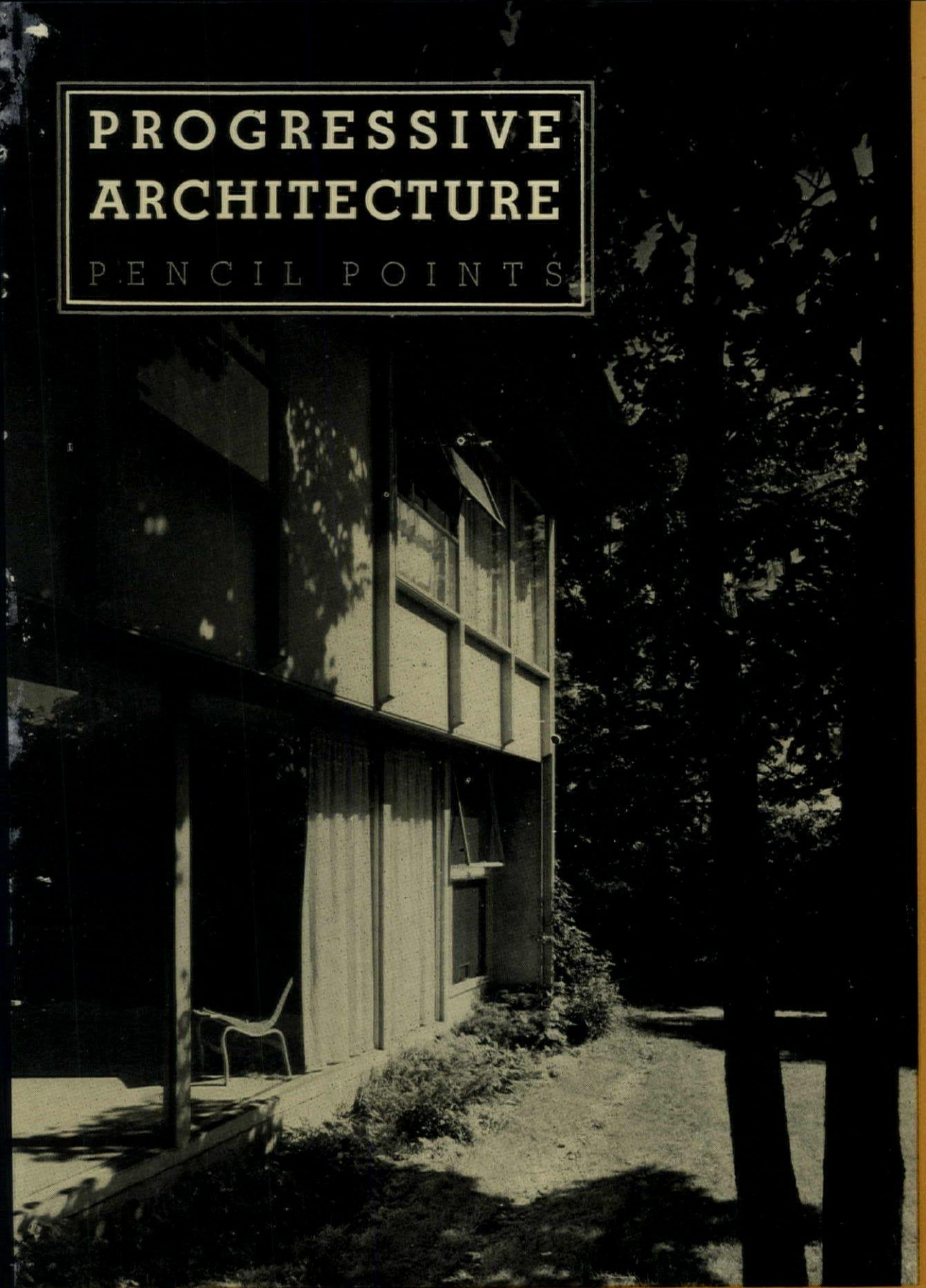
PROGRESSIVE ARCHITECTURE

PENCIL POINTS



HOUSES

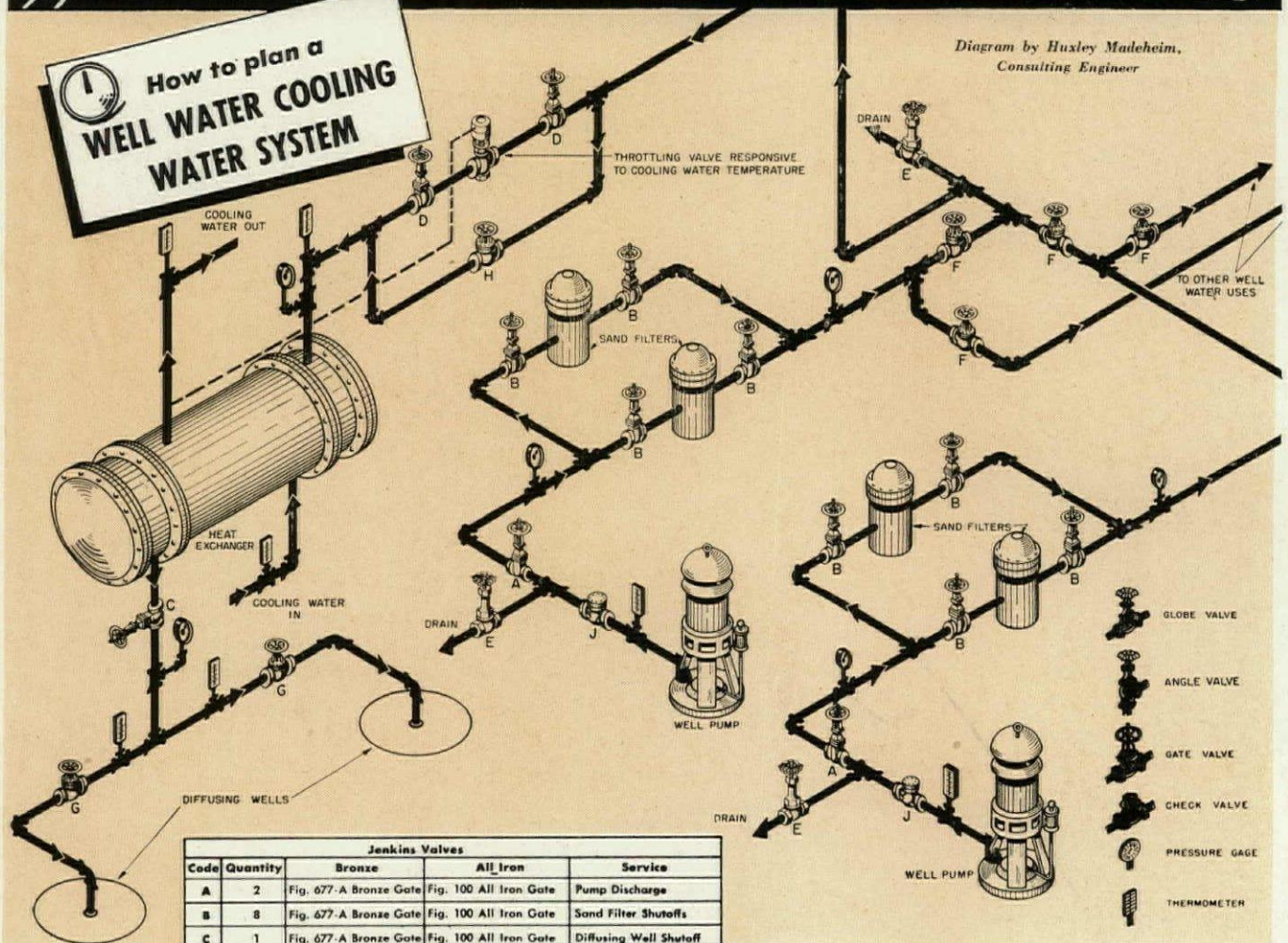
LIGHT CONTROL

OCTOBER 1946

Jenkins PRACTICAL PIPING LAYOUTS 15

How to plan a WELL WATER COOLING WATER SYSTEM

Diagram by Huxley Madeheim, Consulting Engineer



Jenkins Valves				
Code	Quantity	Bronze	All Iron	Service
A	2	Fig. 677-A Bronze Gate	Fig. 100 All Iron Gate	Pump Discharge
B	8	Fig. 677-A Bronze Gate	Fig. 100 All Iron Gate	Sand Filter Shutoffs
C	1	Fig. 677-A Bronze Gate	Fig. 100 All Iron Gate	Diffusing Well Shutoff
D	2	Fig. 677-A Bronze Gate	Fig. 100 All Iron Gate	Automatic Valve Shutoff
E	3	Fig. 47 Bronze Gate	Fig. 40-A All Iron U-Bolt Gate	Drains
F	4	Fig. 661 Bronze Globe	Fig. 142 All Iron Globe	Well Water Header Valves
G	2	Fig. 661 Bronze Globe	Fig. 142 All Iron Globe	Diffusing Well Control
H	1	Fig. 661 Bronze Globe	Fig. 142 All Iron Globe	Manual Bypass about Automatic Valve
J	2	Fig. 295 Bronze Swing Check	Fig. 295 All Iron Swing Check	Pump Discharge Check

Water cooling at a lower cost than with cooling towers can often be accomplished with well water, which is available in adequate supply throughout large areas of the nation, at a constant temperature of 50° to 60° in all seasons.

Heat exchangers are frequently used, because of the clogging, scale-forming or corrosive action of many well waters. This confines the flow of cooling water to the tubes, which can be readily cleaned or replaced. Sand filters are included to prevent the carry-over of sand into the equipment. In certain areas the use of a heat exchanger and the return of the water to the ground uncontaminated is mandatory. Such requirements are met by this layout.

Because many well waters rapidly attack some copper base alloys when associated with ferrous metals, all-bronze valves or alternate all-iron valves are listed.

Other types and pressure ranges of Jenkins Valves can be used for this type of layout, according to the factors involved. Consultation with accredited piping engineers and contractors is recommended when adapting these suggestions to your own requirements, or when planning any major piping installation.

VALVE RECOMMENDATIONS

For details . . . and valves to suit varying conditions . . . see Jenkins Catalog.

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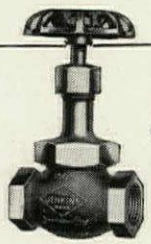

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PROGRESSIVE
ARCHITECTURE
PENCIL POINTS

APPROACHING MATURITY

PROGRESSIVE ARCHITECTURE has an established policy of publishing several houses each month, expanding this coverage occasionally by an issue—such as this one—largely devoted to important residential work.

The pressing social problem at the moment is the minimum housing unit—so pressing that moderate sized homes may not be built. Still we believe that proper emphasis must even now be placed on the house designed for a particular family, the house which is large enough, and is on a sufficient piece of ground to justify individual planning, selective use of materials and methods of construction, and integrated, appropriate expression.

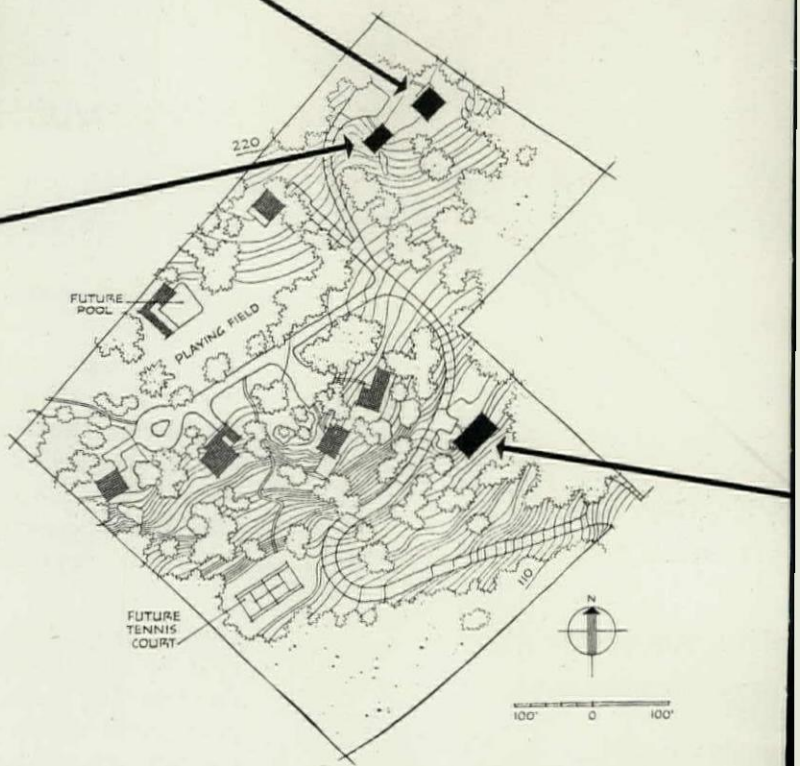
Prefabricated houses produced from a basic prototype are needed; yet that very prototype, in time, will reflect certain advances discovered by designing the large house today. Simple use of available materials is the need today; yet those very materials and the simplicity of their use will often evolve from experiments made in the larger house. There are indications of improved design in the development houses which will be built by the hundred thousands in our current "crisis"; those improvements are largely a result of well designed individual houses published in the last half dozen years. Planned neighborhoods are the hope for better community living in the period ahead; the reasons for neighborhood planning are obvious when the houses are like those on Snake Hill.

We believe that the five houses in this issue are an important proof of approaching maturity in this field of architecture. We feel that they will, in their turn, exert a powerful influence on all residential design. We think that they confirm our policy of documenting, regularly and fully, progress in the design of residential architecture.

The Editors

2 LORD HOUSE ..... Page 59

3 KRIEBEL HOUSE ..... Page 63



3 NEW HOUSES AT . . . . . SNAKE HILL,

Publication of three new houses at Snake Hill is a matter of extraordinary architectural interest. The original five houses at Snake Hill designed by Carl Koch constitute one of the best known and most significant groups of contemporary houses in the world. The three new ones, designed by Koch in collaboration with Huson Jackson and Robert Woods Kennedy, are part of the same cooperative development on the slopes of a ledge-burdened, wooded hillside overlooking a broad panorama of Metropolitan Boston. Of similar merit in plan and design to the first five, the new houses are of very particular interest because of the new, experimental, economical construction with which they are built. Of the very essence of progressive architecture, they make imaginative use of today's resources in materials and structural method in order to provide new and better solutions to problems that are as old as the hills—in this case, suitable habitation for men and their families.

These houses were built at the very end of pre-war private residential construction. Because of the difficulty in finding builders to bid on the work, a special type of building contract was worked out whereby an estimated price was agreed upon, with the understanding that any savings would be divided equally between contractor and owner; and, in the event of any extra costs, these would be split three ways—between contractor, owner, and architect, the latter provision reflecting the architects' wish to experiment with the new structural system and their conviction that it would prove economical. This conviction was justified. When all bills were in, there were savings of from $100 to $500 on each of the houses, for which (as of the end of 1941), total building costs ranged between $7,000 and $9,000.

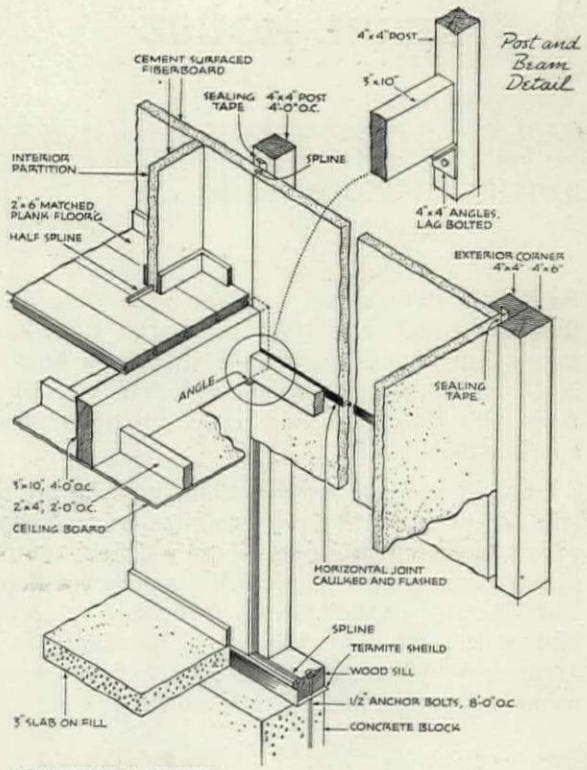
All three of the houses employ a freshly rationalized version of mill construction (see isometric), based on a 4-foot module, that combines some of the oldest

All photographs of the Snake Hill houses were made by Ezra Stoller.

1 ZERBE HOUSE ..... Page 54

CARL KOCH, HUSON JACKSON,
and ROBERT KENNEDY, Architects

ARCHITECT JOSEPH P. RICHARDSON, Builder
(Grandson of H. H.)



STRUCTURAL SYSTEM

BELMONT, MASS.

of materials with some of the newest. Framing (exposed on the exterior) is of 4 by 4 or 4 by 6 redwood posts. Joists are 3 by 10 members, 4 feet on centers. Flooring—in this case, a structural element—is of 2-inch T&G planking. The wall curtain is 1½-inch-thick cement-surfaced fiberboard which automatically forms both exterior and interior wall finish. Placement of this material within the vertical framing results in continuous wall surfaces inside the house, uninterrupted by protruding structural members. The roof is supported by 2 by 6 ceiling joists and rafters trussed together and placed 2 feet on centers. Interior partitioning—which is non-load-bearing and hence may be located at any place the architects desire—is either of wood or of the same cement-surfaced fiberboard as that used for the exterior envelope.

This structural system results in a distinctive exterior appearance, which is quite different from that of the largely wood construction of the original Snake Hill houses. However, the architects point out that the new houses are fairly separate from the original houses, and, at most times of the year, no wood house is visible from any of the new ones.

One of the theories the architects had in mind—one, incidentally, which the finished houses amply reinforce—is that this structural approach, employing standardized parts assembled on a modular basis, provides for the broadest choice in individual preference as to room layout, while the general similarity of exterior appearance tends to produce a restful, homogeneous neighborhood. It is interesting to note that this is almost the exact reverse of that approach to prefabrication wherein standardized plans are used, and variety is possible only by slight—and often fussy—changes in exterior detail. A latter-day expression of faith in the time-honored architectural maxim that the plan's the thing.

ENTRANCE FRONT, at the kitchen corner.

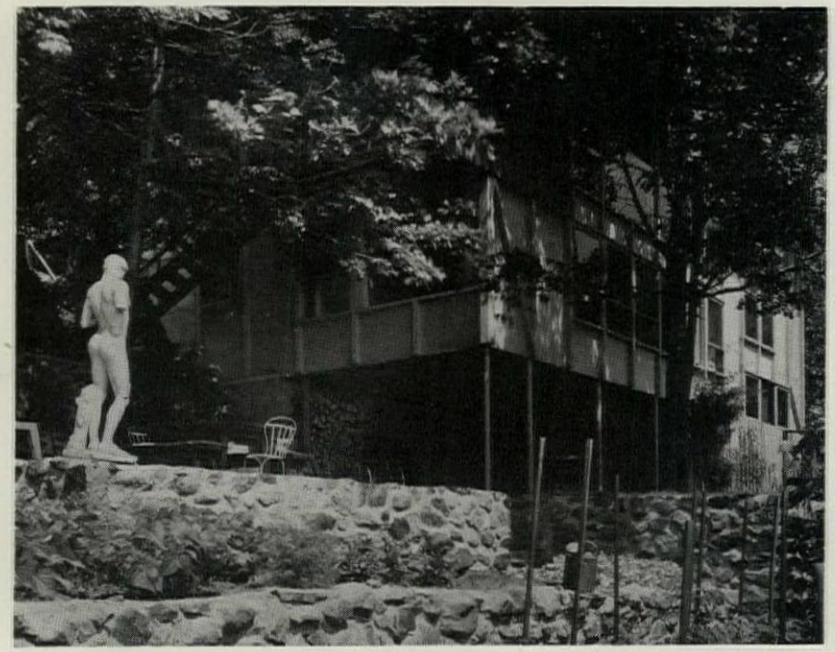
1 . . . ZERBE HOUSE

CARL KOCH, HUSON JACKSON, and ROBERT KENNEDY, Architects

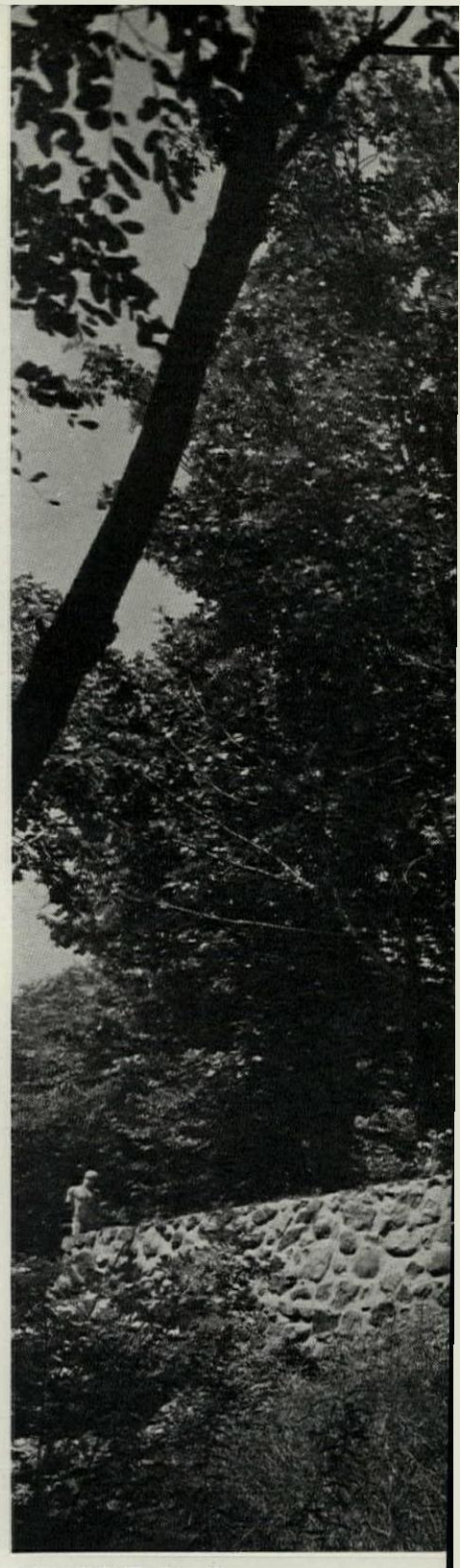
JOSEPH RICHARDSON, Builder

Built on a steep slope, with the important view to the southeast, this home and studio for the artist Karl Zerbe, his wife, and young daughter is the largest of the new houses. At the entrance level, the house has the appearance of a ground-hugging cottage; from the lower terrace, there is a surprising loftiness and spaciousness.

