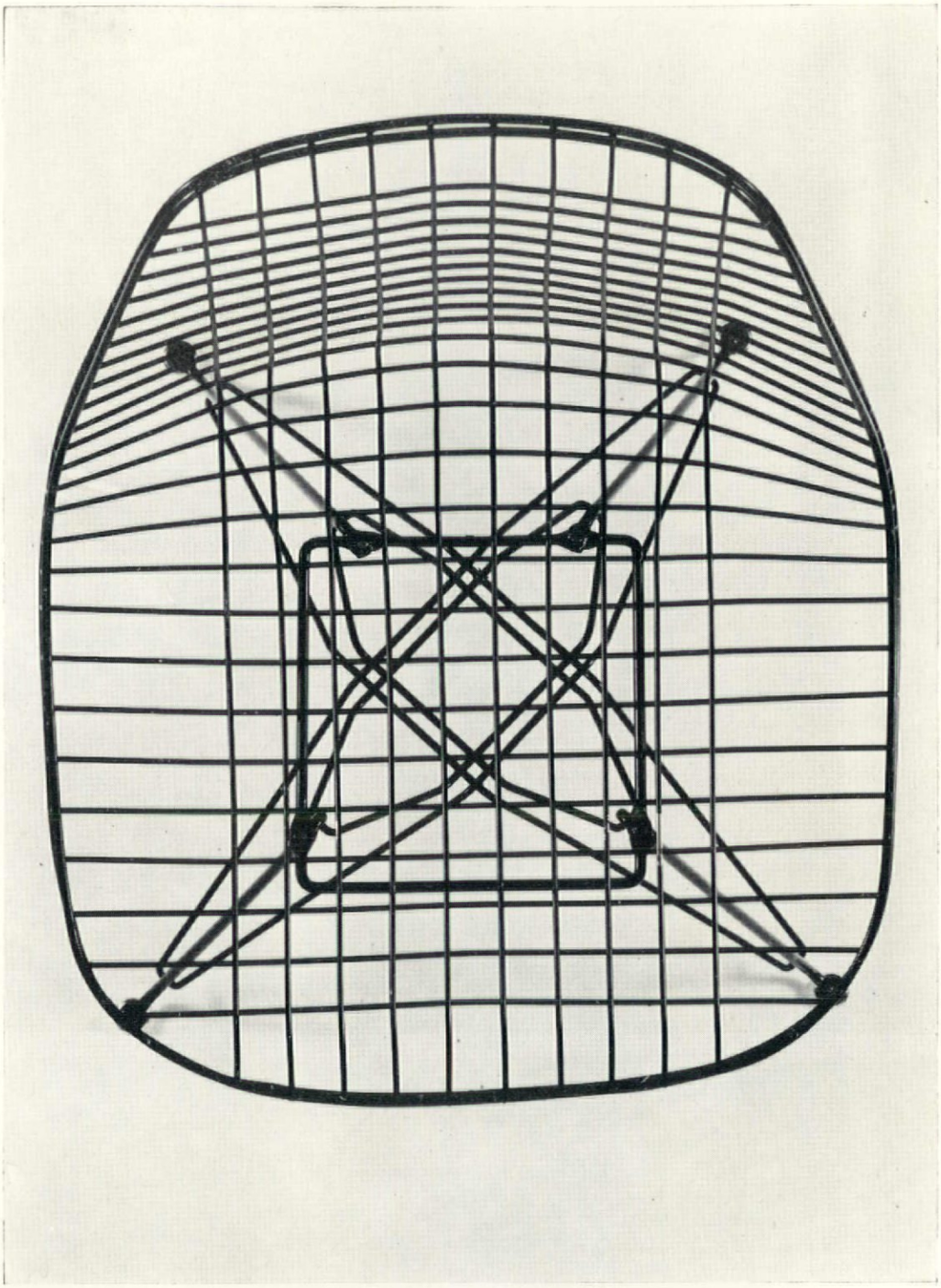
1

◁443

without thinking. And it is this combination of expertise, and the availability of the expertise of others, which produces the apparent casualness that is special to the American life-form and its art-form.[1] (*Bad Day at Black Rock* is of the same period, ie mid-50s.)

And, as it is the Californian Man's real originality to accept the clean and pretty as normal, it is not surprising that it is the Eames' who have made it respectable to like pretty things. This seems extraordinary, but in our old world, pretty things are usually equated with social irresponsibility. That we can be persuaded to accept the pretty is because their work is by no means without a sense of law. When we say 'that's a very Eames photograph' we all know what it means. It is a special way of looking at things, a special sort of composition. It communicates a love of the object photographed, a kind of reverence for the object's integrity. The Eames-aesthetic is to do with object-integrity. This is what gives their whole output cohesion.

[1] And is presumably why Zen is so popular on the West Coast (?).



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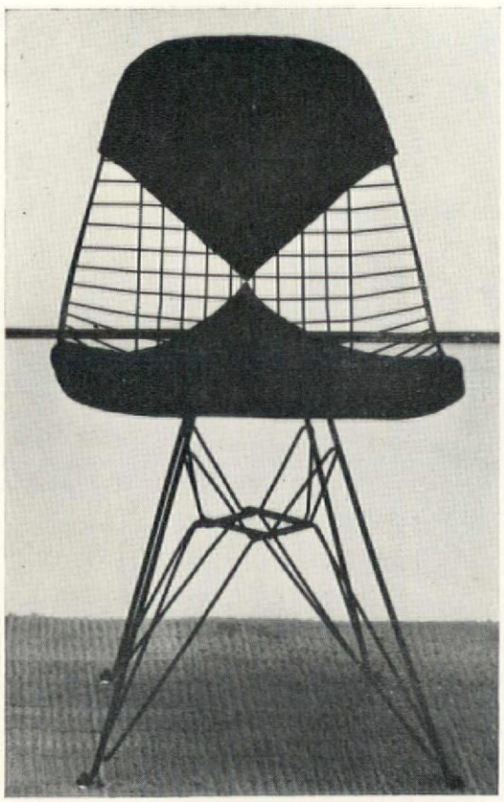

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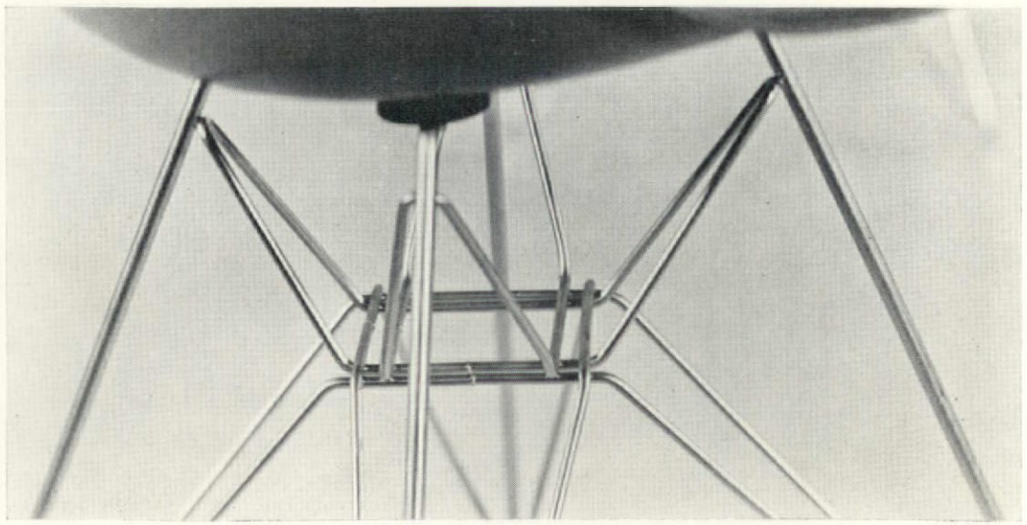

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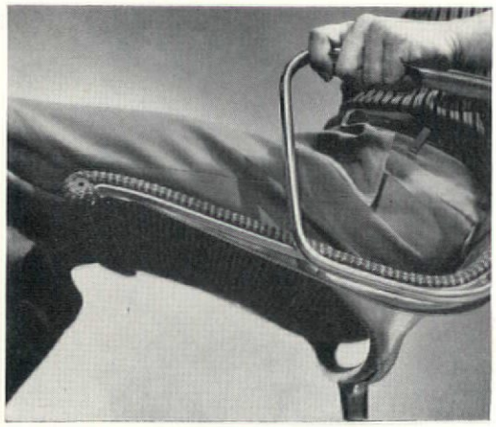
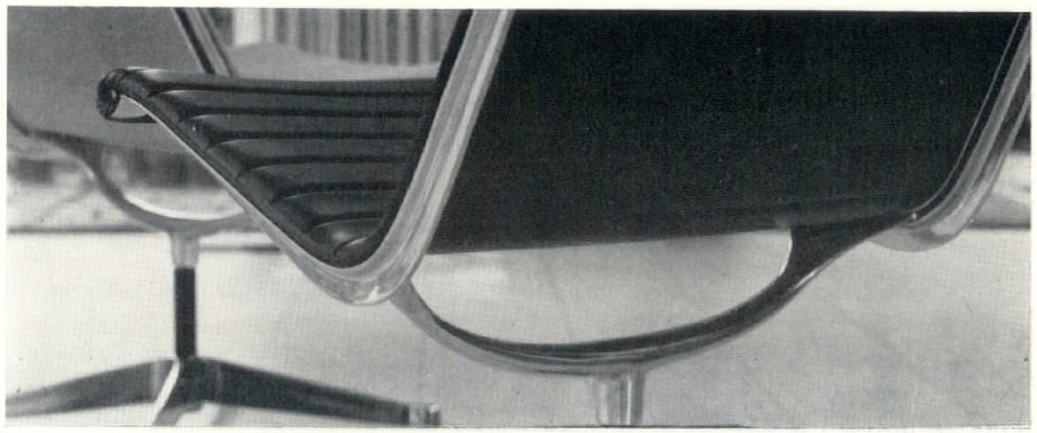




6

Before Eames, no chairs (of the modern canon) were many coloured, or really light in weight, or not fundamentally rectangular in plan (ie the chairs of Rietveld, Stam, Breuer, Le Corbusier, Mies, Aalto).

Eames chairs are the first chairs which can be put into any position in an empty room. They look as if they had alighted there—that crow in the wire-chair photograph is no coincidence. The chairs belong to the occupants not to the building **1–6**.

(Mies chairs are especially of the building and not of the occupants. Maybe what worries one about the Eames library-chair-with-footstool, is that it is a reversion to the club-chair—immovably part of the Club.)

The Eames chairs of the new canon are more like the pre-Courrèges clothes of the occupants; pretty, light, non-geometric, apparently casual. They use nylon, stretch vinyl, fibreglass reinforced plastic, all of which can be self-coloured, and which carry no overtones of furniture from other cultures.

They use aluminium castings and wire-struts which remind one (but only if one thinks about it) of new and old aeroplanes, not of other furniture.

A lot of energy has been poured into their detail; it is workmanlike, explicit, even eloquent, but it is quiet. They can be photographed as a fragment, they can be enjoyed as a fragment. They have high object-integrity.

When the Santa Monica house was first published, Europeans assumed its look of fragility was a consequence of being able to not worry about weather problems in an equable climate. But in reality it is stoutly built, and equipped to *bourgeois* standards. Its lightness, its flicker of change, is its style **7**.

And by the late 50s the Eames way of seeing things had in a sense become everybody's style.

1
Bird among the wire chairs

2
Plan view of wire chair. (See also overleaf)

3
Wire chair with upholstery. (See also page 456)

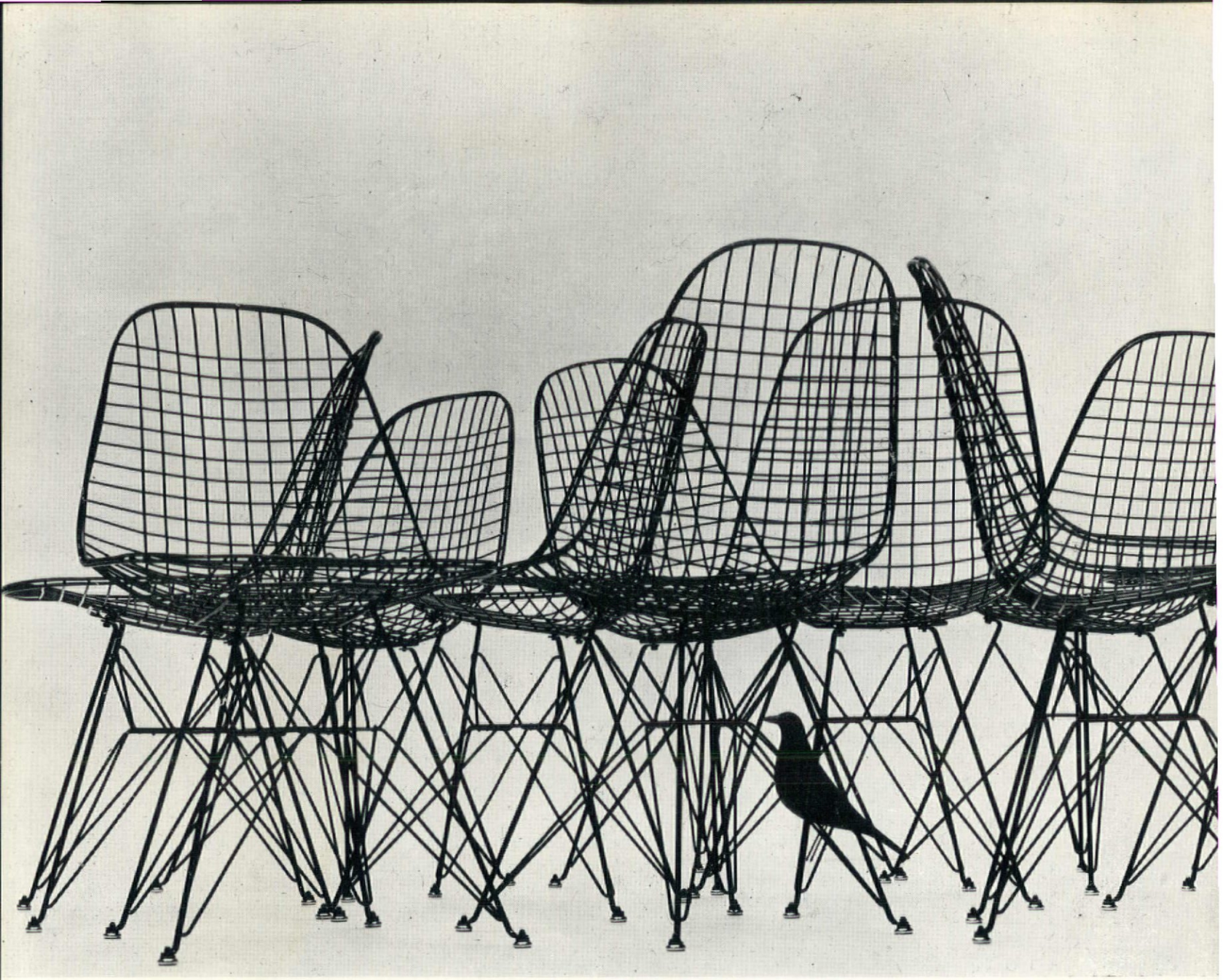
4
Base of fibre reinforced plastic chair. (See also pages 455/6)

5 & 6
Details of seat frame of Aluminium Group chair. (See also pages 446/7)

7
Santa Monica house and studio (right). (See also pages 444, 450–52, 463–67)



7



1

And now Dhamas are dying out in Japan

Alison Smithson

I can see the part played by Ray Eames in all that they do: the attention to the last detail of the collected material, the perseverance in finding what exactly is wanted; although the seeker may not know the exact object until it is finally seen. The stoic pleasantness that jollies along everyone to the bitter end; for there is no doubt that assistants and clients go out of their mind towards the end, if not at stages in between. The principal does, him or herself, but yet cannot afford to; particularly over assistants, if the job really has to be done to the perfection imagined.

The prettiness of our lives now I attribute to Ray even more than Charles; we would not be buying flower-patterned ties but for the Eames card game. Ourselves and Eduardo Paolozzi know where it came from. It is possible Nigel Henderson alone could have led us to steam engines and the ephemera of life via old boots, bits of sacking, ancient postcards magicked over by photography, but I like to think it is to Ray and Charles Eames we owe the debt of the extravagance of the new purchase. The penny whistle, the Woolworth's plastic Christmas decoration and toy, on to the German pressed metal toy and the walking robots: fresh, pretty, colourful ephemera.

Does Peter Blake's generation at the RCA know[1] the people who made so much of their ephemera acceptable[2]—Henderson would not do *that*. Certainly I think it is not clear to the Tilson generation and evades entirely the generation younger who buy the floral prints, bunches of dried flowers, Mexican coloured furniture, rag dolls, and so on.

The Eames allowed us to know Girard and all the cheap Mexicana and candles available to American tourists. The Eames' made Girard respectable-pop for habitat and Enid Chanel

take the clashing pink colours aboard as house colours.

The Eames films gave new life to our inherited toys so that they did not have that peculiar front-parlour-collection chill of Black eyes and Lemonade (Barbara Jones). Our generation were as children reborn from post-war Britain to love objects of a particular international flavour. The Eames gave us courage to make sense of anything that attracted.

In Japan what became suddenly very clear was the Japanese influence on the West Coast, the luxury of the spotlessly clean simple interior, beautiful wrappings, Kleenex.

The influence of the West Coast comes to us through Eames. We see Eames in his films benefiting from the round-the-corner facilities, the developed technology of the film world.

Who influenced who out west?

Did Eames influence help create Disneyland or was there another influence creating both these and the historical collection perfection that got into coloured westerns mid-50s—the right period enamelled coffee can and cup, James Stewart or Burt Lancaster drink out of, etc., etc.?

The West Coast world supports the Eames.

The Eames support the West coast world for us and help support our European dream of America as a great free place to be in.

In some way they are the other extreme of the Dhama bums who live off the bottom of the West Coast literary world. The Eames are the smiling Dhamas who live in the clouds about Los Angeles. They are our Los Angelos—who providentially provided us with the furniture[3] to put in perspectives of buildings. Again it all comes to us because of the available-round-the-corner technology of America.

But I know that before Eames furniture, if you drew a perspective of an interior there was no chair after the Thonet Le Corbusier used, or the first period modern furniture made by Le Corbusier—for the same reason—that you could draw in: and none of this could be bought in the 40s and 50s. The British Thonet available in second-hand shops is altogether different from the Paris flea market Thonet. Reproduction modern is a mid-60s phenomena.

There was the British Rourkee or Bengal safari chair available still at the Army and Navy.

It was the world of the horrors of the Festival of Britain and so on.

The Eames chair was like a message of hope from another planet.

[1] The naïveté of, and practised by, Peter Blake does not exclude awareness of other phenomena; just as 'knowing' about cribbable objects (say by designers) is not an awareness.

[2] American painters may get all the credit.

[3] I refer to the blackbird and post blackbird era frame chairs. The early plywood and adjustable shelving, coffee tables, do not speak in any way for us.

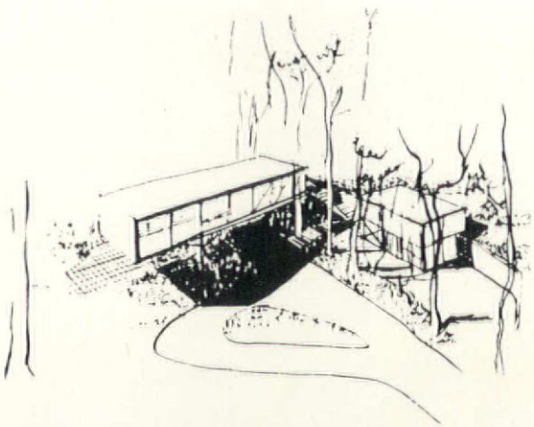


2

1
Wire chairs. (See also page 445)

2
A selection of cards from the House of Cards picture deck and pattern deck. (See also pages 443, 462)

The House of Cards is currently being published by Otto Maier Verlag, Ravensberg/Germany. © Tintarella S.A.



1
The first design for the Eames house shown in *Arts & Architecture*, March 1948
2, 3 & 4
The showroom for the Herman Miller Furniture Co. on 8806 Beverly Boulevard, Los Angeles, opened in September 1949 while the house was still under construction. The showroom was built for a total cost of $6.50 sq. ft at a time when the normal cost of this kind of space was $11.00 sq. ft. The storage units and chairs are all by Eames. (See also pages 462, 469, 470)
5 & 6
The house under construction. A concrete retaining wall holds back the hillside and supports the asymmetrical frame. In both views the studio is the near building separated from the main house by a courtyard which is enclosed on two sides by building, on the third by the retaining wall, and on the fourth side by eucalyptus trees
7 & 8
House and studio are joined by a board walk which is both route and terrace on the down hill side

The wit of technology

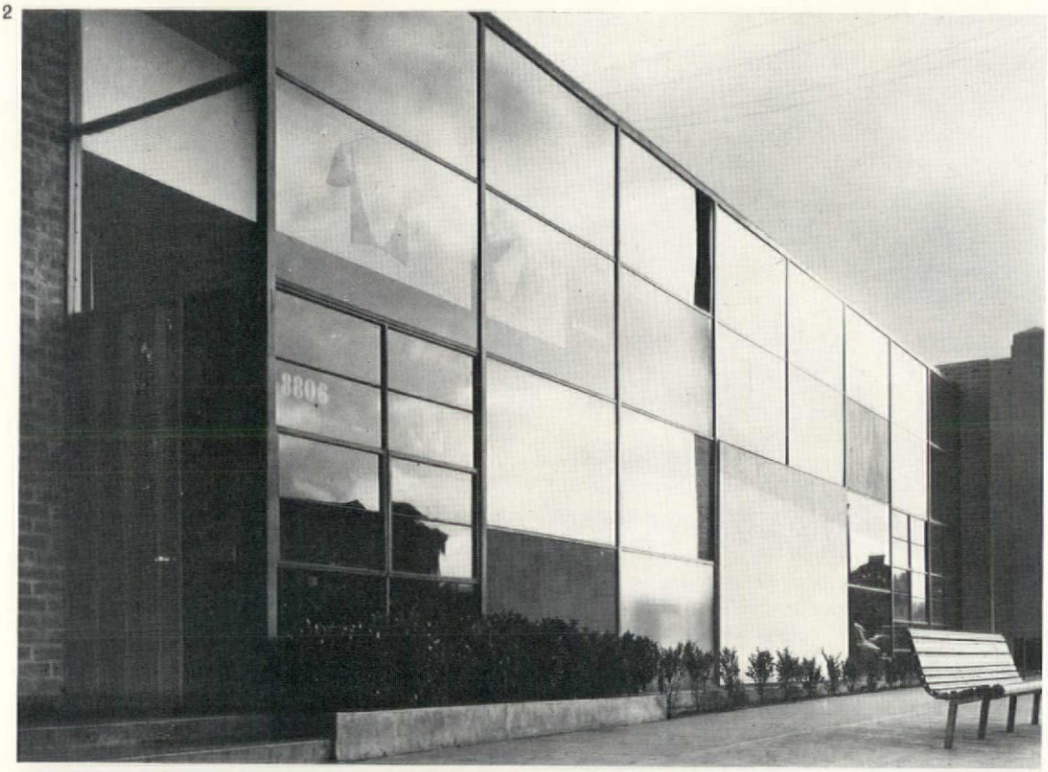
Michael Brawne

Two names have for me dominated the American visual world of the last 15 years—Mies van der Rohe and Eames. Their domination has been not only in terms of the ideas produced, but also in the volume of built form which has in some way carried their imprint. To say this, therefore, is not to belittle the intellectual importance of Louis Kahn or to deny the probings of Saarinen, but only to emphasize the high degree to which the influence of the former two figures has invaded the main stream of now visible design. Mies' primary province has been the exterior, the skin and structure; Eames' the interior, the inhabited places. These two aspects had an apparent merger in the house Charles and Ray Eames designed for themselves among the eucalyptus trees of Santa Monica.

I first became aware of the house in the September 1950 issue of *Architectural Forum*, where it appeared under that Time-Life caption 'Life in a Chinese Kite: standard industrial products assembled in a spacious wonderland'. We had at the AA just finished a long project involving housing, school and factory in a Cambridgeshire village, and had tried to use the simple industrial techniques then current in the Hills/Herts school programmes. The Eames house came as a built confirmation of all that we had looked for and had tried to achieve; its impact and effect were immediate.

It also posed again all the questions we had hesitantly but still persistently been asking; in particular, whether a system of factory-made parts could be devised in which the components were small and variable enough to make them equally useful and valid for all the buildings within the village, town, city; and then at what point, if any, some new order was necessary among this deliberate diversity within unity. Was, in other words, the unique delight of the Eames house on its California hillside extendable into a whole urban area? We were, of course, as is so often the case, reading into the design problems which it did not start out to solve.

2



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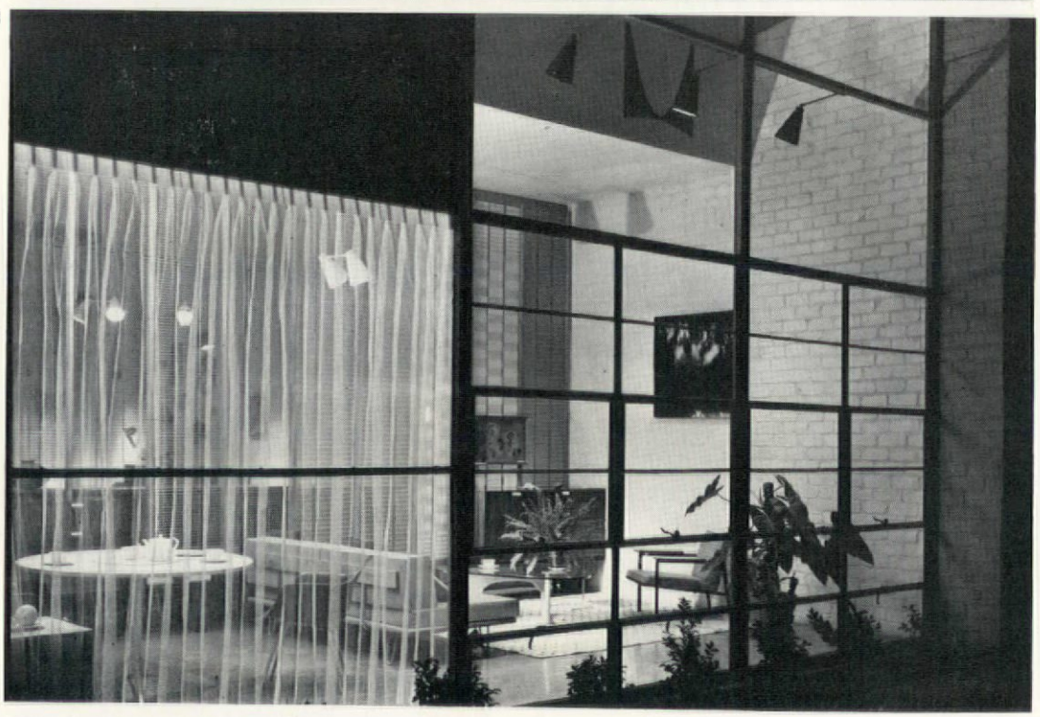

4



Although I only saw the photographs of the house in the autumn of 1950, it had been published much earlier. The Eames house and the house for John Entenza, slightly lower down the slope which Eames designed with Eero Saarinen, were the Case Study Houses for 1949 in the programme sponsored by *Arts and Architecture*, which Entenza then edited. Preliminary designs were first shown in the March 1948 issue of *Arts and Architecture* and the house reappeared several times during 1949, being successively a concrete retaining wall, a steel frame, a defined cage and finally, in the December 1949 number, a finished, inhabited and obviously lovingly occupied house. The built version was a good deal different from the first design. The preliminary drawings **1** showed the house coming out at right angles from the hillside and constructed like a bridge bearing on two sets of supports. All the rooms were on the upper floor so that none of the delights of the double height which are so characteristic of the present house formed part of the early scheme. It was altogether rather more structural exhibitionism, rather less a studied statement on the use of standard elements. The separateness of the studio was also very much more marked.

The completion of the house was preceded by the opening of the Herman Miller showroom which Eames had designed on Beverly Boulevard in Los Angeles, which had a very similar external wall of industrial steel frames and an equally similar interior additive richness achieved by combining the Herman Miller furniture—a good deal of it designed by Eames—with certain oriental and western visual spices which were to become the characteristic touch of the Eames office **2**, **3**, **4**.

It was 1955 before I actually saw the house. It had matured, in comparison with earlier photographs and acquired museum-like collections of objects from all over the world for which it seemed the most natural setting. Interior and exterior had a similarity in the sense that both had the richness of an additive process. The other important change was that the house
▷451

7



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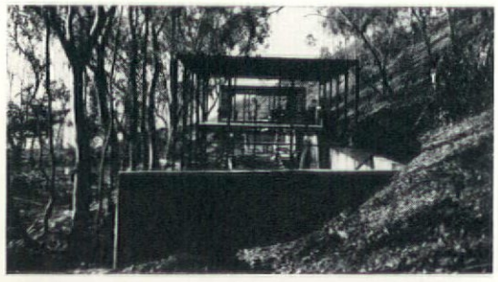

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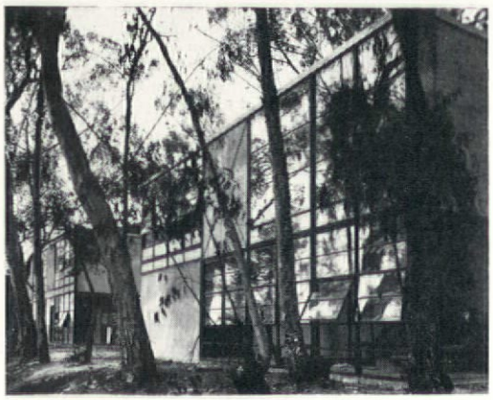

8



and studio pavilion were now linked by a board walk and not only by the paved court between them. The route became a built form **5**, **6–8**.

Seeing the house did not help to answer the questions we had been asking; it was, except for its near neighbour—the Entenza house—an isolated villa in a Californian suburb. The raised board walk joined two pavilions; it was not, and was not intended to be, a built link to an urban mesh. Moving in and around the two buildings, however, gave a new awareness of the cunning with which Eames had used the off-the-peg items from the trade catalogues and had put them together to make a significant place. Nor did any photograph convey the control of light he achieved within the spaces by using translucent material, wired glass and the closely spaced transomes of industrial sash which emphasized the window plane.

Coming to the house within the context of southern California also helped to place it within some historical sequence. It became clearer that it was part of a tradition which could be seen in the simple steel-framed houses of Raphael Soriano, who had in turn been influenced by Neutra and Schindler, both of whom had brought a European and modern movement intellectual notion on the use of technology and had merged it with an existing West Coast stick aesthetic. The results were very different from a similar conjunction on the East Coast, where Breuer and Gropius changed the boarded, planar Cape Cod cottage into Bauhaus images. There was also ample precedent on the West Coast for the use of standard industrial products in one of its greatest buildings, Bernard Maybeck's First Church of Christ, Scientist, of 1910–12 in Berkeley. Maybeck used Hope's galvanized sash and asbestos for a considerable part of the exterior and combined these with an intricate web of redwood sticks and concrete columns **9**.

Where the Eames house, however, differs from its nearest predecessors, the steel-framed buildings of Soriano, and also its possible successors, the houses of Koenig, Craig Ellwood and others in the Los Angeles area, is that its composition is wholly additive, with

9



10



9
Bernard Maybeck's First Church of Christ, Scientist of 1910–1912, Berkeley, Cal. The structure is exposed shuttered concrete, the windows are standard industrial sash, the solid panels above the windows are asbestos tiles, the pergola is untreated redwood

10, 11, 12 & 13
The interior of the Eames house is a changing, evolving space, seldom the same on photographs taken at different times. This change is both short and long term; translucent screens slide and catch shadows, sometimes pictures hang as horizontal planes in the two-storey living room, the white floor has tatami or rugs, furniture is varied as the Eames design new pieces. (See also pages 444, 451/2, 463, 466/7)

frame and cladding not separated but working together, and that it possesses wit, a quality extremely rare in architecture. Its wit is, of course, largely the result of the additive process, of the seemingly casual juxtaposition of different elements.

