

ARCHITECTURAL RECORD

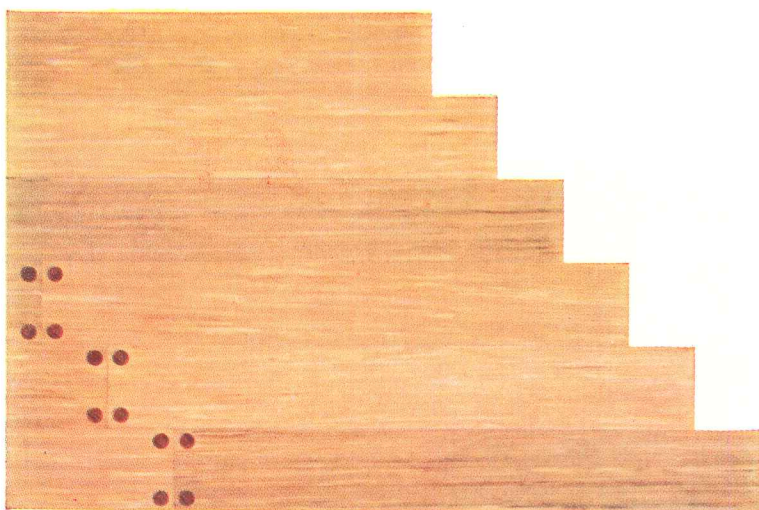
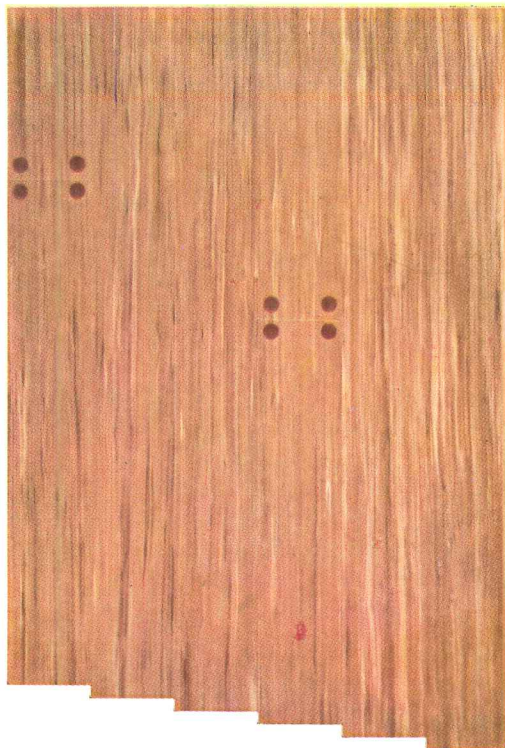
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MID-MAY 1961



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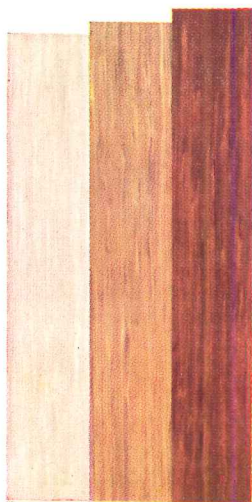
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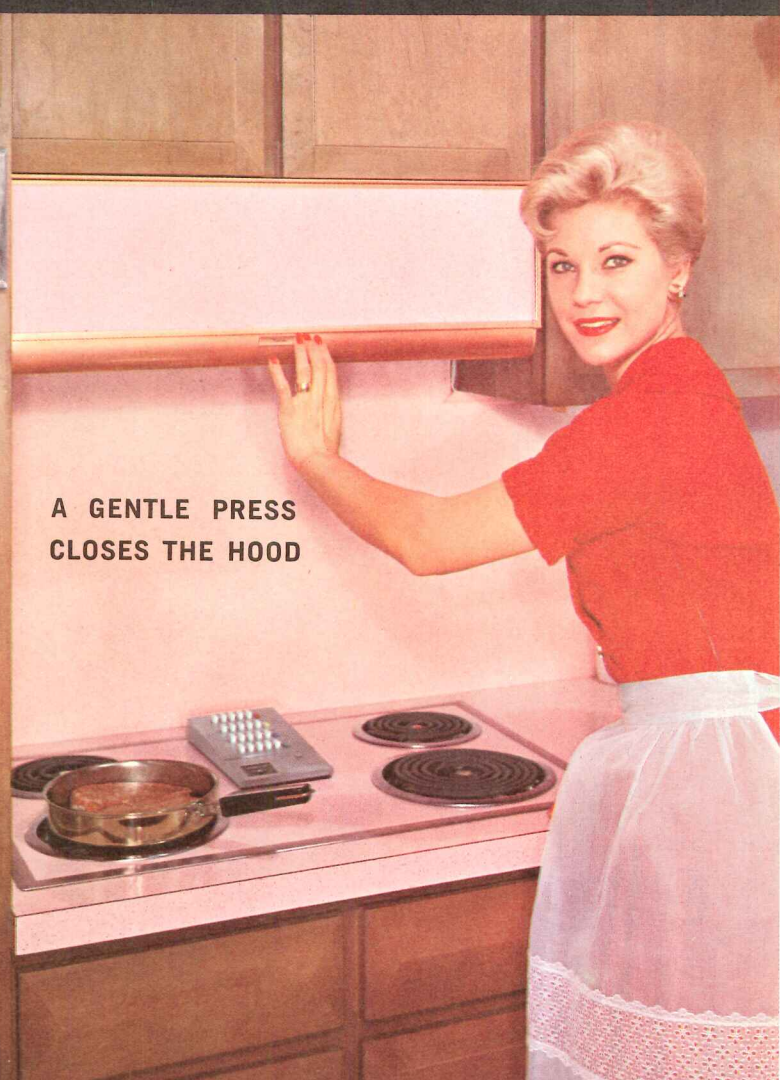
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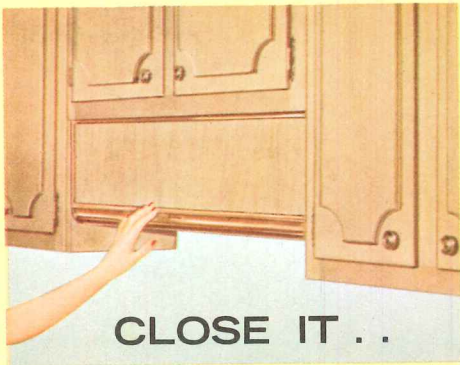
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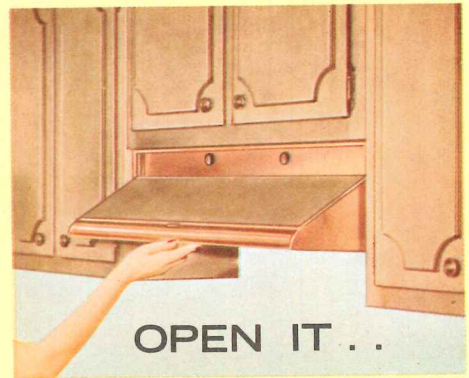
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MID-MAY 1961