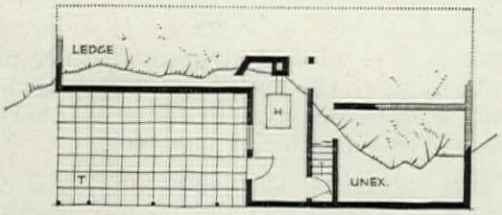
Arranged on three main floor levels, the house respects the site entirely, the floors becoming progressively larger in area (from basement to upper floor) as the slope recedes. The studio, a story and a half in height, occurs at a floor level of its own. The family living area—living-dining room and kitchen—makes the most of the space available in a combined plan arrangement; in the angled corner, a glazed door opens the room out to the high living porch.



The large shaded LIVING TERRACE at the southern corner of the basement level.

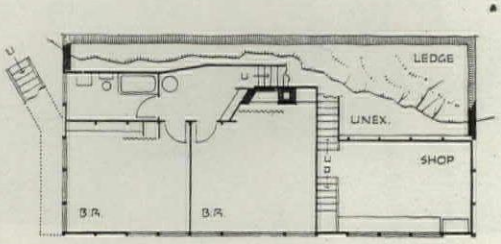


VIEW FRONT of the house . . . . . .

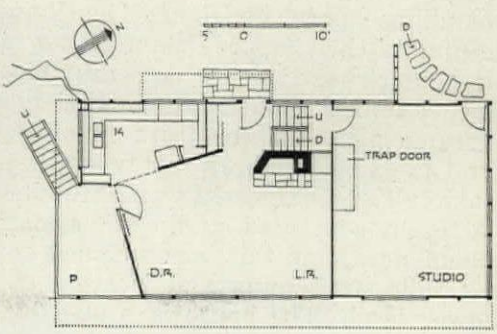


Basement

. . . . . The pattern of the structural elements and proportioning of window areas compose with the site into distinguished architecture.



Lower floor

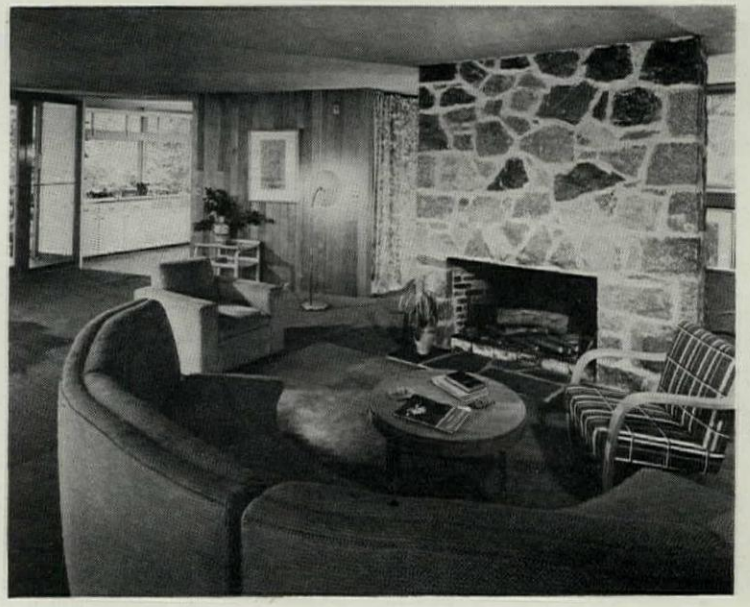


Upper floor

THE STUDIO, a story and a half in height, is full windowed in the corner toward the north; tubular lamps at the window head repeat the light source at night.

ZERBE HOUSE

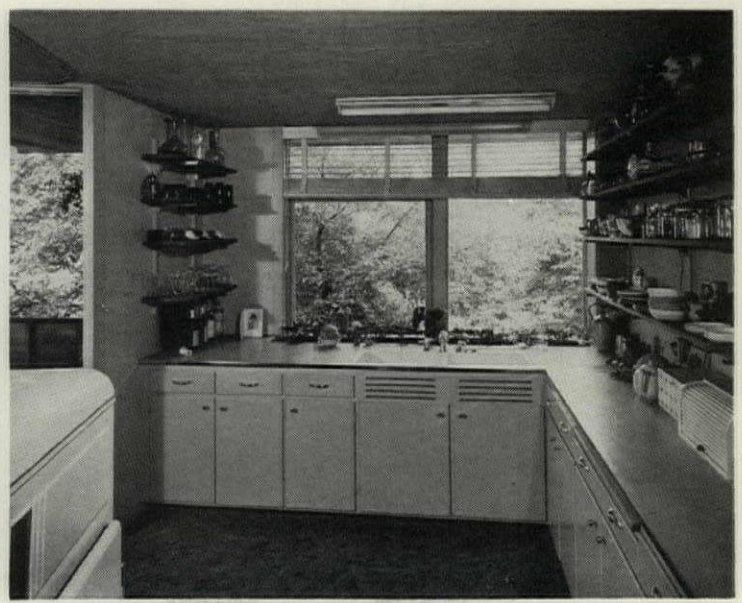
Inside the house the plan advantages of the structural system are apparent. Since bearing partitions are unnecessary, there is the greatest flexibility in handling space division. The living-dining-kitchen space planned as an irregular-shaped unit appears much larger than its actual area; a variety of arrangements of furniture is offered, and the vast windows to the southeast take full advantage of a wonderful view. A totally separated studio was a major client need, and this was satisfied both by full partitioning and location at a lower level. The house is heated by a forced warm-air system.



In the LIVING ROOM, the fireplace breast shields the entrance hall from the lounging area.

Operable panels in the two end windows take care of ventilation.

The DINING AREA opens directly to the kitchen; the door leads out to the living porch.

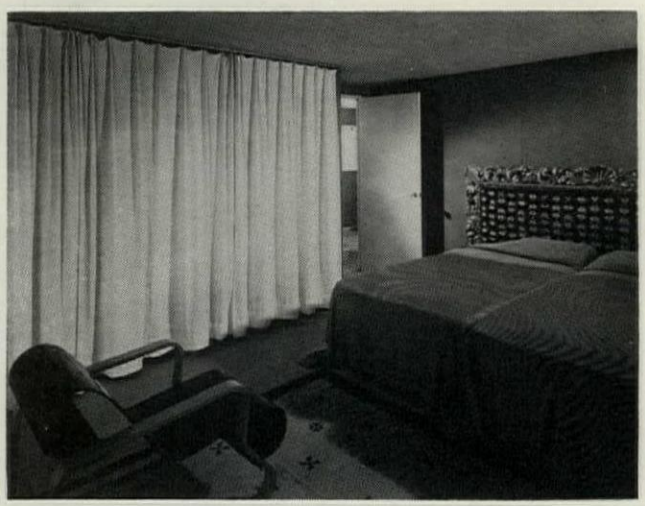


The well appointed KITCHEN is equipped with open shelving installed on adjustable brackets.

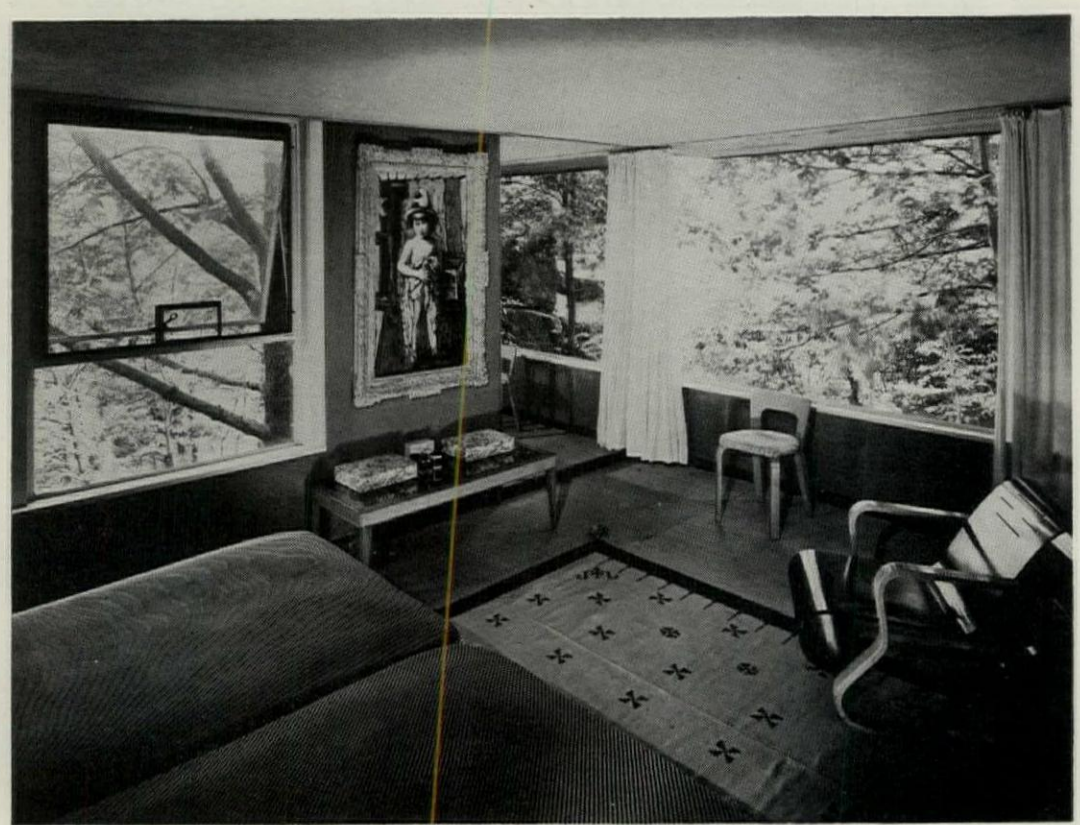
ZERBE HOUSE

The bedrooms in the Zerbe house come at the middle level, both of them with large windows on the view side. The partition on the north wall of the child's bedroom is of cedar boards arranged vertically in clapboard fashion. Throughout the house, partitioning is kept as uncomplicated as possible; even closets are left without doors and the carpentry these would involve. In short, the highly important design reference point of economy applies all the way from structural concept to plan detail.

CHILD'S ROOM. Clapboard partition at left.



OWNER'S ROOM. The door is a 1⅜-in. hollow casein-glued core, flush faced with gumwood.



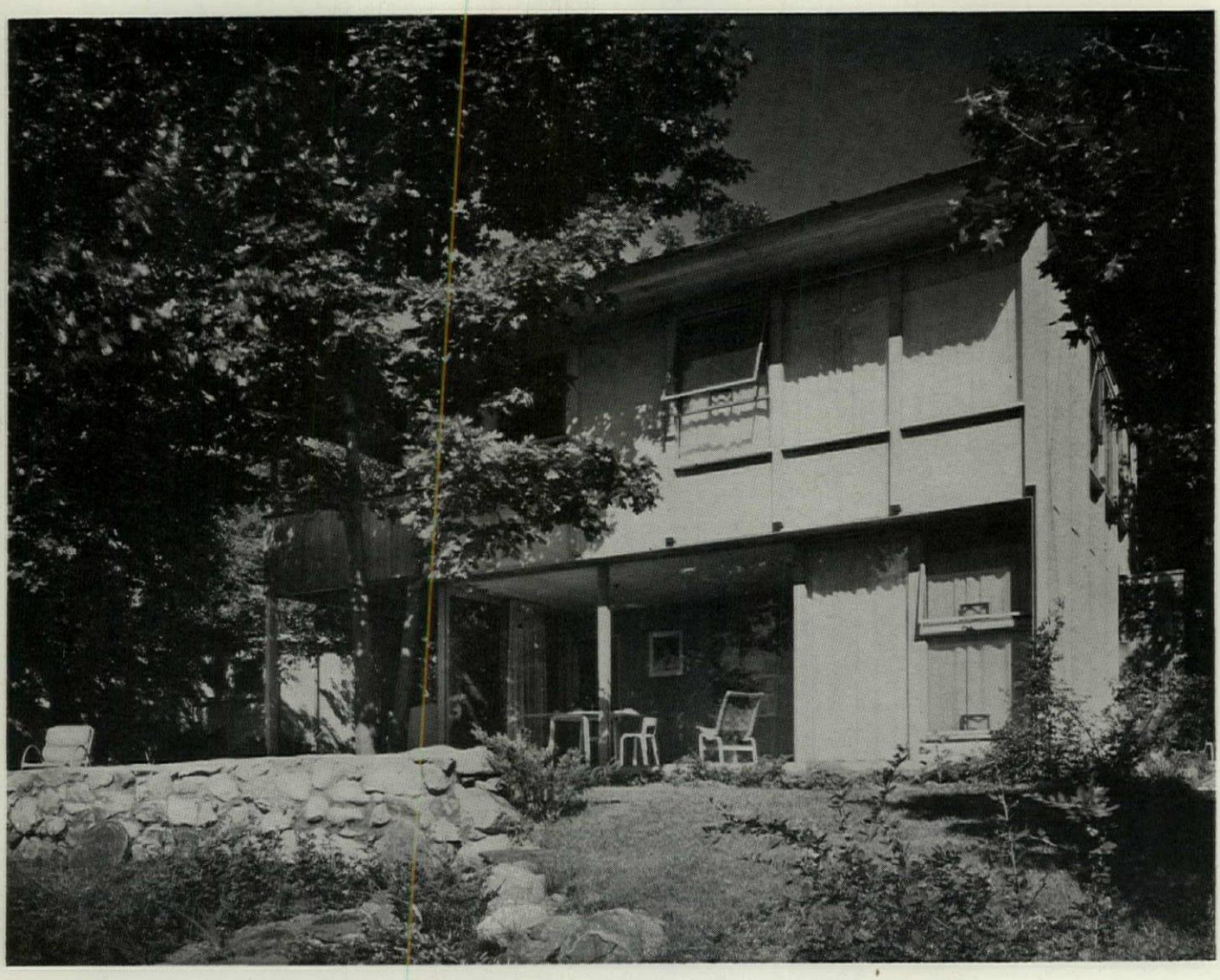
At a corner of the owner's room, a full-length mirror adjoins the view window.

Approach side of house. Don't overlook the view through the corner porch.

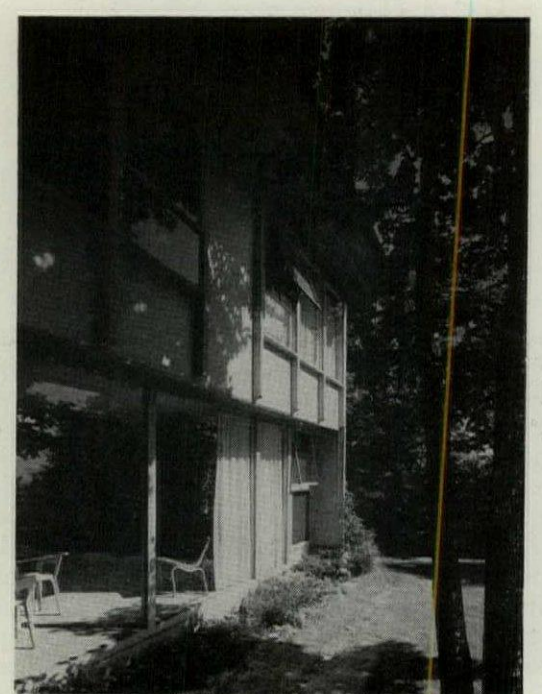
2 . . . LORD HOUSE

CARL KOCH, HUSON JACKSON, and ROBERT KENNEDY, Architects
JOSEPH RICHARDSON, Builder

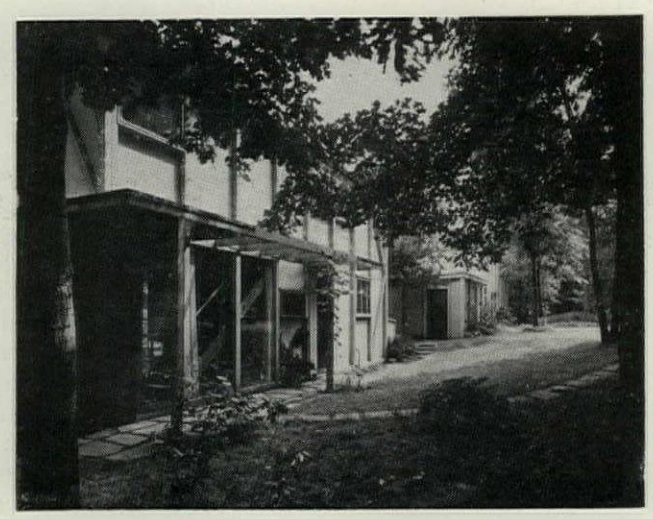
The only one of the three houses built on a level site, the Lord house in shape is basically nothing more than a simple, rectangular box. Yet in amenity and plan scheme—largely because of the flexibility allowed by the structural system—this house is a far cry from the conventional layout of a conventionally built home. And it indicates again one way in which the human desire for individuality can be satisfied through methodical standardization. The architects are careful to point out, however, that the structural concept, while a step in the right direction, is not yet perfected. The nature of the curtain-wall material in its present stage of development is such that it is subject to shrinkage and swelling, and its edges are not weather-resistant. In spite of these deficiencies—and they were known before the houses were designed—no serious flaws in performance have occurred. Obviously, however, if an inert, weatherproof wall material of this sort could be manufactured, the system would be that much better.



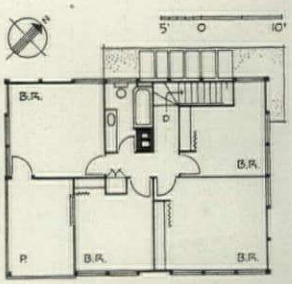
GARDEN FRONT of the house. Curtaining controls the amount of light.



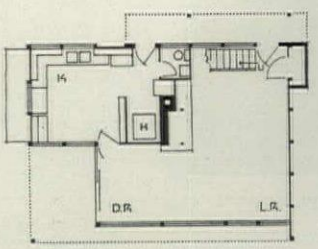
Close-up of the glass wall of the living room.



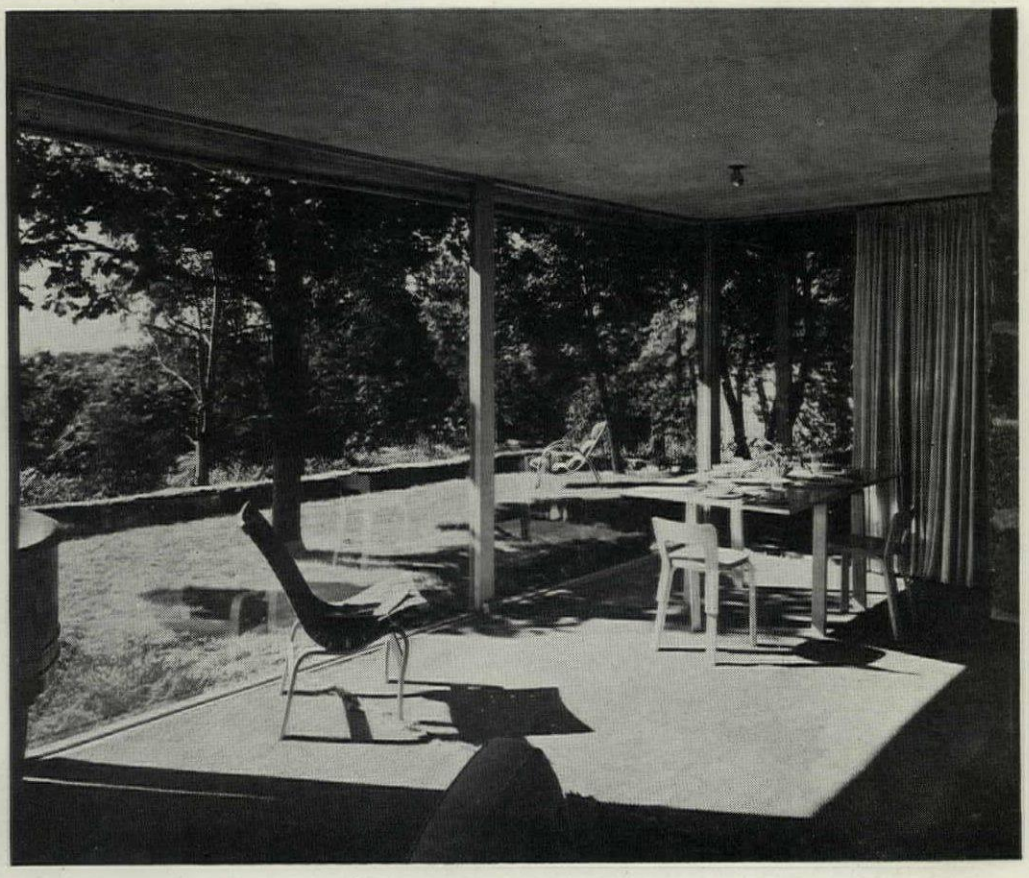
The LORD house (foreground) is closely allied to the KRIEBEL house (background) (see page 63).