Wit and the creation of an apparent whole by the recognizable addition of many small units comes out, of course, much more obviously in the Eames films and toys; it is almost their signature. That Eames also saw his house in this sort of way would, however, appear to be confirmed by the film he made of it five years after its completion. 'The House' consists of a very large number of still colour photographs which come on in quick succession, revealing the many aspects which go to make up the inhabited place: window, floor, bowl of fruit, staircase, flowers, dishes on the table, eucalyptus trees, steel joists, shadows on translucent screens; they are the sequential images seen by a roving eye **10–13**. The same method of conveying information through the accumulation of still views in rapid sequence has been used in some of the other films done by Charles and Ray Eames, notably *The Day of the Dead,* the film on two German Baroque churches and the documentary on the Algiers rising reconstructed from newspaper photographs. The interesting point about this method of film making is not only that it is relatively simple to produce and that rather more information can be conveyed than when there is movement on the screen, but that it corresponds surprisingly closely with the way in which the brain normally records the images it receives. I would assume that it also corresponds rather closely with the way Eames's own thought processes tend to work. I think it symptomatic, for instance, that he is extremely interested in computers (joyously described in his IBM films), and that one of the essential characteristics of computers is their need to separate information into components before being able to assemble them into a large number of different wholes. ▷453

11



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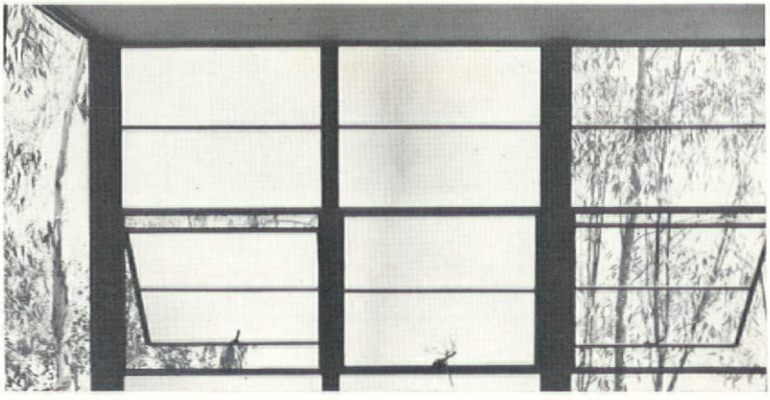


13



14
A composite photograph of some of the experiments which the Eames were conducting showing the war and immediately after; these included not only methods of bending plywood but also ways of supporting a seat

15 & 16
The moulded plywood traction splint designed for the US Navy; a complete three-dimensional problem in which use, adaptability and the process of manufacture had to be considered jointly

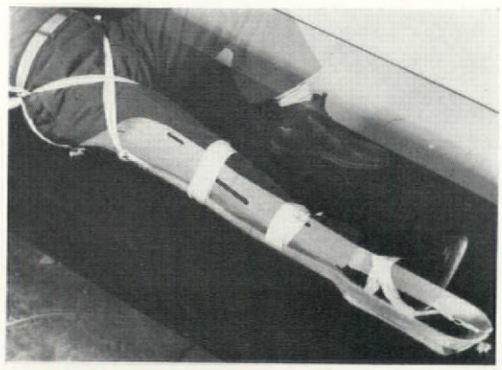
17–20
Elements of the chair are connected to each other by thick black rubber discs which allow slight movement and thus an added sense of comfort. (Drawing of connection, *Arts and Architecture*, Sept. 1946)

20, 21 & 22
In the first series of chairs two heights were available and two supporting structures. The chairs could be used indoors and out



14

15



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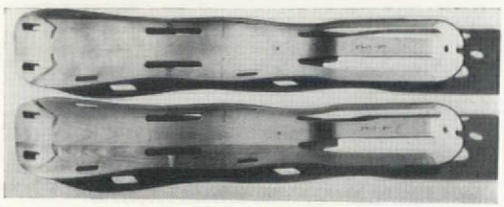


◁452

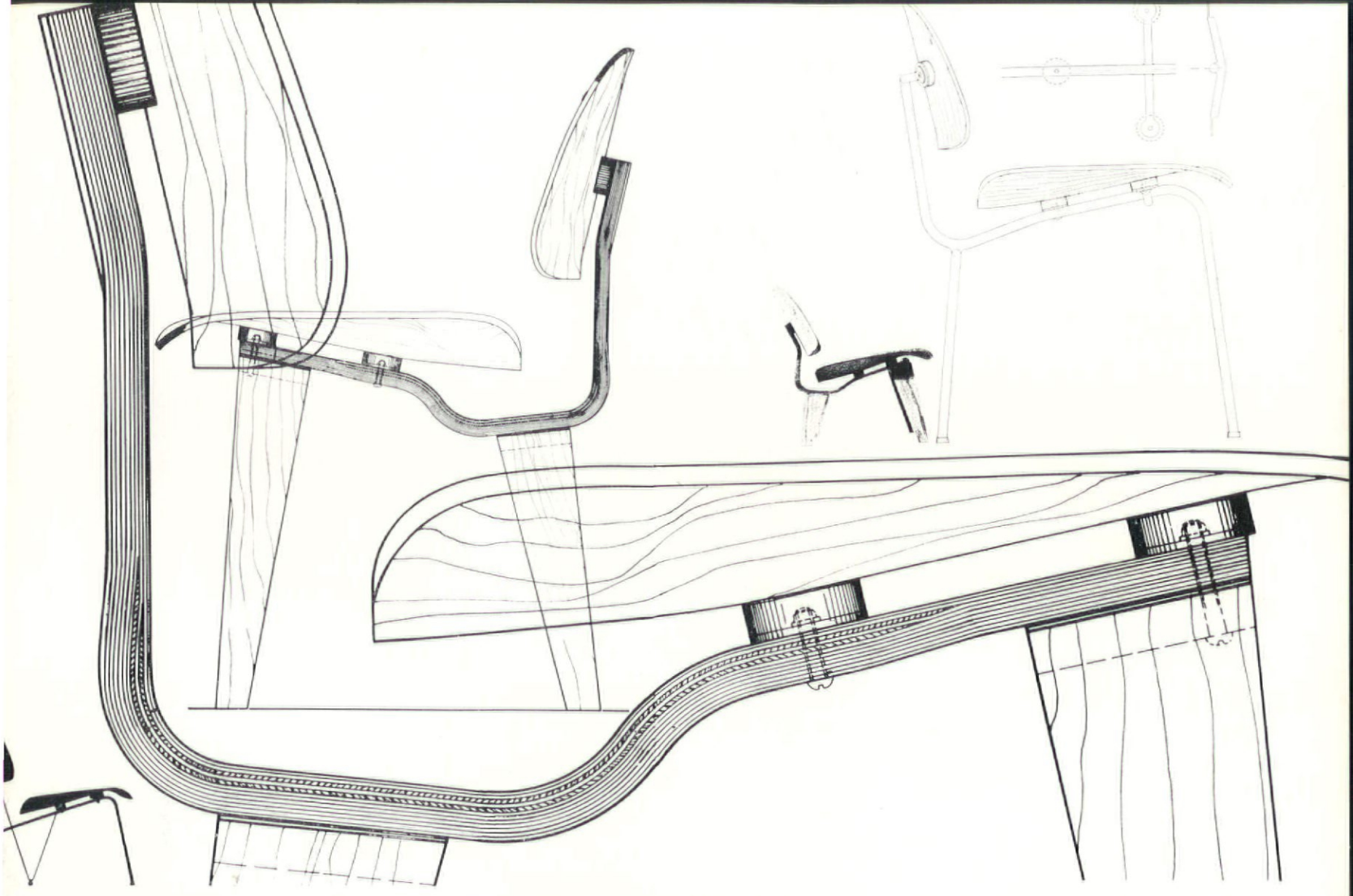
This awareness and emphasis on the need to make objects on the basis of what is right in use rather than what is best in terms of production is already evident in the house, but comes out perhaps clearest in the sequence of chairs produced between 1945 and 1956. It is an attitude of design radically different from the Miesian, so that any similarities between the Santa Monica house and a Mies steel-framed building are at most cosmetic. There is neither an attempt to create universal space nor a desire to be controlled by the demands of production towards the use of uniform repetitive elements.

The first in this series of chairs was in the moulded plywood group **21** exhibited in March 1946 at the Museum of Modern Art in New York. The design had grown out of an experimental chair which Eames, then teaching at Cranbrook, and Eero Saarinen had submitted together with other furniture in the Organic Design Competition organized by the Museum of Modern Art in 1940–41 (page 434). Their prototype, of moulded plywood and metal bonded together by rubber, was awarded first prize. No firm, however, then had the technique to manufacture such a chair. Eames spent the war years on the West Coast working on plywood components **14**, particularly a light strong traction splint for the Navy **15**, **16**. This, like the chair, was a three-dimensional problem in producing a form made by bonding thin sheets of wood veneer which had to fit the human body. At the end of the war he was in the Moulded Plywood Division of the Evans Products Company and was then able to bring out the first chair and exhibit it in New York. Tables, folding screens and unit cases on low benches formed part of the original group of furniture (page 436). In 1947 the Herman Miller Company took over the national distribution of this range and also began to make certain components.

Wartime advances in technique made the mass production of such a chair a possibility. The laminations of the timber were bonded by placing a sheet of synthetic resin between them and curing these for a few seconds with the heat supplied by the wave emissions of an electronic instrument. The same process attached to the timber the thick rubber discs which connected the various elements of the chair and allowed some movement between them.

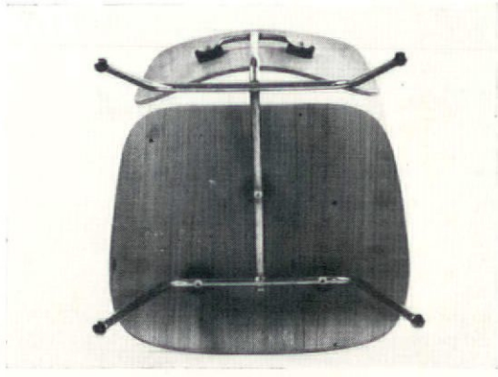
Although the plywood group included a large number of items, it was the low chair which became most widely known, and which the Herman Miller Company catalogue was later to describe as 'America's most famous modern chair'. It consisted of two doubly curved moulded plywood elements, one for the seat, the other for the back, which were joined with the rubber shock mounts to either plywood or bent steel rod legs **17–21**. These could be had in two heights. The number of chair types available was limited, and the form was considerably influenced by the material; the smoothness of the plywood in particular made changes in posture difficult.

▷456









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21

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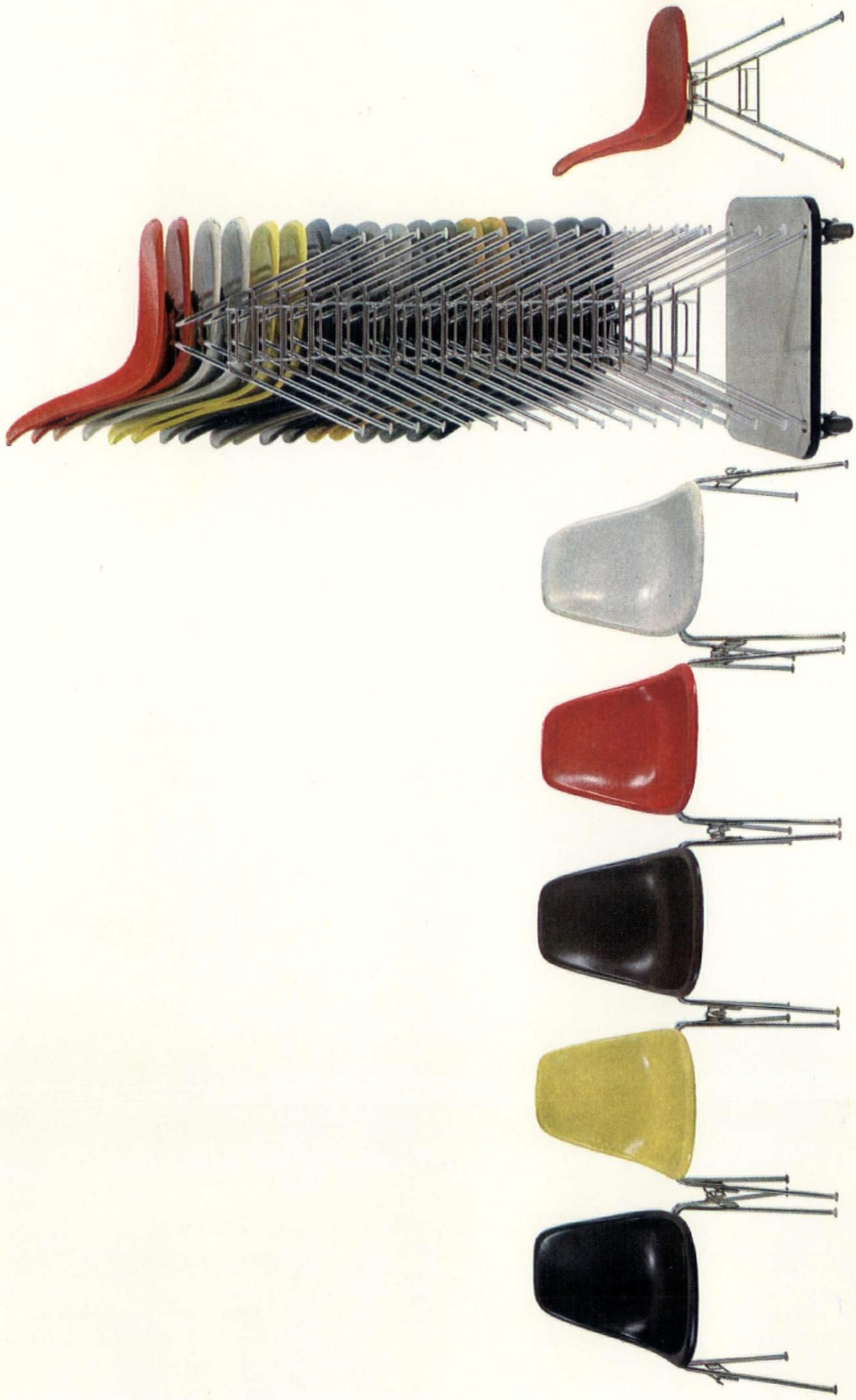


22–24, 26–28
A few of the possible combinations of elements in the second series of chairs. Colour, texture and supporting structure could be varied within each form

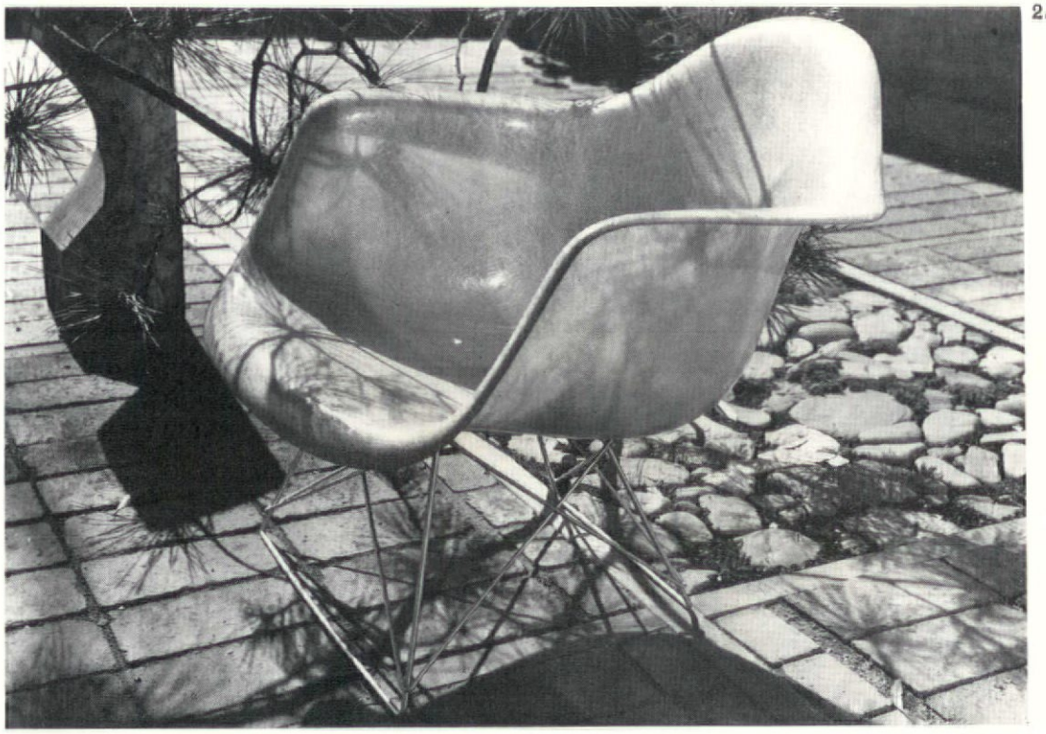
25
Two of the possible versions in the 1952 series of welded mesh chairs. Upholstery could now be clearly differentiated from the form of the seat

Colour block by courtesy Herman Miller AG, International Department, Basel, Switzerland

23



24



25



◁453

The second design four years later kept the separation between seat and support, but increased the range of types **22**, **23**. The seat was a polyester fibreglass shell, made by preforming glass fibres and resin and then pressing these under heat between matched metal moulds. The legs were bent steel rod, a cat's cradle of zinc coated or black steel wire, or a metal swivelling pedestal base on castors. The wire and strut base could also accept birch rockers. The shell was in two versions, for a side chair or an armchair **24**, **26–28**. The armchair shell was available either in one of its six coloured versions (made by pigmenting the resin), or with a foam rubber pad fitted over the shell and upholstered in five possible colours of PVC fabric or seven colours of cloth. Colour, texture and resilience were now possible within an extended range of forms, giving much greater correspondence between chair type and seating requirement.

The dining/desk chair version was in 1952 to have a further variant by having the shell made of a resilient welded wire mesh **25**. The legs were similar in range to those made for the fibreglass armchair so that a small rocking chair and a very low small chair with a seat height of 13½in also became available. Leather was added to the list of possible upholstery materials. More important still, a clear separation was made not only between seat and support but also between seat and upholstery, especially in the version where the pad was in two pieces **25**. The cover was seen as a removable changeable element with perhaps a different life span because of wear or taste. The chair could thus also, it seems, be thought of in an additive way rather than as a fixed entity.

The next chair was to continue even more markedly the trend towards use as the primary consideration. Eames, in fact, started by asking the question: which material provides the most comfortable resilience and which upholstery allows this resilience to be most effective as

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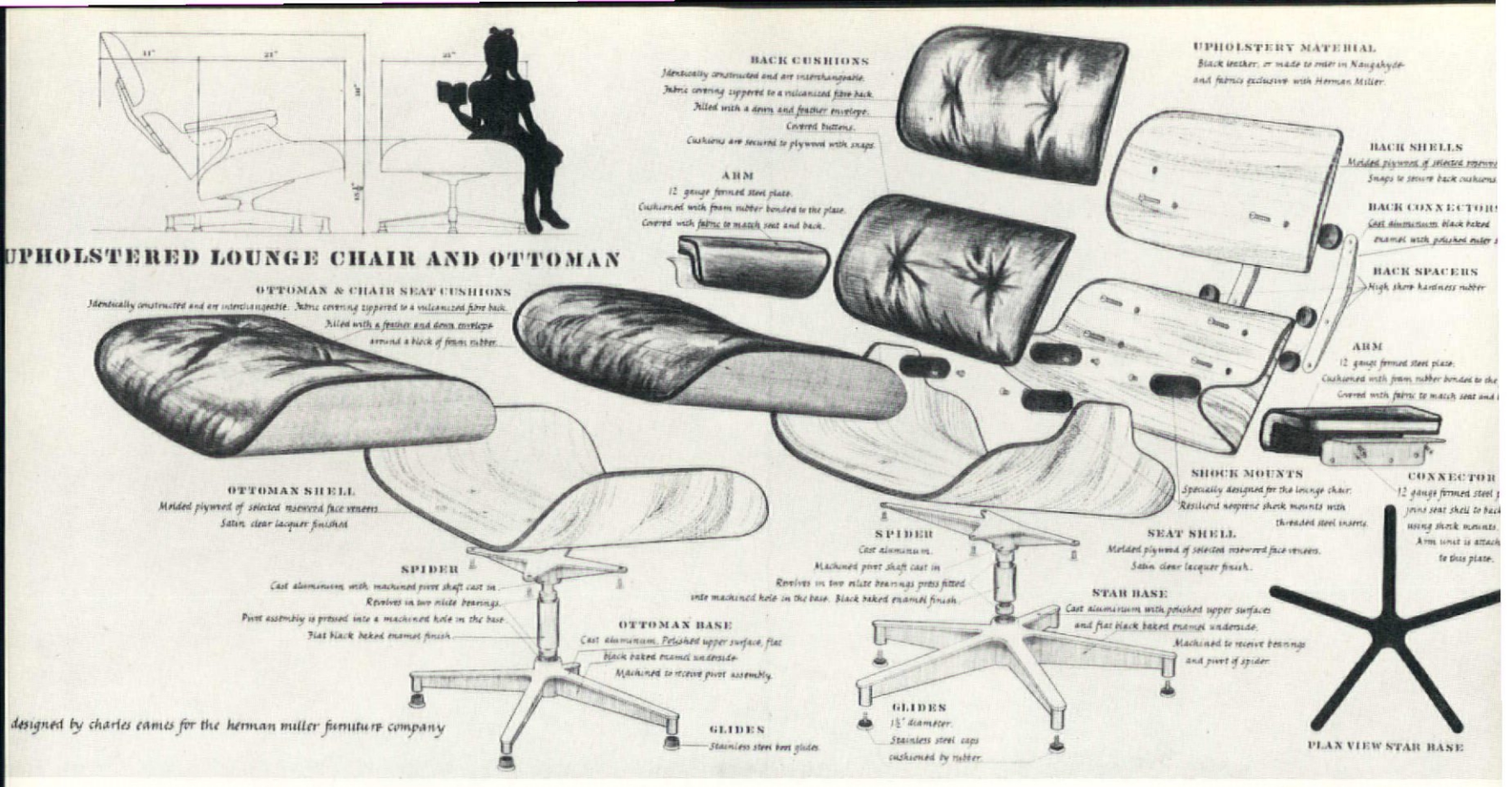

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29 & 30
The Lounge Chair and ottoman continues the development of an additive chair in which each element is evolved from its appropriate function in terms of comfort

31
Swivelling chair using cast aluminium and PVC stretched between frames

◁456

well as having comfortable, perhaps even luxurious, tactile properties? The answer was down-filled leather and it is such a combination fastened to moulded plywood shells which makes the Lounge Chair **29, 30**. Like the traditional barber's chair, it has an articulated headrest—fastened to the back with resilient rods—is able to swivel on its cast pedestal and provides foot support by the addition of an Ottoman foot-rest made in the same materials as the chair. Chair and footstool have both the appearance and the comfort of the wrinkled ample nineteenth-century club chair. Being no longer dominantly production orientated, Eames is able to choose an appropriate technique for each component and to revert to old-established materials like down and leather when these give the best results.

The moulded plastic chair has slipped into common usage and become almost as accepted and imitated as the Thonet bentwood furniture. The Lounge Chair has, on the other hand, continued the tradition of the luxurious chair established, as far as the Modern Movement was concerned, in 1929 by Mies's 'Barcelona' chair and Le Corbusier's 'Siege Grand Confort'. It belongs to that subcategory of modern design concerned with 'the enjoyment of luxury materials, of the well made, of the high finish'[1]. Unlike its two predecessors, however, it is much more consciously concerned with these aspects as part of a comprehensive concern with the purpose of objects, rather than with their manufacture or their relationship to a predetermined order. The 'Barcelona' chair in particular defines space, establishes frequently a polarity between objects, suggests a spatial relationship between people. The Lounge Chair on its swivelling pedestal does none of these things; it is the user who controls its angle, its position in space relative to others and to the surrounding space.

Charles Eames was to go on to design further furniture for the Herman Miller Collection and to continue to concern himself with those aspects of design in which the additive element played a strong influence: exhibitions (a moving observer viewing a large number of items in sequence) and particularly films using multiple projection (a static observer viewing a number of images projected simultaneously on a facetted screen). He has so far not been again involved with building, yet I believe that the architectural influence which he has exerted has nevertheless been important. He has shown that in some forms of design, including that of a building, an additive attitude is possible and that the totality will be richer than the sum of the parts. This would appear to be an important point to have demonstrated in a period in which architecture has found it necessary to consider the problems of obsolescence, of change, of increase through addition; and thus to discover a grammar in which the degree of determination can be assumed to be different for different elements. Eames has, moreover, demonstrated that a high level of visual joy is possible within it. Equally significant to architecture has been Eames's demonstration in furniture design that the question of performance in use is the most important to be asked, and that a high level of technology offers, in fact, so many ways of solving a given requirement, that production can be geared to the problem requiring solution; that 'what for' is fundamentally a more interesting question than 'how', and, moreover, with great technological choice open, the most appropriate. In this sense Eames's furniture contributes more to design thinking than 'plug-in', being based on an attitude more appropriate to the present high level of technology. Like the design of space craft, it starts from a performance specification and not the random exploitation of the seemingly possible.

What Eames has shown is that it is possible to exploit the highest available levels of industrial production to whatever ends are considered correct within a given design context; that, in other words, the machine can be controlled, and that, through its use, a designed world can be created in which choice, the delight of visual wit and a high appropriateness between form and use are all possible.

▷458

[1] A. & P. Smithson in *The Heroic Period of Architecture* (*AD* 12/65)

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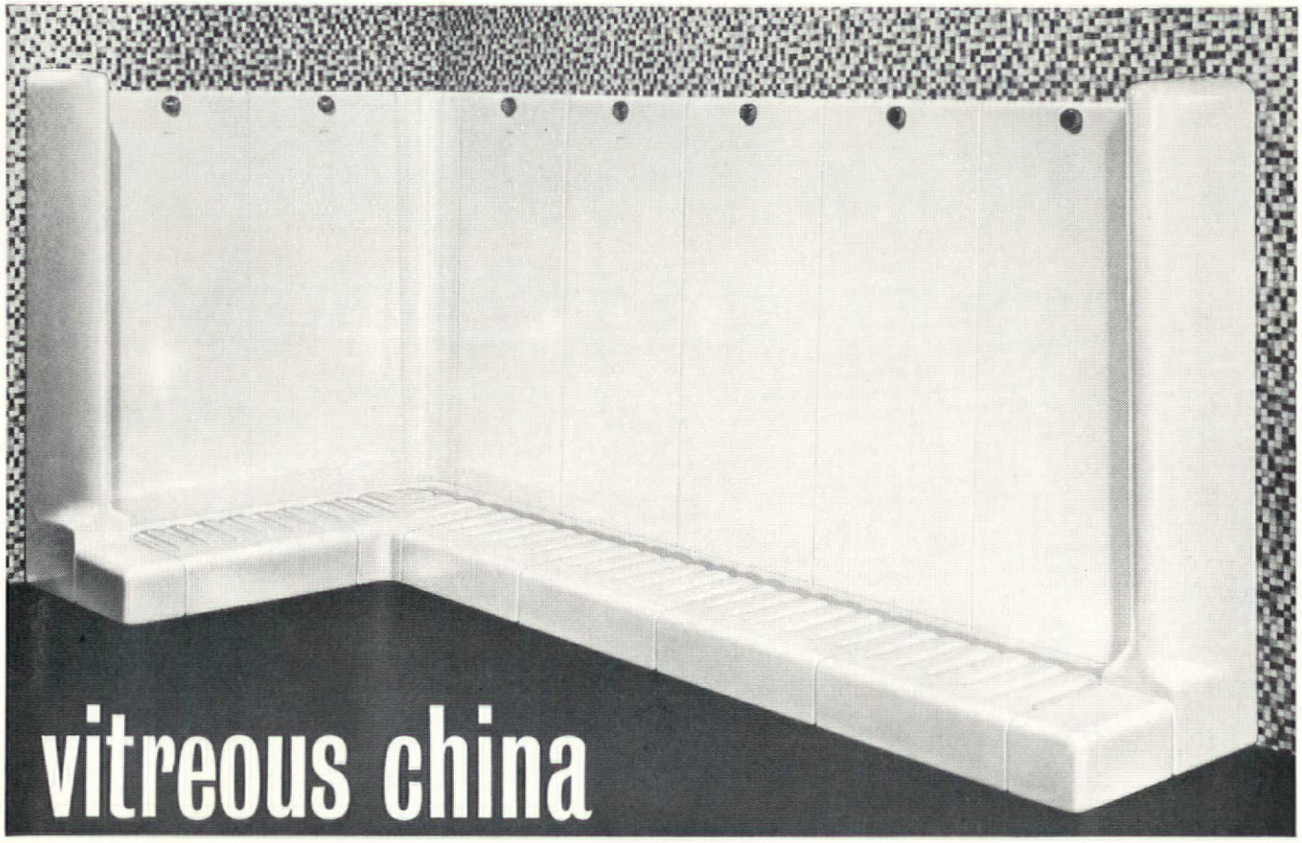
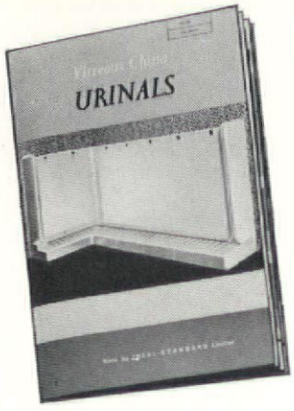
the "Vitural"



vitreous china slab urinal available with corners, risers and treads.



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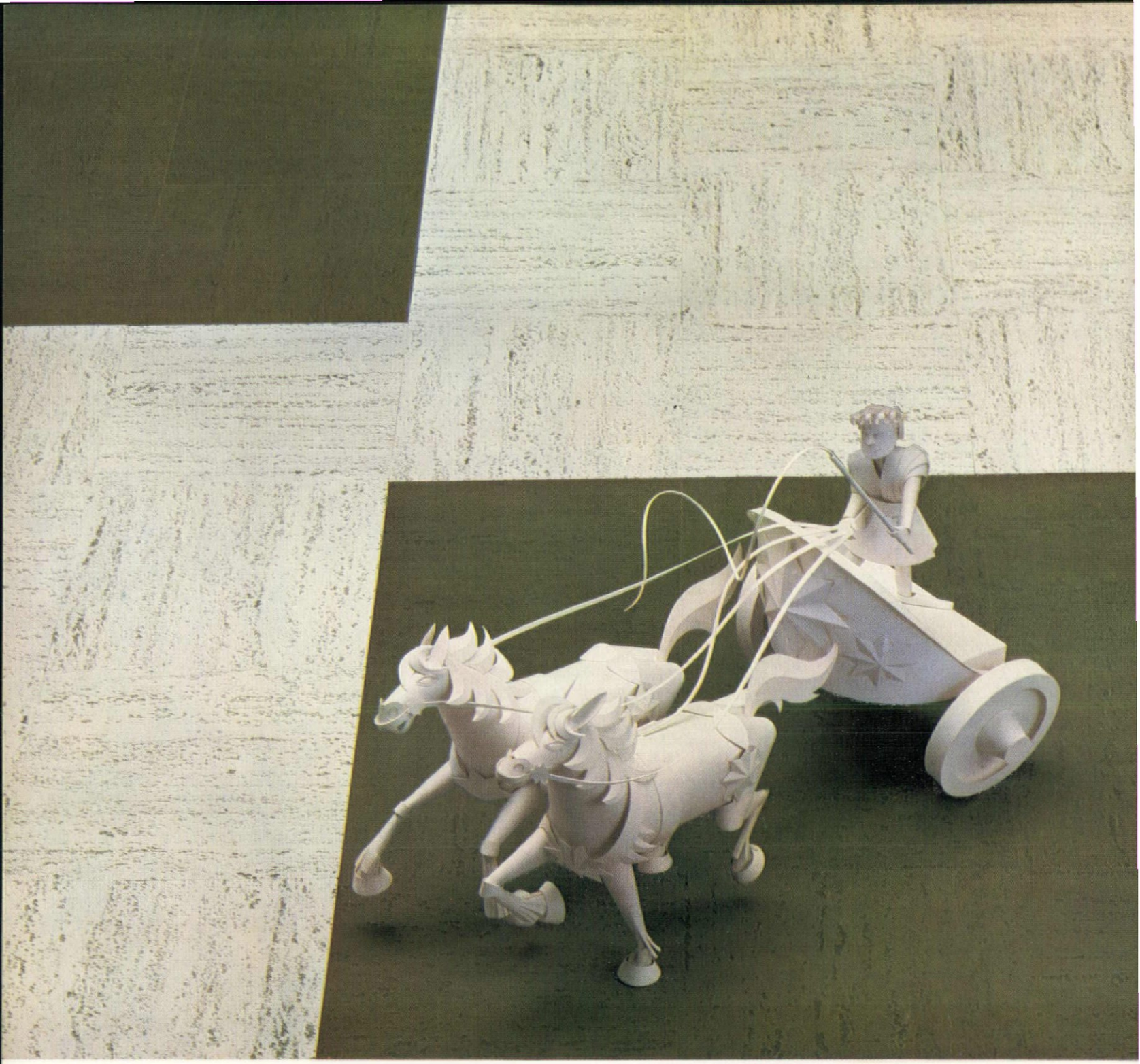

Paper sculpture by Bruce Angrave - Travertine vinyl asbestos tiles, by Marley

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Included in the Barbour Index File

Architecture creating relaxed intensity

Geoffrey Holroyd

Charles and Ray Eames have contributed a link between two important influences on the environment: architectural expression which incorporates technological commitment and technology itself. This occurs in two ways: one, the examination of a new way of relating decoration to structure, with a new reason for wanting to do this; and two, the realization of the importance of the 'unification of the audience'. According to this, the greatest technological impact on architecture comes not only through materials or the organization of techniques of construction, but most powerfully through the many new characteristics of the audience itself. In the act of working this out the Eames have found a way into problems which are European in origin and international in significance. Central to this is their core problem of participation: the difference between participation in art and art.

The everyday object

The Eames' combination of participation and decoration is new; their actual enquiry into this has been conducted in language which has often had the effect of forcing their own intuitive visual sense uncomfortably into its pattern. When it has done so it has produced misleading results and it is necessary to correct these. For instance, since 1952 the Eames workshop in California has continuously produced films about design; at least one film—sometimes three—has emerged each year since that date, and the list of titles is informative. The following quotation is from a booklet produced in 1953 to introduce a film presentation in Los Angeles on the Campus of the University of California, in which the making of bread is the subject, and to increase the sense of involvement smells are added to sounds and the images on the screen:

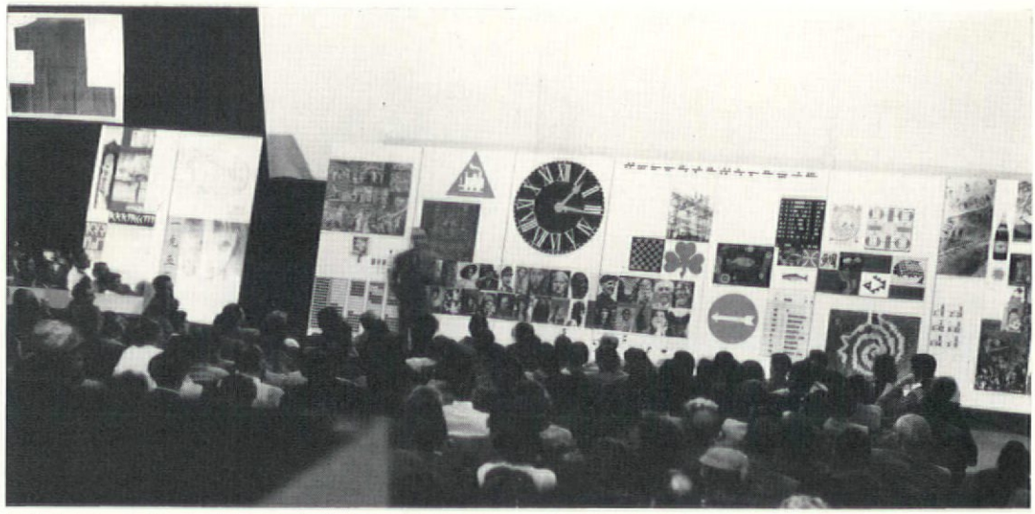
'. . . art is a chair, a test tube, a loaf of bread . . . art is a mathematician's formula, a philosopher's way of life, any man's dreams. . . .'

What does this mean? For one reason it should be treated warily; it is an explanation outside of and not within a particular form structure, and is not therefore under the limitation of a visual discipline. It is, in a way, like the attempt made by Le Corbusier to describe the Temps Nouveaux Pavilion in Paris, 1937, as a Museum of Popular Education and in 1958 his Phillips Pavilion for the Brussels Exhibition as 'vision by pictorial images'. This is similar to the interest of the Eames in using, as designers, film techniques and media of communication. The difference, however, is more than one of technique; it is in the different responsibility for the whole which Le Corbusier is prepared to take, the concern with making a complete statement. Describing the Brussels Pavilion, he writes:

'The possibilities are almost infinite. But how to make a choice? I thought: Museum of Mankind, Palace of Discovery, Museum of Natural History, Museum of Popular Traditions. Months, a year looking for the right thing.'

The building Le Corbusier designed is a formal statement in terms of thin concrete parabolic-hyperbolic slabs and on its inner surface the projected images are also included in this statement, unified with the concept. He concludes **12–15**:

'I knew that in this matter there was no one whom I could appoint in my place.'



1

1 First use of the multi-image technique 'A sample lesson for a hypothetical course'
This was exhibited in a classroom at the University of California in Los Angeles, 1953

Business Screen Magazine No 7, Vol. 23

Five hundred spectators were to witness a new art form at Brussels, but the 'new' was Le Corbusier's concept of architecture previously evolved in his form structures over a period of 40 years and now projected onto this new subject. In the words of Jean Petit, collaborating with Le Corbusier, 'a new vocabulary of sounds, images and colours combine in a magical and fulgurating space, kept correctly in time by rhythm and movement in a precise syntax'—the syntax of Corbusian form.

The Eames want to create a different kind of form; according to the language of their analysis they do not want to create form at all. Their explanation—on only one level, it should be remembered, which has behind it many American scientific and academic supporters—is given, for example, in a pamphlet dating from 1953 as 'lifelong learning'—or again, 'a normal progression, perhaps, toward breaking down the barriers between fields of learning . . . toward making people a little more intuitive'.

Growth as control

Much of the phase since 1950 of the Eames' work suggests John Dewey and his idea of the illumination of human purposes, the co-ordination of human life. Dewey believed in more science and less literature in education. Since we are all involved in world industrialization, occupations more than books should provide us with our tools. Fellowship in occupation is a better guide to democracy than the snobbish scholastic culture of books and the fine arts. Compare this, for example, with the Eames' 1962 Science Exhibit film script:

'Today, as in the past, a laboratory can be many things and many places . . . when animals or insects or birds or men live together in communities, then the society they form becomes a laboratory.'

And then with the following, written by Dewey:

'. . . the school should be a miniature workshop and a miniature community; it should teach through practice, and through trial and error, the arts and disciplines necessary for economic and social order.'

According to Dewey's view, things have their place and function in the environment and this explains them. The more fully life is lived the more continuous the illumination of its purpose This could account for the Eames conscious pursuit of 'involvement'; the films, the multi-image of simultaneously projected stills, and the multi-screen counterpart using simultaneous films, are instruments of involvement in this specific sense. Borrowing from many different disciplines is one of the Eames' addictions; having created their instrument, so to speak, they apply it with the logic of the psychiatrist. In 12 minutes at the Moscow Fair, 1959, the problem of giving credibility to the theme 'Glimpses of the USA' is handled by showing simultaneously 2200 still and moving pictures on seven screens **20, 21**. This seems to make quite sure that the response will be functional, in the depth psychology sense, rather than aesthetic; and there is a double edge to the statement in the accompanying text that viewers were not expected to grasp each shot.

The more predictable visual element of architectural history is used in a film introducing the US Science Exhibit, 1962, in Seattle, to illustrate the development of science; new innovations in the buildings are used in this film to explain new branches of science **3–6**. The aim: to 'delimit the viewer's notion of science'. But here, more than in Moscow, the Eames' visual talent gets out of the film and into the environment. The viewer is encircled by a 34ft high screen wall, concave and painted white, and seated in Eastern fashion on a carpeted floor giving the space the appearance of a mosque; like the many young students in the El Azhar Mosque **2** in Cairo, he is enclosed in an environment aloof from the outer world for the purpose of encouraging contemplation. The following is a description of El Azhar:

The El Azhar Mosque counts several thousand pupils and many professors. Four rites have representatives in the Mosque—two of them Egyptian, one Turkish and one Arab. The students are arranged by rooms and corridors and each section has its inspector, above whom is the great sheikh of El Azhar.

The whole of the area defined by columns is covered by red carpets of a standard size and there is no furniture. The courtyard structure is integrated with a structure of behaviour, and it is the role of complex ornament in intricate arabesques to invite the submergence of the individual will into that of the deity. This fundamental architectural situation is drawn into the explanation of science with the substitution of an assembly of six simultaneously projected moving images in two rows of three for the visual fascination of blue and white tiling. Is it contemplation; or is it functional learning?

▷464

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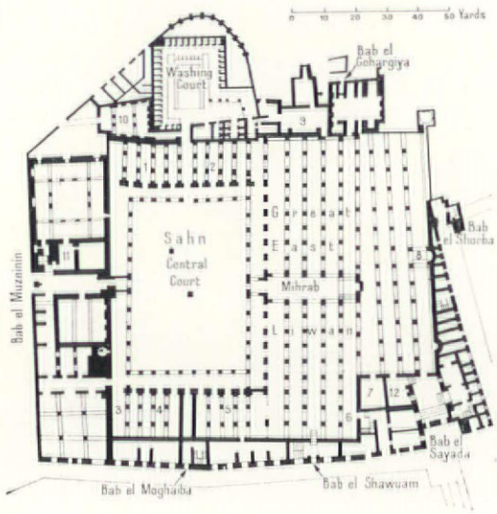

El Azhar Mosque, Cairo

2 This is the plan of a mosque-college. The mosque has no exterior proper, surrounded on three sides by houses and shops. The columnar space is divided—but without physical barriers—into 'rooms' each under the control of a teacher

Sahn: central open court with fountain.
Great East Liwan: columnar space completely covered with red carpet.
Mihrab: space richly decorated with mosaics
1–12: subdivisions of the Liwan for students and their teachers

US Science Exhibit, Seattle, 1962

3, 4, 5 Visual introduction. Viewers sitting on the carpeted floor of the House of Science
6 House of Science—Area 1 of the Federal Science Pavilion, Seattle. Includes film projections on a continous wall surface of acoustical plaster, giving picture brightness and colour comparable with conventional screens. (See also pages 441, 462)



3, 4, 5, 6

Philips Pavilion, Brussels, 1958, by Le Corbusier

12 Drawing by Le Corbusier. Geometrically curved planes designed as new structural elements providing minimum quantity of material; maximum covering
13 Vision by pictorial images
14 Exterior of the Pavilion
15 Electronic plays
Illustrations: 'Le poème electrique Le Corbusier'

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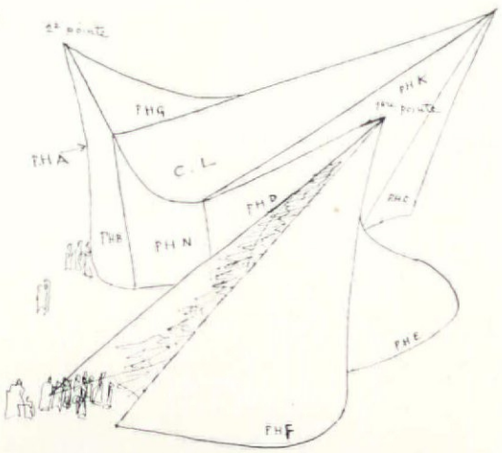

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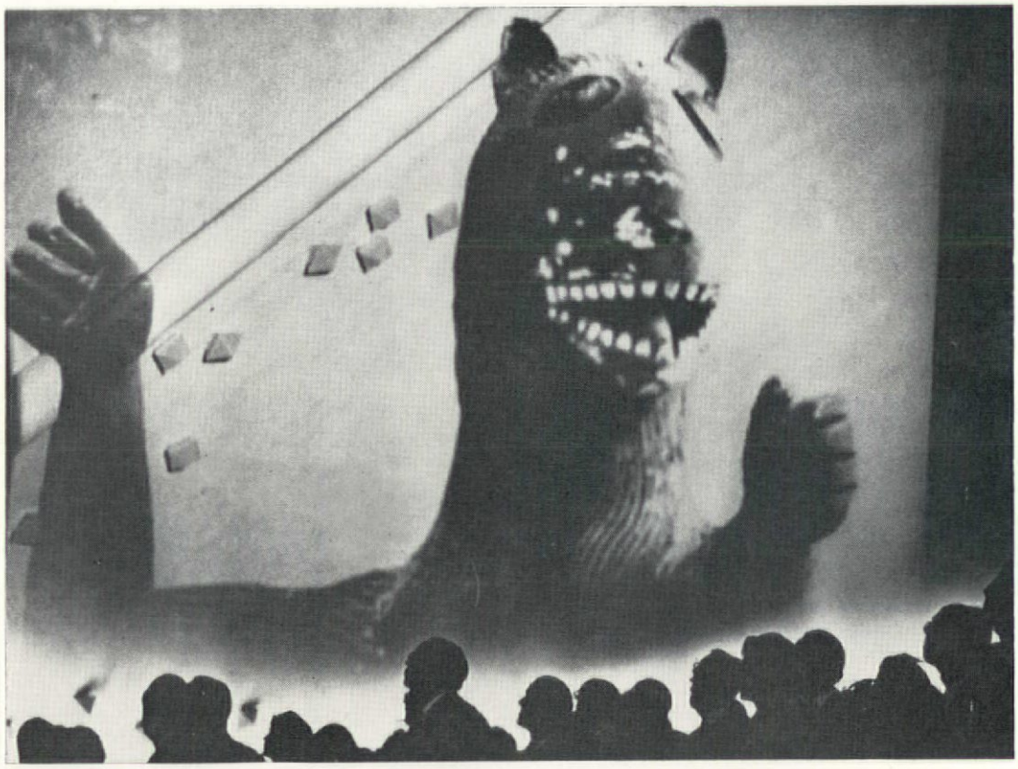

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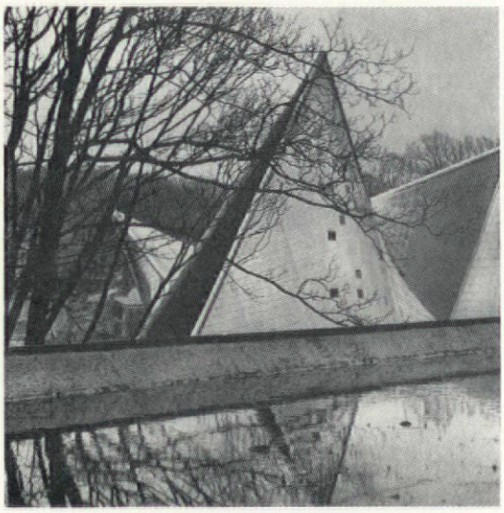

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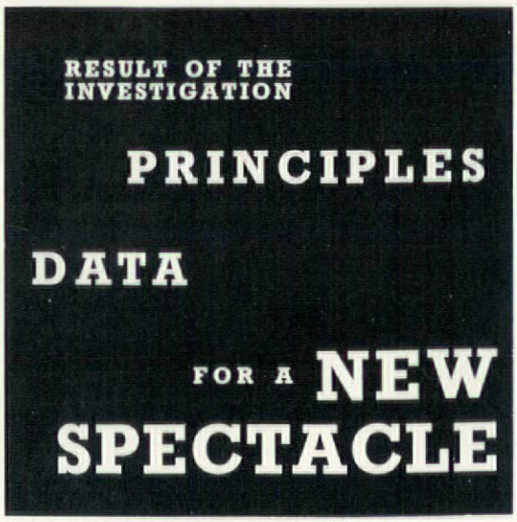
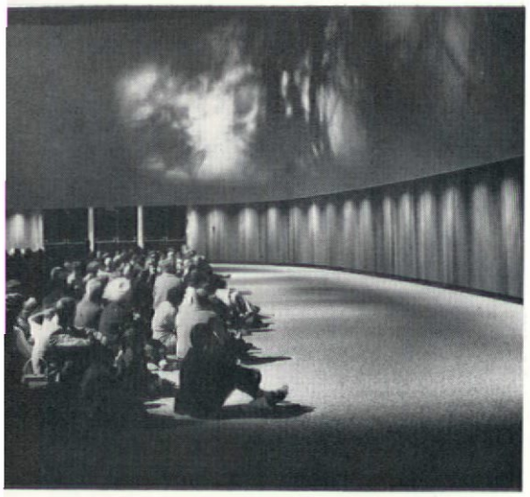
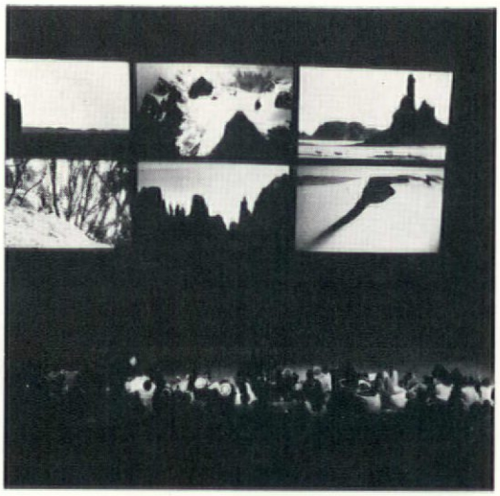
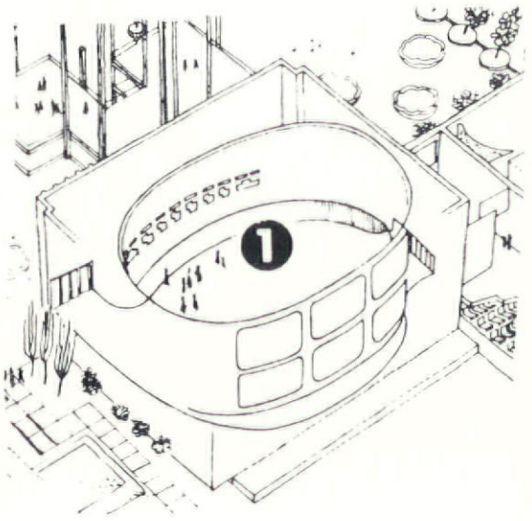


LIGHT
COLOUR
RHYTHM
IMAGE
SOUND

ONE MIGHT CALL IT ELECTRONIC PLAYS







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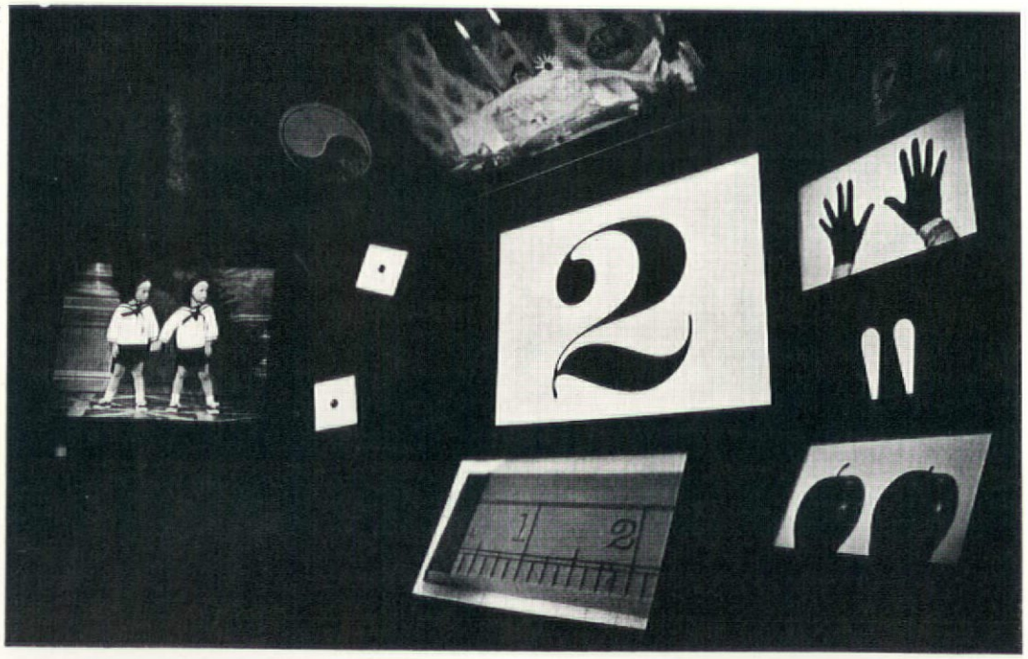

The IBM Ovoid Theatre at the New York World Fair 1965

7 Multi-screen large scale projections used in the Ovoid Theatre—the Information Machine. Title of the spectacle: 'Think'. (See also page 462)

8 The podium under the Ovoid Theatre contained electronically animated puppet shows, an antique computer display, a giant Probability Machine, the Typewriter Bar, the Scholars' Walk, an IBM computer, fountains, flowers, flags and clocks. (See page 441)

9 An audience of 500 persons, seated, was lifted up on a hydraulic lift into the centre of the avoid 'auditorium' and entirely surrounded by screens

10, 11 Enclosure by images on different scales was organized within a single volume

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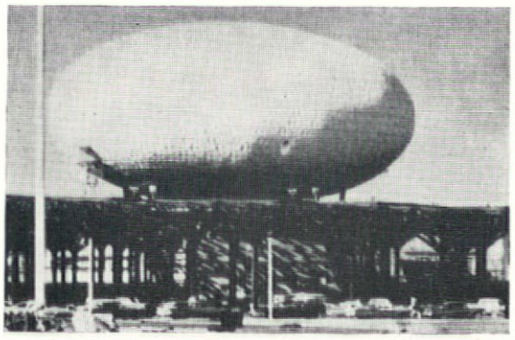

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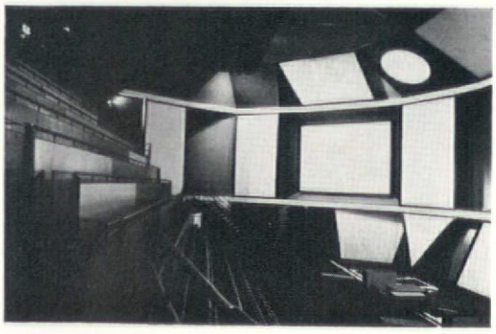

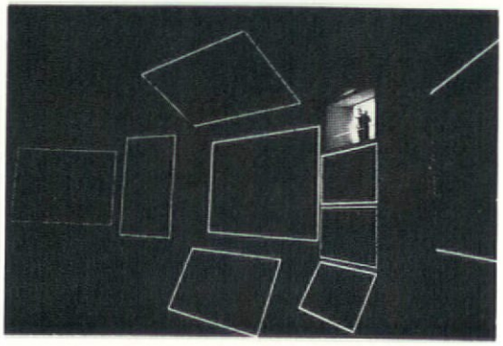

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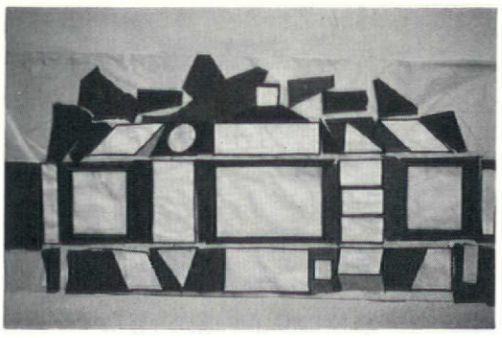


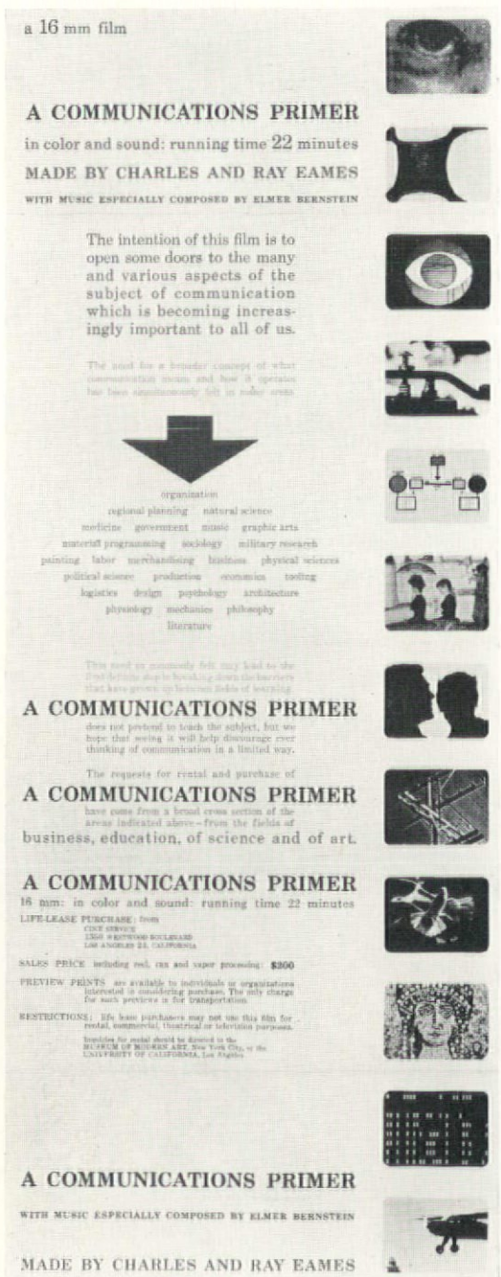
16



Pamphlets

16 Pamphlets announcing four films **17** Pamphlet advertising 'A Communications Primer', 1953. Groups of text in different colours: dark blue, pale blue, orange, pink, brown

17



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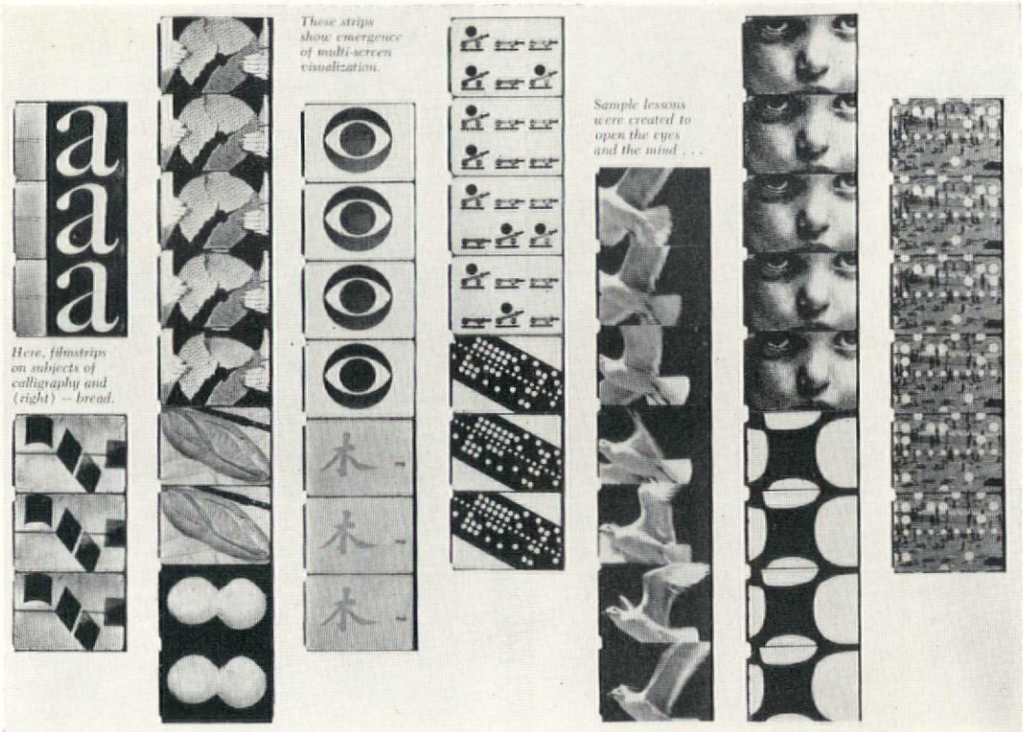

Multi-image involvement

18 The Eames' first work on this was done in collaboration with Alexander Girard and George Nelson. There are many processes which use a 'message'; the capacity of the receiver is the most potent factor in this situation. Instead of lecture seminars with single colour slides they used three in a row, continually changing all three, to involve the audience more intensely. (*Business Screen* No. 7, Vol. 23)

Lecture

19 Extract from the RIBA Annual Discourse, delivered by Charles Eames in London in 1959

One of the most penetrating of the changes is that change which makes our society almost completely dependent on current information, that is, information current, and as contrasted to information that is accumulated. In a traditional society, that is a traditionally orientated society, information is mainly accumulated, and almost any action within this pattern calls for a specific reaction. Today there are very few isolated pockets where this could be said to be true.

Ours is a world so threaded with high frequency, interdependence, that it acts as one great nervous system. It requires all the feed-back controls man has devised to keep from oscillating itself out of existence.

Examples of apparent information vary in complexity and degree. The telephone is a highly personal disorganized complexity. The controls that link aeroplane traffic and relate operations to weather, are only practicable to the degree that they are current and disorganized.

In the operation of a processing plant or controls for a rocket, information in the form of signals must come in micro-seconds in order to be current. In communication even with a computer the speed of light becomes too slow if the light is a bit too low. In problems of inventory and logistics, information can be slower but must remain current. A high percentage of the information possessed in our society would be meaningless if it were not current.

US Pavilion, Moscow Fair, 1959

20, 21 The display space is enclosed by one of Buckminster Fuller's geodesic domes
The idea was developed in Moscow, and later in New York, of driving through the audience's habitual responses by the sheer quantity and the rapidity of change of images, in order to 're-arrange' these responses. A wide-ranging cross-section of American life was presented in 12 minutes

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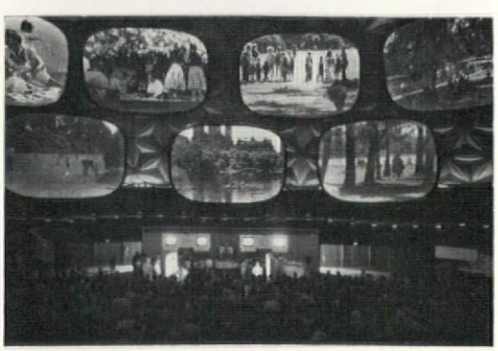

22 Extract from script of film introduction to the US Science Exhibit, Seattle, 1962

Science is essentially an artistic or philosophical enterprise—carried on for its own sake. In this—it is more akin to play than to work.
But it is quite a sophisticated play in which the scientist views nature as a system of interlocking puzzles.
He assumes that the puzzles have a solution, that they will be fair.
He holds to a faith in the underlying order of the universe.
His motivation is his fascination with the puzzle itself—his method a curious interplay between idea and experiment. His pleasures are those of any artist.
High on the list of prerequisites for being a scientist is a quality that defines the rich human being as much as it does the man of science—that is—his ability and his desire to reach out with his mind and his imagination to something outside himself.

23 Script of IBM film for the Ovoid Theatre, New York World Fair, 1965

Host: Ladies and gentlemen, welcome to the IBM information machine. And the information machine is just that—a machine designed to help me give you—a lot of information—in a very short time.
Host: It can help us look at things more closely than we normally do.
Host: It can pick out and given special emphasis to things we often take for granted.
Host: Or it can offer a broad perspective of morning in Manhattan.
Host: The machine brings you information in much the same way as your mind gets it. In fragments and glimpses—sometimes relating to the same idea or incident.
Host: Like making toast in the morning.
Host: Here is another example. Each screen shows one aspect of the notion—*road race!*
(Road race sequence)
Host: That's how the information machine works. Now *this* is how we would like to use it.
We'll show you some examples of problems that are very complex and some that are familiar to us all.
You'll see that the *method* used today in solving even the *most* complicated problems is essentially the same method we all use daily.
It is *this method of attack* that forms a link between our most sophisticated questions and our familiar ones. The recognition of this link can make us feel at home in this changing and complex world.