Second Floor



First Floor

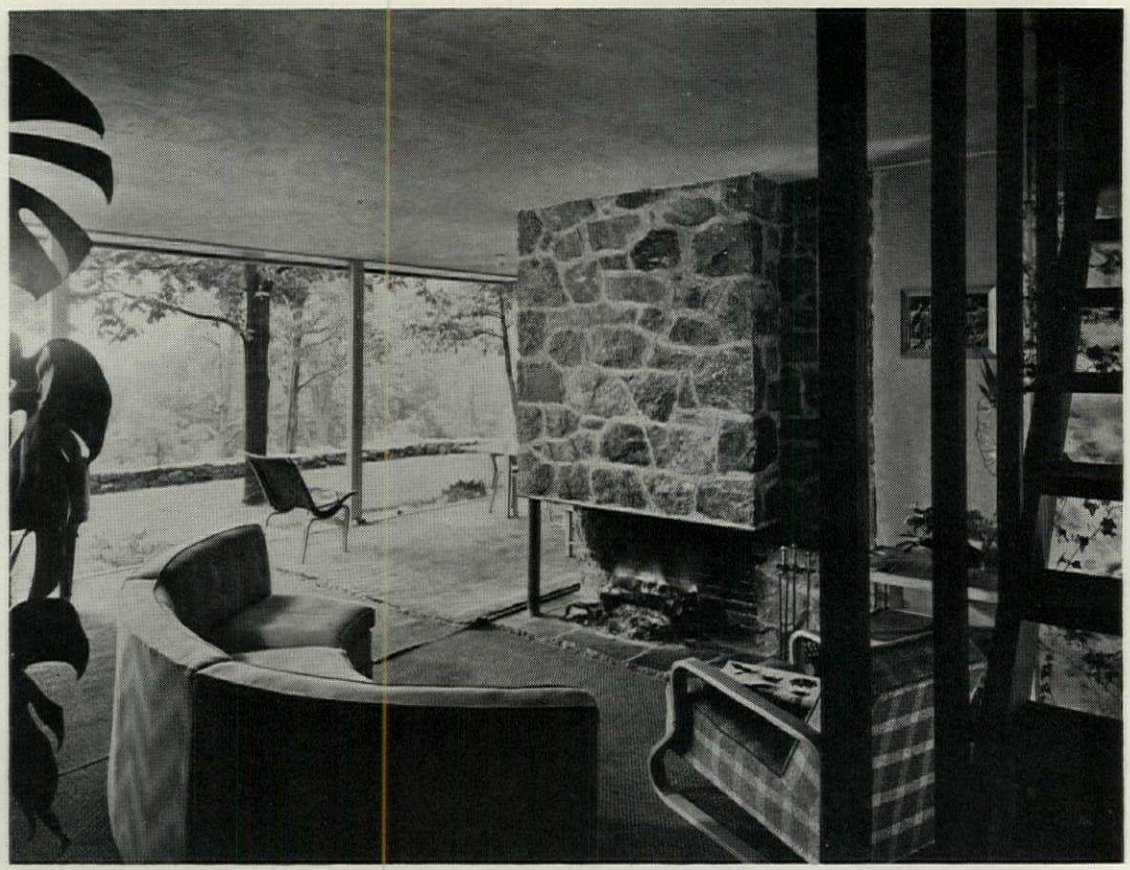


Home in the country. Large rugs cover the concrete floor.

LORD HOUSE

Like the other houses, the Lord house is planned around the extraordinary view that the site affords, in addition to providing living quarters for the family—in this case, a man and his wife and two children. The basementless house is heated by a combination system — radiant coils in the downstairs floor and hot-water radiators upstairs, served by a ground-floor heater. The glazed corner of the dining-living space provides a remarkable sense of unity with the outdoors; a sliding, glazed panel opens up half of the wall of the dining space to the corner porch.

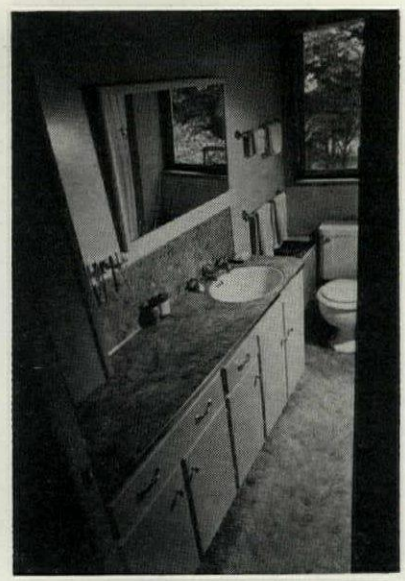
From the window wall, past the fireplace corner to the open stairway built across the front window.



General view of LIVING SPACE; the stairway (right foreground) is rationalized down to just about the simplest possible scheme.

LORD HOUSE

The design of the fireplace in relation to the window wall is one of the few instances we have seen where both may be viewed and enjoyed at once. The Lords wanted a separate kitchen, and the one provided is exceptionally bright and large enough to accommodate a secondary dining table.



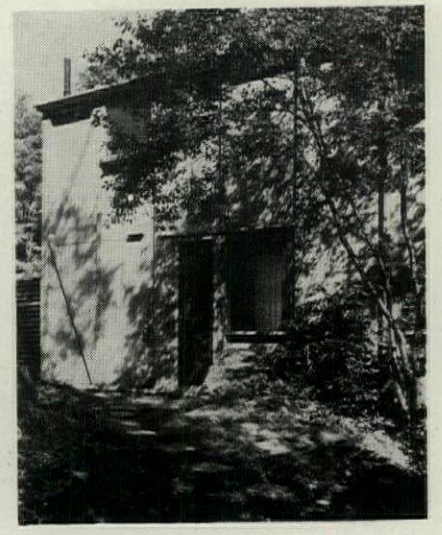
BATHROOM. The linoleum-surfaced counter provides desirable space that is usually lacking.

KITCHEN

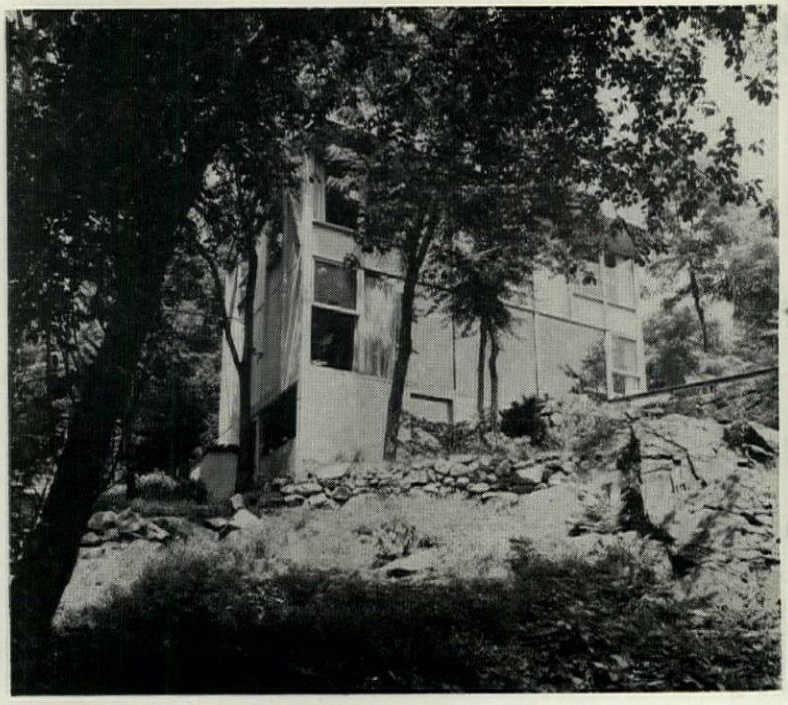
3 . . . KRIEBEL HOUSE

CARL KOCH, HUSON JACKSON, and ROBERT KENNEDY, Architects
JOSEPH RICHARDSON, Builder

Like the Zerbe house, the Kriebel home is built on three levels on a sloping site. The Kriebels have three children, and woodworking, carpentry, and pottery are hobbies in which the family indulges. To serve the latter, the basement floor includes a workroom equipped with a sink. For a house that measures but 20 by 32 feet in area, it is rather surprising to find four bedrooms within. Since this house—like the others—was built on the basis of utmost economy, some of the interior spaces are admittedly a bit cramped. But future plans call for an addition of a bedroom suite and a larger hobby room. The rather bare appearance of certain views of the house is also explained by the fact that it is in only its first stage of development.



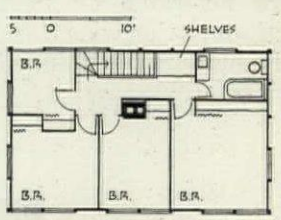
KITCHEN DOOR



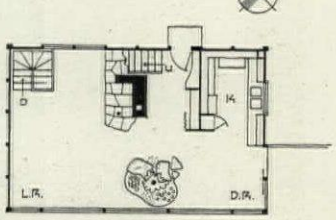
VIEW SIDE of house showing the hilly site.

The louvered screen at the right of the dining-room door joins this house to the Lords' house next door.

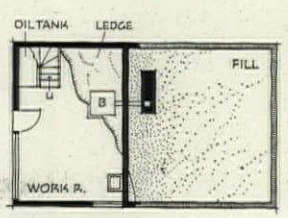
DINING-LIVING AREA. This house brings the outdoors in quite literally.



Second floor



First floor



Basement

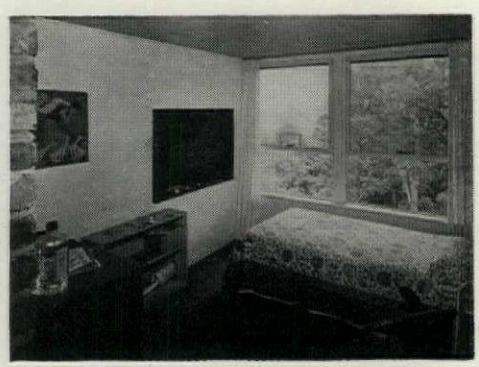
KRIEBEL HOUSE

The architects took advantage of a natural outcropping of rock, let it come right through the floor of the living-dining space, and serve—with ferns and other plant material added—as a dividing element between the two main functions of the room. To make space on this floor seem as large as possible, an extraordinarily open plan is used; no wall occurs between kitchen and dining corner; the living and dining area are a continuous space, and no separate entrance hall exists. As in the Lord house, the Kriebel home has a split heating system—a radiant panel system for the first floor and hot-water radiators at the bedroom level.

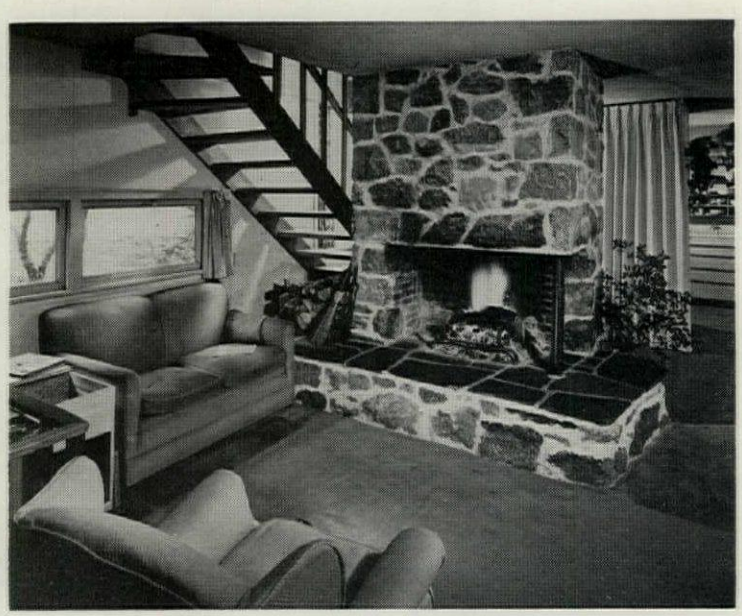
From left to right: fireplace wall, entry alcove, closet, kitchen alcove, dining corner, and natural rock outcropping.

KRIEBEL HOUSE

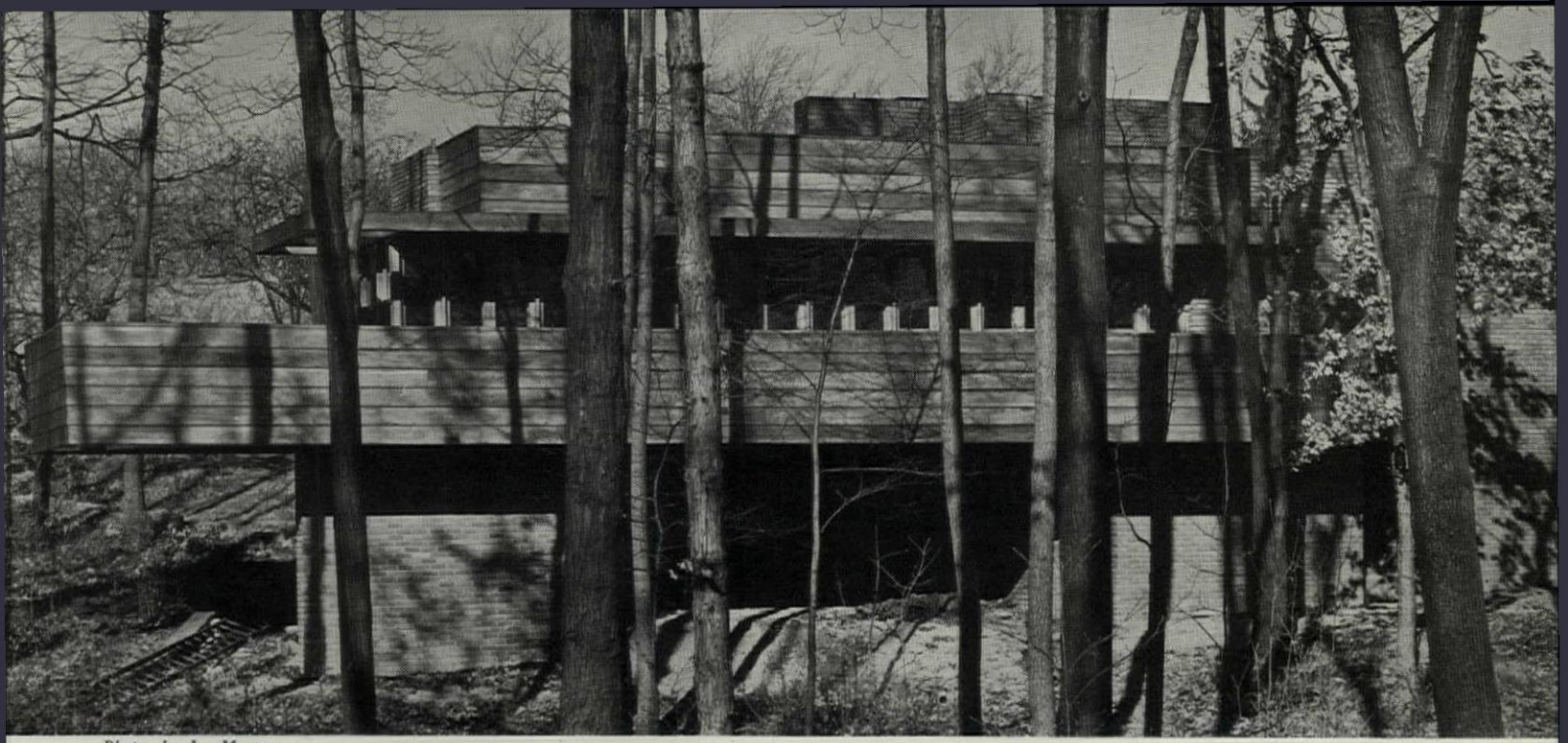
These interior views illustrate perhaps more than any of the others the freedom in planning that is possible where partitions are non-load-bearing. Spaces are divided only where desirable or necessary to separate functions; otherwise (on the first floor) the total house area is planned as a single general living space.



One of the four bedrooms.



The fireplace corner. The fireside seats command the view through the window wall opposite.



Photos by Joe Munroe

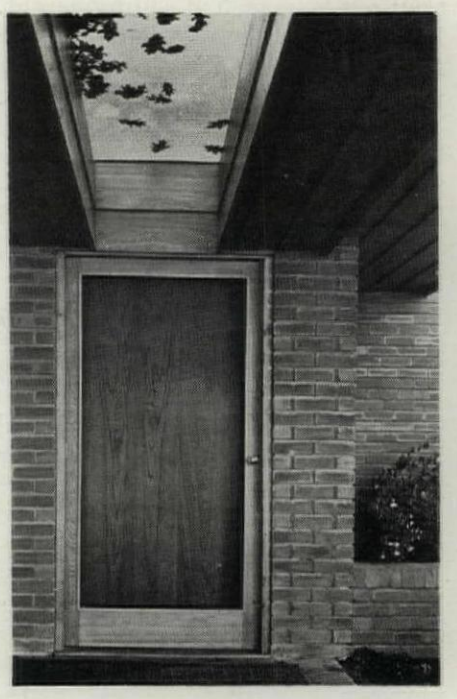
THE LIVING ROOM WING straddles a little valley.

HOUSE AT BLOOMFIELD HILLS, MICHIGAN

FRANK LLOYD WRIGHT, Architect

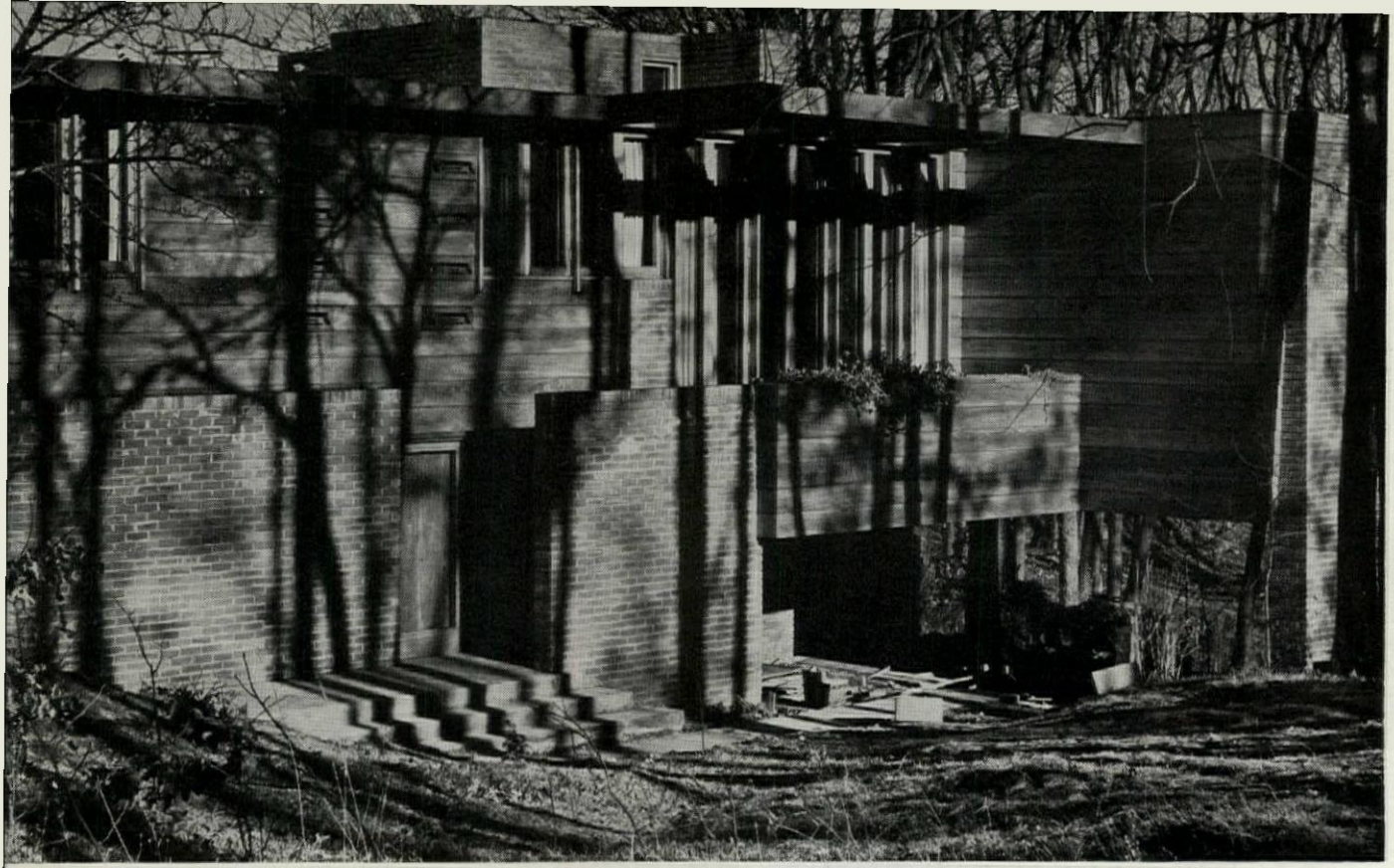
An important criterion for judging a house is the satisfaction of the family for which it was designed. In this case the owner reports: "All of us would love to do it again. We would have Frank Lloyd Wright again, too—if he would have us." High praise, indeed.