24



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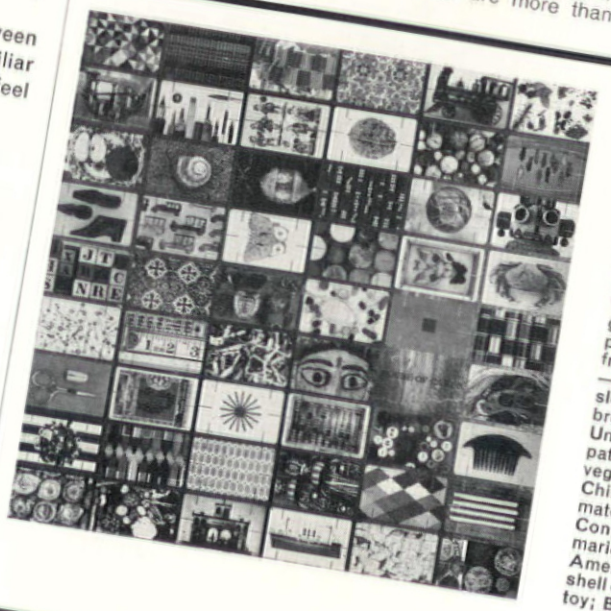
27



28

Typical items used in the presentation of the Herman Miller furniture range in Los Angeles
24–28 The effect is not one of an exhibition of folk-lore, or popular-genuine craft art. It is more connected with space—with the light, luminous, white, gold and pink effects of baroque art. The objects are more than playfully decorative; they function as the angels with trumpets, rampant horses and wildly draped curtains of baroque decoration function. That is, as intermediaries between actual and formal space, but released from the cartouches and lozenge panels into which such objects are historically frozen

Japanese kites on white walls—Seed packets in panels—Wooden whale with orange ostrich plume for water spout—Mexican tin and glass box with red stained egg in one compartment—Butterflies hanging or resting on plants and furniture—Mexican masks—Metal plant tray filled with sea pebbles and broken decorated pottery—Photo enlargement of a feather—Mexican glass box filled with coloured tissue paper balls and tied with gold string—Charred wood posts joined by eroded metal bolt—Glass jars of coloured sweets with ribbon around—Large mauve powder puff in a Japanese bowl.

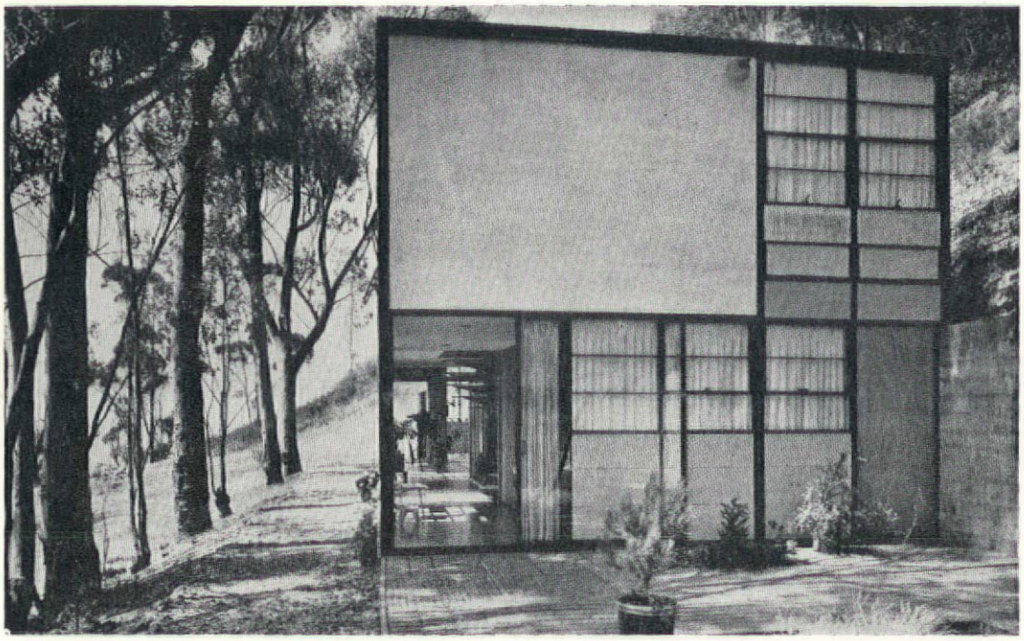


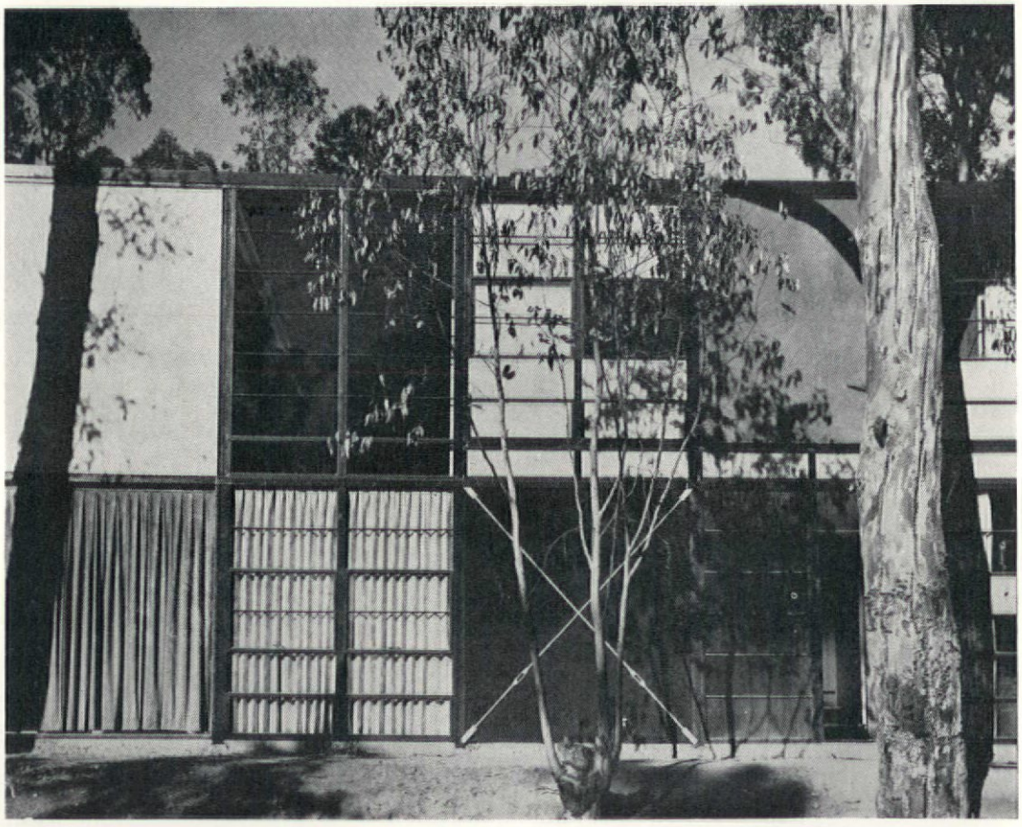
House of Cards
29 Descriptions of illustrations on the House of Cards Picture Deck. Interchangeable with these, there is a House of Cards Pattern Deck. (See pages 443, 448)

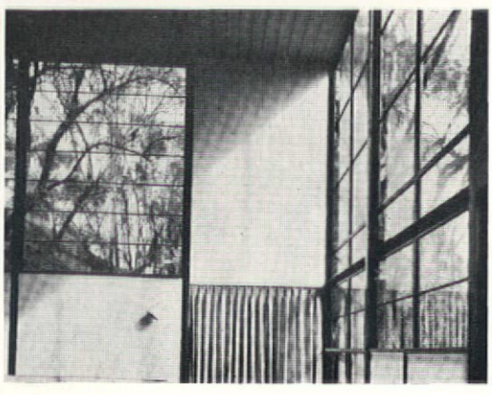
German porcelain marbles—Ends of chalk—Penny Japanese toy cars—Watch hands—Cookie in shape of a boar—Old Japanese paper dolls—Gold thimble, embroidery scissors—School pens, pencils, brush—Nosegay of flowers—French and English tape measures and rules—Mexican string—Peeling paint—Walnut—Chinese baby firecrackers—Wax Austrian angel—19th Century building blocks—Giant glass marble—Tassels of French bell pulls—Chinese pincushion—Victorian English pill boxes—Inlaid candies from Strasbourg—Toy Japanese fish game—Old cigar box—18th Century ribbon bow—Moths and butterflies—Czechoslovakian blown glass beads—Buttons—Portuguese embroidered trinket box—Metronome—Chinese abacus—United States coins—Christmas tree ornament—Chinese patchwork quilt—Little German wood doll—Garden vegetables—Medicine—Early American toy locomotive—Chinese dominoes—German toy boat—Red-tipped kitchen matches—Apple on Meissen dish—Wood comb, Belgian Congo (Bakuba tribe)—Wax crayons—East Indian marionette—Straight pins—Old lace—Lockets—Crab—American Indian Kachina doll—Herbs and spices—Snail shell on sand—Old American toy railroad station—Balancing toy; Buster Brown and Tige—Spools of thread.

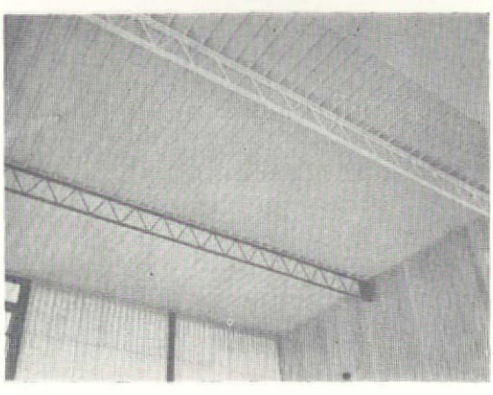


◁458









In 1946 John Entenza, editor of the West Coast magazine *Arts and Architecture*, forecasts this duality in a discussion of the Santa Monica House. He 'delimits' the viewer's notion of living; he disassociates the house from any fixed architectural pattern (note Le Corbusier's similar claim that the Villa Savoie should not resemble a familiar experience of a house); but he fails to suppress an explanation of why he finds the house beautiful—'the juxtaposition of carefully arranged planes, solid, opaque and translucent, and their relations not only in the breaking up of space but in the reflection of greater space and in the containing and the enclosing and the releasing of space'. But Dewey writes in a chapter on 'Organization of Energies' (*Art and Experience*):

'The art work is the name for an art product which has been effective. It is what the product does; its working. The aim is not a form but growth.'

One part of John Entenza's introductory piece conforms to this, the other does not. I believe there is another explanation than that of the philosophy of Dewey and one which approximates more closely to the dual aspects evident here. Involvement is being required in two highly dissimilar areas of experience. Spatial relationships, even when linked with function, are by their nature fixed elements of a defined situation. This means they do not comply with Dewey's ethical criterion of constantly moving forward to a position which is more effective than the previous one.

This is the kind of juncture at which the *nature* rather than the fact of technological commitment becomes involved; if we can accept the fact that the most significant component of the situation is the technology-implicated audience, a third course is immediately added to the two referred to above. That is, not responding to involvement by function alone, nor perceiving the relationships of involvement manifested through form structure. This third course is an in-between one; it is due to an in-between kind of activity, not exact in the formal sense, arising instinctively and automatically out of an enthusiasm for involvement—without the inside knowledge which either science or art demands. The technology-implicated society is acquisitive of facts, objects and cultural expressions, however minute or apparently trivial. This category of behaviour is recognized by the Eames. It is incorporated in the Santa Monica House in an ideal version of the way it is applicable generally in the environment. Not precisely covered by the term popular culture, it is also far from defined as folk culture, although it includes this of all periods and nationalities and, significantly, the baroque. There is a parallel with everyday art, the daily art of the Bauhaus, called by Walter Gropius the 'common citizenship of all forms of creative work'. This is a conception which reaches back to the Deutsche Werkbund and the socialism of William Morris. ▷466

Santa Monica House, 1949

30 Two-storey part of living room showing balcony and bedrooms which can be closed off with sliding panels **31** End view of living unit. Panels of plywood, stucco, and asbestos partially conceal the 7ft 0in. grid **32** White, blue and black stucco panels. The two over the door are gold leafed **33** The truss is omitted from this external wall **34** Exposed metal decking and open webbed joists forming the ceiling.

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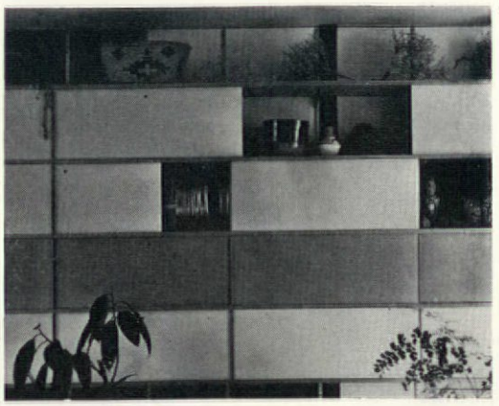

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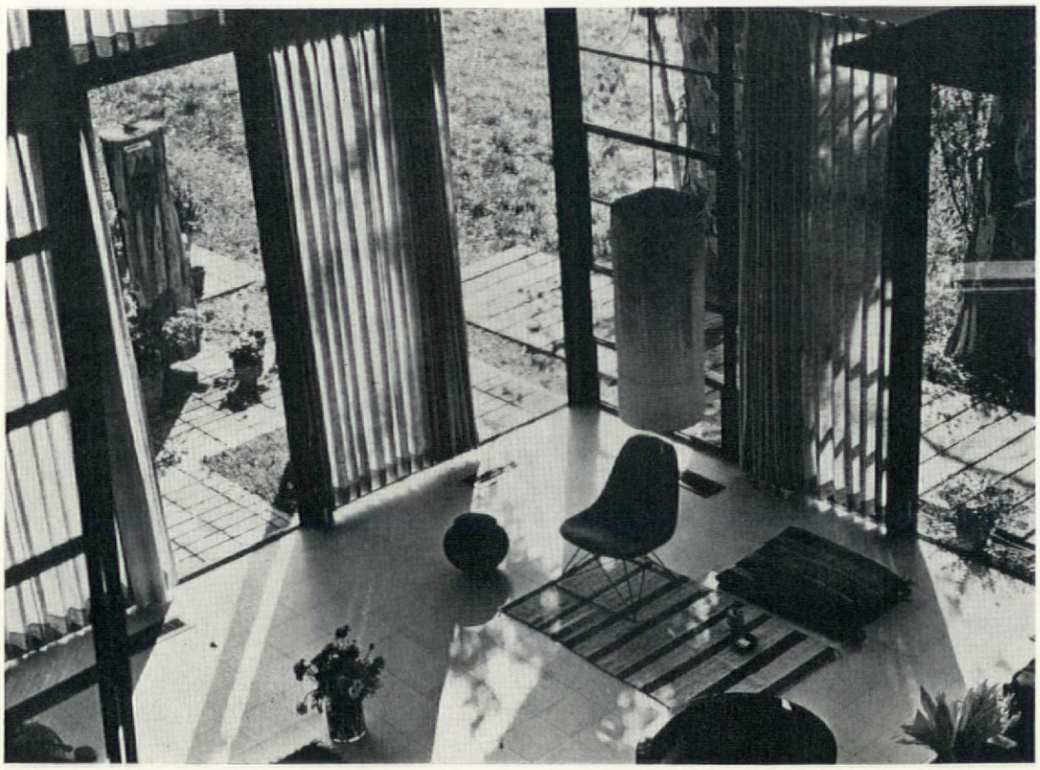

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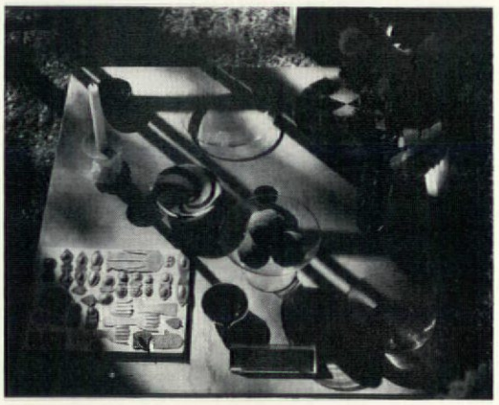
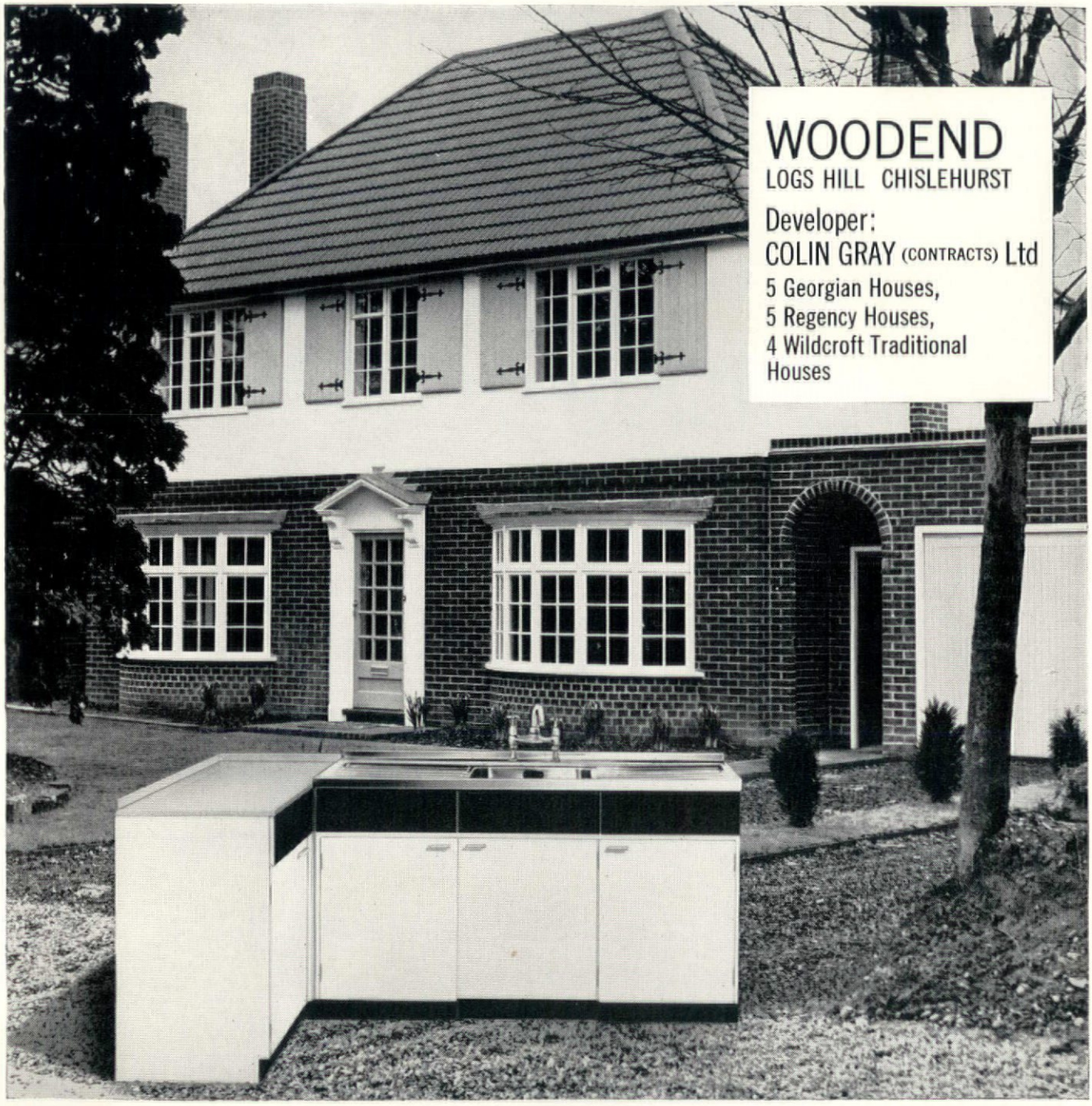


Santa Monica House

35–40 Eames' house brings to the variability and change of its contents—its pattern of growth—the fixture of an imposed order. There is a double reality. One is the continuous dark grey web, inside and outside, of the steel frame, its panels, and its roof. This is the primary form. The other is the sense of secondary form, accepting activity for practical ends—storage systems, or the experience of visual spectacle. To the primary form is added a courtyard, a paved platform or a floating, horizontal decorated plane—conceived spatially but dependent on the more powerful primary form. Elimination of ritual is not necessary; activity does not conflict with form.

In the past, temples and cathedrals have possessed this organization, where a strong stone or timber system has supported the roof, and within this, secondary structures for shrines or tombs combine with furniture and equipment to create another system

▷466



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◁464

Stopping fragmentation

But the difference of the audience in the 50s and the 60s entirely changes everything: from the hypothetical assumption of 'Man' or 'modern man' has developed the newly conscious middle-class amalgam whose image is reflected in magazines, advertising and TV programmes. In part this has been created by new factors, such as increased purchasing power and new inventions which have exploited this by assaulting with new effectiveness its eyes and its ears. One of the first effects has been an explosive fragmentation—the splitting of the audience into many different sub-groups. Styling of products and interior decorating have thus received tremendous importance, released from all restraint—each variety appealing to (if not actually creating) a different branch of audience. Initially the burst of activity has been beneficial, each group discovering a means of identifying itself in some degree, of finding, at whatever level, a means of expression. But actually this compartmentalization is injurious; injurious especially to the course of architecture. To reverse this fragmentation is a necessary step in the direction of architecture. The effect of unifying the audience, as an aim, would be to make no distinction between art objects and ordinary objects except through the difference of the contexts within which they function. It is therefore open to the architect—in a way which the folk art/fine art division never permitted—to work with each level in the same way, making form structures which are equally relevant to both. And this is what the Eames have done; the gaiety and decorativeness of their furniture, toys, games and films, being pure without being inaccessible to all but the initiates of form. They achieved this most clearly for a period between about 1946 and 1953, after which their involvement with a fragmented audience again has led away from the concept of architecture.

Place as control

What does this directly contribute to an architecture? Is there more than an attitude; a humane idea of man living in equilibrium with technology, his sensibilities not dulled but sharpened in the process? The question asked by the Eames, and which requires to be answered by the thinking out of architecture, is: What is the relation of decoration to structure?

Louis Sullivan's 'basic law governing growth' which relates the shape of a thing to 'its innermost nature and to its way of adapting itself to its environment' is very far from the answer they have given. Not one idea but two, in disagreement with each other, seems to me to be an underlying current in their work; an innermost nature not of harmony but of discord. The first chair is like a centaur—not the body of a man combined with a horse, but the spinal organization of vertebrates combined with water-lily pads.

The idea of structured forms in works of architecture is combined with an idea of the validity of knowledge, its origin and its processes In the latter case there is no special orientation to a formal culture of 'place'. In the two alternative contexts of architectural and non-architectural 'structures' the question of decoration looks different. Within architecture, the need to separate true from false exerts great pressure and restraint on decoration. Louis Kahn says: 'I feel that the beginning of ornament comes with the joint. The way things are made, the way they are put together, is the place where ornament begins.' Thus the Ionic capital decorates the junction between the post and the lintol, making the support more expressive, and a similar principle applies to the emphasis of the structural parts which is the role of decoration in a classical sense. But in the case of a non-architectural context, decoration is connected with the working of magic; its power is enlisted in the construction of totems—in the ecological aspects of habitat. It makes an intervention on the level of action. Decoration is functional, like the ventilation grilles of old lamps, or the reinforcing of barrels, or the spokes of spinning wheels: a hierarchy of shapes, structures, tools and charts. The formation of an applied technology in which visual order is one part among many other parts is the natural result of these forces linked in a working cycle. Biology is a constant source of example.

The fact that the Eames have not eliminated one or the other completely is a factor in their aesthetic; both approaches are retained equally in spite of the impracticality of trying to unify them in the Sullivan sense. An impossible idea, it may be said. It is not surprising that after 20 years it has not invoked a following and contributed an architectural centre.

Nevertheless this is there, as surely as the seat of power, the germ, which Sullivan believed in, and which had sufficient supply of nourishment to support the initial stage of its development. Examine the argument together with the clearest examples available. In broad outline form-structure and growth-structure have been allocated different spheres by the Eames; in the Santa Monica House **30–40** the spanning regular structure is in *the Sphere of the culture of 'place'*, the architecture culture—most connected with European form precedent. If we examine the plan of the house **41** it is certainly as skeletal as an aircraft fuselage, but it is not 'matter of fact' as Eames claims. The most important thing is to see that it is formally dependent on the structural volumes of Mies van der Rohe. It is a natural extension of these in the tradition of the classicizing influences which Mies himself concentrated. Unlike the modification of his discipline which Philip Johnson made in his Glass House, shaping the skeleton frame in a historically more 'post and lintol' direction than the Farnsworth House, Eames takes it in a different direction entirely.

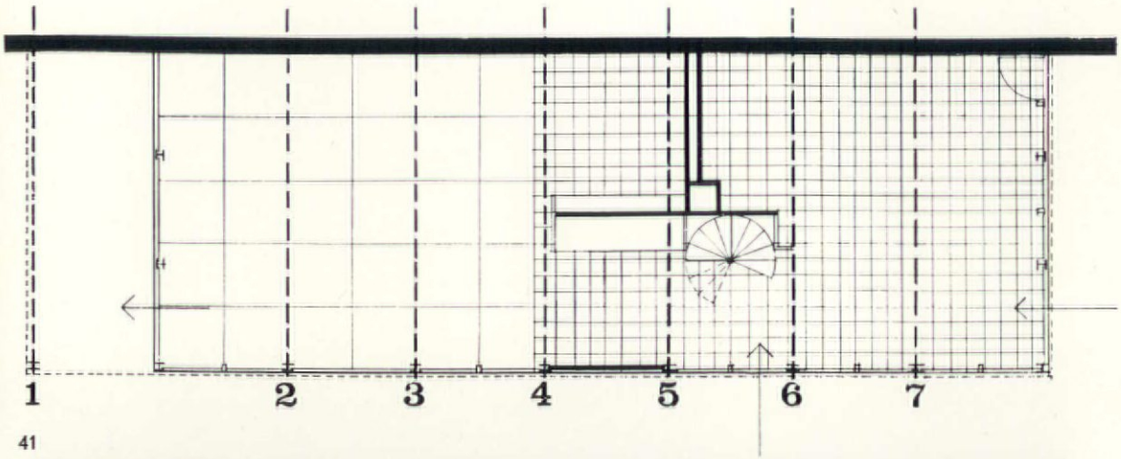
To show this most clearly it is necessary to study the visual treatment by Mies of the structural roof slab as revealed in the projected buildings for Illinois Institute of Technology (made soon after his arrival in America) and to observe how this developed in the completed works. In these rectangular buildings the bay system in steelwork results in a regular deep I-beam in the spanning direction and, if this is to be expressed externally, it leads to a black band crowning the short sides of each block. This does not have to continue along the other two sides; visually, however, by doing so the effect of a covering slab is obtained. This is the treatment Mies adopted for the first unit, the Minerals and Metals Research Building in 1943 **49**. It was repeated in 1945 in the Alumni Memorial Hall and in the Chemistry Building in 1946. As the size of the unit increases, this visual effect becomes less justified as the greater span steps up the depth of I-beam structurally necessary. In the famous project for the Library and Administration Building in 1944, the great size of this unit causes the spanning beams to be several feet in depth and this is not carried round the other two sides **45, 51**. No covering slab effect is therefore possible. The profound seriousness of this issue for Mies—as to what should be his attitude to an entablature—is evident from his next buildings. The Farnsworth House embodies a pure floating slab, but it is followed by a model of a drive-in restaurant in which there is a radical solution to the difficulty. Deep trusses are exposed above the roof slab entirely, allowing the roof plate to continue independently below at equal depth all round. Crown Hall **50**, completed in 1956, is a masterly affirmation of this, a floating slab over a large rectangular building, with a minimum of externally exposed spanning trusses. The project for a Convention Hall **52** in Chicago is the most extreme resolution of the conflicting corners of the Library building 10 years earlier, subjecting both inner and outer space to the discipline of four equal elevations.

Reconciling growth and place

In the Santa Monica House this progression has been perceptively observed, but both the ideal of the monument and of neo-classicism—expressed by the heavy entablature with columnar support—are skilfully evaded.