When Gregor Affleck and his wife went to Mr. Wright to design their home, they told him: "We have seen the other houses and we don't like them and we like yours. . . We don't like attics; we don't like basements, and we don't like furniture." Their needs were simply stated—"a house with a lot of windows, a large fireplace, a carport instead of a garage, room enough for three people to live in but large enough for six to sleep in." On their architect's advice, they bought a very uneven piece of land—"something with a little character in it, something nobody else could do anything with." Mr. Wright carried on from there. On succeeding pages, we assay the result.

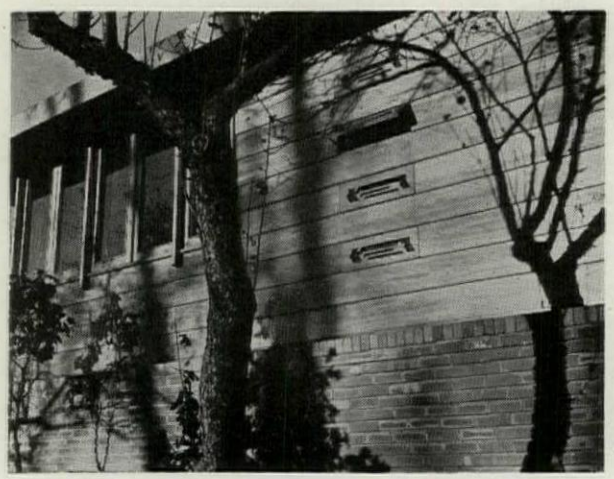


FRONT ENTRANCE, skylighted.

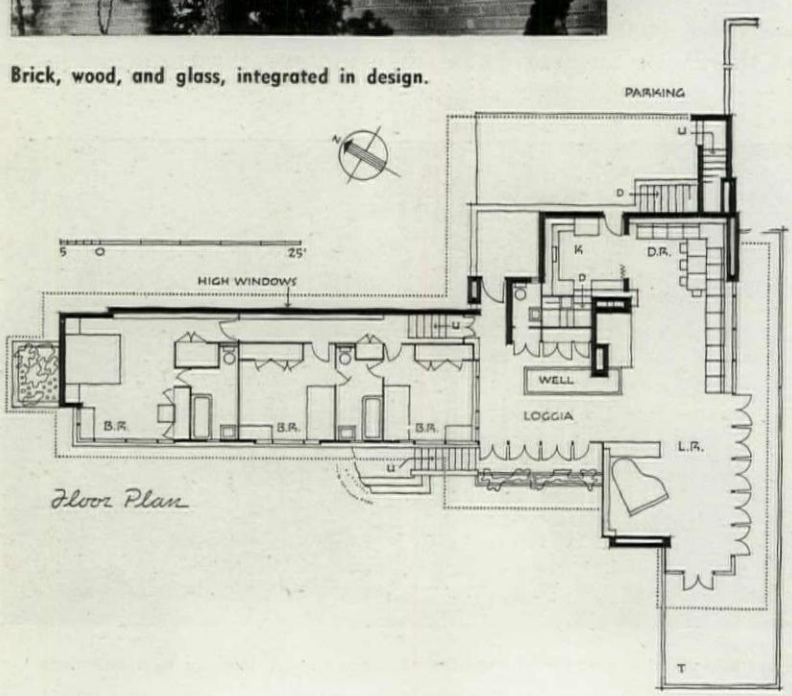
Enclosed by the wall at the corner of the carport, outside stairs lead up to a roof deck.



REAR OF HOUSE, bedroom wing at left. The steps lead up to the loggia balcony.



Brick, wood, and glass, integrated in design.



Floor Plan

HOUSE AT BLOOMFIELD HILLS, MICHIGAN

FRANK LLOYD WRIGHT, Architect

The plan scheme screens the house from the approach side, windows on this front being restricted to transom-type sash at ceiling height. Entrance to the house from the front door is an ever-expanding progression of openness and light. The narrow entry leads into the loggia where windowed doors to a balcony are supplemented by skylights and a "floor lantern," glazed at the bottom, which admits light, provides a view of the garden beneath, and—when opened in summer—becomes what Mrs. Affleck terms "an organic air-conditioning unit." A turn to the left opens into the great, irregular-shaped general living space, windowed from floor to ceiling at the southern corner toward the living balcony and the down-sloping woodland. To an exceptional degree—though not for Mr. Wright—the house and its site are part of each other, and it is difficult to draw clear distinctions between the elements of plan, materials, structure, and finished design.

The solid wall of the cantilevered balcony gives form and privacy to this raised, outdoor room.

From the loggia, past the "floor lantern" to the general living room.

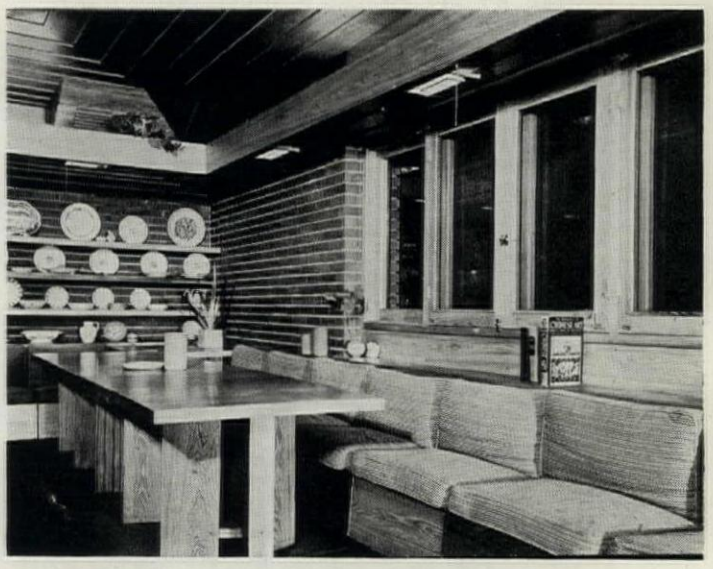
DURING CONSTRUCTION, VISITORS CAME IN SWARMS. SAMPLE REMARKS:

"I hear that the man who is building this house is an architect and he is crazy."

Visitor: "Did you ever think what would happen if you tried to sell this house?"
Mr. Affleck: "Sure, I think I could sell it. Did you ever think how foolish it is to build a house you don't like so that you can sell it to somebody who will not like it either?"

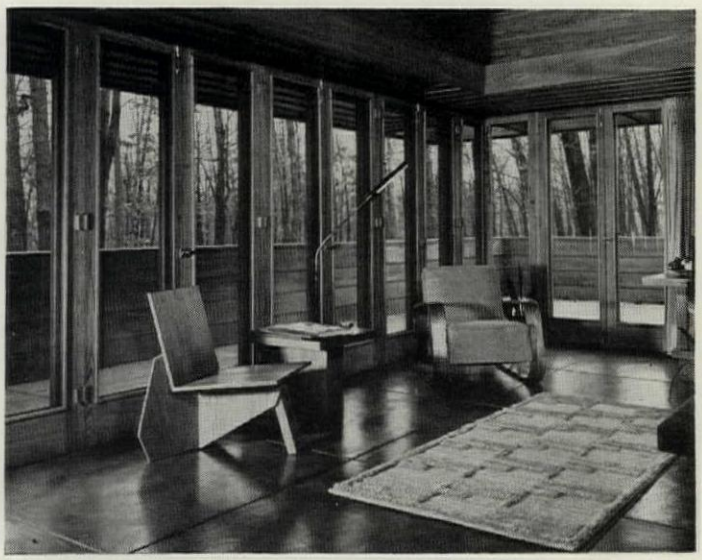
"Wouldn't you think that fellow could find some level ground to build a house on?"

Visitor: "We are going to design our own home. We know what kind of a house we like."
Mr. Affleck: "Why don't you write your own music? You know what kind of music you like."

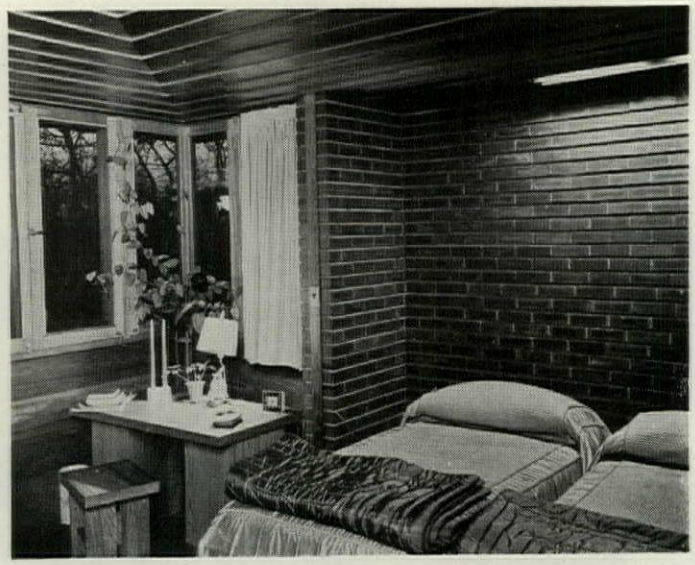


The dining corner.

Loggia windows, doors, and skylights.



The marshaling of vertical door-frame lines complements the insistent verticality of the woods seen through them.



Master bedroom. The board applied to the wall to receive wiring and light switch is frank. But is it integrated design?

MRS. AFFLECK SAYS:

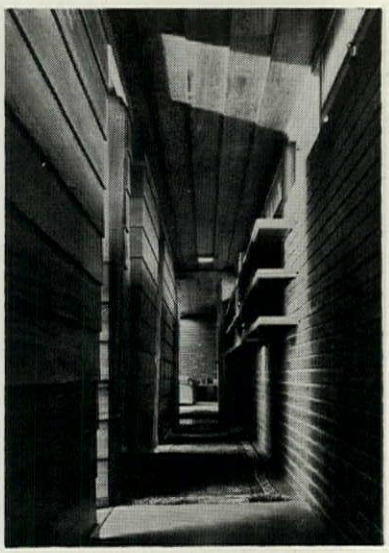
"I wish we could take a vacation—if we could take our house with us."

"I know the roof has leaked and that the skylights leak, but I would rather live in this house than any other house in the world."

HOUSE AT BLOOMFIELD HILLS, MICHIGAN

FRANK LLOYD WRIGHT, Architect

Exterior walls of wood are built of double layers of one-inch-thick overlapping boards screwed together, with continuous insulation between the layers. While ingenious (the structure itself forming both interior and exterior finish), this sloping-wall construction seems rather prodigal in the use of the material and something of an anachronism, in that it creates hard-to-justify shearing and overturning stresses at every joint and (where it serves as a non-bearing wall) its solidity seems excessive.



The in-sloping wall of the corridor is made up of offsets of overlapping, 12-inch cypress boards.

The three bedrooms, located in an upper wing of their own, are separated by bathrooms.

MR. AFFLECK'S CONCLUSION:

"There are only two things wrong with a Frank Lloyd Wright house. People will hardly let you get it built and will hardly let you live in it when it is done."

Photos by Roger Sturtevant

HOUSE AT MODESTO, CALIFORNIA

WURSTER, BERNARDI & EMMONS, Architects

A distinctive house planned for a hot, dry climate

Protection from the sun is essential to comfort in the interior-valley country where Modesto is located. This, perhaps more than any other single factor, has determined the form and detail of this California home. Rooms are high and airy; the tall, double-hung windows, equipped with operable shutters, are a flexible means for controlling light and ventilation; the deep porch ceilings are sunshades as well as part of the roof construction; brick walls help retard the penetration of heat; even the pitched roof is an insulation device.

The porch and paved terrace at the corner where the garden room meets the living room.

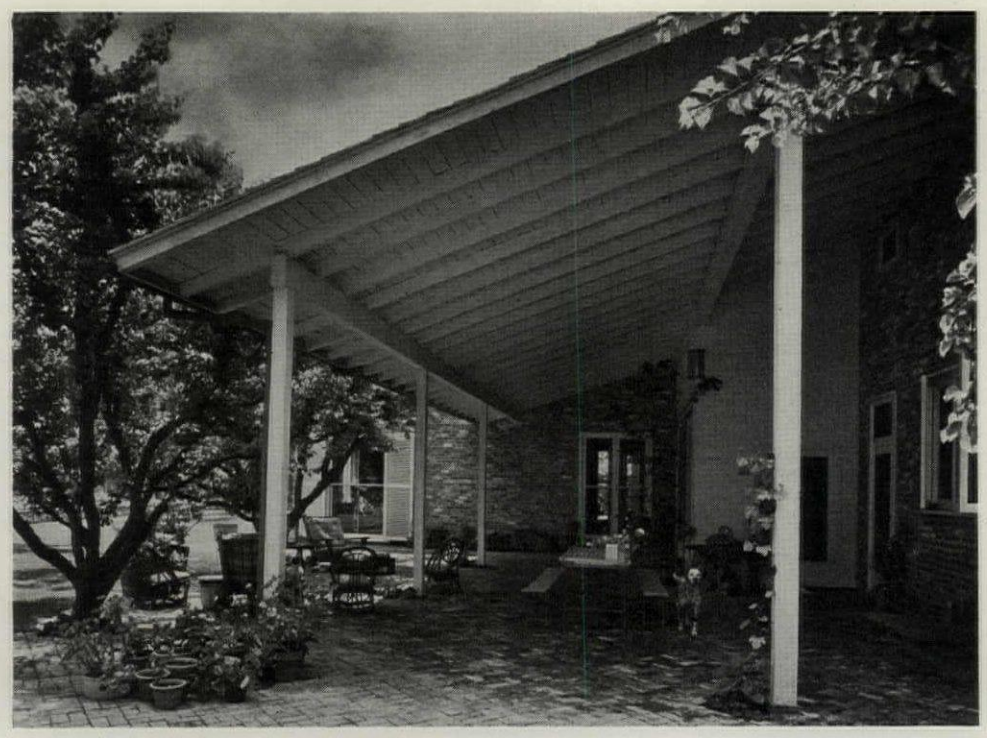
HOUSE AT MODESTO, CALIFORNIA

On these two pages are further illustrations of the design result of skillful planning for sun control. Toward the garden, large glass areas were wanted in the dining room, garden room, and owner's bedroom. In every case, these are bordered by exceptionally deep porches that eliminate glare and direct sunlight.

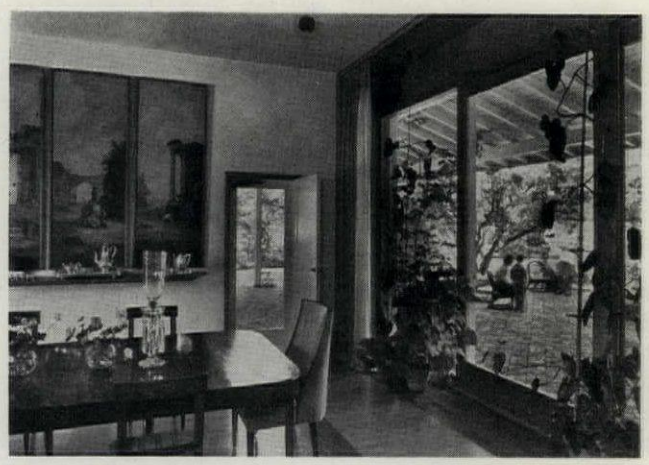
The garden room is a noteworthy plan development of what customarily is treated as a glazed passage. Here, this connecting link between main house and bedrooms becomes an informal, apart, family living room.

A deep porch adjoins the window wall of the garden room. Doors from this room lead to all three of the bedrooms.

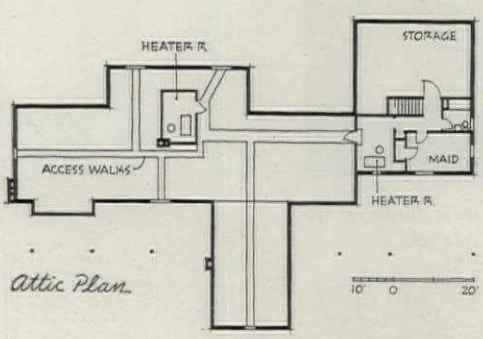
WURSTER, BERNARDI &
EMMONS, Architects

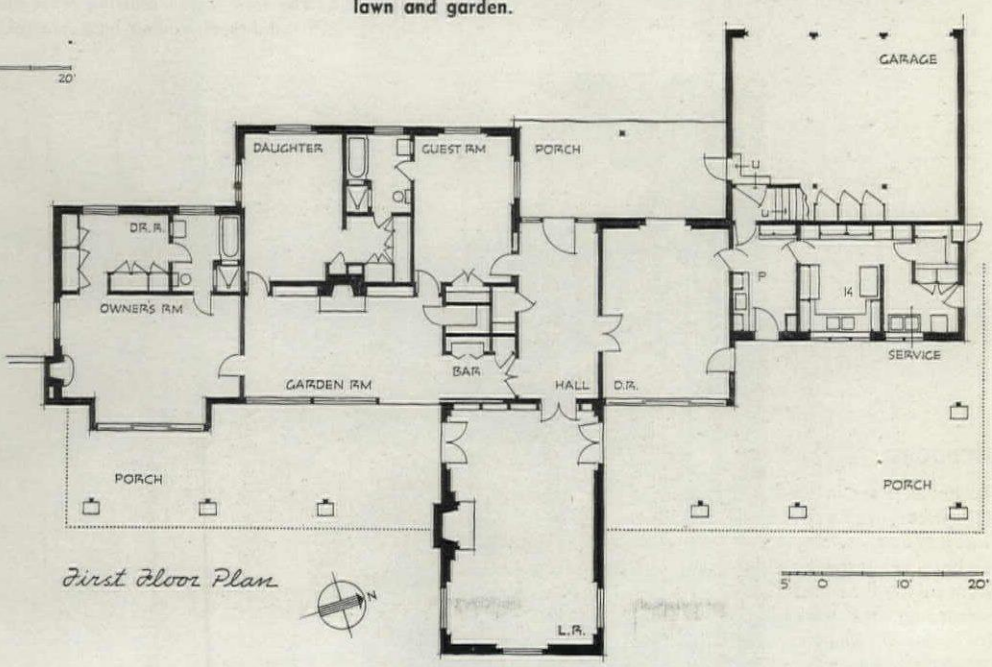


This huge, shaded living porch opening off the main living room, dining room, and kitchen wing is designed to lure whatever breezes come along.



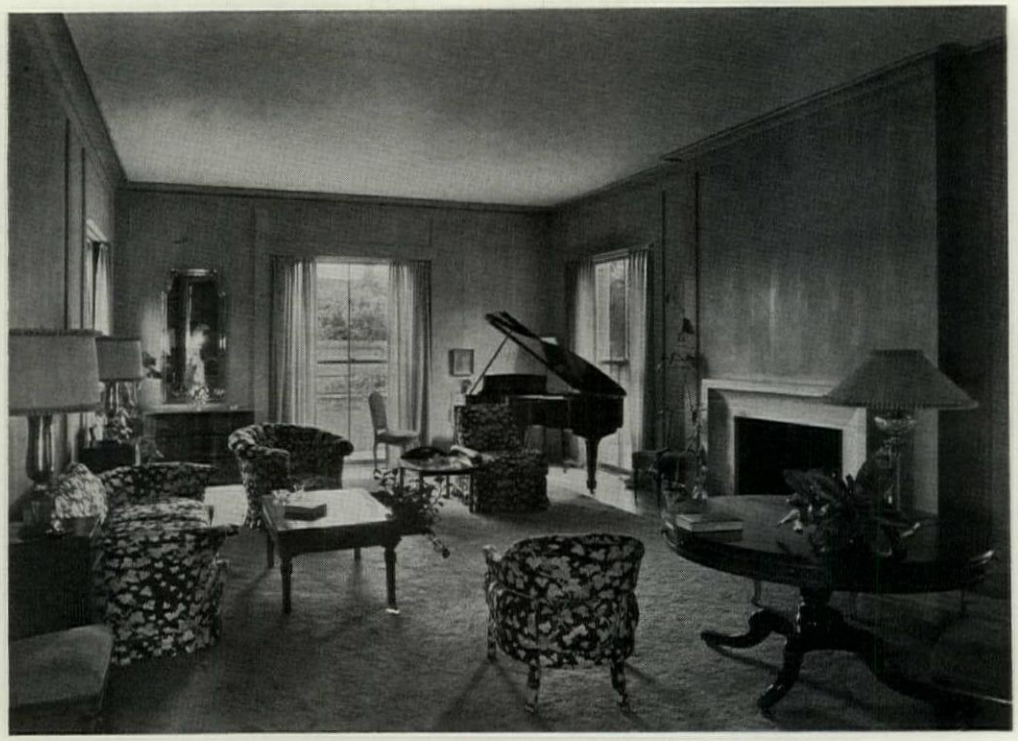
The dining room commands a full view across the porch to the lawn and garden.





THE PLAN

Separate rooms were preferred to the open-plan approach. The formal living room has three garden exposures. An unusual feature of this basementless house is placement of storage space and heater rooms (gas-fired; warm air) in an attic. This attic, insulated at the ceiling line, is part of the planning for comfort control.

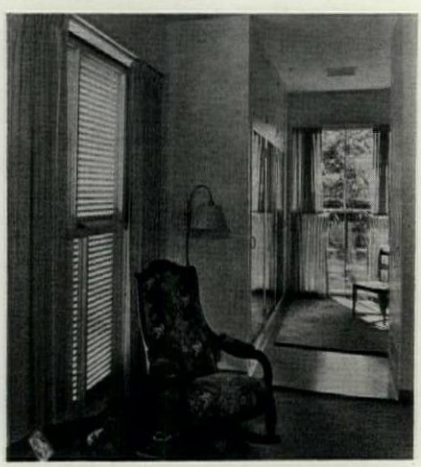


The formal living room is finished in vertical-grained fir paneling, stained light to retain its natural color.

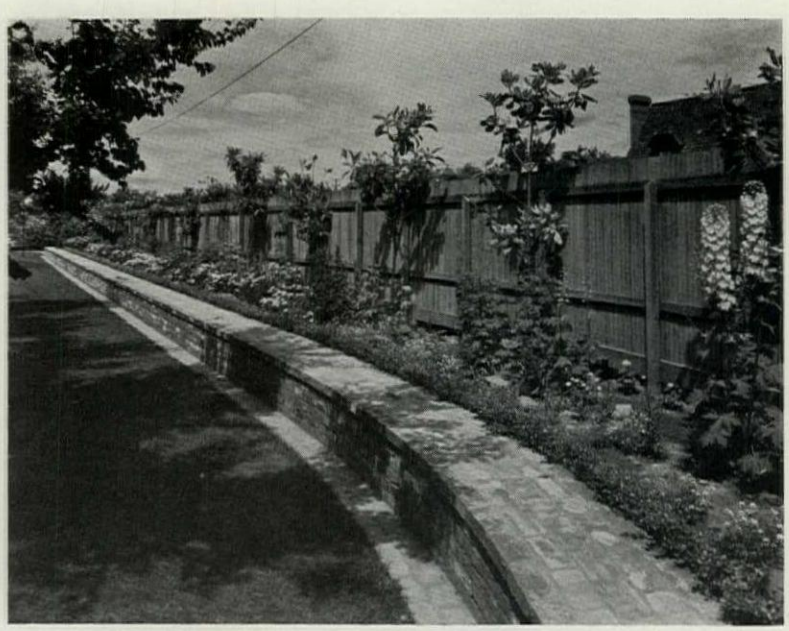
HOUSE AT MODESTO, CALIFORNIA

WURSTER, BERNARDI & EMMONS, Architects

All windows exposed to direct sunlight are large, double-hung sash. This type was used because, in the architects' judgment, it is the most practical window yet devised that will allow use of exterior shutters and interior sliding screens while causing no disarrangement of curtains or deprivation of privacy when open.



The view to the dressing room illustrates the flexibility of window-light control.



OUTDOORS

The house is set in an old apricot orchard. This natural setting has been enhanced by distinguished formal landscaping, the work of Thomas D. Church, landscape architect.

FRED BASSETTI, Designer

AIRPORT HOTELS

These schemes constitute but a preliminary study to help define requirements and a logical design approach. While the result is clean, contemporary architecture, possibly their greater significance lies in the progressive attitude of the designer and the sponsor and promoter—George Cary, Jr.—who, seeing a new human need, offer a cogent argument in favor of a planned program to serve it.

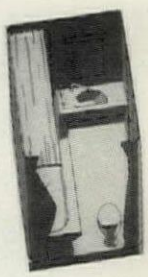
Air travel is vulnerable to the whims of the elements. When conditions require "All Flights Canceled," both planes and travelers come to a halt. Planes may return to their hangars; travelers, in most cases, are left to fend for themselves. Sleeping facilities at small airport hotels is the answer proposed here.

In many respects, the design problem is similar to that of any hotel. But special factors enter in. To handle the problem of protection against noise, for instance, the designer proposes fixed, double glazing and complete air conditioning. Grounded passengers are not likely to make long stays; hence, emphasis is on easy-to-maintain efficiency rather than on luxury or residential amenity. Bathroom units are a specially designed prefabricated type, the designer seeing the potential of the program becoming a nationwide series of hotels and recognizing the appeal of reliable, standardized accommodations.

What about use of the hotels in good weather? The lounges, dining rooms, cocktail bars, and other usual hotel services are the designer's answer. The idea is that business people would use these hotels as a base between plane arrival and departure. Another possibility is use by flying clubs and private flyers for whom facilities at present are all but non-existent.

Three sizes of hotels are proposed. Each anticipates the likelihood of future expansion of sleeping quarters, either laterally, in new wings, or by the building of additional floors.

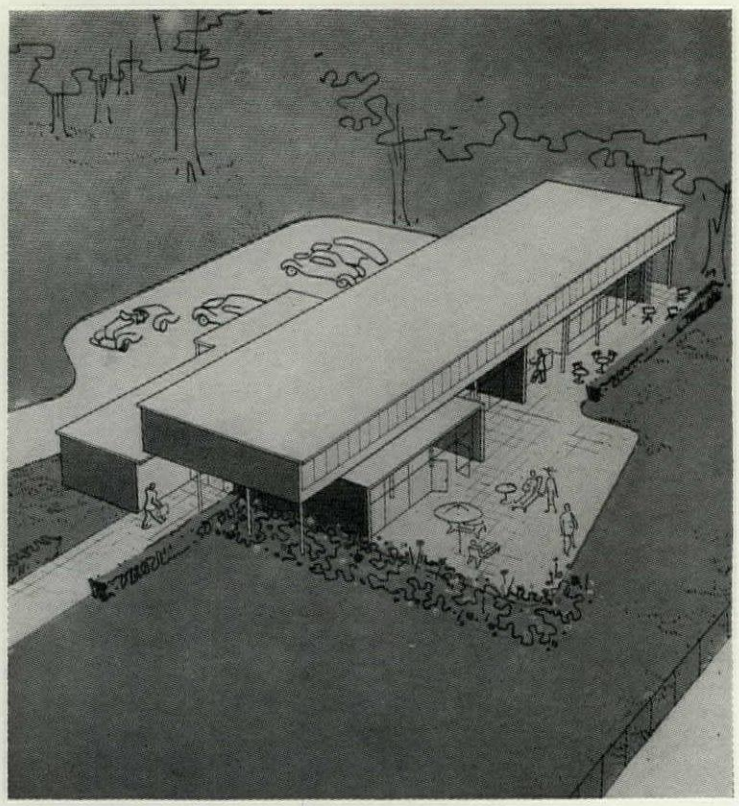
Typical Guest Room. Hard matting surfaces the main traffic areas of the floor; soft-pile rugs are restricted to small strips alongside beds.



Proposed Prefabricated Bathroom Unit.

AIRPORT HOTELS

FRED BASSETTI, Designer

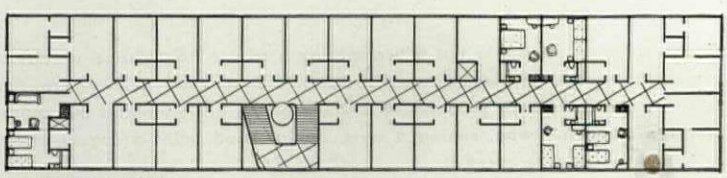


FOREWORD

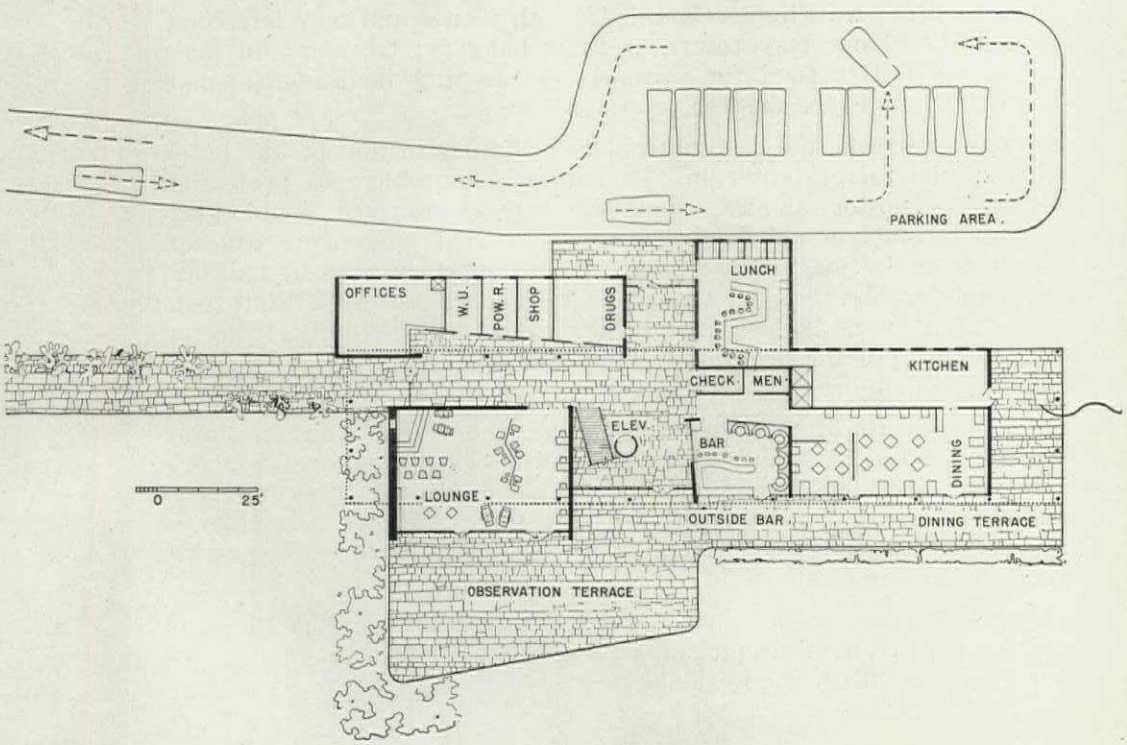
Since the designs are schematic and unrelated to specific sites, exact relation to existing airport buildings is not indicated. The plan is to place them as near as possible to main terminal buildings—connected by covered walks, where feasible.

SMALL

Main public rooms offer box seats for viewing port activities; circulation serves car parking and airport terminal buildings equally. Kitchen and dining-room spaces, rather lavish in relation to number of guest rooms in initial schemes, take into account the probability of additional guest rooms at a later date. Meantime, airport visitors would undoubtedly make use of these generous services. A basement provides space for baggage checking and service and storage rooms.



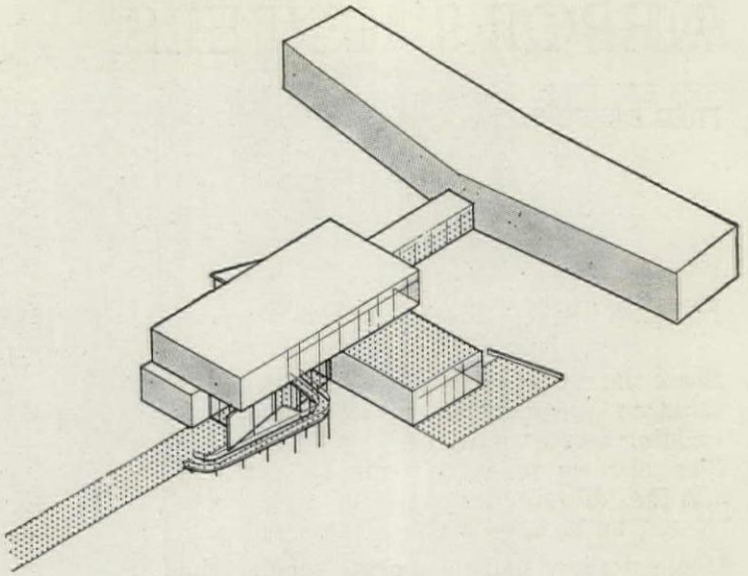
SECOND FLOOR

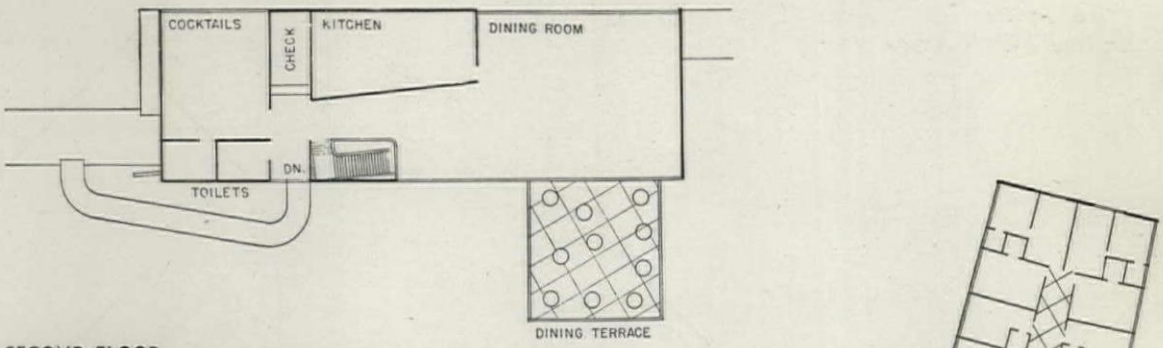


GROUND FLOOR

MEDIUM

An inventive plan that raises the dining room and kitchen to the upper floor, with an outdoor dining terrace on the field side, this scheme, like that of the small hotel, anticipates arrival of guests from both the port and the highway. Standard guest rooms and baths are schemed in a wing-shaped projection, connected to the central building by a glazed gallery. As with all of these plans, double glazing and air conditioning are planned to isolate visitors as much as possible from airport noise. One questions the location of kitchen deliveries and storage; but since the design is schematic, this may be captious criticism. A basement with dumbwaiter service would be a possible solution.





SECOND FLOOR

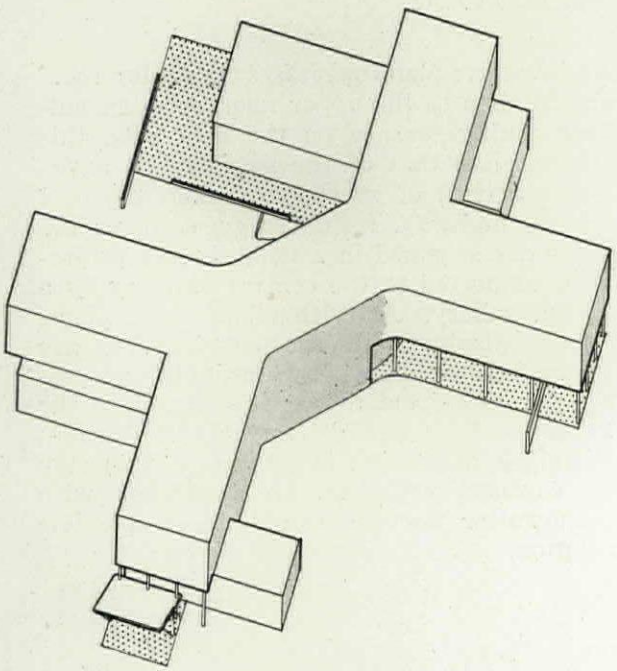
GROUND FLOOR

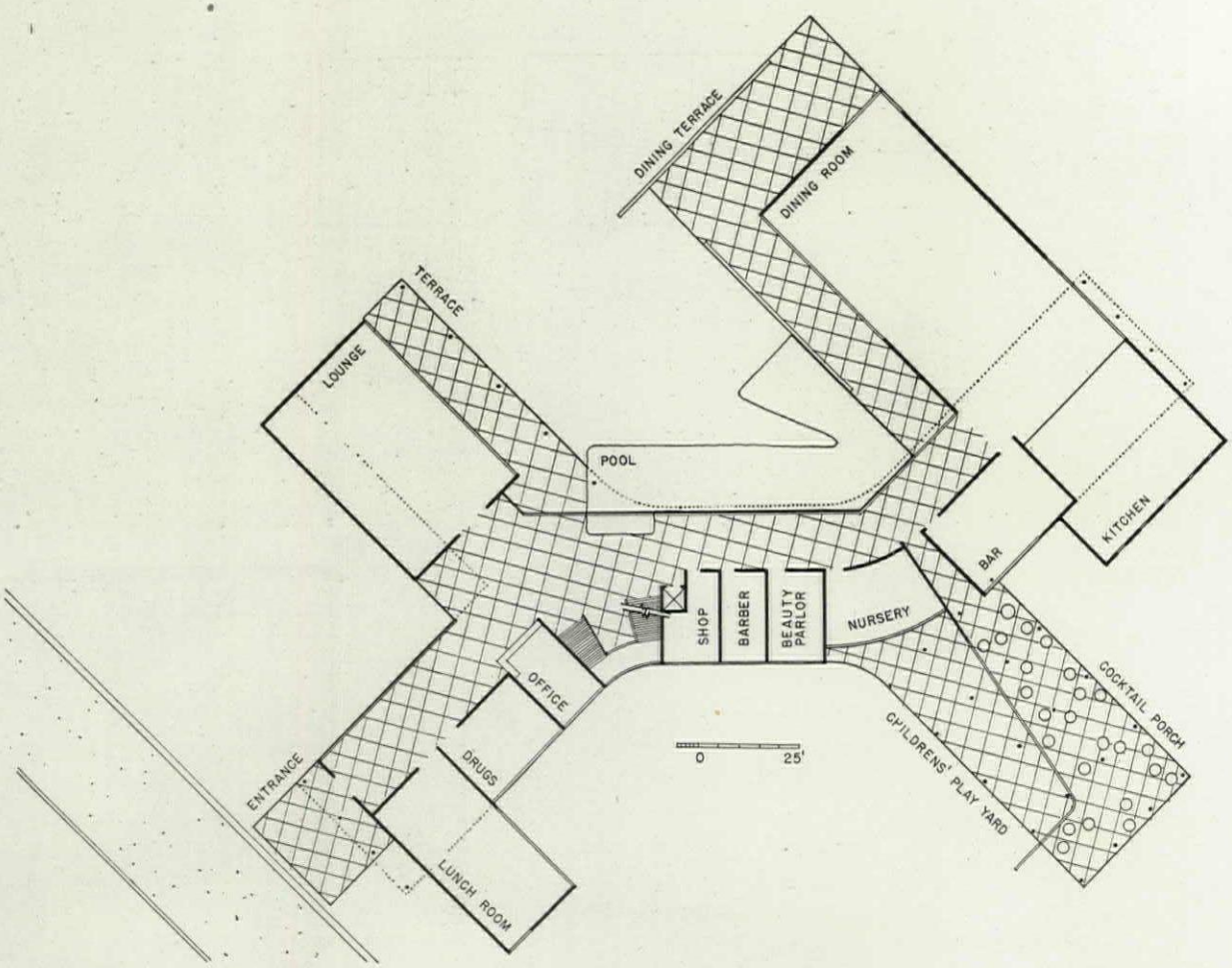
AIRPORT HOTELS

FRED BASSETTI, Designer

LARGE

A considerably more elaborate scheme than that suggested for the smaller hotels, this plan is based on the same principles. Public rooms are faced toward the field; shops, kitchen, bar, and service areas are kept to the road side of the building. While these designs are all concerned particularly with airport locations, they contain numerous fresh ideas for designers of any hotels where viewing is an important factor. In this case, the projection of the lounge and dining-room wings encloses a landscaped courtyard.





Details on following page

Gottscho-Schleisner

WHOLESALE GLOVE DISPLAY BOOTH

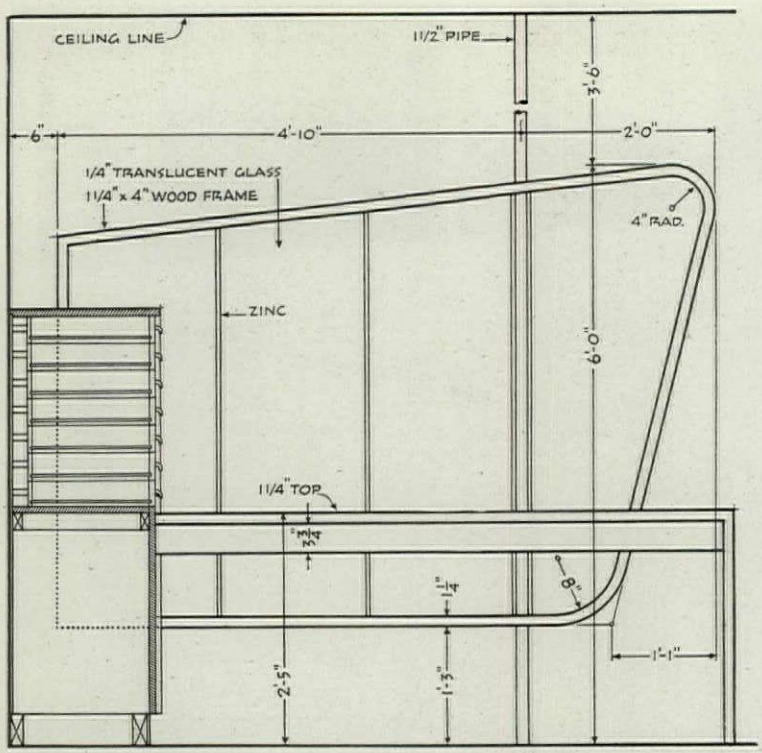
FOWNES BROS. & CO., NEW YORK CITY

KETCHUM, GINA & SHARP

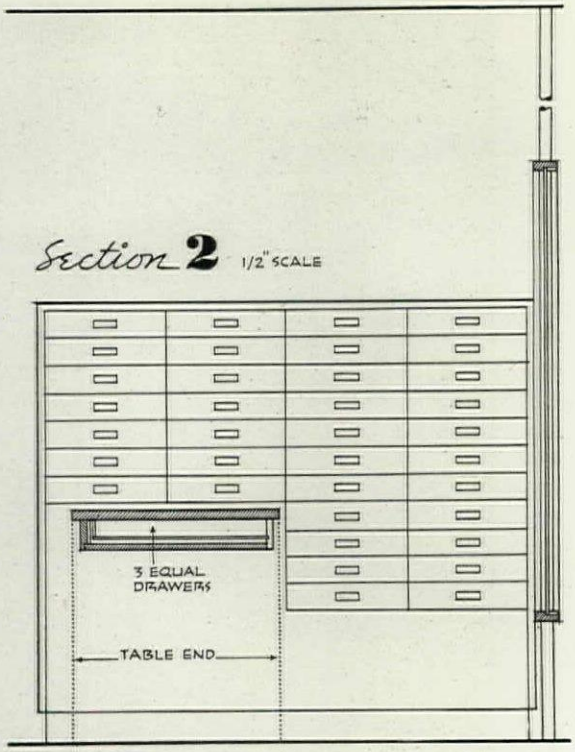
Architects

In both this and the telephone booth which follows, the desire of this firm to experiment with straightforward, unconventional uses of materials is successful. Situated along an interior wall, display booths require light and ventilation; screens are more logical than complete partitions. Telephone booth (pp. 81, 82) was designed as drawn; the owner had the telephone mounted as photographed, nullifying an important detail. Acoustically the booth is entirely satisfactory despite its openness.