Through the use of very light steel sections only 4in by 4in bolted to 12in deep open truss joists and topped by a paper thin metal trough decking—hardly thicker than the insulation board above it—Eames expresses paper thinness only **44**. The two critical trusses across the short external walls, which lead Mies into the monumental Greek entablature in the form of a heavy floating plane, tending to restrain the space beneath, are omitted. Some additional stiffening to counteract this is provided by carefully placed cross bracing wires. The panel system of windows can then extend to the very edge of the thin roof flashing, giving a delicacy and fragility which no Miesian building has. The effect spatially tends to be liberating; the articulated structure and clear glass envelope of a Mies volume are divorced from a hovering pressure which in Mies' form is the generator. There is another purpose behind this: the release of the interior pressure means that the house is more calm as an object, and will permit the introduction of more variables, more potential in *the sphere of growth*. The house is filled with a huge collection of toys—objects of indigenous Santa Fé folk culture, tumbleweed, driftwood, desert finds of great variety—placed everywhere **35–40**. A tenth of this accumulation in the Farnsworth House would ruin it. Mies wants all glass and no clutter; Eames wants clutter, 'functioning decoration'. To form an intermediary between this and the spatial volume of the house, Mies' crystalline transparency is blasted away intensely and viciously, and clear glass replaced by a series of decorative variations on the idea of translucency. The effect is to destroy an articulated glass volume and to create out of it a context sympathetic to the many objects placed inside; the translucent panels are, however, related by a system geometrically linked to the Miesian discipline which is nearly blotted out—opaque panels painted in white and gold leaf and black; semi-opaque transite looking like Japanese shoji and covered with patterns of eucalyptus leaf shadows like intricate calligraphy; wired glass in the workshop 'to make the glass visible'. The irony is that decoration is pressed into the service of

▷469



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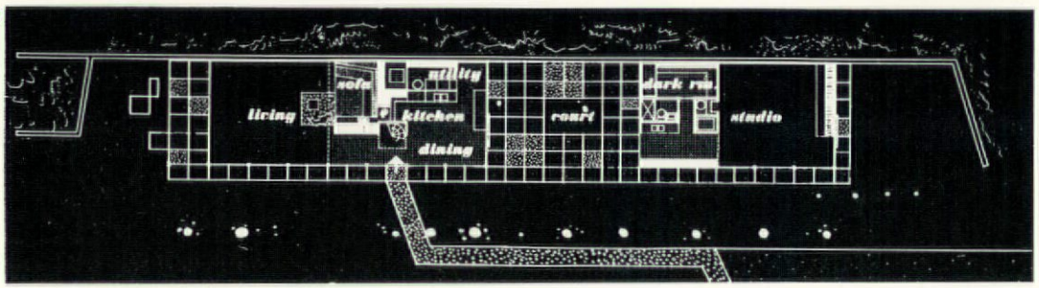

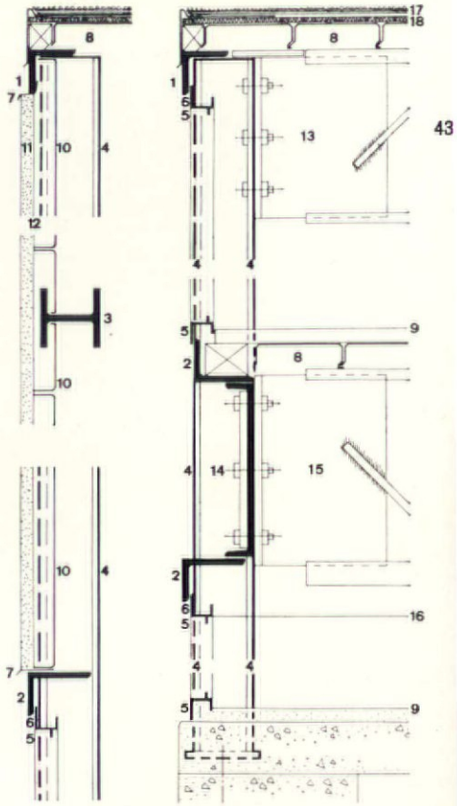

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1 3in × 3in angle
2 4in × 3in angle
3 4in × 4in column (plan)
4 face of column (section)
5 sash
6 $\frac{3}{16}$in clearance for sash
7 metal flashing
8 steel decking
9 F.F.L.
10 $1\frac{1}{2}$in steel siding
11 plaster
12 waterproof paper
13 12in joist
14 12in channel
15 14in joist
16 finished ceiling line
17 gravel surface composition roofing
18 $\frac{1}{2}$in insulation board

Santa Monica House

41 Plan of the living unit. Structural grid shown dotted to indicate that at the two intersections between wall and roof membranes the trusses, otherwise regularly spaced, have been omitted

42 Key plan

43 Detail drawing showing plan (left) and sections of wall columns

44 Night view; Santa Monica House

Illinois Institute of Technology

45 Corner detail; Library and Administration Building

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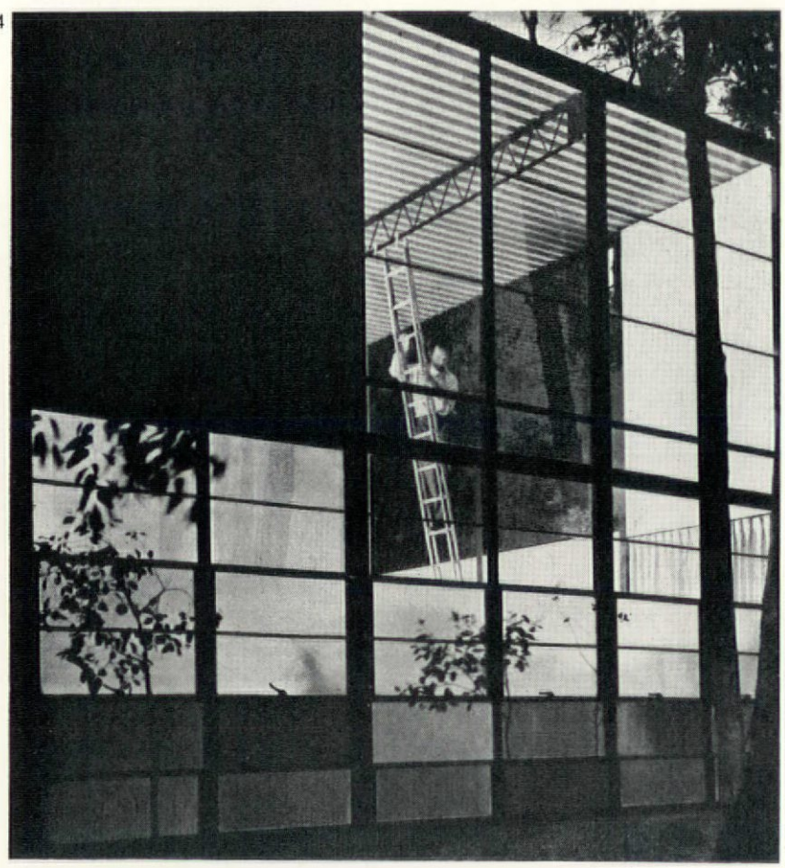

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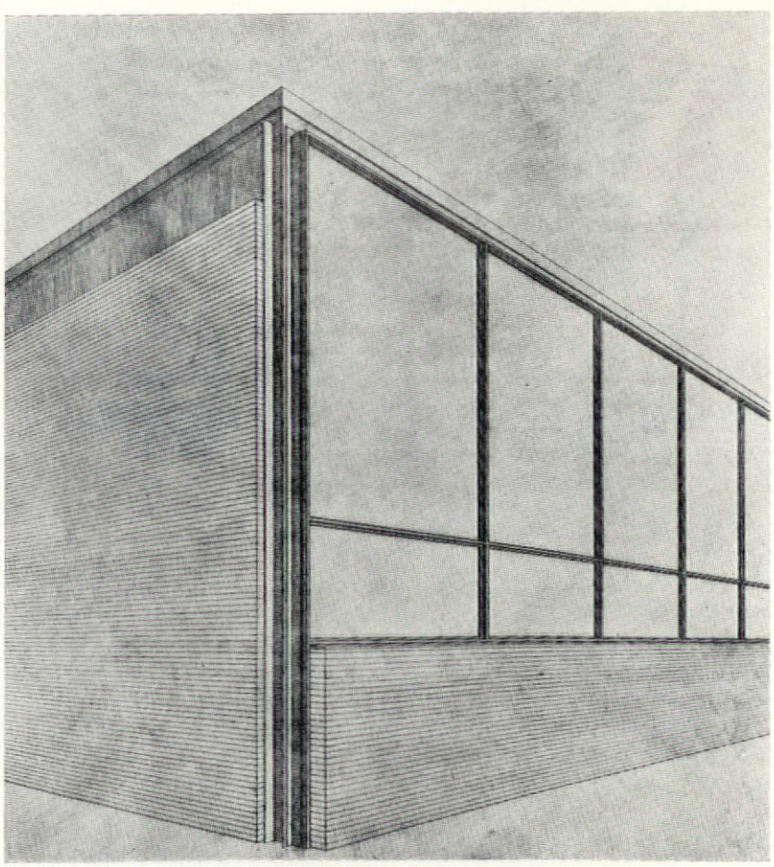

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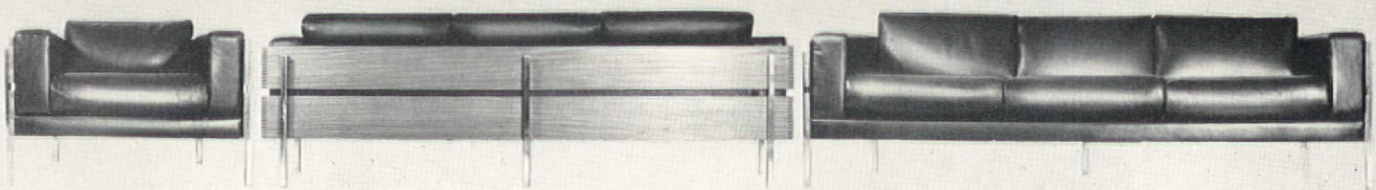

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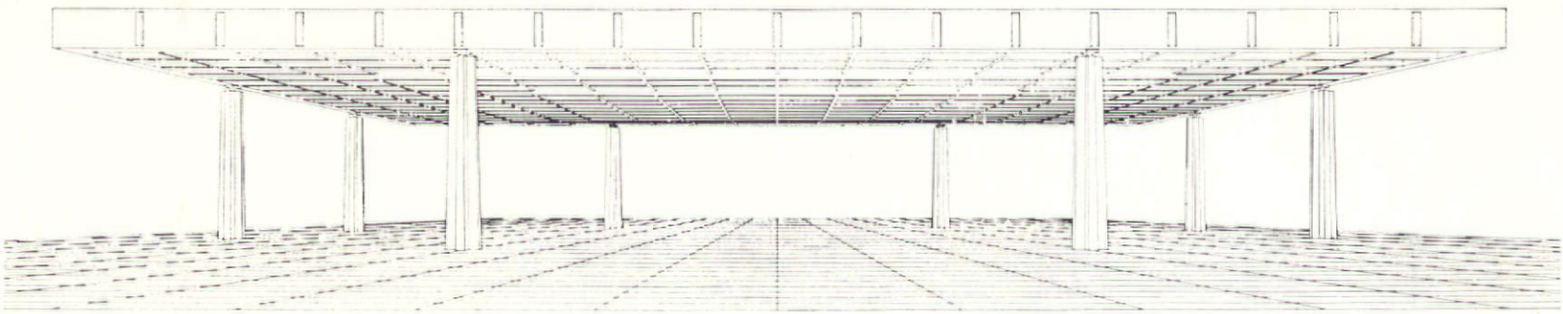

46 The Acropolis, Athens

Mies van der Rohe buildings

47 Bacardi Building in Santiago, Cuba, 1957. Project, with roof structure and supports in concrete. Concentration on the monumental entablature; the theme which recurs in the Georg Schafer Museum Project for Schweinfurt, 1960, and again in the Gallery of the Twentieth Century, Berlin, 1962–65, but in welded steel

48 IIT Library and Administration Building, 1944

49 Mies van der Rohe. IIT Metallurgy and Chemical Engineering Building, 1946

50 IIT Crown Hall Project, 1952. Extension of exposed truss treatment

51 Mies van der Rohe. Drive-in restaurant project, Indianapolis, 1946. First solution of the corner problem exposed in the Library and Administration Building

52 Convention Hall Project, Chicago, 1953

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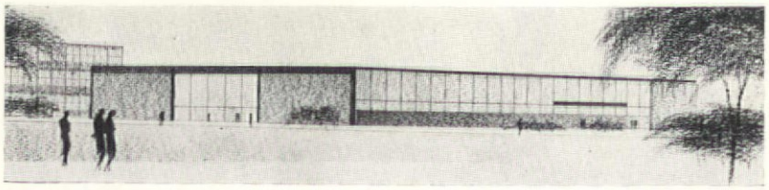

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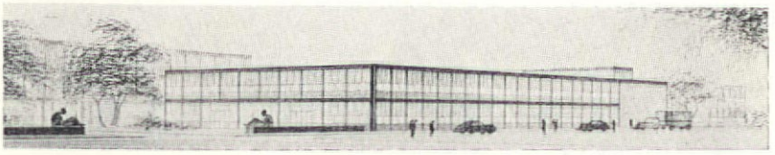

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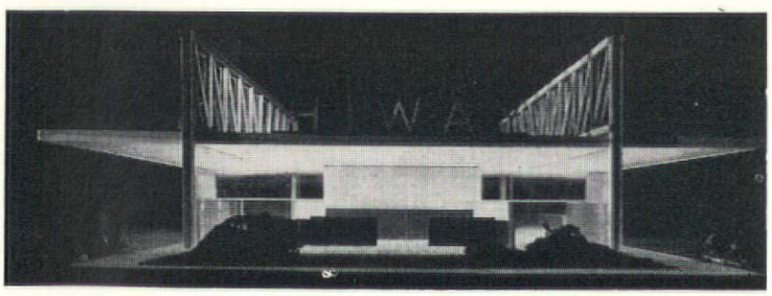

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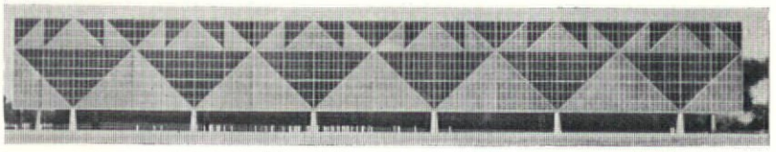

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mathematicians' formulas and test tubes, but kept away from the most significant formal factor, the dark grey linear web which is preserved like a plain Doric order. The Eames House is a fascinating mixture. I believe it has been so far wrongly interpreted, perhaps not least by Eames himself. In order to attach to it a unified conception it has been called a kite and a gigantic toy, but it could be more influentially defined as the success of two systems aesthetically opposed but acting together.

The loss of Miesian order ended Eames' interesting participation in architecture, except for a fragment: the Herman Miller Furniture Company Showroom in Los Angeles **56, 57**. The glazing panel texture from the house is used again, extending again to the thin roof line in front of a cased-in steel frame, but not arising now from the truss discipline. The significant organization of the interior **53** comes from a miniaturization of the Barcelona Pavilion **55**, the columns reduced to slender sticks or merely fixing points for sticks on a 7ft 0in square grid, and the screens almost touching the floor but some distance from the ceiling.

The formal idea behind the use of screens in the Barcelona Pavilion and Mies' consecutive court-house projects, with their interior columnar bay rhythm, is the underlying order of the scheme, but it is destroyed again by actually connecting the screens to the supports and attaching things to them—forcing them into use, not merely directing space. As in the house, the first effect is to reduce the spatial pressure, producing an enclosure which is both visually tense and at the same time calm; accepting the functioning magic totems which are placed within—from pocket-size computers to Katchina dolls, coloured seed packets **24–28**, or that miniaturized encyclopaedia of everyday objects, the Eames House of Cards **29**. A regular system underlies an irregular system; that is one aspect. Another is the way many closely-spaced posts seen above wall-like screens are virtually uncountable; and therefore a number of arrangements of the plan produce the same visual effect. This is one of the origins of the notion of aesthetic flexibility. The 'meccano' type of post-and-panel scheme as a principle, used by the Eames themselves in the Nehru Exhibition and by many imitators, misses the point; by a serious misjudgment the rhythm of the regular panel units is too far away from Mies' original in these schemes—too much mechanistically unified in the service of growth and change, and too little spatially perceived to serve 'place'. They repeat the kite or toy interpretation of the Santa Monica House all over again.

In these points the Eames' design framework misses its connection with the deep issues it has previously revealed. Positive development has almost been lost; it is time to clear away the confusions which are obscuring this.

For a brief period a light glowed; now there is a mass of work to be done, not, I think, of the kind the Eames suggest in 'A Communications Primer', 'The Information Machine', 'Introduction to Feedback', 'Think . . . although these give a vital part of the picture; the work now is the kind both Mies and Corbusier would understand. The originality of the Eames is related to environment in an unusual degree. The most explicit analogy is a historical one, with the Japanese art of Kabuki. The origin of this was in the staid and traditional Shinto religious dances:

One of the holy girl dancers who performed these in the sacred shrine left the priests and the temple for the streets and bazaars of Kyoto ringing a bell and dancing before the merchants, fishermen and craftsmen of the town. Other dancers followed, and the dancing games they improvised were called Kabuki —meaning 'I am losing my balance, I make follies'. These had great success; they were established as tours; then had theatres built for them and the acting began to acquire rules.

Ritual in architecture

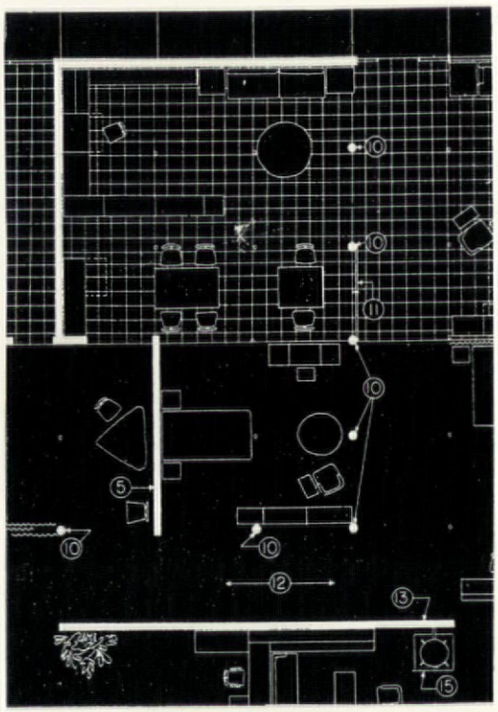
In conclusion, their experimental attitude seems to be part of the Eames' approach which is influenced by Dewey—the detailed analyses and specific enquiries instead of assertions. But not the innate sense of space; the fixing of space by the arrangement of objects. The Eames have offered, with their functional-decorative comments on objects—real and in the form of colour photographs—a range of experiences recognizable to a large audience. This range is linked on a formal level to the form structure of their designs as original creative artists, and it is this which is the great achievement of the Eames.

Intimate everyday meanings are given a structure. This is an equivalent to the historical idea of ritual*; a social ritual in which behaviour is integrated with visual elements from the baking of bread to the decorating of Christmas trees. Ritual is a means through which patterns of behaviour can be integrated with patterns of form; it achieves this through the building up of a meaning structure. In the early period of modern architecture this kind of structure, significant to the society of the 20s, did not exist and for Le Corbusier and Walter Gropius there was nothing they could do but invent one, quickly and totally, as a working hypothesis. It was designed to fit the form structure of the new architecture, but without the indispensable experience of sociology. Sociology is now an essential tool, but it does not contain the visual formal ingredient which has historically characterized ritual—and which is connected with the significance of objects seen not as they are effective but as themselves.

The building of ritual is a two-way process, not *only* under the control of the designer, but it is subject to an essential rule. The rule is the inevitability of the division of the participants by their own choice into two parts. One group becomes the initiates, training themselves to become capable of responding to all aspects of form on an aesthetic level, like the guests at a Japanese Tea Ceremony. The other, larger group cannot fundamentally understand form structures but can take part in a ritual on a participant level. This participant ritual is the key to new meaning structures; perhaps it has always been in the past also. The fountains, reflections, lights, trees and silhouettes (not to mention the aperitif and the café noir)—all the aspects of the piazza—are parts of meaning structure and not form structure. Experiencing them is a contribution to participant ritual which is a means of connecting behaviour to urban space. No part of participant ritual can actually be that space; it must have been created by form elements not dependent on this—but not opposed to it either.

The work of the Eames shows that meaning structures differ in every possible way from form structures, but the task of architecture and of art is to reconcile them.

*For detailed analysis see *New ritual in architecture* by Geoffrey Holroyd in *Le Carré Bleu* (Paris) 1/66



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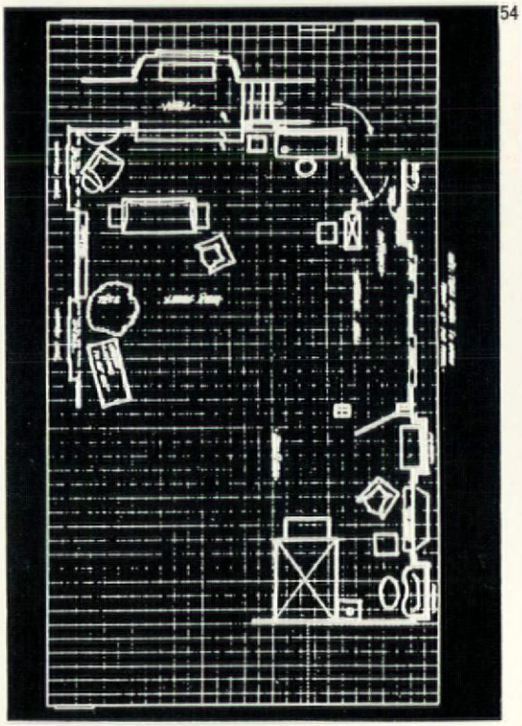

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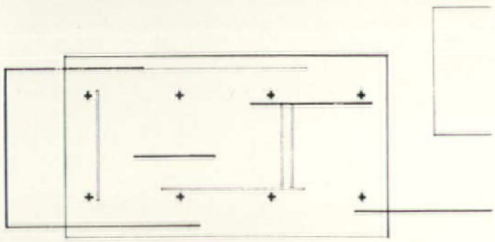

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53 Detail of carpeted central area of Herman Miller Showroom

54 Television staging plan, worked out in the NBC studios, based on interlocking panels and connecting parts which can be assembled to produce an unlimited number of different stage settings on the grid lines of grooves in the stage floor

55 Use of screens and posts in a context independent of a pattern of use. Barcelona Pavilion, Mies van der Rohe, 1929

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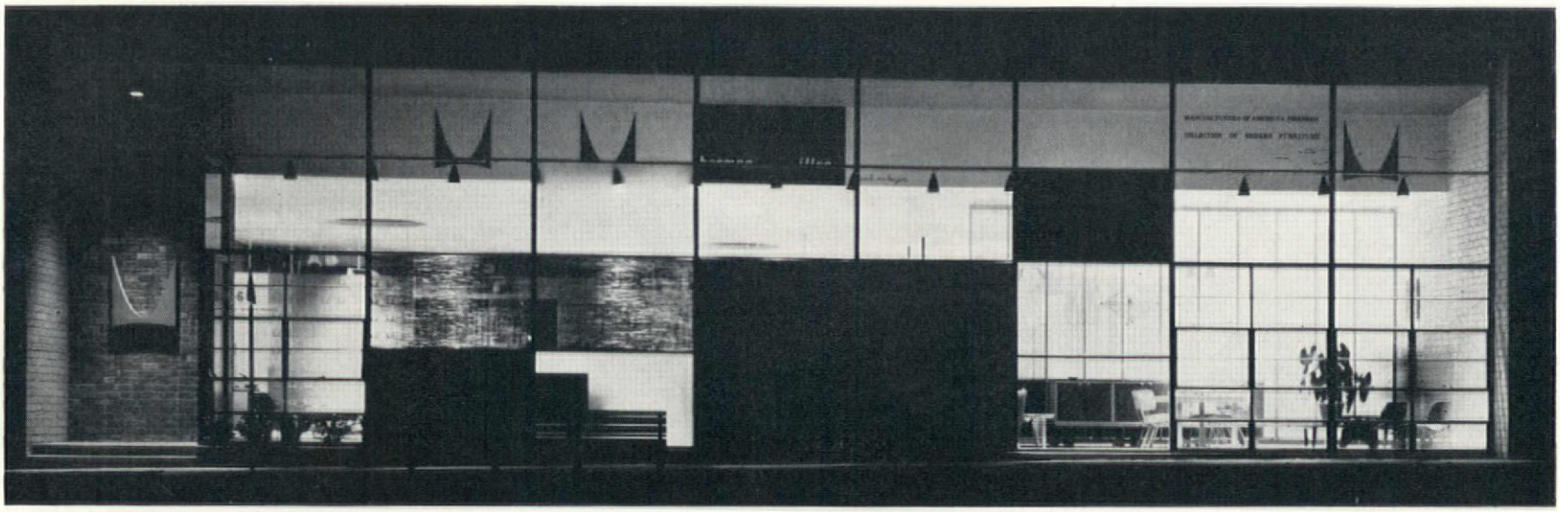

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Other references to ritual in architecture:
Ernst Cassirer —"An Essay on Man."
Erwin Panofsky—"Meaning in the Visual Arts."
John Dewey —"Art and Experience."

Domus 424, March, 1965.
Business Screen Magazine, No. 7. Vol. 23.
Max Lerner —"America as a Civilisation."
Poéme Electronique Le Corbusier—Philips.

Herman Miller Showroom, Los Angeles

56, 57 Night view and interior space. (See also pages 449, 462)

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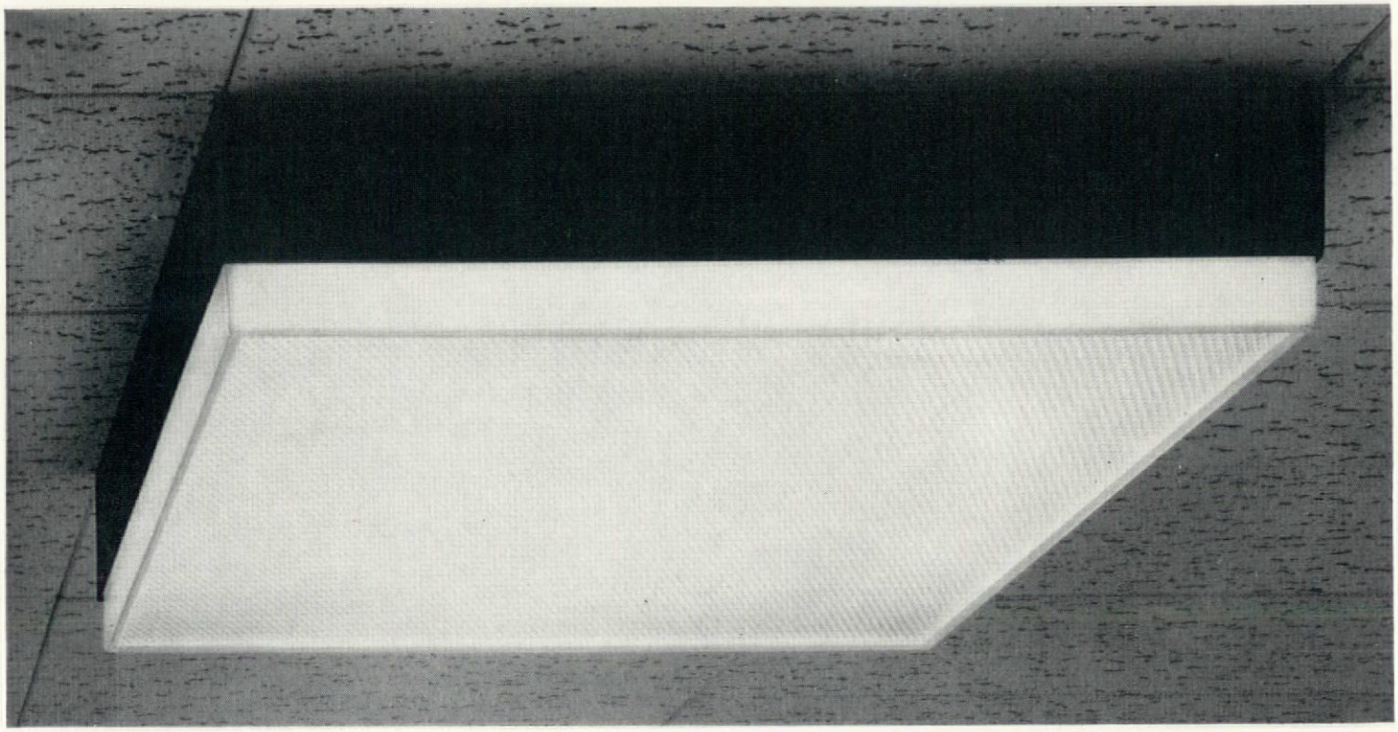

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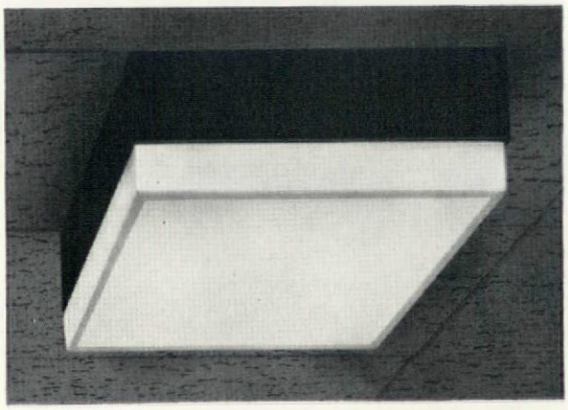

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Children as experts

Geoffrey Holroyd

Children are expert at adapting places and corners to fit their games. As they do so the places become as personal and as special as the behaviour which is invented to fit them. They create ritual instinctively linked to the physical enclosures of space—circles, rings, tunnels and angles—but which have, even at their most precise, a secondary nature. As systems they are free; almost anything may develop in them. In these photographs the goldfish, the seated bedouin and the absent actor (minus his horse's head) occupy secondary spaces like these. But they have also been transcended by a super-imposed order which is less free—more primary as an influence structuring form. This order is *The Toy* designed by Eames in 1951. It is a paper and wood order which gives the child a column and entablature control over the props, candle footlights and child-sized chairs which his own sense of secondary form (strongly inspired by the 'story' element of what he is doing) is unable to give.

He is doing things which he needs to do; today they exist, tomorrow they are dismantled, faded, destroyed, eaten. Eames brings to the child's pattern of growth the element of fixture. The giant bricks, not Eames designed, do not have this effect.

The Eames have enlisted the children—who play and perform very well anyway without any primary form structure—to explain an art (or non-art) idea in a very charming way. A way beyond the logical and understandable anti-art climax of Marcel Duchamp or Buckminster Fuller is opened up by their conception of a new function for art in modern society. With the Eames play expands far beyond the walls of the nursery; their toys are the environment in miniature.