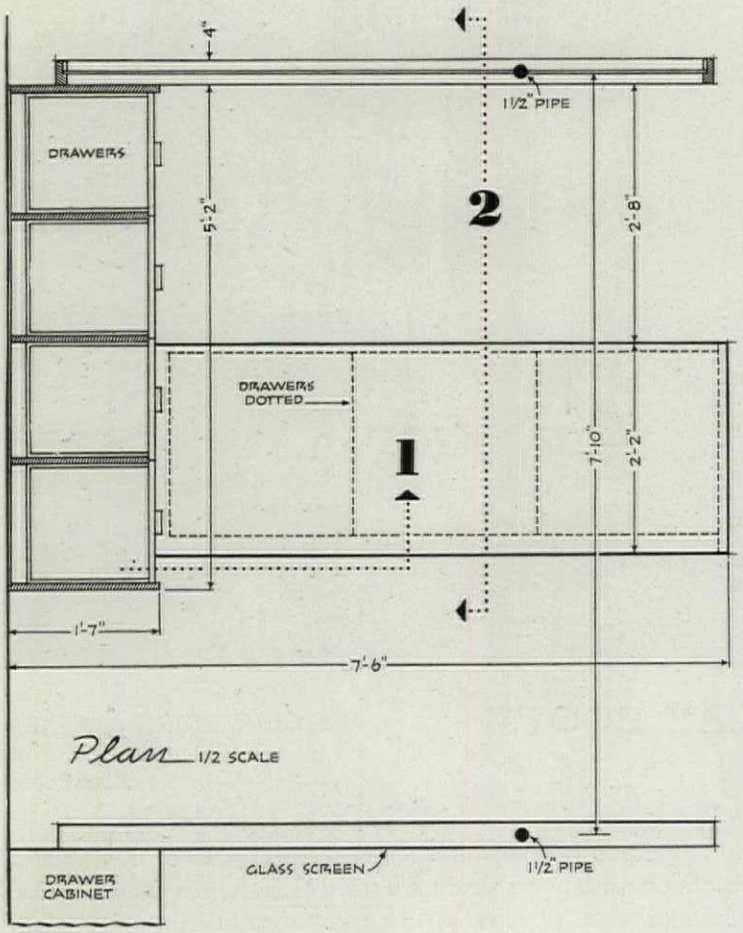
Photo on preceding page



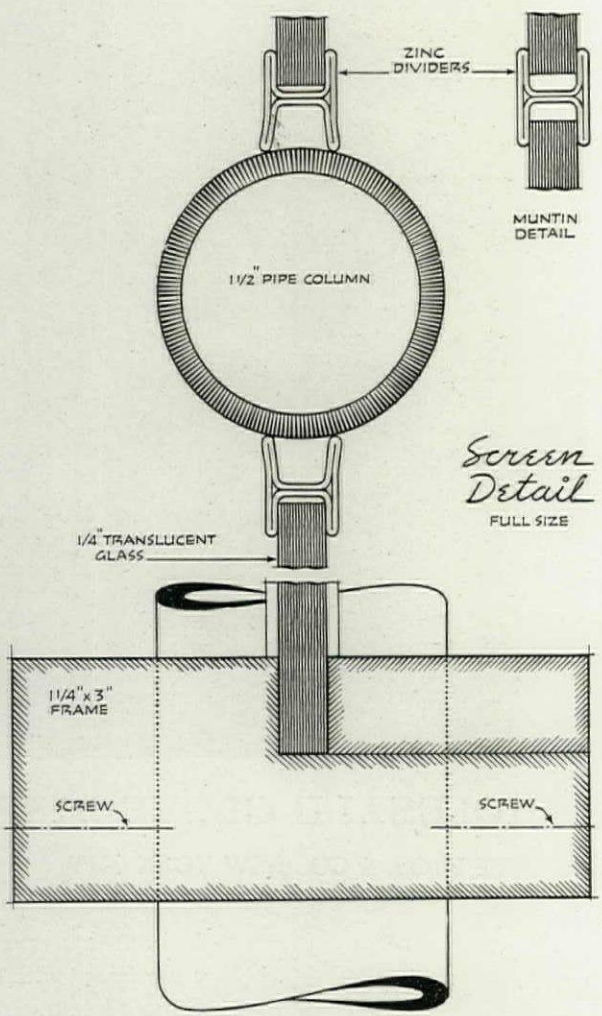
Section 1 1/2" SCALE



Section 2 1/2" SCALE



Plan 1/2 SCALE



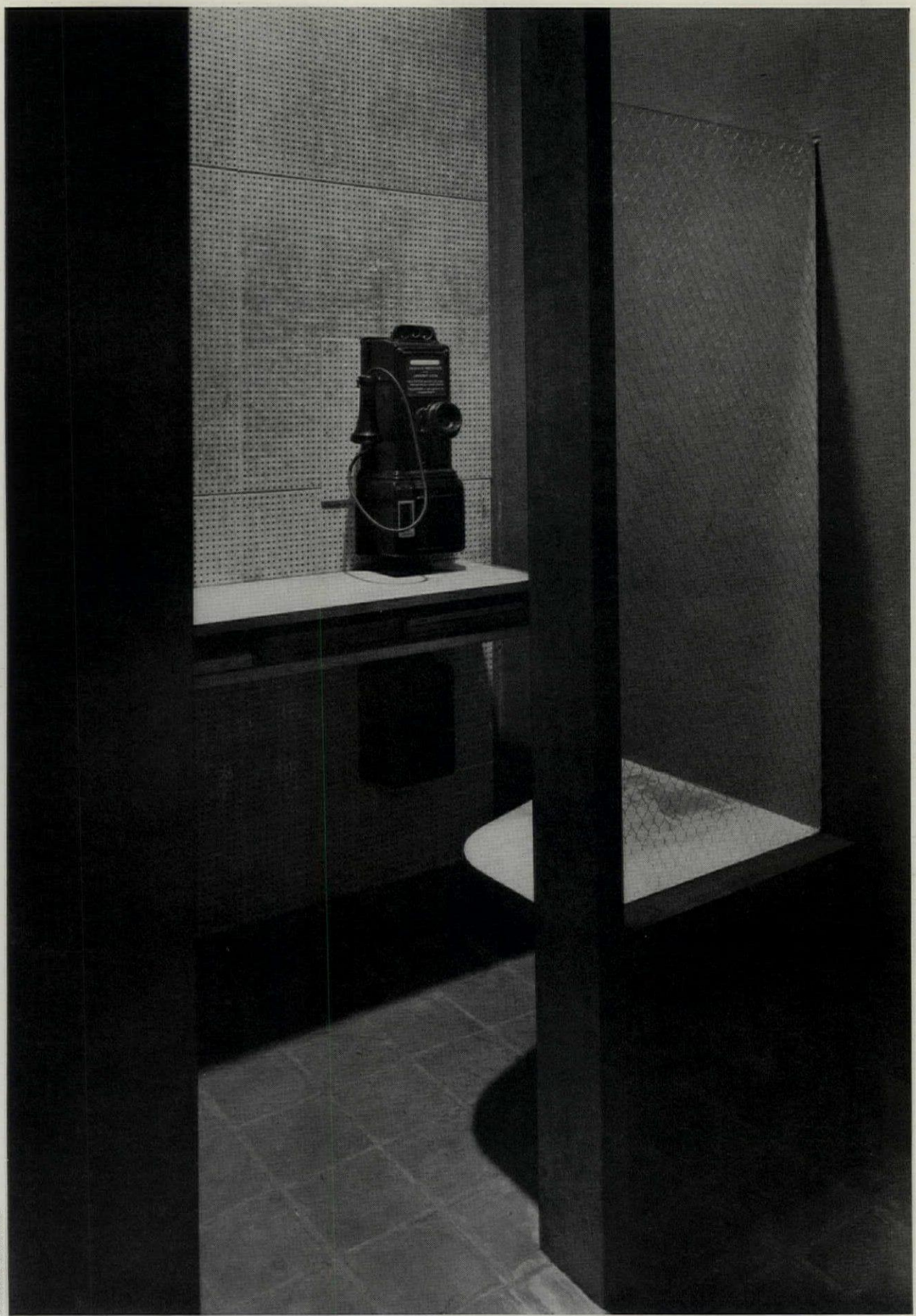
Screen Detail FULL SIZE

WHOLESALE GLOVE DISPLAY BOOTH

FOWNES BROS. & CO., NEW YORK CITY

KETCHUM, GINÁ & SHARP
Architects

Details on following page



Gottscho-Schleisner

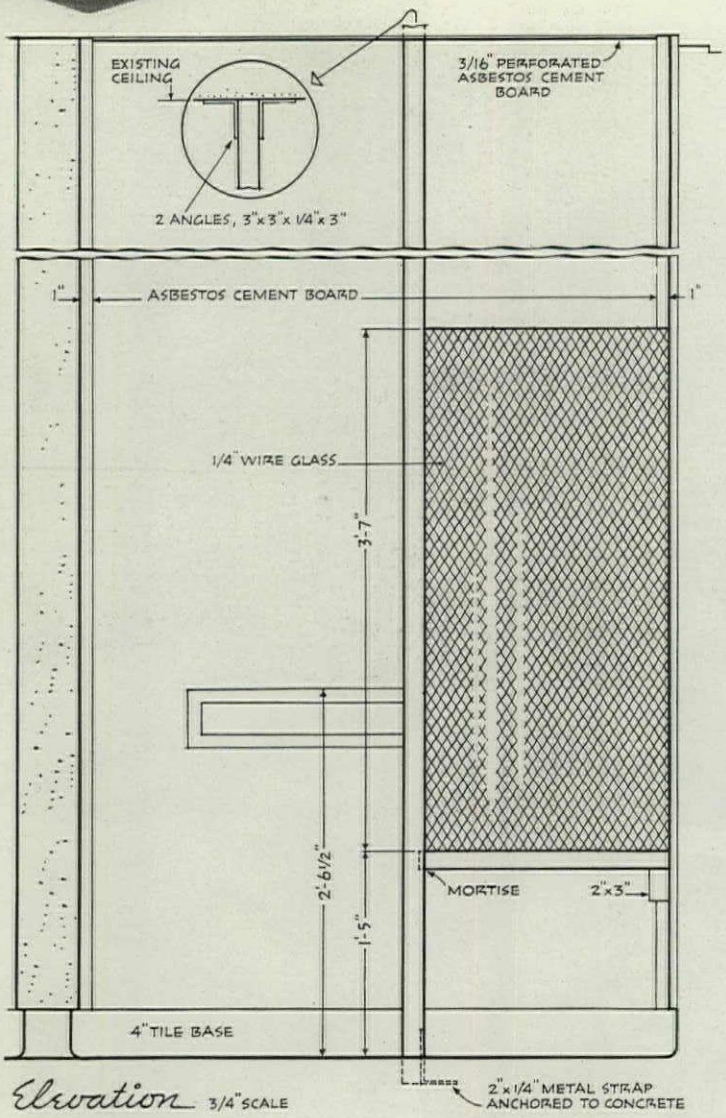
TELEPHONE BOOTH

KIDDE MFG. CO., BLOOMFIELD, N. J.

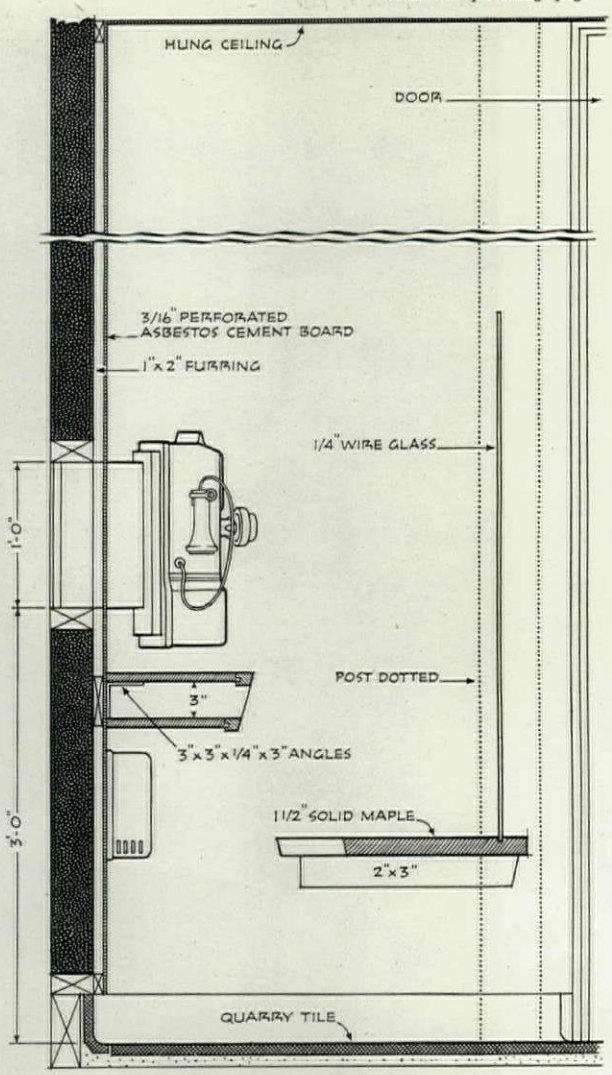
KETCHUM, GINA & SHARP

Architects

Photo on preceding page

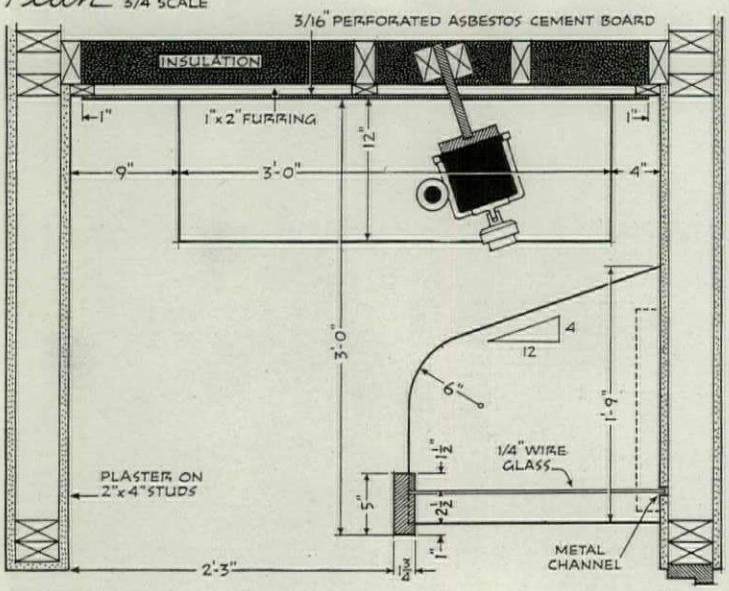


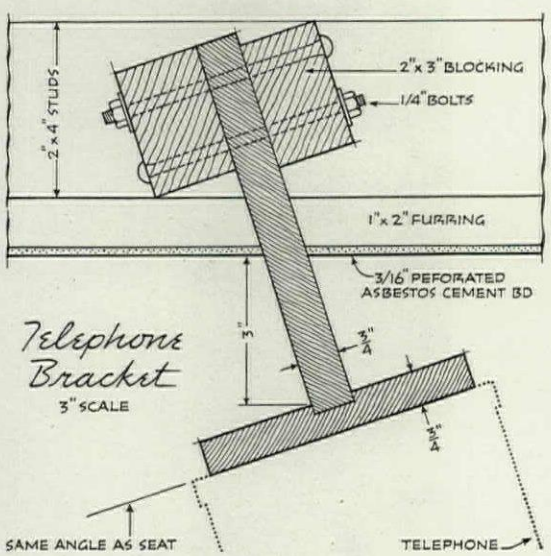
Elevation 3/4" SCALE



Section 3/4" SCALE

Plan 3/4" SCALE





Telephone Bracket 3" SCALE

TELEPHONE BOOTH

KIDDE MFG. CO., BLOOMFIELD, N. J.

KETCHUM, GINÅ & SHARP
Architects

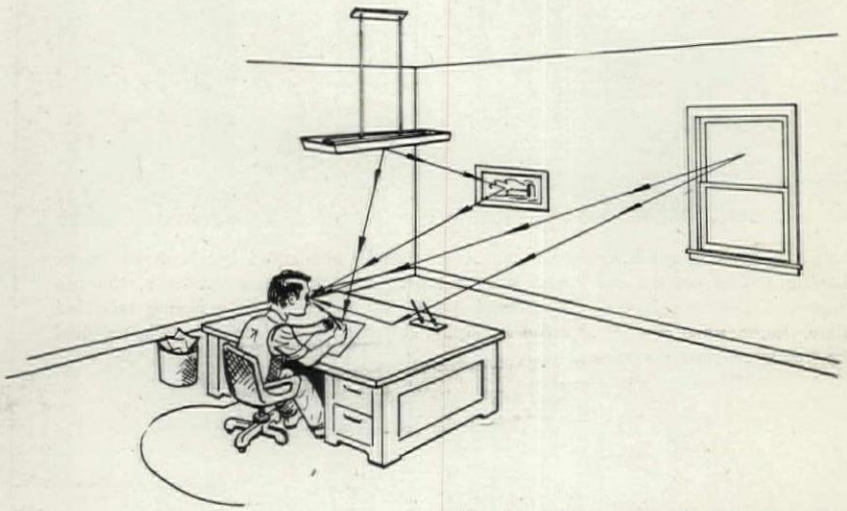


Fig. 1. Direct and reflected glare, the greatest offenders against comfortable seeing, occur all too often and are not well recognized. Glare can be prevented if lighting, interior decoration, and furniture arrangement are planned in relation to one another.

LIGHTING . . . . . .

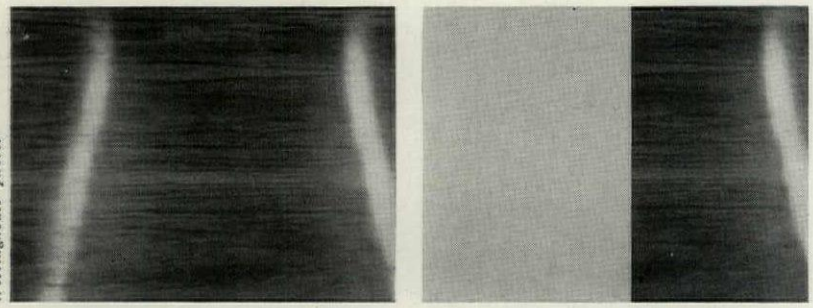
PLANNED TO FUNCTION PROPERLY

by **WM. H. KAHLER**, Lighting Engineer, Lighting Division
Westinghouse Electric Corporation, Cleveland, Ohio

All good architecture must perform certain functions, which are the basis of design and planning. "Functional" does not necessarily mean purely utilitarian, but includes the combination of usefulness, "eye appeal," comfort, and economic stability. Progressive architects and engineers are now trying to visualize a finished building as a place of comfort, livability, and maximum over-all efficiency. In it, lighting plans are important; if, as is frequently true, they are executed by the "rubber stamp" method, they will nine times out of ten fail to satisfy the human requirements of vision and psychological acceptance.

Thus the real problem is more than just the selection and installation of lighting "fixtures." It is a problem of true illuminating engineering, which involves planning the entire visual environment, including interior decoration, furnishings, fenestration, and lighting equipment.

To accomplish this end, the architect must relate the interior to the specific activities of the user. Illumination requirements for different applications vary from pure utility to decoration and atmosphere. Usually there is a combination of functions; and it is the purpose of this article to analyze briefly the functions of illumination for types of interiors that will be occupying a large portion of our architectural talent in the next few years. The procedure of analysis followed should also serve as a guide in solving the many variations of lighting problems that arise.



Westinghouse photos

Fig. 2. **Reflected glare from desk tops can often be eliminated by choice of proper materials. Left, as the eye "sees" a desk having a dark, glossy wood top, the two streaks of light are images of overhead luminaires; the result is annoying reflected glare. Right, when a piece of diffusing light linoleum is placed on the dark, polished top, reflected glare disappears.**

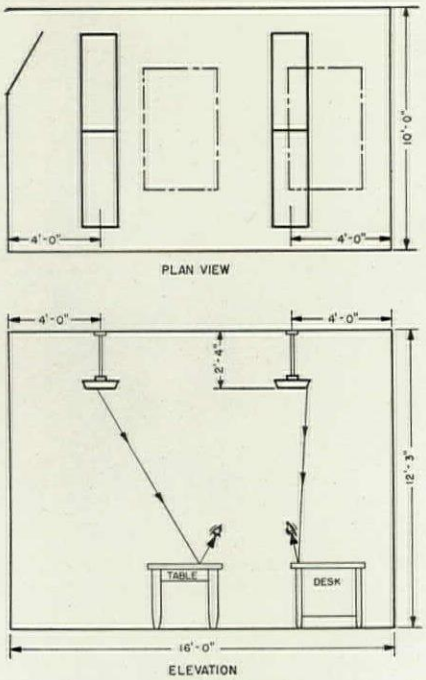


Fig. 3. **Conventional lighting layout for this small office provides 38 foot-candles (average) in-service illumination. Work at either table or desk subjects eyes to reflected glare.**

OFFICES

Seeing comfort and good visibility are the main functions of office lighting. The lighting requirements may be summarized as:

1. To provide enough light.
Most office work involves reading fine print, poor carbon copies, pencil notes, and other severe visual tasks which are carried on for long periods of time. At least 50 foot-candles should be provided, and higher levels are desirable. For the more ordinary seeing tasks such as are found in filing, conference rooms, and general correspondence, a minimum of 25 foot-candles is recommended.

2. Harsh shadows must be prevented.

3. Direct and reflected glare must be avoided.

4. Equipment must be easy to clean and re-lamp.

5. Appearance should be neat and in keeping with architectural character of rooms.

The subject of glare deserves careful study. While the detrimental effects of glare are easily understood, actual elimination of all phases of glare has been very difficult. Detrimental glare in an office may be present in any or all of many forms.

Direct glare will result from high-brightness luminaires located within the normal field of vision. It is of first importance, therefore, to select a type of luminaire with acceptable brightness characteristics in the direct glare zone (from the horizontal to 45 degrees below horizontal).

Window glare (**Fig. 1**), another form of direct glare, can be unbearable if not properly controlled by some form of shading. To take full advantage of natural lighting, the position of the worker has to be properly oriented in relation to the window. The best arrangement for comfortable seeing is obtained when the worker faces away from the window at an angle such that daylight reaches the working surface from over his left shoulder (or his right shoulder if left-handed).

Reflected glare (**Fig. 1**) invariably exists in very detrimental forms that all too often are accepted as inevitable. The problem is more easily understood if the fundamental law of reflection is remembered. This law—the angle of reflection equals the angle of incidence—is the basis for solving all reflected glare problems. Glass or polished desk tops, glass partitions, or glass-covered pictures are common causes of reflected glare.

Glass desk tops should not be used as they invariably cause detrimental reflected glare, in a manner often more serious than direct glare afforded by a luminaire. Also, dark desk tops create a condition of discomfort because the brightness-contrast between bright papers and the dark tops is high. It is recommended that desk tops have a simple pattern, a dull finish, and a light color with 20-30% reflection factor (**Fig. 2**).

Reflected and transmitted glare from glass partitions can be very disturbing, for it is often caused by the reflection or refraction of direct sunlight. Painted walls, therefore, are preferable to glass partitions. To eliminate reflected glare from existing glass partitions, the glass can be replaced with wall-board or painted with a light-colored, non-glossy wall paint. If glare occurs at a localized position on the glass, this spot may be covered with a chart, map, or some non-glossy decorative material.

Reflected sun and sky glare from glass-covered pictures is likewise very serious but can be corrected easily by tilting the picture properly or by changing its location.

The above factors are not directly related to lighting units, but they do contribute to the comfort or discomfort of the seeing environment. The interior decorator, architect, and lighting engineer should coordinate their efforts to accomplish the best results.

Figures 3 and 4 illustrate several principles involved in planning private-office lighting for maximum seeing comfort.

SCHOOLS

Illumination for the school classroom must provide adequate visibility on desks, writing boards, and charts. The artificial lighting system is generally used with natural lighting, but must be designed to be adequate for night service as well (**Figs. 5** and **6**). The long-range function of classroom lighting is to assist in the conservation of the child's eyesight and to make studies easier and more cheerful.

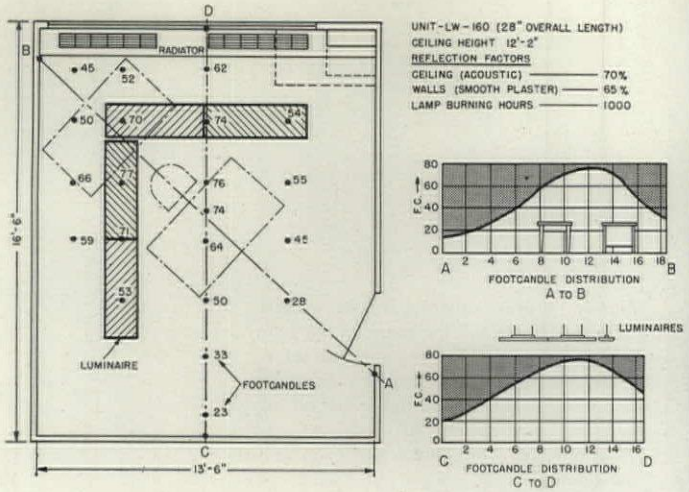


Fig. 4. **The principal function of private-office lighting is to provide comfortable, adequate seeing conditions for the person working at the desk or table. Therefore, illumination should originate from around and behind the worker, not in front of him. This non-symmetrical arrangement results in comfortable seeing, eliminates direct and reflected glare, yet illumination is concentrated on desk and table, as shown by foot-candle curves along line A-B.**

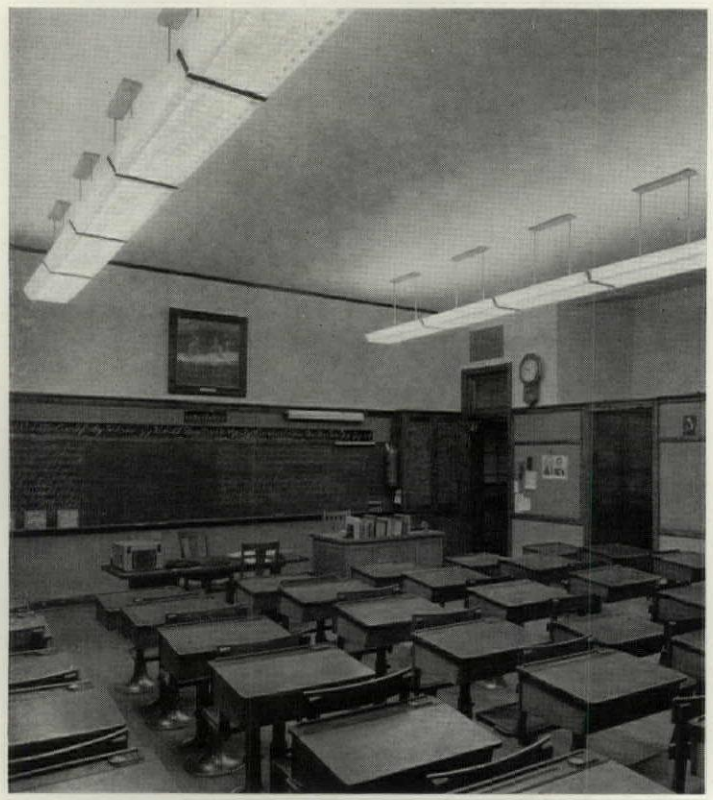


Fig. 5. **School relighting programs require careful planning to achieve the objective of sufficient, comfortable, healthful light on desks and chalkboards, at minimum over-all cost. In the example illustrated, two rows of louvered, direct-indirect fluorescent luminaires provide over 40 foot-candles (average) on desks. Bottom louvers shield lamps at normal viewing angles and also prevent accumulation of dirt, bugs, and paper wads.**

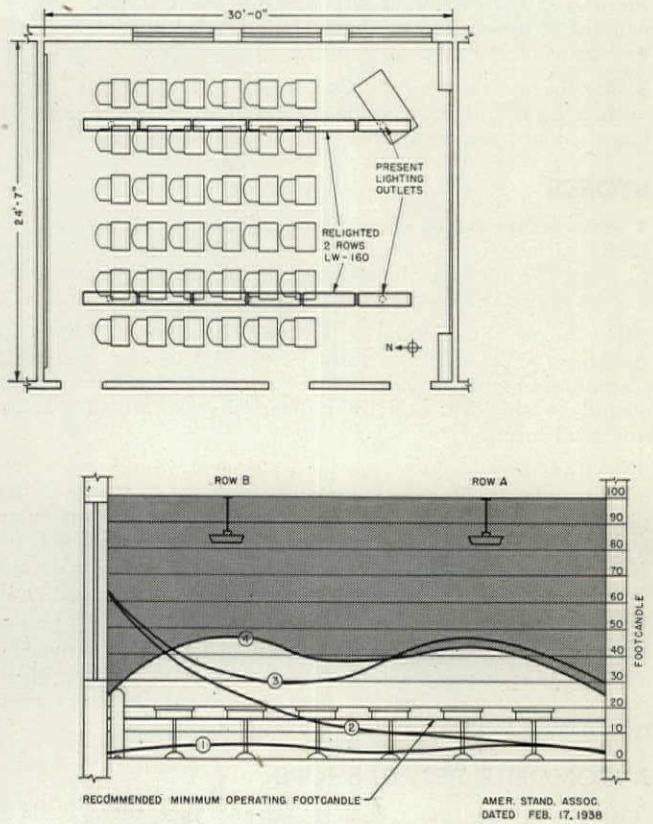


Fig. 6. **Analysis of lighting in same classroom: *Curve No. 1:* Artificial illumination before relighting; *Curve No. 2:* Daylighting measured on a typical day when the sun was not shining; *Curve No. 3:* Daylight supplemented by artificial illumination from the inner row of luminaires; *Curve No. 4:* Illumination from both rows of luminaires without any daylight.**

Westinghouse photos

Fig. 7. **A practical store lighting system, designed to help sell merchandise, includes direct fluorescent lighting for general illumination and incandescent spotlights for accenting displays. Spotlights are all adjustable; any one or all may be used simultaneously to meet particular requirements.**

Control of brightness distribution is very important in classrooms because the interior illumination must compete with daylight. Looking out the window, the child perceives brightness levels of 100 to 2000 foot-lamberts.* Then, turning to the chalk board, he may find a brightness as low as 3 or 4 foot-lamberts. The eye is severely strained when subjected quickly to such tremendous changes in brightness. How, then, can this source of strain and discomfort be minimized?

1. By properly shading the windows.

2. By increasing the illumination level within the room, thus increasing the writing board brightness. (At least 30 foot-candles of general light should be provided and higher levels are desirable.)

3. By increasing the reflection factor of the interior surfaces with a light finish on walls and ceiling, light-colored chalk boards, and light desk tops.

STORES

The main function of store illumination is to sell merchandise. Lighting may contribute to a sale in three successive steps: to bring the customer into the store, to create a desire to buy, and to assist the customer in appraising the merchandise.

Light on the merchandise is most important. When the customer walks into the store he should be attracted to the merchandise, not to bright light sources. Thus, all sources should be shielded, and light directed to counters, displays, and wall cases.

The store should have adequate general illumination, plus accent lighting in showcases and on feature displays. Displays are very important, as was proven by a recent survey made by a large manufacturer. This study revealed that 53.8 cents per dollar spent in department stores comes from impulse buying. Ninety percent of this business includes merchandise on display.

Displays in most stores are being constantly changed, so changes in lighting must be anticipated. The lighting should be flexible, easy to service, and economical in terms of its relationship to sales (**Fig. 7**).

AUTOMOBILE REPAIR SHOPS

During the war many dealers learned that there could be profit in an automobile agency, even with no new cars to sell. The service shop and parts department were sources of considerable revenue, and now progressive dealers want to maintain this business by providing more modern facilities. Better illumination can contribute to increased service sales, as customers are impressed by modern, neat working facilities. The functions of illumination in the shop are:

1. Adequate visibility for workmen.

2. Attractive, neat appearance for customer.

3. Minimum investment and operating cost.

To meet all these requirements, localized general lighting has been found to be the practical answer (**Fig. 8**).

INDUSTRIAL PLANTS

In the factory lighting is a production tool. The results of good lighting are improved morale, fewer accidents, better housekeeping, fewer errors, and increased output. But lighting as analyzed by the architect serves more detailed and definite functions, which vary in different manufacturing operations.

In the machine shop lighting assists in the visibility of micrometers, scales, and gauges; makes scribe marks visible; and permits workmen to read specifications and drawings accurately. **Figure 10** illustrates the result of proper lighting.

Lighting in the weave shed of a textile mill has many functions in operating and maintaining the loom, but the most essential is inspection of the cloth as it is being woven. A sufficient quantity of light, and proper distribution, direction, and brightness of the source are important. For example, it has been found that fluorescent luminaires should be installed at right angles to the needle bar to prevent harsh shadows.

In the chipping and scarfing area of a steel mill the most difficult seeing task is the detection of small cracks in the surface of the billets. Inspectors must locate these cracks so that they can be burned or chipped out; for this purpose the highest practical level of illumination should be provided. Modern steel mills are finding levels of 30 to 50 foot-candles practical and economical using 3000-watt mercury lamp equipment.

Countless other examples of the "functions" of lighting can be cited, and the same conclusion will be drawn. *All* lighting must be functional if it is to accomplish its intended purpose. Therefore, the illumination system must be planned with the building in relation to all other factors such as space layout, decoration, acoustic treatment, air conditioning, and equipment arrangement. Planned lighting is the only kind that is economical in the long run; and planned lighting is the answer to better vision.

*The foot-lambert is a unit of brightness and may be defined as a reflected or transmitted "foot-candle." That is, brightness is the illumination in foot-candles times the reflection factor of a surface.

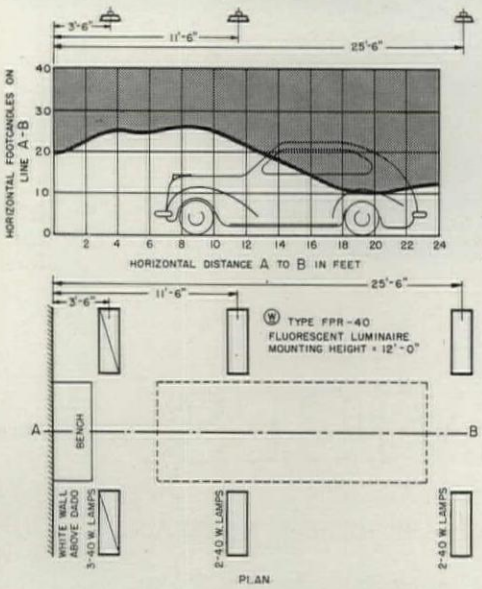
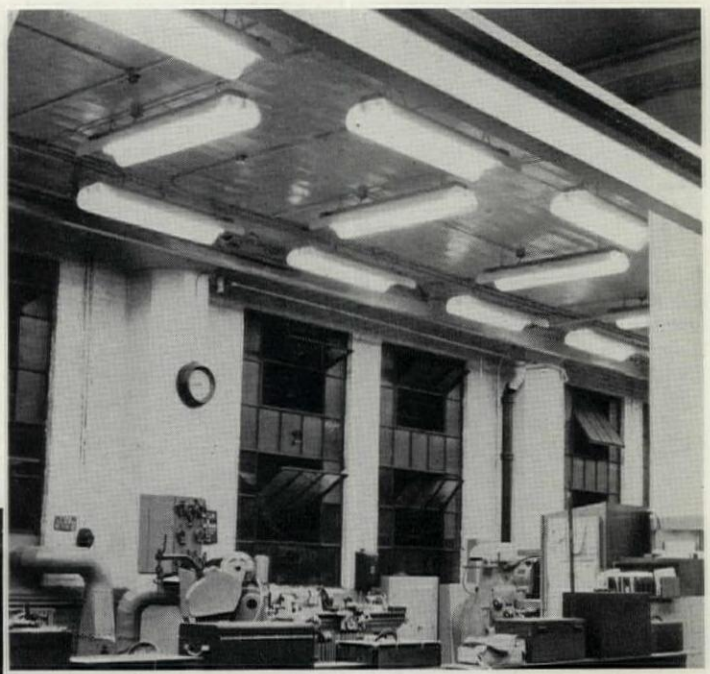


Fig. 8. Functional lighting design in a modern garage gives maximum visibility, neat, inviting appearance, and economic justification for every luminaire installed. Lighting layout in the motor repair stall is an example of functional planning for each operation; with maximum illumination where most needed, that is, over the motor and work bench.

Fig. 9. Various parts of this factory lighting system are designed for several functions. The continuous-row general lighting, at 14' mounting height, serves all general factory operations. Luminaires over the benches provide the higher illumination levels required for precision inspection work. The large-area, low-brightness light hoods (right foreground) improve visibility of vernier scales and micrometers and shield out annoying reflections from daylight transmitted by overhead skylights.



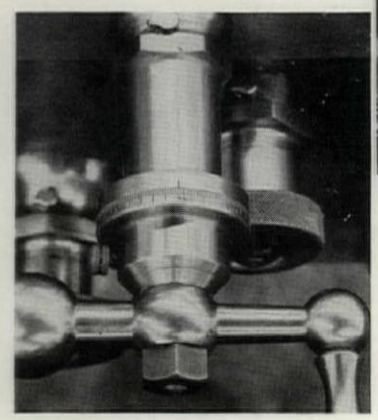


Fig. 10. In a tool room, machinists must frequently use micrometers, steel scales, and micrometer adjustments on machine tools. Each is a difficult seeing task; one of the functions of lighting is to improve visibility for such purposes. By installing luminaires in two directions in a grid pattern, the graduated markings and numbers are easily seen against a luminous background which is a reflection of the low-brightness, large-area fluorescent sources. In this case visibility depends upon reflected luminaire brightness rather than on foot-candles on the work.

North (sunny) facade of the projected University Maternity Hospital for Sao Paulo, Brasil (Rino Levy, architect) is essentially a composition of various sun control devices. These include minimum openings, deep porches and balconies, and a grillwork of vertical louvers, utilized in accord with the needs of interior space for sun and light penetration.

Richard J. Neutra

SUN CONTROL DEVICES

A presentation based primarily on examples collected in South America by RICHARD J. NEUTRA.

EDITOR'S NOTE: The earliest modern attempts at architectural integration of sun control devices to come to our attention were Le Corbusier's, exemplified in his apartment house for Algiers. Since then the architects of much of the literate world have continued to formalize devices which have grown up informally in regions where the sun is strong. Lighting engineers, in experiments in Texas, Massachusetts, and our Middle West, have investigated the scientific control of natural light in order to offset its ill effects. Manufacturers have brought products for the purpose to our attention: a patented, adjustable exterior Venetian blind from France, sent to us with word of the interest expressed by American G.I.'s; a slotted aluminum awning produced in the U. S. A.; polarized, anti-glare, and anti-heat glass; and others. Meanwhile traditional methods of excluding unwanted sun have continued in use, some of them more successful than certain highly rational formal attempts. Most of the successful devices, formal or naive, have a common principle: they stop the sun before it hits the glazing. The problem is of course acute in most of Latin America. We are indeed grateful to Mr. Neutra for assembling the majority of the accompanying illustrations and furnishing the incentive for this presentation.

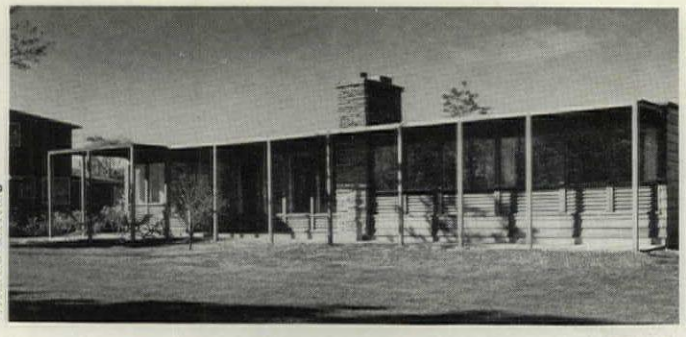
No other single feature of South American architecture has excited as much attention as the conspicuous means of controlling sunlight which characterize the buildings. Vertical, movable louvers are particularly intriguing to me because a decade ago I experimented with this type of device, although I did not pursue my ideas to an ultimate conclusion. At the time we sketched various solutions for execution in different materials, some simple and some increasingly complex and mechanical.

Later I learned of the patents held by architect and city-planner Julio Villalobos of Buenos Aires, covering movable vertical blinds, of which he has shown me many executed examples. Good use has been made of this device by Ferrari, Hardoy, and Kurchan in elaborate apartment buildings in Buenos Aires; by Roberto Brothers in their Resiguros Building and others in Rio de Janeiro; by Kneese de Mello in Sao Paulo; by Oscar Niemeyer, who has used it with great freedom in his church and yacht club at Pampulha. Le Corbusier has suggested *bris soleil* of a similar type; Gropius has experimented with projected trellises. These are only a few examples. Other remarkable pieces of equipment, such as glass louvers operated by concealed cables, roll shutters, and mechanized, custom-built, metal sash and doors, have been splendidly used by Gregor Warchavchik, Wladimir Acosta, and other Latin American architects.