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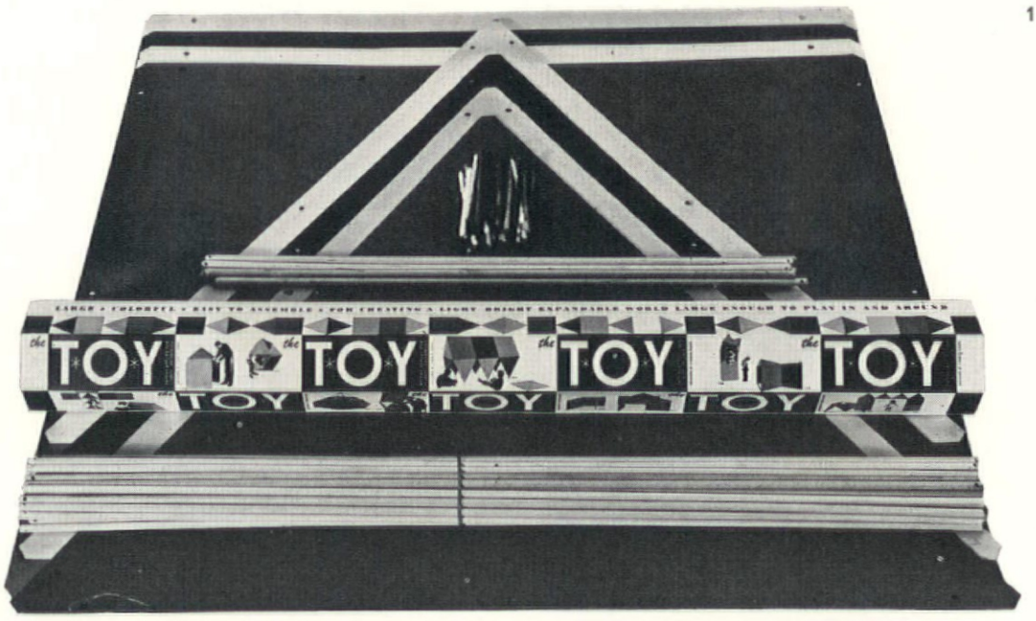

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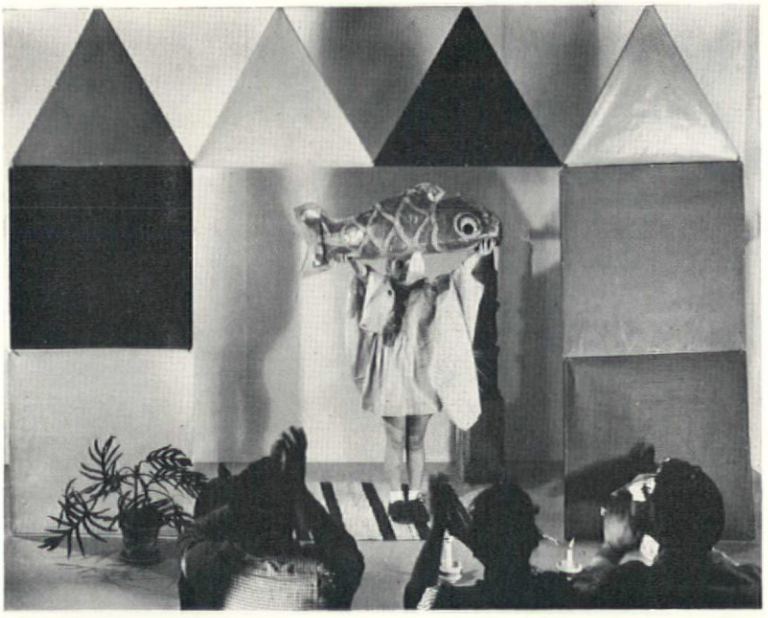

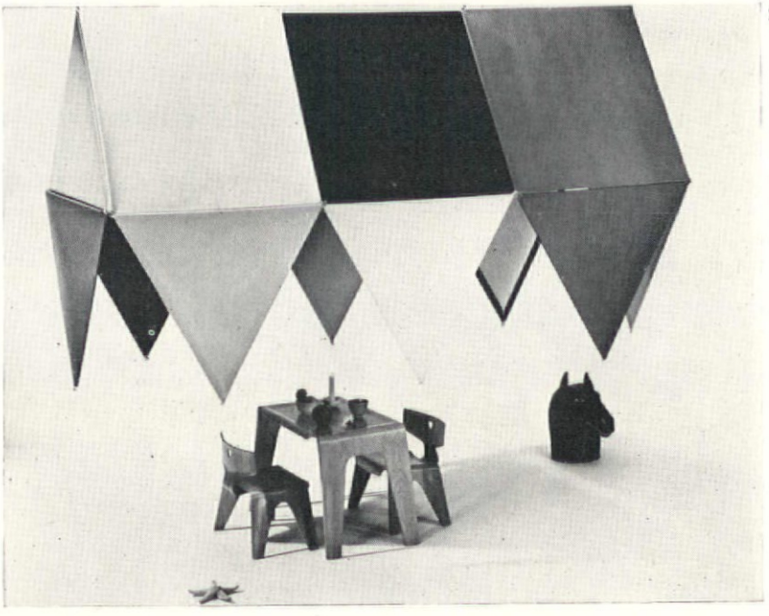

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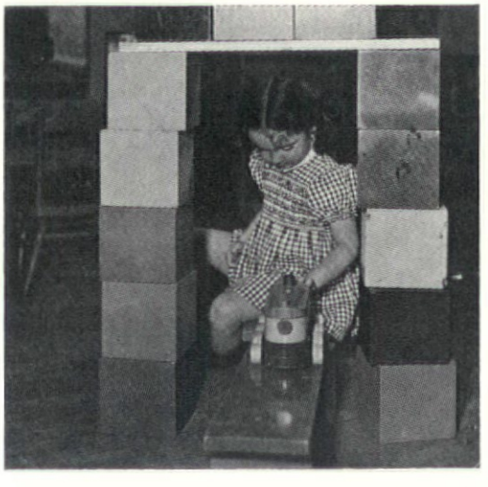
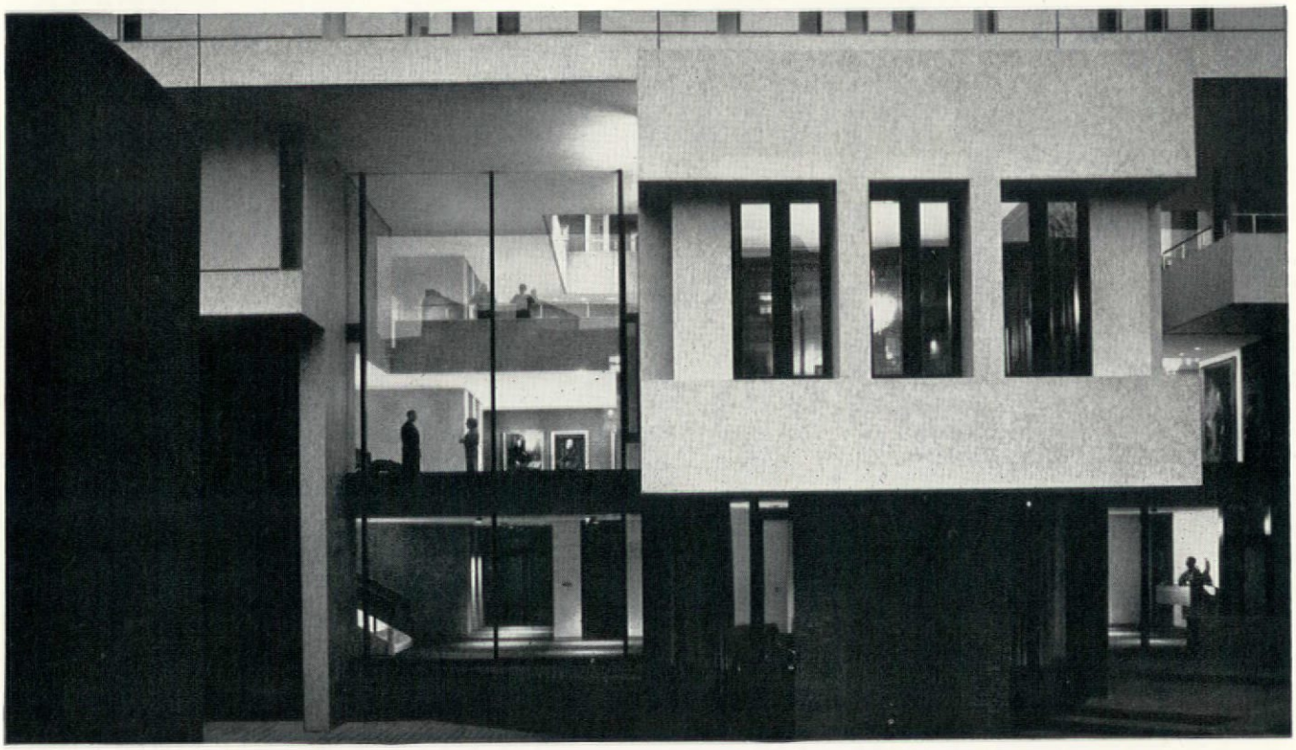


1 The Toy, designed in 1951, packs away into a hexagonal cylinder. The kit includes square and triangular panels, stiffening rods, pipe cleaner wire connections **2, 3 & 4** The Toy being used creatively by children **5** Conventional building bricks have fewer possibilities for creative play



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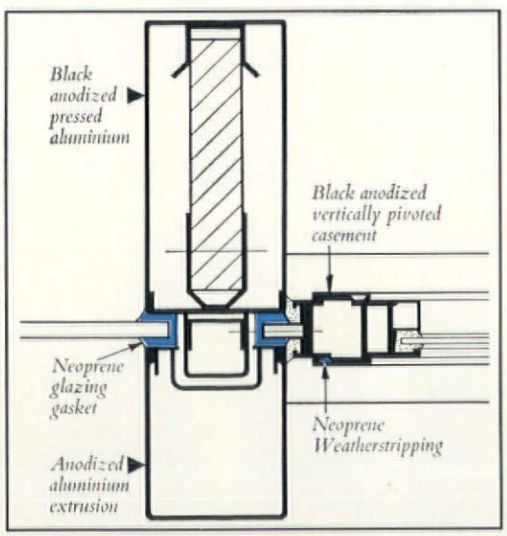

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At left: Detail of Mullion
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Trade notes

Alexander Pike

To obtain additional information about any of the items described below, circle their code numbers (O1, O2 . . . etc.) on the Readers' Service Card inserted in this magazine.

O1 Moulded plastic windows
Williams & Williams Ltd., Reliance Works, Chester

The new range of Polyrama windows are moulded in one piece from glass fibre reinforced polyester. Claimed to have a high degree of weather resistance and freedom from maintenance the range comprises 36 fixed and 18 opening lights.

O2 Portable burglar and fire alarm 1
Alarm Equipment Supplies Ltd., 183 Hammersmith Road, London W6

The Vedette is operated from the mains or from self-contained batteries. Sensitive to definite movement or flame within a radius of 30ft or a volume of 216,000ft³ it operates an alarm audible for 440yds. Size 12in × 12in × 6in. Wt. 35lb. Price £78.

O3 Plastic panels
Osma Plastics Ltd., Hayes, Middlesex

Osmalux panels consist of translucent rigid PVC tubes, $2\frac{3}{8}$in × 3in cross section, extruded with interlocking flanges. Sections are joined by plastic locking wedges. Capable of spanning 18ft horizontally and 10ft vertically, the panels are claimed to have a U-value of 0·47 and a light transmission of 70 per cent.

O4 Drawing board lamp
Thousand and One Lamps Ltd., 386 Lee High Road, London, SE12

The DL-I provides a choice of four mountings and has a counterbalanced arm claimed to enable it to function at any angle over a flat or sloping surface. Prices from £5 15*s* 3*d* to £6 2*s* 0*s*.

O5 Unit shelving
Versatile Fittings (WHS) Ltd., 10 New Fetter Lane, London, EC4

Vizusell shelving is mainly for shopfitting but is suitable for storage and workshop use. It employs extruded channel verticals only $1\frac{1}{16}$in wide and Stelvetite steel shelving in depths of 6 to 20in. Prices: channels 4*s* 6*d*/ft single, 7*s* 6*d*/ft double, shelving 3ft long 22*s* 6*d* to 45*s*.

O6 Paint
Silexine Paints Ltd., Barking, Essex

An old product with a new price. As part of a direct-to-user sales campaign, Silexine have brought down the price of many of their products to about half their normal level. Their super gloss was chosen as the joint best buy (and cheapest) in a *Which* report on 24 brands of white gloss paint. Price: 82*s* for 1 gallon of finishing coat and undercoat.

O7 Folding partitions 4
General Presswork and Stampings Ltd., Oakland Road, Leicester

Hufcor acoustic folding partitions are claimed to provide improved sound control with reduced weight. Stacking space is 2ft² for a 20ft wide partition and jambs have magnetic latching.

O8 Plastic cistern 2
Shires Ltd., Guisely, Leeds

Available in high and low level models and in six colours, the Puma cistern is $19\frac{5}{8}$in wide × $10\frac{7}{8}$in high × $19\frac{5}{8}$in deep. Can be fitted with dual-flush siphon for one or two gallon flush.

O9 Glass fibre light fitting 3
The Sheerlite Shades Ltd., Sheerwater, Woking, Surrey

The glass fibre body 12in diameter × 6in deep gives diffused light and plastic multi-ring louvre shields the bulb. Available in seven standard colours at £2 15*s* 9*d* plus PT.

O10 Range of lighting fittings
BBI Lighting, 188 Edward Road, Birmingham 12

The new BBI catalogue includes a range of fittings in matt aluminium and recessed and surface mounted ceiling fittings.

O11 Glazing sealant and vision strip
Stonhard-Tremco Ltd., Berger House, Berkeley Square, London, W1

Suitable for use in metal or wood sash channels and in concrete recesses. The polyisobutylene-butyl tape is used as backing and the vision strip, creating a clean glass line, is set in the sealant.

O12 Electric storage heaters
Thermodair (GB), Unidair House, Hayes End Road, Hayes, Middlesex

The Thermodair Q storage heaters are available in two models with controlled input, Q225 and Q300 rated at $2\frac{1}{4}$kw and 3kW, and one controlled output model QFA 300. Sizes Q225, 31in wide, $24\frac{3}{4}$in high × $10\frac{1}{4}$ in; Q300, 34in × 29in × $10\frac{1}{4}$in; QFA300, 36in × $30\frac{1}{2}$in × 12in. Prices, £24 3*s* 0*d*, £29 8*s* 0*d* and £44 2*s* 0*d* respectively.

O13 Flueless gas convector
R. & A. Main Ltd., Gothic Works, Angel Road, London, N18

The Ripon Convector heater measures 17in high × $30\frac{3}{4}$in wide and 4in deep and has a gas output of 7500 BThU/hr.

O14 Shower cabinet
Troman Bros. Ltd., Highlands Road, Shirley, Solihull, Warwickshire

The Crelene Copenhagen Shower Cabinet has side panels of acrylonitrile butadiene styrene and a perspex tray fitted to a steel frame. Size 30in square × 79in high, weight 110lb. A Winn mixing valve produces a constant flow at pre-selected temperature. Price £69 6*s* 0*d*.

O15 Acrylic paint
Pinchin Johnson & Associates Ltd., 93–97 New Cavendish Street, London, W1

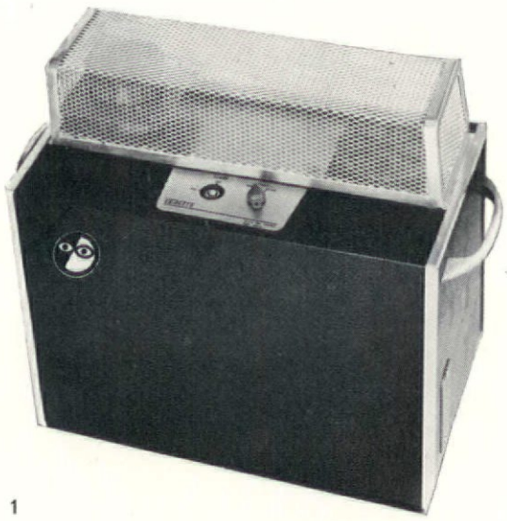
Gaymel Speed-Prime is a 100 per cent acrylic resin emulsion copolymer claimed to possess outstanding properties of adhesion, water resistance and blister resistance. It is water thinnable and is touch dry in one hour and hard dry in two.

O16 Joint sealing strip
Servicised Ltd., 2 Caxton Street, London, SW1

Servicore is a self-adhesive compressible sealing strip suitable for dry methods of construction. Claimed to remain under permanent compression despite thermal contractions it is available in a range of sizes to suit all joint widths between $\frac{1}{8}$in and $1\frac{1}{2}$in.

O17 Curved building board
R. Benbow & Co. (M/S) Ltd., Torquay, Devon

A sandwich construction that can be formed by the manufacturers to almost any curve, Supaboard consists of an inner core of expanded polystyrene and outer skins of mill board with timber and laminated plywood edge-trims.



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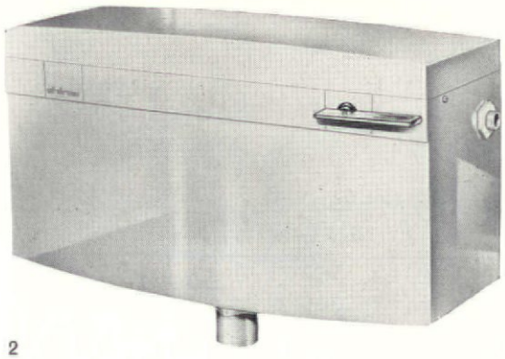

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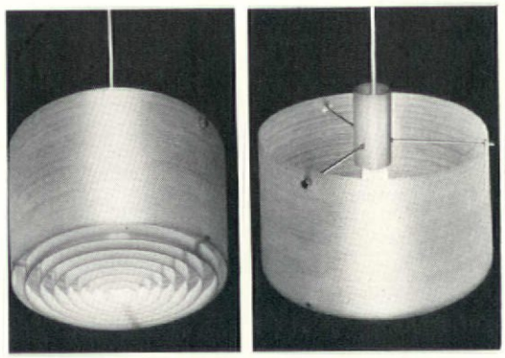

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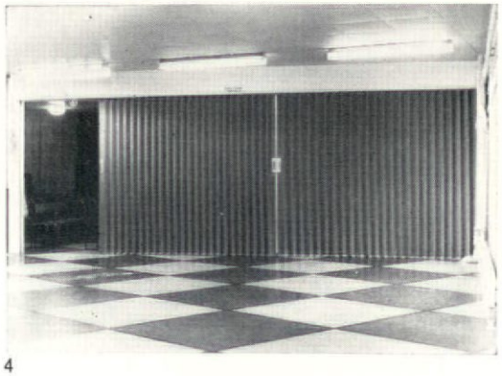

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Product analysis 10

Door and window furniture

Alexander Pike

Although the ranges of building products on the market are constantly increasing, the architect is rarely faced with too great a variety of a particular item. However, this is the case with door fittings, where a bewildering proliferation of choice has a tendency to hinder rather than assist the selection of appropriate equipment. It is no coincidence that judging not merely by the typography but also by their contents, many catalogues appear to have been produced at the turn of the century.

A large proportion of the styles offered were designed, quite clearly, up to 50 years ago, and as patterns have been retained and their storage is not expensive, some manufacturers feel unable to resist the chance opportunity to glean sales, however meagre, on these items.

The situation is only a little better with window fittings, where many of the models catalogued are totally unsuitable either in appearance or function for general present-day usage.

Before attempting any criticism of these products it is probably appropriate to suggest that some manufacturers might reflect on the ridiculous appearance of their catalogues, with a profusion of unwanted fittings illustrated by pre-war blocks, particularly when viewed in comparison with the frequently excellent presentation of continental manufacturers. If our own producers lack the sense to realize that their expensive trade literature is not being used to advantage they are probably also unaware that shelf space in architects' offices does not permit the storage of heavy catalogues including a large proportion of items they would never consider using.

If it is felt necessary to retain these outdated items in their inventory they should most certainly be separated from the current designs which otherwise by sheer weight of numbers are likely to pass unnoticed.

Design criteria

Aesthetics

In the past, door handles presented few problems. They were usually consciously designed and the degree of embellishment related directly to their cost. Under these circumstances the cheaper products frequently scored heavily.

Window furniture was (and frequently still is) the product of untrained designers concentrating more on expediency and the method of production rather than on the function. Surprisingly enough this process often produced robust and unselfconscious designs.

Ergonomics

Door handles in the form once universally accepted as a standard, the circular or in some cases slightly elliptical knob, if not ideally suitable ergonomically, were nevertheless fairly satisfactory and evoked few complaints from the users.

The re-introduction of lever handles overcame one of the criticisms frequently associated with knobs—the difficulty of opening a door with hands full. However this is a situation met too infrequently to justify its consideration as a determinant for design. Preoccupation with ergonomics as a design criterion in most fields of design has gained for this factor a prominence which is a little out of place in the design of lever handles. This has led to the development of forms which are sculptured to fit the hands, producing a shape far more suited to the handle of a tool in constant use throughout the day than to an object which is to be grasped and operated for a few seconds at a time.

The more important ergonomic weakness of the lever handle is often overlooked—the fact that when fitted at the normal height it requires not only a rotary movement of the wrist but also introduces a sideways motion as the handle is moved downwards.

Economics

Recent adoption of stamping techniques has enabled cost reductions to be made on many items of door furniture, demanding a degree of standardization not previously necessary with casting techniques. Furthermore the use of acetal resin plastics has enabled strong and long-lasting versions to be produced at reasonable costs. The design of the lever mechanism is of the utmost importance and it is in this particular aspect that differences in cost can have a marked effect.

Structural performance

Door and window handles are subjected to heavy forces in use, particularly when the locking mechanism permits little rotation, and levers meet a stop before reaching the vertical position. The handle must be of robust section in both planes of bending for rotary and outward movement.

Mechanical performance

As door handles may be in constant use throughout their life and undergo many thousands of cycles of operation, the moving parts are likely to be subjected to considerable wear. The materials for these parts should therefore be chosen with care.

Marketing

Manufacturers' catalogues will normally describe the basic materials and finishes, but they rarely quote the materials employed for the working surfaces of any mechanism. Architects may be in some respects to blame for this circumstance, as they too frequently neglect to enquire, resting their choice on aesthetic grounds alone.

Materials

The traditional materials for door and window handles include pressure cast zinc alloy and pressure die cast aluminium, hot pressed brass, aluminium and nickel bronze and cast bronze and brass. These have recently been successfully supplemented by acetal resin plastics. Anodized aluminium provides very economical products, but unless used in association with more hard wearing materials, bears poor comparison with harder metals. Satin chrome plate on brass or bronze is more hard wearing but although the appearance is satisfactory, the electroplated finish cannot be considered as permanent and will require attention in the course of time. Satin nickel bronze provides excellent wearing properties and requires no surface finish. The appearance suffers however, unless cleaned regularly.

Products employing copper based alloys have increased in price alarmingly as a result of the recent rocketing costs of the raw materials, forcing reconsideration of the use of stainless steel, which has hitherto been confined to the luxury category. With excellent performance for working surfaces and durable integral finish it is now comparable in price with satin chrome, bronze or brass.

Many handles are now fitted with nylon bushes, utilizing the hard wearing and friction free characteristics of the material to ensure smooth operation and long life.

Until recently plastics have never seriously contended the superiorty of metal but they are now invading the field of door and window ironmongery in the form of acetal resins. This material has a high impact strength, is resilient and extremely hard wearing. It is resistent to attack from acidic and alkaline pollution and is unaffected by salty atmospheres.

Manufacturers' approach

A large number of small firms have an extensive repertoire of designs accumulated over many years and rely on patternmakers to produce the models from which they evolve their new designs. Apart from these, however, the better firms are well aware of the importance of good design and have made considerable efforts to select skilled industrial designers as consultants. In some instances these have resulted in a complete and compatible range of furniture offering a wide selection of different types.

The most notable ranges to emerge recently have been the *Myron* by Henry Hope, the *Modric* by Allgood, and the *Sadler* by Lilly.

Designed by Kenneth Grange, the *Myron* furniture demonstrates an extensive reassessment of the functional requirements of the door handle. The backplate assemblies are composed of a nylon skeleton, screwed or pinned to the door surface, over which is clipped a cover plate in pressed aluminium or moulded polypropylene. The nylon projects through the surface of the cover plate to provide a bearing for the handle and a hard-wearing key guide for the escutcheon. The skeletons for sprung handles incorporate a Delrin drive disc and a torsion spring of tinned spring steel. Spindle retaining clips are of spring steel for Delrin handles and of composite spring steel and Delrin for aluminium handles.

For the *Modric* range Holscher and Tye have designed a system of related components capable of combination in a wide variety of different ways. All the basic components can be used with backplates based on a 3in module and are complemented by a matching range of window fittings. An innovation is the inclusion of electrical switch plates and bell pushes, providing for the first time the possibility of creating a unified system of ironmongery throughout a room. The range in general is robust, and is sensible in terms of production and application, with the possible exception of the round knob, which has a mannered simplicity with rather dubious ergonomic undertones and may require conscious cleaning—a problem not encountered with the traditional round knob which was self-cleaning in use. The excellent *Modric* catalogue is even more remarkable for the inclusion of a price list fixed until 1970.

Kenneth Sadler's designs for B. Lilly provide a compatible range more limited in application than the *Myron* or *Modric* and although it has suffered more criticism it is extremely strong and simple, and promises to be popular.

Criticism

Despite exhaustive dissection of designs, tedious introduction of models which seem strangely familiar, the door handle suffers little basic change and it is sometimes difficult to date a product within 15 years. No innovations whatsoever have emerged in the design of latch mechanisms and a considerable amount of money is wasted in most buildings, particularly houses, on providing latches where they are not absolutely necessary. The expense of fitting mortice locking latches can be avoided by utilizing the excellent range of permanent magnets now available for this purpose—far more positive, foolproof and a fraction of the cost. Blame here must often rest on the architect who is too preoccupied with selection between door handles having very little difference, to appreciate that the use of the fitting itself should be questioned.

Diversification of ranges on the part of manufacturers still does not provide wide enough selection to be able to match door and window furniture, for which costly specials must be ordered if cohesive design within a room is to be achieved.

▷474

Some manufacturers of door and window furniture

*G. & S. Allgood Ltd.,
297 Euston Road, London NW1

*Bloore & Pillar Ltd.,
Ward Street & Lower Street, Newtown, Birmingham 19

James Collins (Birmingham) Ltd.,
Lemmington Road, Birmingham 23

*Coburn Engineering Ltd.,
Peasmarsh, Guildford, Surrey

H. C. Davis & Co. Ltd.,
1 The Pavement, Clapham Common, London SW4

*Dryad Metal Works Ltd.,
42 Sanway Gate, Leicester

Electro-Hydraulics Ltd.,
Liverpool Road, Warrington, Lancs.

*Group Sales Ltd.,
88 Clapham Park Road, London SW4

James Gibbons Ltd.,
Walkden House, 3/10 Melton Street, London NW1

James Hill & Co. Ltd.,
227 Upper Street, Gt Tower Street, London N1

Harrison (Birmingham) Brass Foundry Ltd.,
PO Box 233, Bradford Street Works, Birmingham 12

*John Harper & Co. Ltd.,
Albion Works, Willenhall, Staffs.

Heinrich Wilke GmbH, Messrs.
Hewi-Nylon-Beschlage,
35/48 Arolsen, Posfach 107, Germany

*Henry Hope & Sons Ltd.,
Smethwick, Birmingham

E. Hill Aldam & Co. Ltd.,
Brittanic Works, Red Lion Road, Tolworth, Surbiton, Surrey

P. C. Henderson,
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*Industrial Devices Ltd.,
313 West End Lane, London NW6

Kawneer Co. (UK) Ltd.,
Aylesbury Road, Aston Clinton, Bucks.

B. Lilly & Sons Ltd.,
Baltimore Road, Birmingham 22B

Mountford Bros. Ltd.,
24/30 Northwood Street, Birmingham 3

Charles P. Moody Ltd.
215/217 Coldharbour Lane,
Loughborough Junction, London SW9

*Wm. Newman/Automatic Doors,
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Parker, Winder & Achurch Ltd.,
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Josiah Parkes & Sons Ltd.,
Union Works, Willenhall, Staffs.

*Alfred G. Roberts (Exports) Ltd.,
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**The cooperation of these firms in the preparation of this article is gratefully acknowledged*

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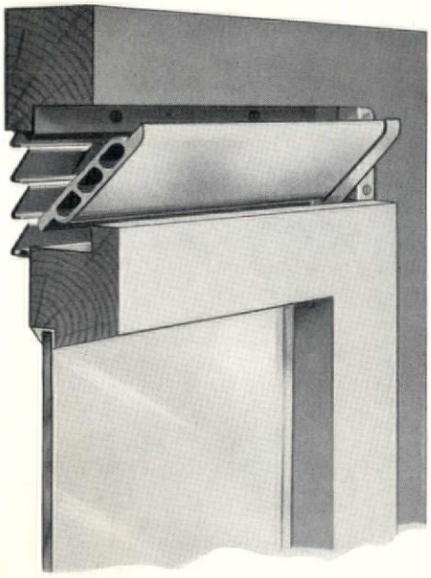

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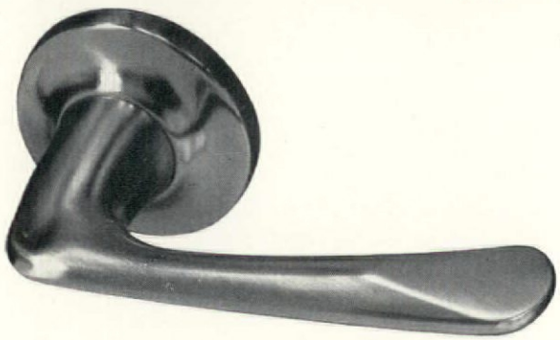

- **It has been designed specifically for manufacture in stainless steel by a process ideally suited to the material.**
- **The K66 is spring loaded.**
- **The slim neat rose provides a completely concealed fixing.**
- **Being stainless steel the superb finish can be permanently maintained.**
- **Lever to lever fixing for use with Union holed locks can be provided.**
- **Other fittings are also available in stainless steel.**

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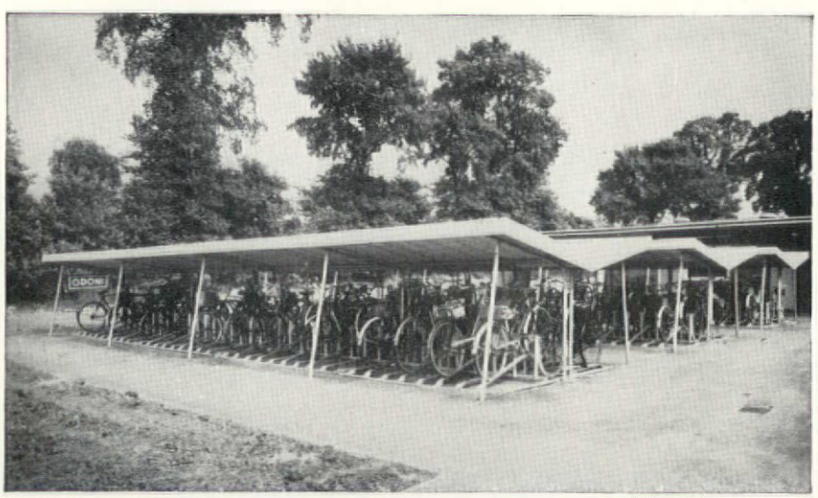

Type TD2A-R-LR ODONI Tubular SHELTER (R.D.899573) with Type 5A Pedal Cycle Stands at Gable Hall School, Corringham, Essex.
Photo by courtesy of Messrs. Brown & Moulin, A/A.R.I.B.A., in Association with H. Conelly, C.B.E., F.R.I.B.A., County Architect, Essex County Council

Odoni

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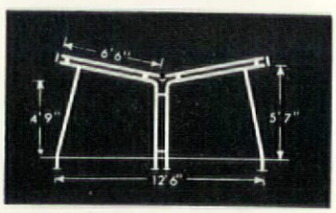

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No. 5

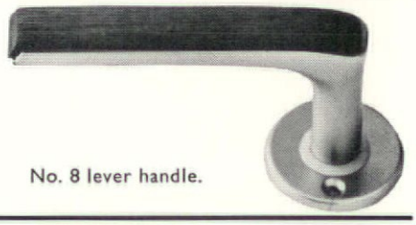
Material: Brass.
Finishes: Polished or satin brass, nickelled or chromed.
Dimensions: About 4½ in.
Concealed fixing.



No. 5 lever handle.

No. 8

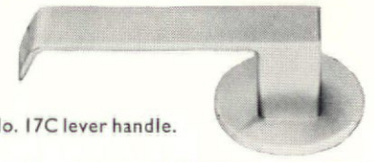
Material: Brass with teak, pine or oak insert.
Finishes: Polished or satin brass, nickelled or chromed.
Dimensions: About 4½ in.



No. 8 lever handle.

No. 17C

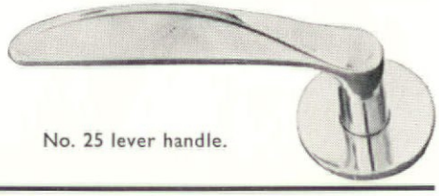
Material: Brass.
Finishes: Polished or satin brass, nickelled or chromed.
Dimensions: About 4½ in.
Concealed fixing, also available with acryl (17A) or teak (17B) cladding.



No. 17C lever handle.

No. 25

Material: Brass.
Finishes: Polished or satin brass, nickelled or chromed.
Dimensions: About 4⅜ in.
Concealed fixing.



No. 25 lever handle.

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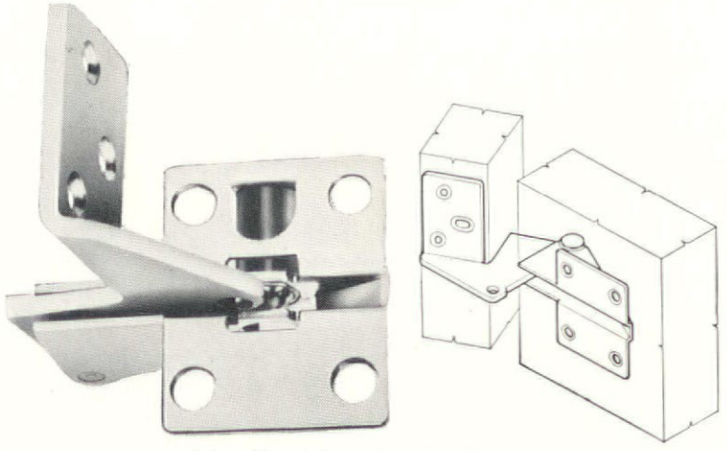
Suitable for door thickness up to 22 mm.
Can be fitted back to back.
A pair consists of one hinge incorporating a ball catch, and one blank.



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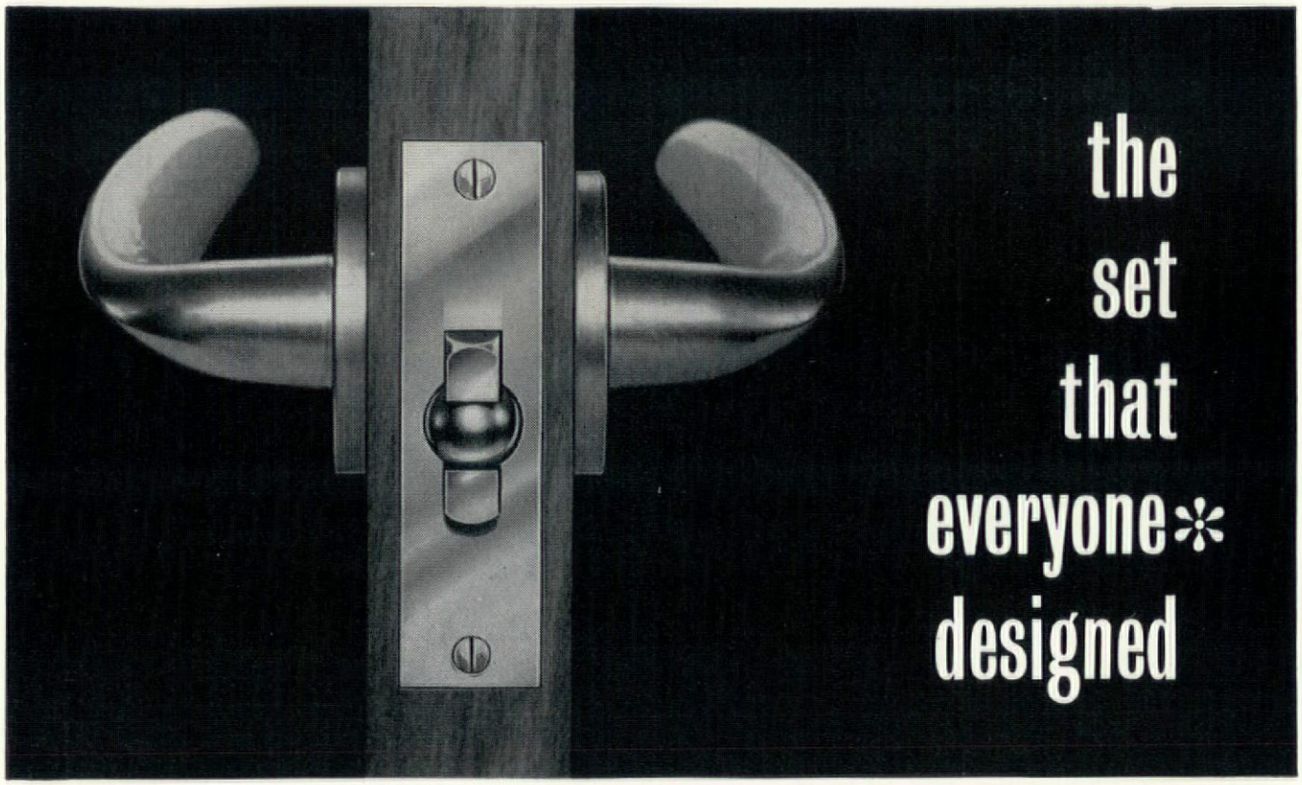
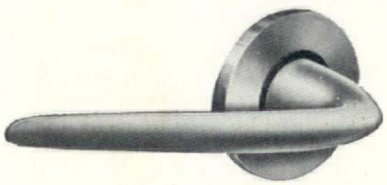
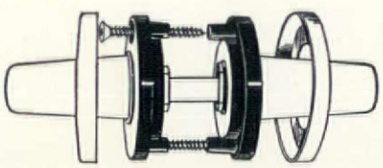


the set that everyone* designed

but only Marstons make







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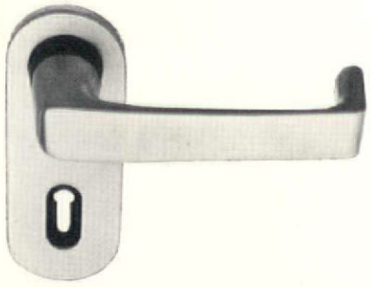
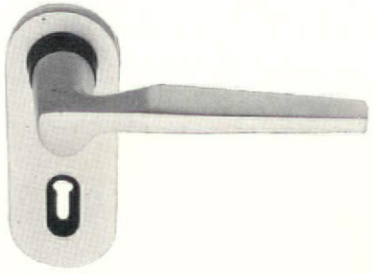
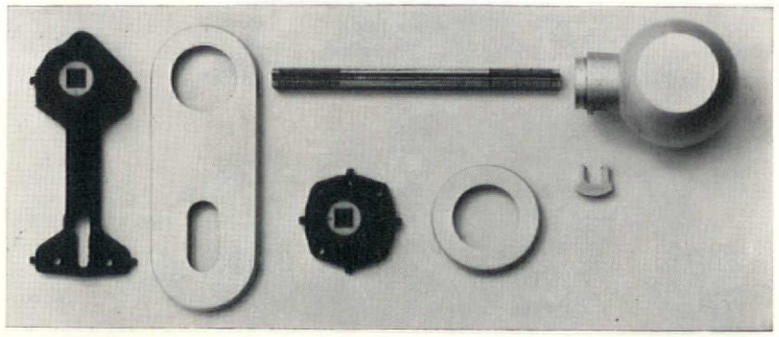
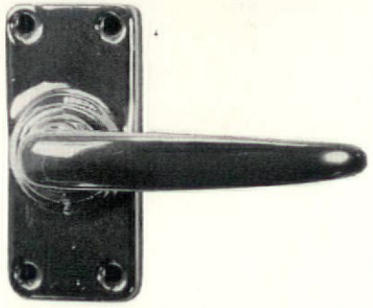


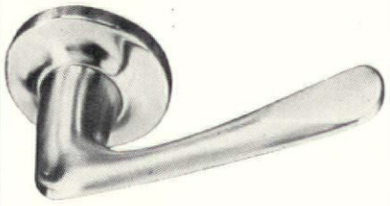


Myron lever handles types 1 and 3, and the component parts of the aluminium ball knob, showing nylon skeleton with spring-loaded bush, aluminium (interchangeable with polypropylene) cover plate, spindle and retaining clip
Designer: Kenneth Grange FSIA
Manufacturer: Henry Hope

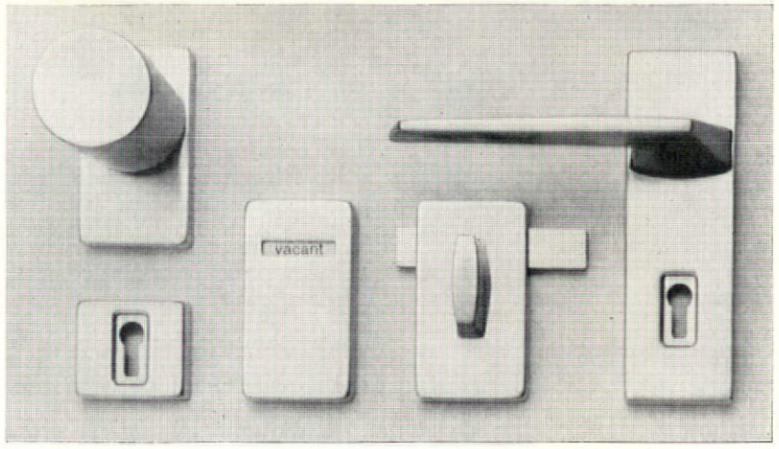




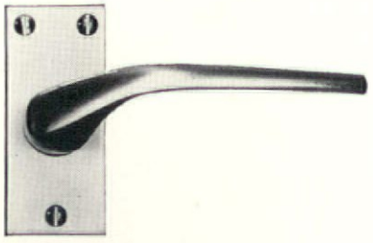
135 lever handle in vitreous enamelled cast iron—robust, corrosion-resistant and cheap. The manufacturing process demands a design with no sharp edges in order to minimize the need for machining on the castings and to accept the vitreous finish. It is unfortunate that a design which satisfies so many other requirements should not be more pleasing aesthetically
Manufacturer: John Harper



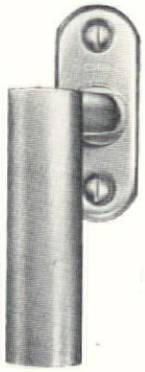
K66 lever handle designed specifically for manufacture in stainless steel. Hitherto stainless steel handles have been made as castings, not only expensive, but frequently unsatisfactory due to porosity in the castings. The K66 is made by a new process giving an excellent finish at an economical price
Designer: Roger Peach FSIA
Manufacturer: Dryad Metal Works



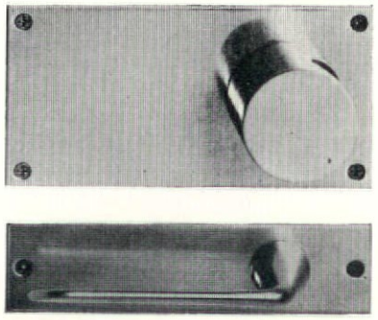
The *Sadler* range of lever handle, knob, back plate, escutcheon and indicator bolt. The range includes a related door pull and letter plate
Designer: Kenneth Sadler
Manufacturer: B. Lilly

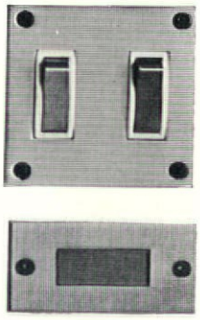


Die cast lever handle in the Yale *Milford* range

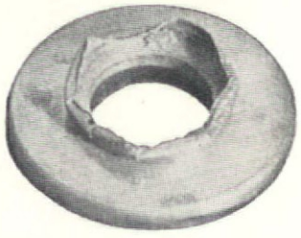


Ogro window handle 8055B in anodized aluminium





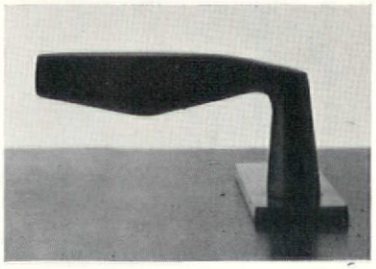
A few of the wide range of components constituting the *Modric* system. Knob with backplate, lighting switch, lever handle with backplate, bell push/neon light. All fittings are secured by screw fixings which are frankly expressed
Designers: Holscher and Tye MAA/ARIBA
Manufacturer: Allgoods

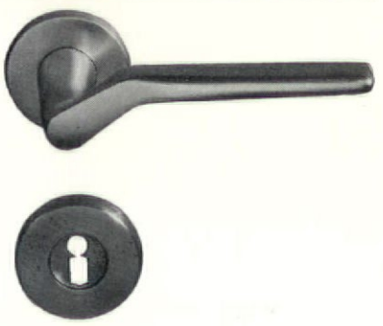


Abrasive damage to handle bearing subjected to dry friction, a defect now usually eliminated by the use of nylon bushes or, in the case of Wehag handles, by an absorbent bearing ring of sinter metal



Ogro 9065 hospital lever handle 9½in long, with 666KSL backplate, all in anodized aluminium
Concessionaires: Group Sales

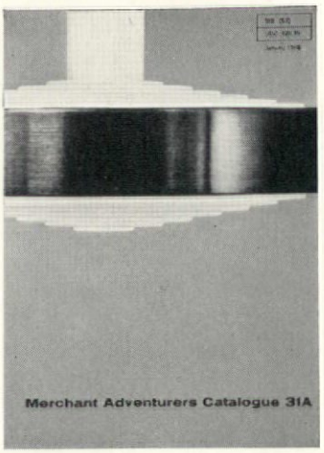




Wehag lever handles types 118 and 121 in anodized aluminium with hard glaze finish
Designers: Braun-Feldweg and Max Burchartz
Manufacturer: Wilhelm Wehag. (Marketing Agents: Alfred G. Roberts)

lighting concepts . . .

Display units with fully directional mountings and no visible cables or joints, form part of the wide range of display lighting in Catalogue 31A, which illustrates some of the best ideas in tungsten lighting to-day



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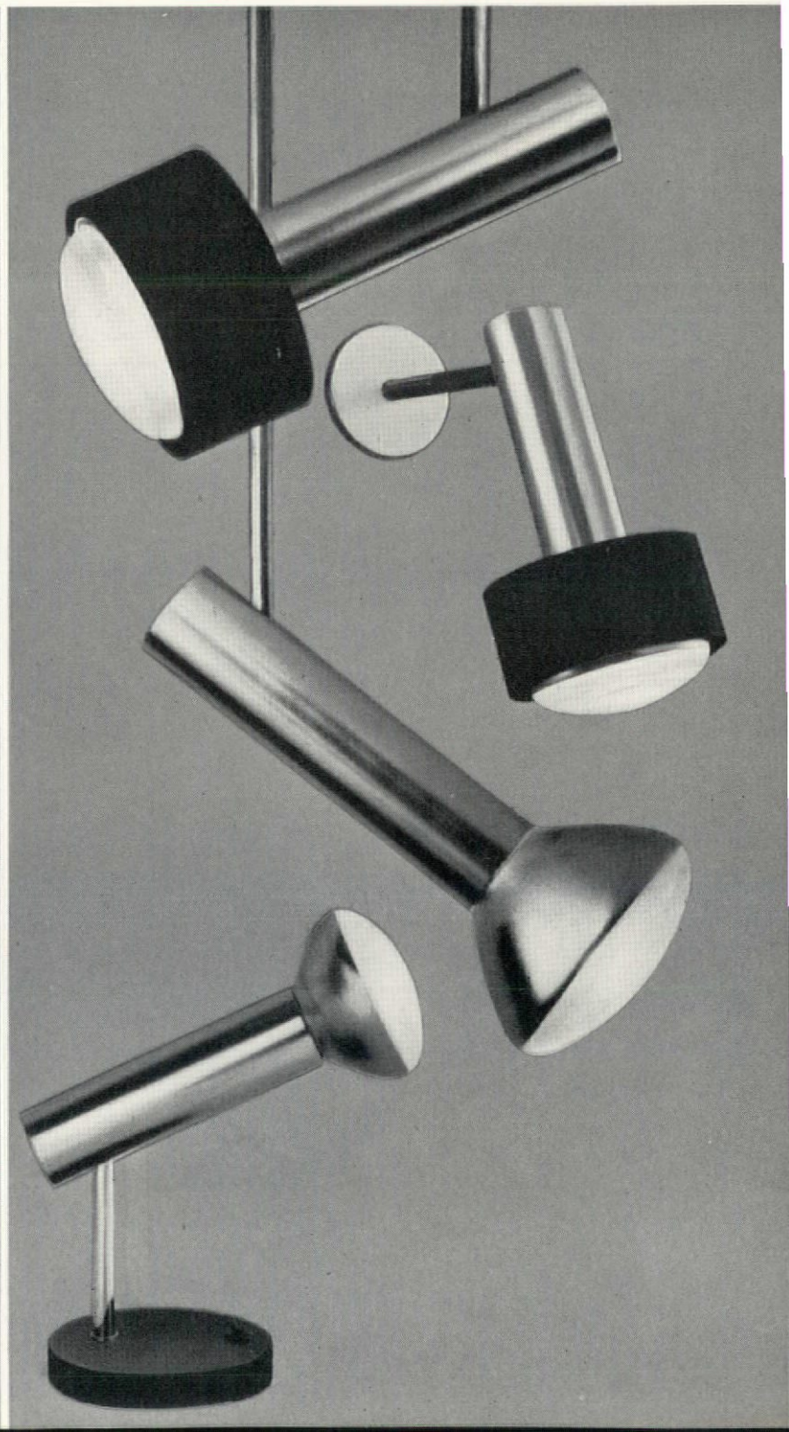

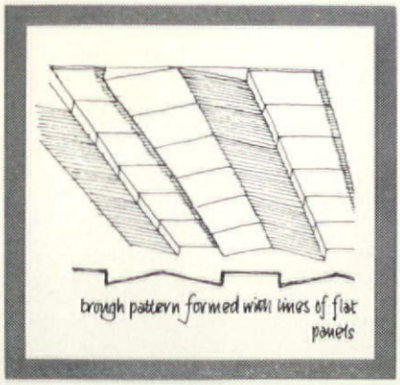

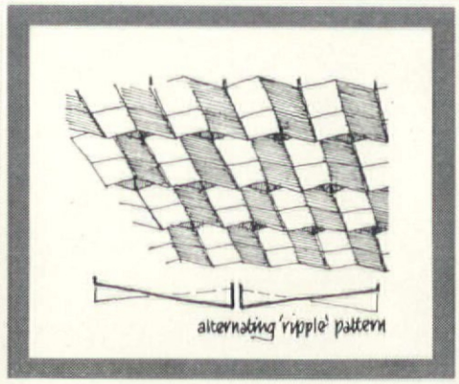

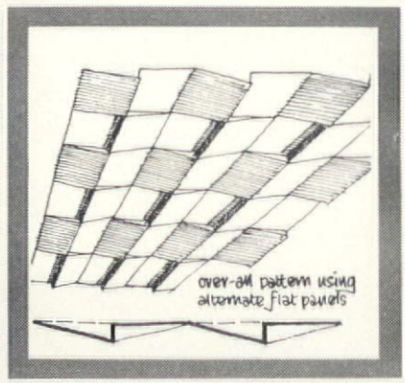

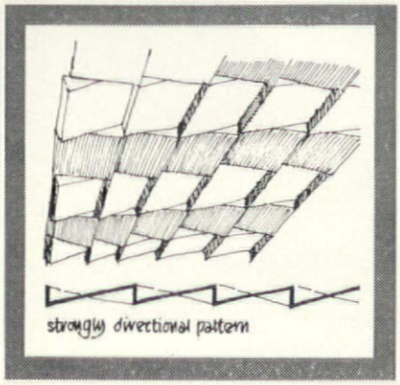

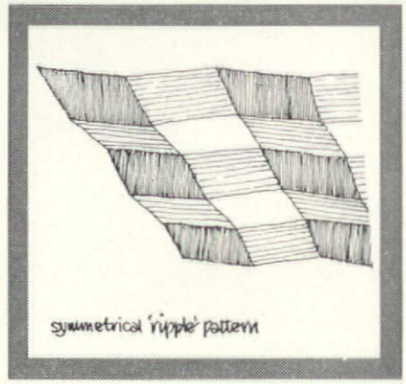

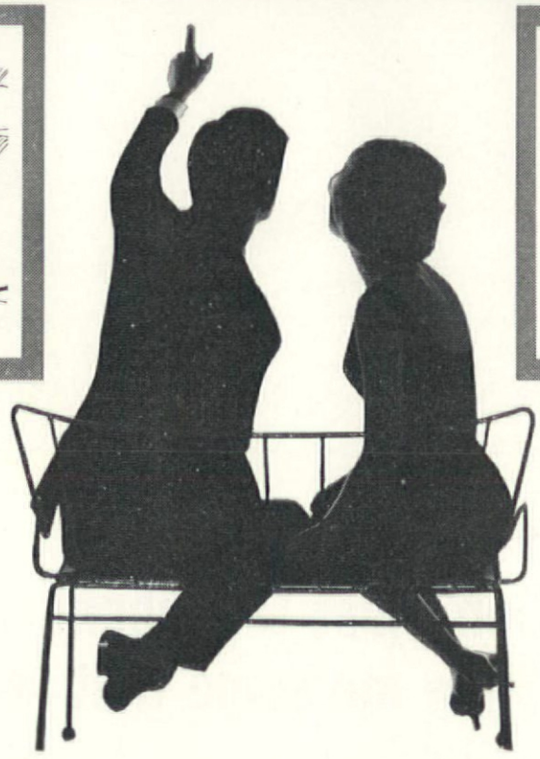

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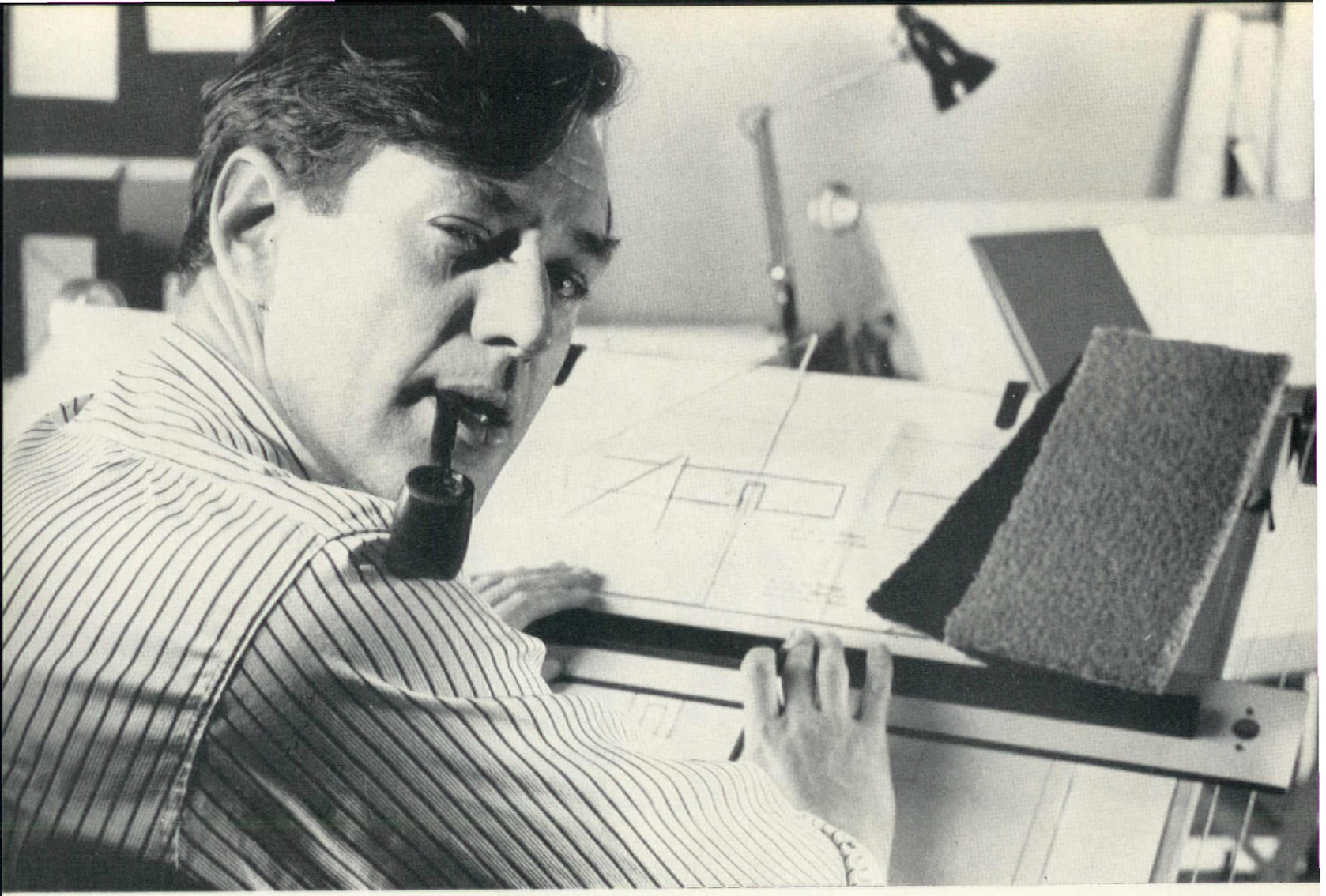

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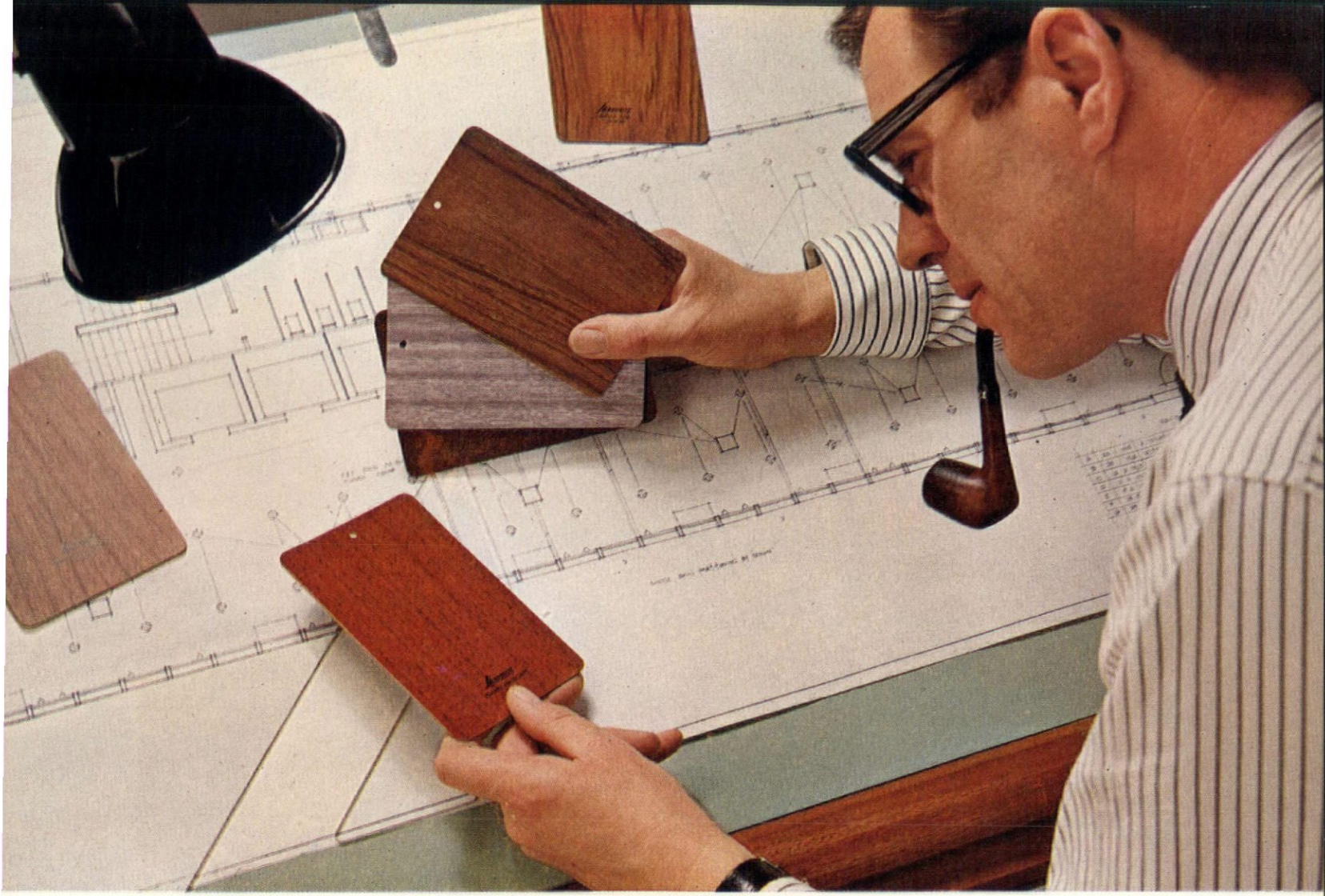

So we did (and these are only a few of them).

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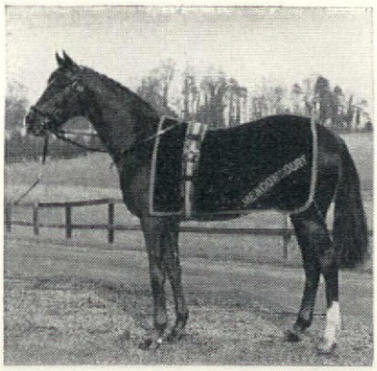

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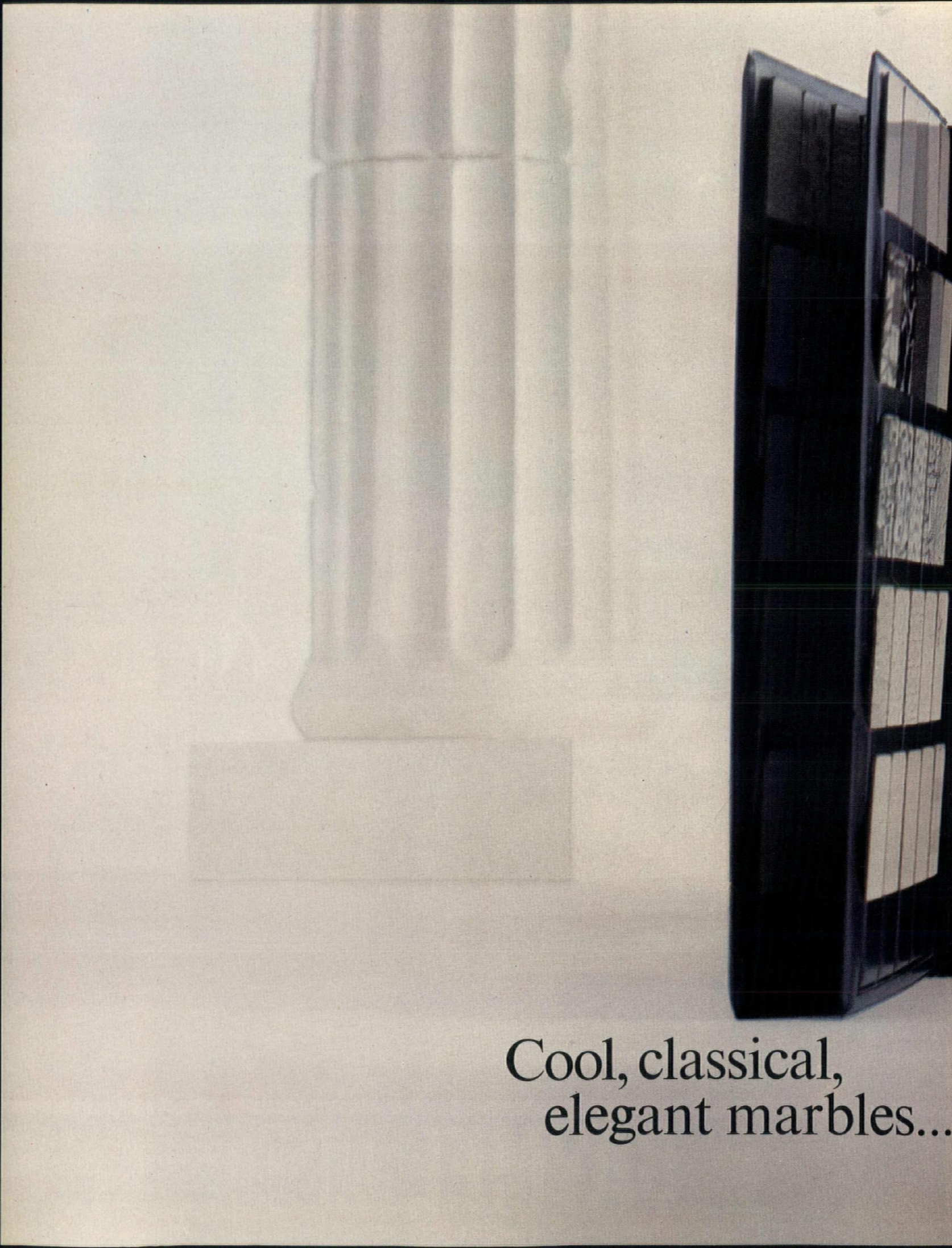

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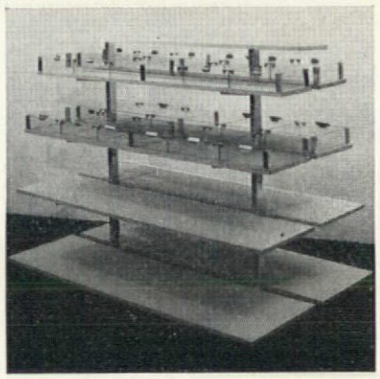

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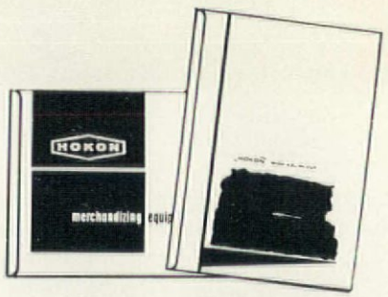