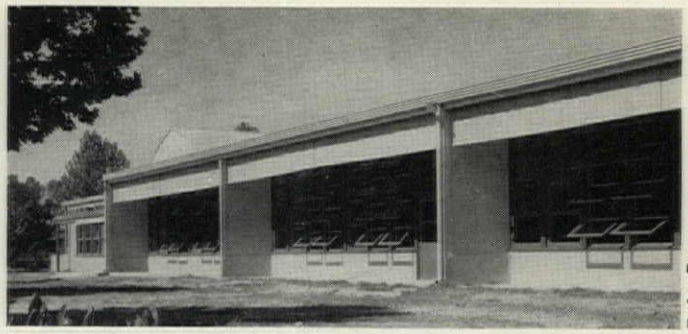
Rather early, I started to use polarized, glare-resistant glass, especially when a building had to face both the beauty of the western ocean and the setting sun's reflection in it. I decided that no blind could compete with such a simple method. However—and quite apart from the high cost of glass in South America and other places—there are two occasions when some sort of blind would appear to be the best solution: first, when there is no glass at all, as in tropical climates where local breezes must be turned to advantage; second, when there is no view from a window, and blinds can serve to exclude the undesirable sight as well as unwanted sun.

Many of the accompanying illustrations, in contrast to my own designs (which utilize thin aluminum blades), employ asbestos-cement and fiber boards, or vanes prefabricated of reinforced concrete, which I assume should be vibrated or subjected to vacuum when manufactured.

—RICHARD J. NEUTRA

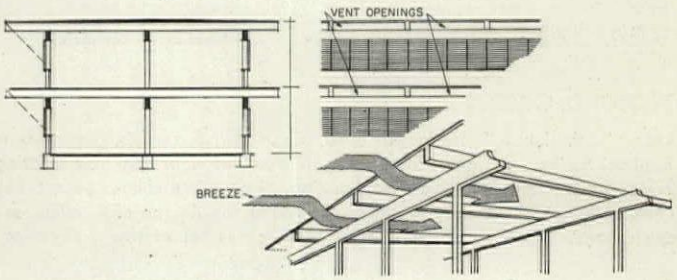


Hedrich-Blessing



Esther Born

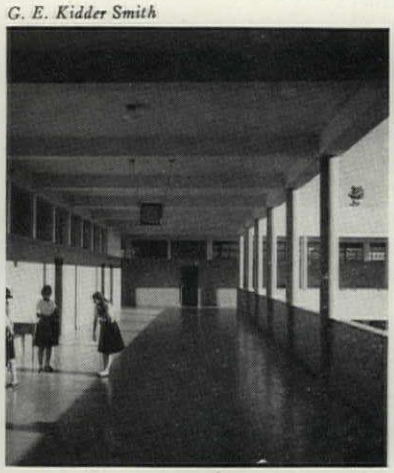
Richard J. Neutra



CANOPIES; VENTILATION PROBLEMS

Simplest of the many devices is the canopy—marquee, porch roof, slatted sunshade; it has many forms. Top left, house near Chicago, George Fred Keck, architect; top right, Fowler Elementary School, California, Franklin and Kump, architects (used here with auxiliary exterior roller shades; the wing walls serve primarily to give privacy to adjacent classrooms); lower left, scheme for Puerto Rican hospitals, Richard J. Neutra, architect; lower right, scheme developed for tropical health centers by Neutra. Illustrations also show four methods of ventilating: Keck's house has fixed glazing and louvers with interior doors; the school employs horizontal pivoted sash; in Neutra's hospital scheme note great floor-to-ceiling height, double sun canopies, and open lower walls for through ventilation. In the health center scheme openings between rafters over a "spandrel" beam admit breezes; folding louvered metal blinds and overhangs control sun.

G. E. Kidder Smith

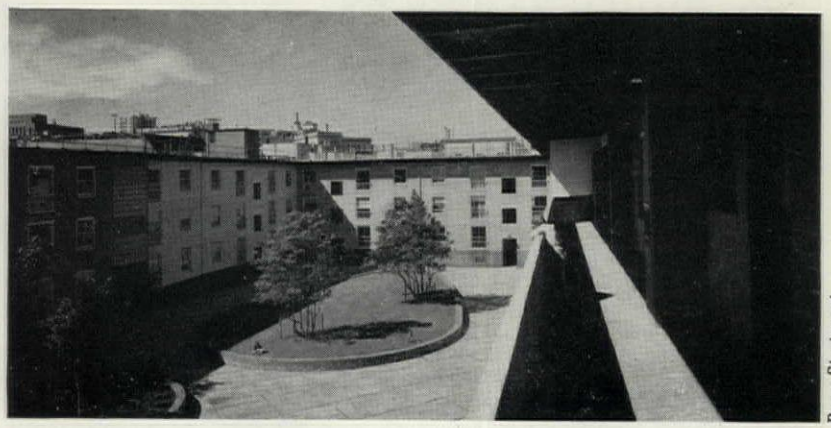


G. E. Kidder Smith

Richard J. Neutra

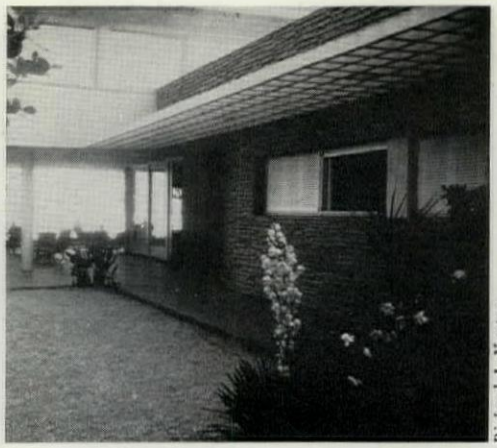
BALCONIES

Further development of the canopy idea is its use as a balcony, both as a pleasurable adjunct to rooms and as means of circulation—in some cases replacing interior corridors. Top, left, balconies and translucent screens on the sunny facade of a building in Sao Paulo, Rino Levy, architect. Top, center, normal school in Bahia, Brasil, where classroom corridors are also sunshading balconies. Top, right, restaurant and swimming pool, Stockholm, Sweden, Paul Hedquist, architect. At right, Valencia Gardens (housing development), San Francisco, Harry A. Thomsen, Jr., and W. W. Wurster, architects, also uses balconies as sunshade-corridors.



Roger Sturtevant

Shulman



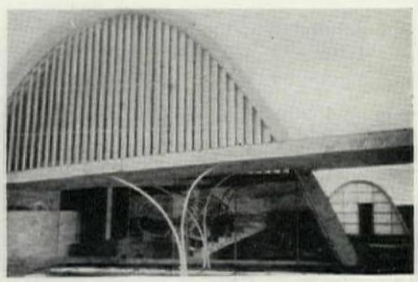
Richard J. Neutra

PIERCED CANOPIES

Left, "lath house," Hallawell Seed Co., San Francisco, Raphael Soriano, designer. Right, "egg-crates" of light concrete construction in a Brasilian building, Gregor Warchavchik, architect. Both show methods of varying the degree of sun control. Other similar devices include boards set at the correct vertical angle for excluding sun at certain seasons, admitting it at others (used by Alfred and Jane Clauss, by Ernst Payer, and others); total projection, spacing, and inclination of members are determined by sun inclination and direction for the individual localities.

G. E. Kidder Smith

G. E. Kidder Smith



Richard J. Neutra

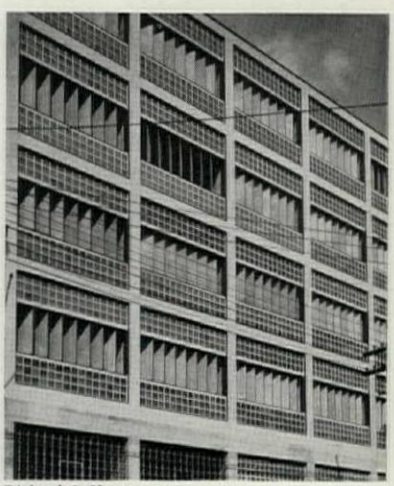
FIXED VERTICAL LOUVERS

Left, first widely published South American example of this device was Roberto Brothers' Rio de Janeiro building for the Associacao Brasiliera de Imprensa, which has inspired many subsequent structures. Right, most recent Brasilian example, facade of Oscar Niemeyer's church at Pampulha, Bello Horizonte.

Richard J. Neutra

EXTERIOR BLINDS

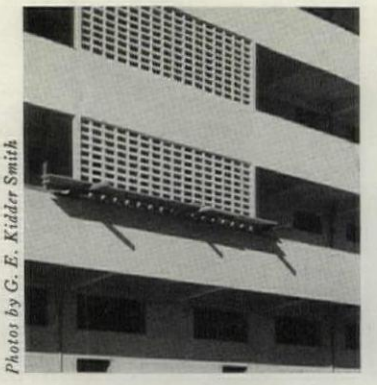
Common in Mediterranean buildings, the adjustable exterior blind can function like an awning in excluding sun, but is superior because its slotted construction admits breezes. Top, apartment house in Brasil, Alvaro Vital Brazil and Adhemar Marinho, architects; below, beach house, Conde Crespi, Garuja, Brasil, Gregor Warchavchik, architect.

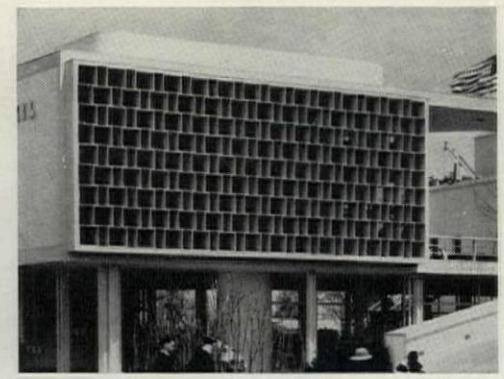


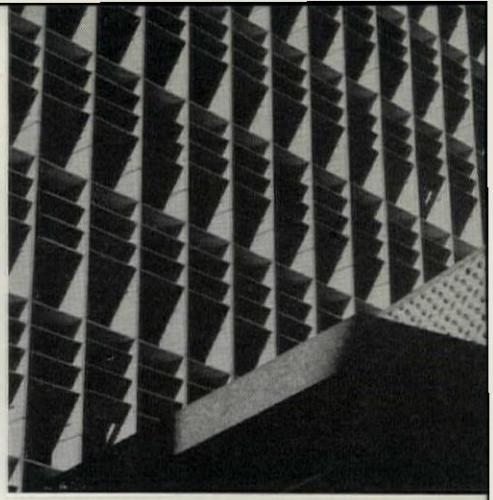
Richard J. Neutra

OPERABLE LOUVERS

Various types of mechanically operated louvers permit any degree of sun penetration desired. From left to right: office building in Sao Paulo (Edificio Leonidas Moreira), Eduardo Kneese de Mello, architect; boat passenger station, Rio de Janeiro, Corrêa Lima, architect; apartment house (utilizing the system patented by Julio Villalobos) in Buenos Aires, Ferrari, Hardoy, and Kurchan, architects; system devised by Richard J. Neutra, employing movable aluminum blinds.







Photos by G. E. Kidder Smith

VERTICAL SCREENS, "EGG-CRATES," ETC.

Sometimes merely a pierced screen, sometimes more elaborate in conception, sometimes with movable portions, this type of device offers many opportunities for rich treatment of facades. Left, apartment house, Rio de Janeiro, has concrete screens at intervals along sunshading balconies. Center, Brasilian Pavilion, N. Y. World's Fair 1939, Lucio Costa, Oscar Niemeyer, architects; P. L. Weiner, associate. Right, north facade, Ministry of Education and Health, Rio de Janeiro, for which Le Corbusier was a consultant.

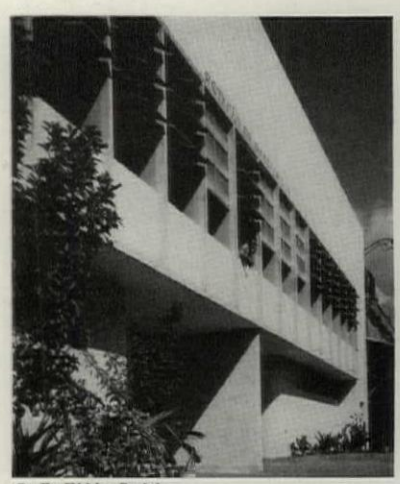
Richard J. Neutra

PIVOTED WALL SECTIONS

School in Puerto Rico, Richard J. Neutra, architect, employs horizontally pivoted wall sections both as sunshades and to permit complete ventilation. Note the extensive roof overhang which shades the upper portion.

ANTI-SUN GLAZING

Proposed Schenley Building for Cincinnati, Ohio, Woodie Garber, designer, based entirely on the use of actinic glass in prefabricated double glazing—a method of which Neutra is also a strong advocate. He also suggests use of polarized glass.



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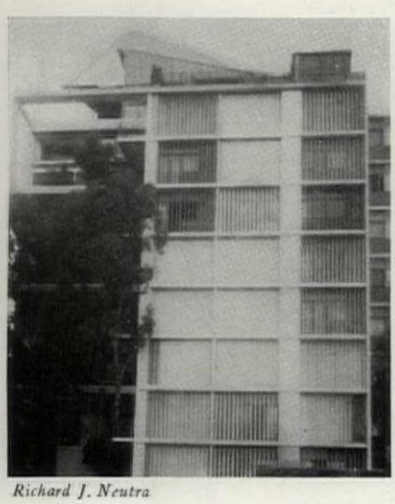
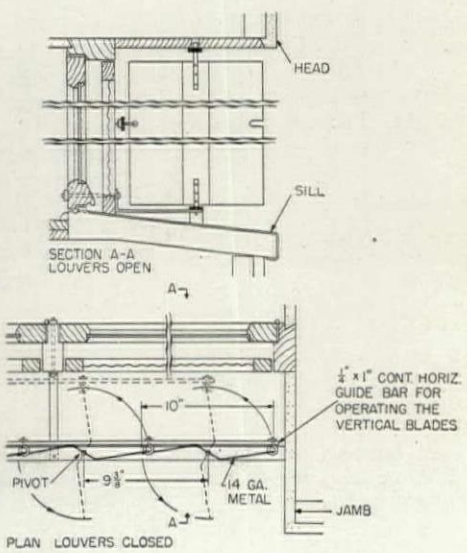


Richard J. Neutra



MANUFACTURERS' LITERATURE

★ *Editor's Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.*

Air Treatment

8-138. *The Answer Book on Home Heating, (SP-00-90)*, General Electric Co. (See 8-138 under "Heating".)

1-53. *Strato-Liminator*, Wilster, Inc. Reviewed September.

Awnings

1-54. *Aluminum Awnings Are Something Between You and the Sun*, Aluminum Awning Co. Reviewed September.

Bathroom Equipment

2-11. *Tiletone Shower Cabinets (22b-3)*, 8-p. illus. booklet; shower cabinets, porcelain-enameled iron or glass, for houses, garages, basements—standard or corner receptors. Fittings, accessories. Tiletone Co.

Communication Systems

3-65. *Amplified Intercommunication Systems, AIA 31-i (TL-36)*, Webster Electric Co. Reviewed September.

Controls

3-66. *The Weather-Man Controls Building Temperature from the Outside (Bulletins A-446, B-546)*, 12 pp., illus. Installation and operation of thermostatic control actuated by outdoor temperatures, for houses and buildings; data on wiring connections, settings, readjustments. Automatic Devices Co., Weather Controls.

3-67. *Special-Built Time Switches for the Volume User (Bulletin T-55)*, 4 pp., illus., giving six examples and descriptions of how time switches met outlined specifications. Automatic Temperature Control Co., Inc.

Doors

4-57. *Berry Aluminum Overhead Type Garage Doors*, Berry Door Co. Reviewed September.

4-58. *Truscon Straight Slide Steel Hangar Doors (C-30)*, Truscon Steel Co. Reviewed September.

Drafting Room Equipment

4-59. *Pomeroy Stereograph Drawing Machine*, Pomeroy Stereograph Co., Inc. Reviewed September.

4-61. *Spend Your Time On Design*, illus. folder (3½x6), describing transparent plastic templates for windows, house plans, standard symbols. Includes application, prices, sizes. Timely Products Co.

4-60. *The New Universal Boardmaster*, Universal Drafting Machine Co. Reviewed September.

Electrical Equipment

★ **5-34.** *Handbook of Farmstead Wiring Design, AIA-31-C-61*, 55 pp. Basic requirements of wiring layouts for farm buildings, farmhouses, exterior wiring. Recommendations. Details for placing outlets and switches. Industry Committee on Interior Wiring Design. (40 cents per copy—make payable to the Industry Committee on Interior Wiring Design.)

Fire Protection

6-73. *"Automatic" Sprinkler Systems (Bulletin 56)*, 20 pp., illus. Data on all types of industrial and commercial sprinkler installations; on fire alarms and automatic controls. Detail drawings. "Automatic" Sprinkler Corp. of America.

Flooring

From Armstrong Cork Co. Reviewed September:

6-69. *Ideas for the Retail Confectioner Who Wants A Shop That Attracts Customers.*

6-70. *Store Planning Ideas for the Appliance Dealer Who Wants to Build a Successful Business.*

6-71. *Maximent*, Maximent Corp. Reviewed September.

6-72. *Industrial Flooring and Marine Decking*, Miller Marine Decking, Inc. Reviewed September.

Gypsum and Gypsum Products

★ **7-53.** *New Water-Repellent Gypsum Sheathing*, 11-p. illus. booklet with detailed diagrams on specifications, advantages of water-repellent, fireproof, gypsum sheathing. Gypsum Association.

Hardware

8-136. *Authotone Chimes (No. 110)*, 8-p. illus. folder on manually operated two-tone door chimes; prices. Auth Electrical Specialty Co., Inc.

8-137. *Hardware for Casement Windows*, 8-p. catalog covering internal and external casement window operators and accessories for wood and metal sash; installation details and dimensions; also features new reversible wood casement window operator. H. S. Getty & Co., Inc.

8-120. *Door Holding Devices & Builders' Hardware Specialties for Distinctive Buildings, AIA 27B*, Glynn-Johnson Corp. Reviewed September.

8-121. *Lockwood Finishing Hardware, Simplified Specifications*, Lockwood Hardware Mfg. Co. Reviewed September.

8-122. *Schlage Luster Sealed Aluminum Locks (Form 364)*, Schlage Lock Co. Reviewed September.

Heating and Heating Equipment

8-105. *Quick Heat Oil Furnaces for Automatic Heating*, American Stove Co. Reviewed September.

8-106. *New Units of Complete Norge-Heat Line*, Borg-Warner Corp., Norge-Heat Div. Reviewed September.

8-124. *Radiant Heating the Smart Modern Way With Radiant Baseboards (Form 859B)*, Burnham Boiler Corp. Reviewed September.

8-125. *Electromode Electric Home Furnace*, Electromode Corp. Reviewed September.

★ **8-138.** *The Answer Book on Home Heating (SP-00-90)*, 26-p. illus. consumer brochure; simplified explanation of types of house heating, air conditioning, and air-cooling units and systems. General Electric Co.

8-126. *Herco Residential Oil Burner*, Herco Oil Burner Corp. Reviewed September.

8-139. *Hoffman Economy Heating Pumps. AIA 30-C-5 (Cat. VCP 1045)*, 24-pp., illus. Vacuum and condensation pumps. Brief descriptions, standard and special capacities, engineering data, specifications, installation diagrams. Hoffman Specialty Co.

8-113. *Iron Fireman Model V Oil Burner (1145)*, Iron Fireman Mfg. Co. Reviewed September.

8-140. *Precision-Built Clark, AIA 30-G-1*, 6-p. illus. folder on horizontal rotary oil burners; commercial, industrial; capacities, ratings, general specifications; detail drawings. National Oil Burner Co.

8-127. *Petro Automatic Boilers (Form 7)*, Petroleum Heat and Power Co. Reviewed September.

8-141. *Rutledge Steel Water Tube Heating Boilers*, 4-p. folder on features of steam heating boiler for houses, office buildings, etc. Engineering data; ratings. R. W. Rutledge Water Tube Boiler Co.

8-128. *Mammoth Certified Vertical Steel Tubular Heaters (216C)*, Stainless & Steel Products Co. Reviewed September.

8-150. *Thatcher New V Series Comfortmaster*, 4-p. illus. folder; oil-fired air conditioning furnace, residential; engineering data and dimensions. Thatcher Furnace Co.

8-129. *Triplex Products That Assure Hot Water at Its Best (Bulletin 246)*, Triplex Heating Specialty Co. Reviewed September.

Hospital Equipment

From American Laundry Machinery Co. Reviewed September:

8-131. *Typical Laundry Layout for 25-Bed General Hospital.*

8-132. *Typical Laundry Layout for 50-Bed General Hospital.*

8-133. *Typical Laundry Layout for 100-Bed General Hospital.*

8-134. *Typical Laundry Layout for 150-Bed General Hospital.*

8-135. *Typical Laundry Layout for 200-Bed General Hospital.*

8-130. *Sterilizers, Operating Lights, Infant Incubators, Laboratory Apparatus for Every Hospital*, Wilmot Castle Co. Reviewed September.

Insect Control

9-51. *Automatic Fly Control by Electricity*, Detjen Corp. Reviewed September.

Insulation

★ **9-53.** *Eagle-Picher Insulation (A-192)*, 28-p. illus. manual covering insulation in low temperature and