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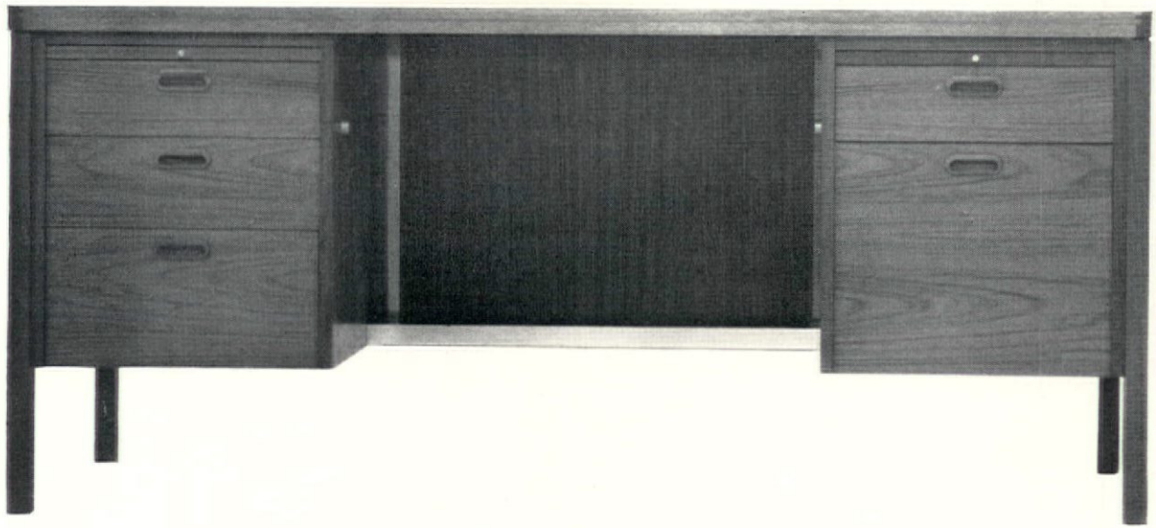
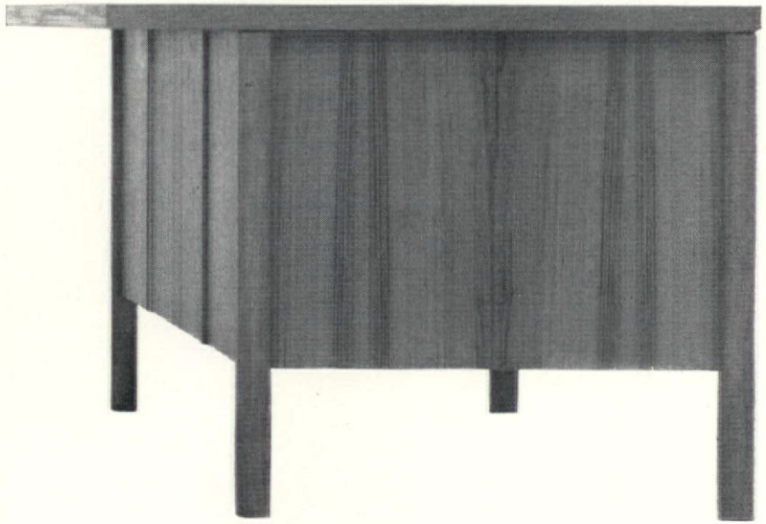
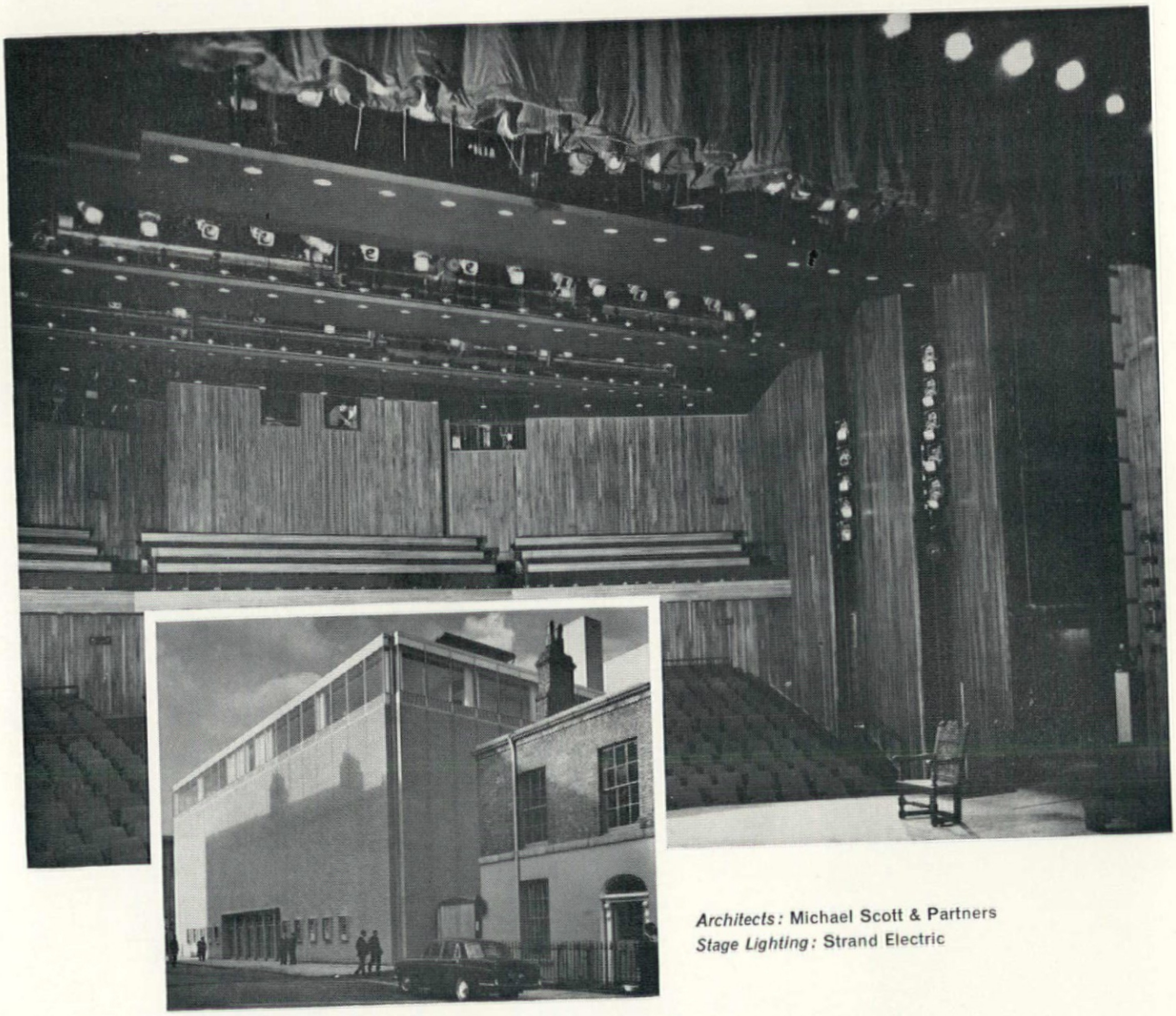




LUCAS FURNITURE Teak Range desks, designed by Herbert Berry FSIA and Christopher Cattle MSIA. Available with wood or satin chromed steel legs. Model T/DP53 is as sturdy as it looks, but easily demountable to get round tight corners. The price is £72 8s, including tax. Matching Teak Range pieces include single pedestal and typists' desks, storage, bookcases and tables. Lucas have furniture for all contract needs, including four ranges of desks, plan chests, unit storage, beds and a wide range of contract chairs. On show at The Design Centre, and in our showrooms. Write for details to Lucas Furniture, Old Ford, London E3. Advance 3232. Barbour Index No. 410



Architects: Michael Scott & Partners
Stage Lighting: Strand Electric

The Abbey Theatre Dublin

With a brand new theatre built on the old site Dublin no longer mourns the loss of its famous Abbey Theatre. The old Abbey was never a comfortable theatre by all accounts so that Michael Scott's new building has much to offer Dublin's theatre minded audiences. The stage lighting is, of course, Strand throughout. There are 60 front of house spots, 67 stage spots and a variety of portable equipment including a 4000 watt effects projector. The lighting control is a Strand 120-way 2 preset 14-memory system. Architectural plans and details of Ireland's National Theatre appear in the September issue of 'Tabs' magazine. If you are not a regular recipient of this quarterly journal please ask to be included on our free mailing list. Ask also for a copy of the special 60-page *New Theatres* issue if you didn't get one last June.

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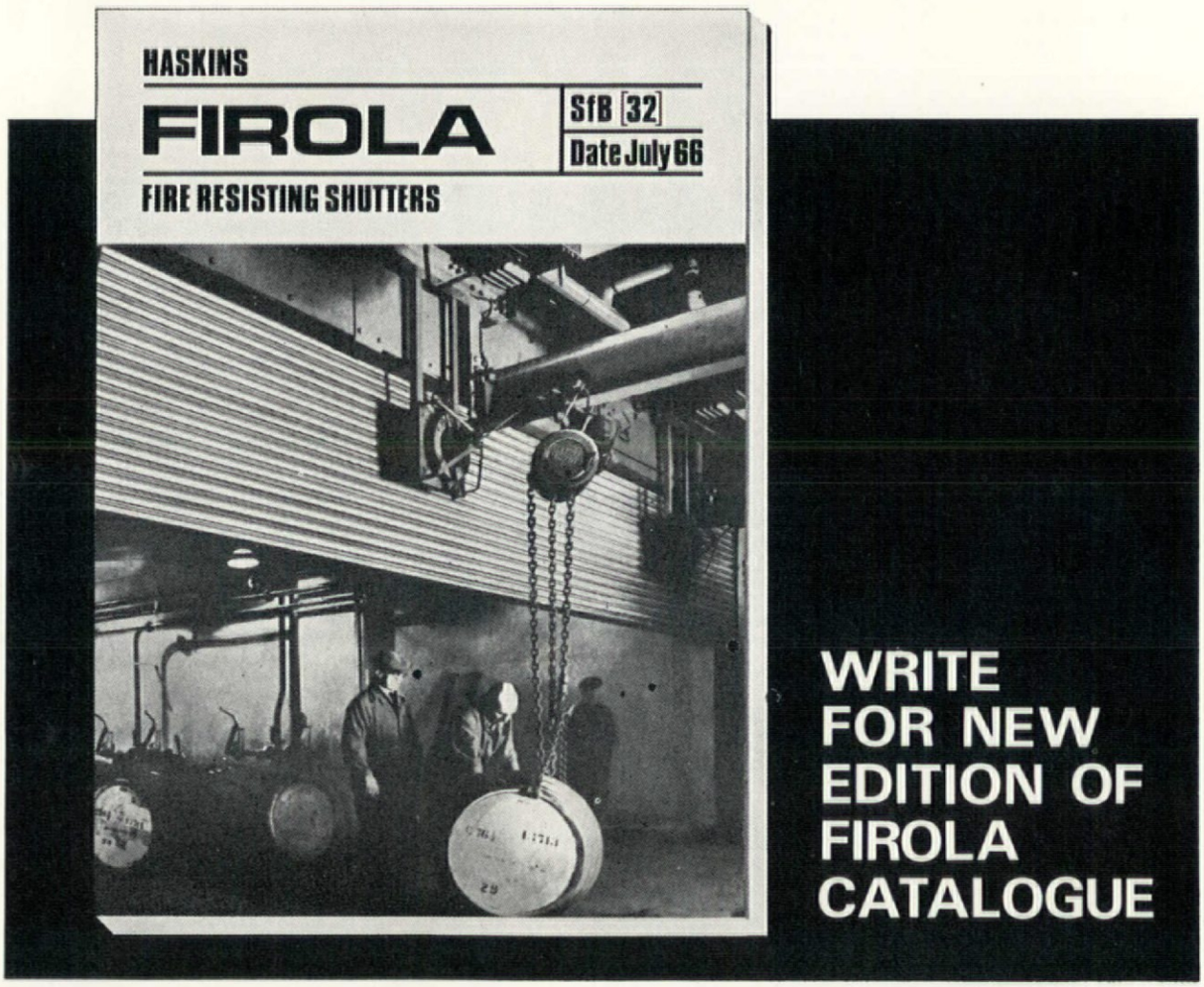

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Refer to Barbour Index

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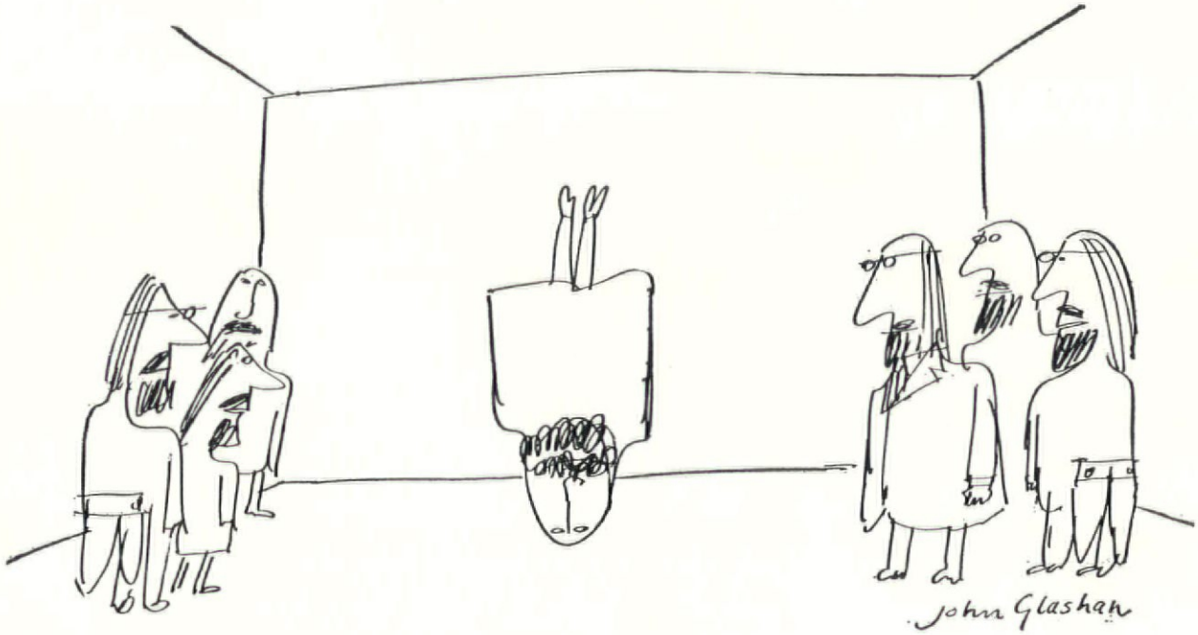
Who's the joker who said we could have all our heating, lighting, ventilating and sound-absorption through the ceiling?



The HT Ceilings man. And he wasn't joking

Deadpan, he said it. Because he knew he could do it. 'He who laughs last', he muttered, as he stood on his head (the better to look at the situation, you understand.) Then he jumped to his feet, and came up with all the answers — including a gem on cost-cutting. We kid you not. HT Ceilings can combine any or all of these functions in *one ceiling*. There's nothing to clutter up design. In point of fact, HT Ceilings are a flexible design element in themselves.

Heat through 'em. HT Radiant Ceilings with unique new electrical element built right in, give gentle uniform warmth at unbeatably low running cost. The element, operating at around 100° F, has an exceptional safety margin. There are no unsightly radiators or pipes. And what's more — no maintenance.

Light through 'em. HT Luminous ceilings give you glare-free, shadow-free lighting at any level. They can provide up to 100 lumens per sq. ft.— or more. Pretty bright, eh ? And HT will put any size or shape of lighting unit into any ceiling, integrated to suit design requirements.

Ventilate through 'em. When it comes to ductless ventilating ceilings, HT have yet another ace up their sleeve. Multiple invisible slots give controlled air-injected ventilation with absolute freedom from draughts, even at 120 air-changes per hour. Still no draughts when the volume of air injected is varied in different parts of a space. Given the air-change requirements, HT experts will calculate the rest to ensure complete mixing above head-height. If you want to introduce humidified or conditioned air, HT Ceilings are the boys for that as well.

Let's speak acoustically. HT make the only acoustic ceilings that can both reflect and absorb sound scientifically calculated for optimum performance, with no change in appearance.

The sound-reflecting and sound absorbing materials are effectively concealed behind aluminium alloy strips. Stove-enamelled in twenty-one colours, and completely flexible directionally, the lineal facing offers endless design possibilities.

As an example of HT Acoustic Ceiling efficacy — they can reduce reverberation time in swimming-pools from 6½ seconds to 1½ seconds. Five seconds worth of nerve-racking reverberation lost ! And again, these ceilings need no maintenance.

Thinking of integrating ? Fitting fire-sprinklers, air-terminals or lighting-units — any shape — into all HT Ceilings presents no problem, nor does working round corners, or partition integration.

The HT Ceilings man wasn't standing on his head purely for laughs. He was entirely serious about the possibility of combining all these features in one ceiling.

To give you a case in point — HT are producing a special two-layer luminous/acoustic ceiling for Ford's new £10½ million Engineering and Styling Centre at Basildon. In this ceiling, the light fittings are designed to be the wiring trunking and main support of the Acoustic Ceiling which itself forms the air-conditioning plenum and fire barrier. The lower ceiling, designed to the building module, provides glare control and supports for the demountable modular partitioning throughout. Covering 200,000 sq. ft. this is the largest single special ceiling in Europe.

The gang at HT live and breathe ceilings. Their expert advice is available from the drawing-board onwards. They're thoroughly qualified to see the project through. At design stage, during erection and after completion HT are ready and able with help.

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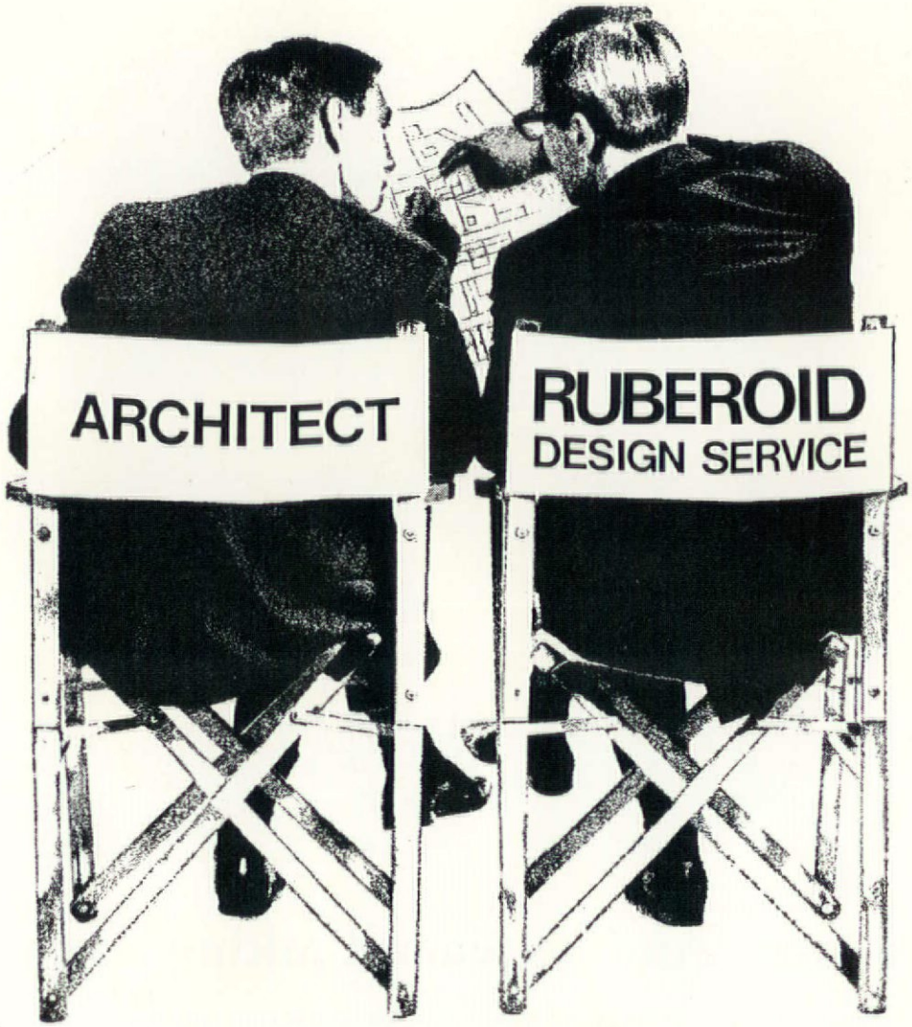

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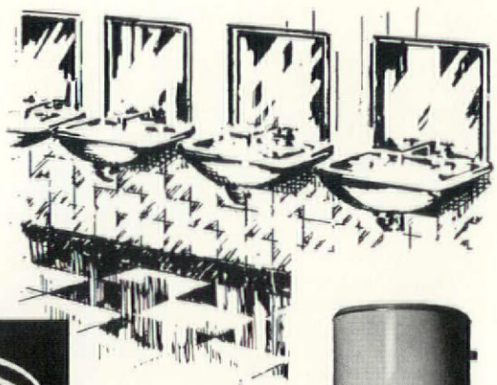

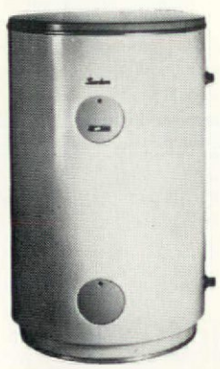

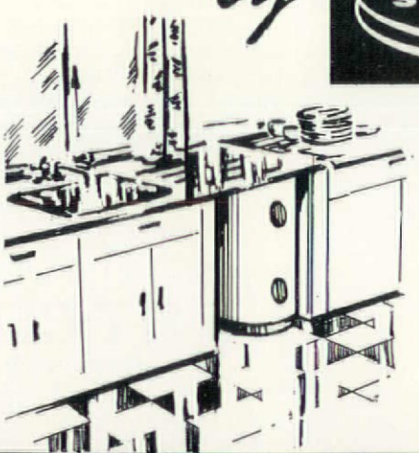

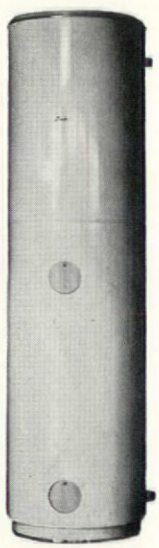

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BARBOUR INDEX 204

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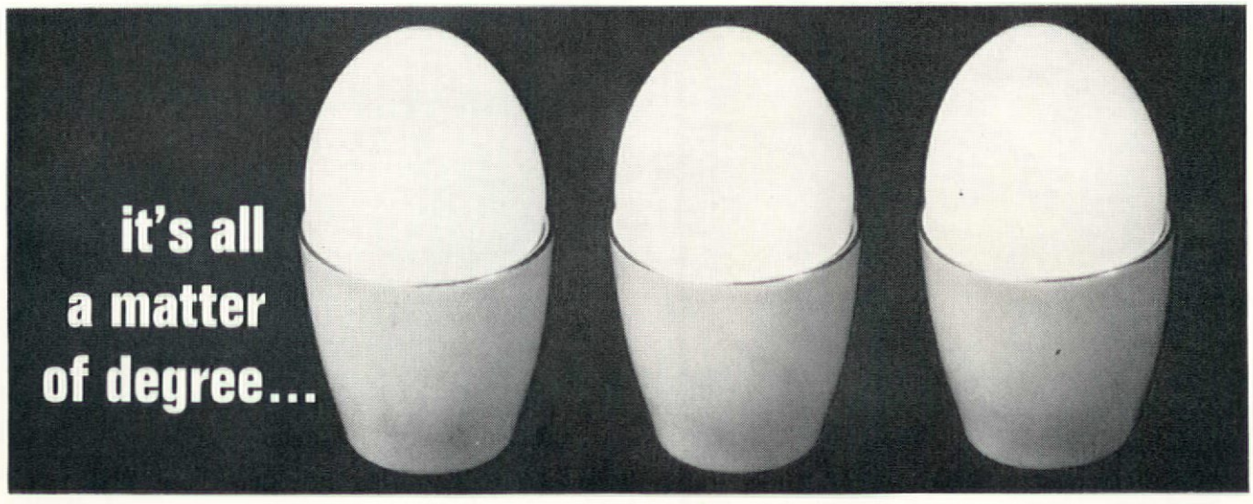

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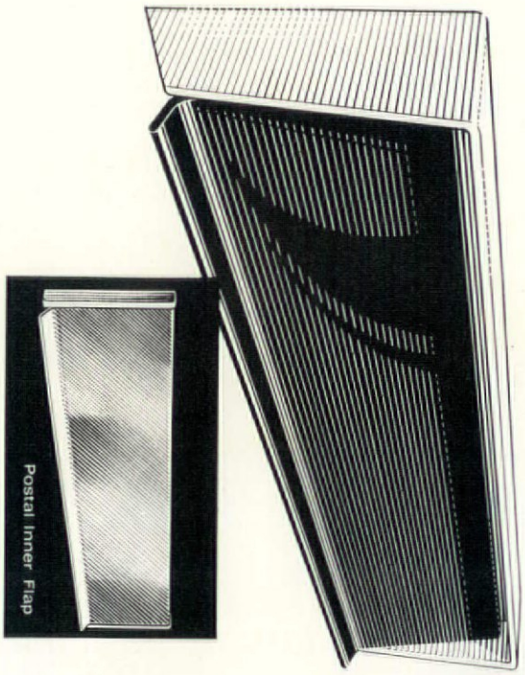

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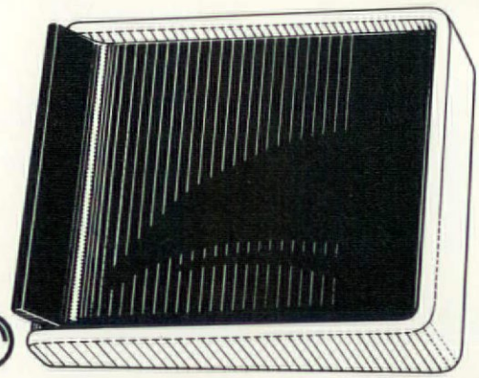

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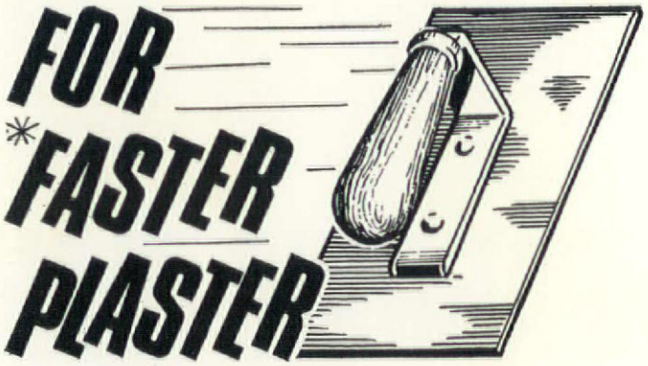

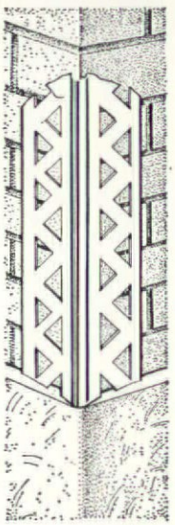

*** (in both senses of the word)**

around every corner . . . the new Blakey Galvanised Metal Angle Bead.

Designed to the suggestions of leading architects, Blakey Angle Bead fits snugly and easily over breeze blocks or bricks; gives phenomenal keying power; and substantially reduces plastering costs. (One well-known firm of plasterers reports saving of 5d per foot run — £5 per house — compared with concrete angles).

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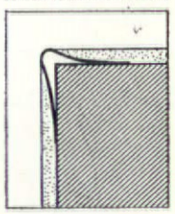

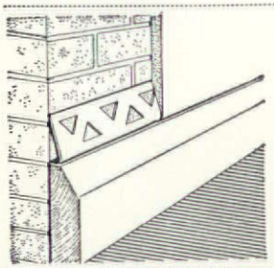

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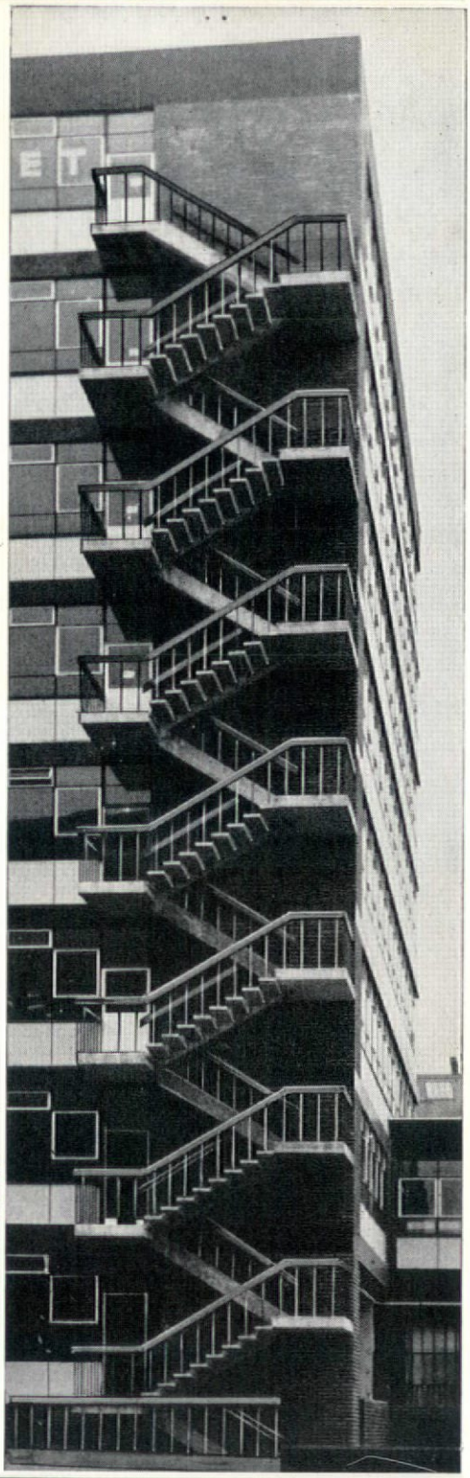

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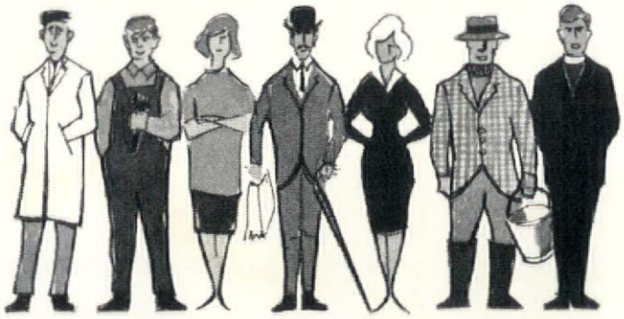

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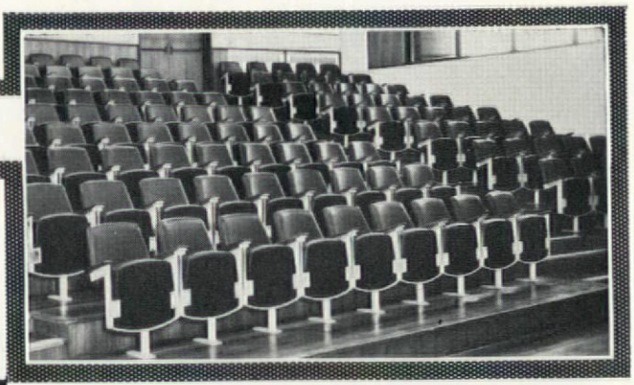

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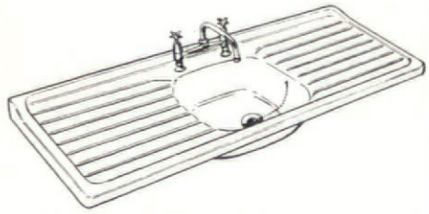

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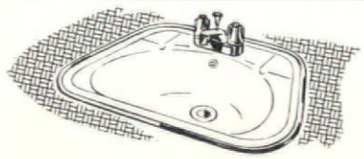

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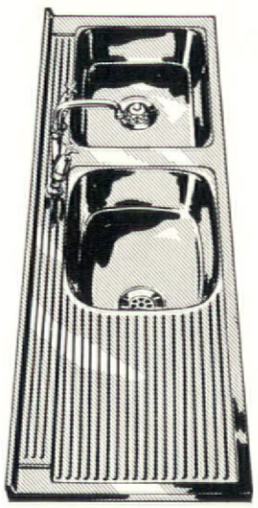

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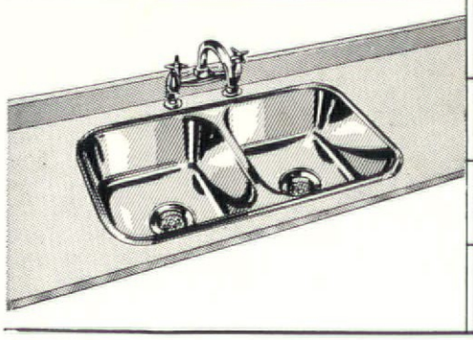

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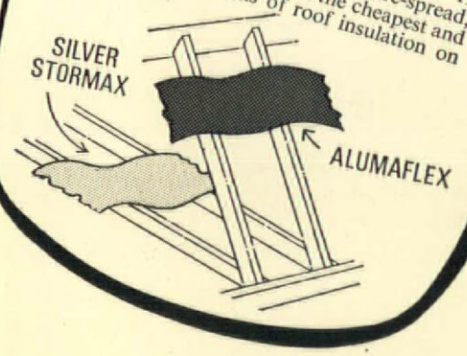

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