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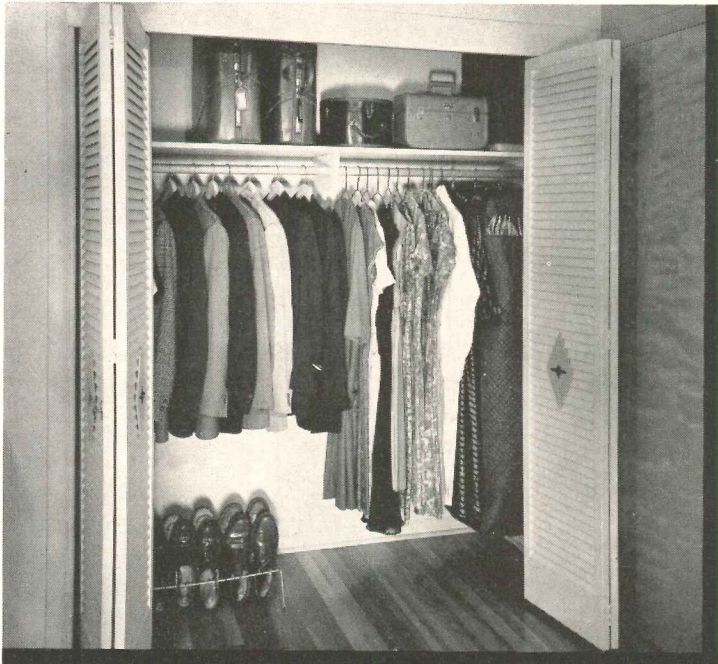
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Illustration: Plate 121. Walls: Scored Design SD-5, 335 Cr. Aqua, 365 Cr. White. Vanity Walls and Countertop: SD-5, 320 Cr. Brown, 332 Cr. Toffee. Floor: SD-5 and 4¼" sqs., 335 Cr. Aqua, 362 Cr. Charcoal.

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PRE-BUILT COMPONENTS FOR HOMEBUILDING *

BY ALBERT G. H. DIETZ

Professor of Building Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts

Construction by components is a rapidly-growing method of building houses which promises to bring about a major shift in the homebuilding industry in the future. In component construction the house is assembled with a relatively small number of relatively large shop-built parts instead of being built in the traditional way with a large number of small pieces fabricated and put together by workmen in the field.

It is not easy to define what is meant by component because the term is used in a variety of ways. Generally speaking, a component is considered to be a sub-assembly which is shop-fabricated and intended to be joined to other sub-assemblies in the field with a minimum amount of site labor and time. This definition obviously is a very broad one and in practice has to be formulated more precisely for any given operation. The components most commonly employed today are wall and partition panels, roof trusses, and a variety of items of millwork and trim. To a lesser extent equipment and appliances are also made into components in the form of sub-assemblies for rapid final assembly in the field.

There are certain basically different approaches to the design and use of components, and these must be clearly understood from the first.

1. Components may be specifically designed and fabricated for specific house plans, in which case specific parts are produced for standardized houses.

2. Components may be produced in standardized sizes and shapes not intended in advance for any specific house plan, in which case

standardized parts are produced for non-standardized houses.

In the first case some parts may be and usually are interchangeable among several houses but this is not necessarily true. In the second case, parts are interchangeable among different houses. Evidently, a much greater degree of flexibility is demanded of the second system of components than of the first.

COMPONENTS CURRENTLY EMPLOYED

Components produced by various fabricators vary greatly in size, shape, and degree of finish. They may be classified as components for the shell of the house, millwork, and equipment and appliances. These in turn may be subclassified as indicated below, although there are no sharp dividing lines among these groups.

Shell

Shell components vary from merely precut to panels with finish applied to both exterior and interior faces.

The following variations are commonly found:

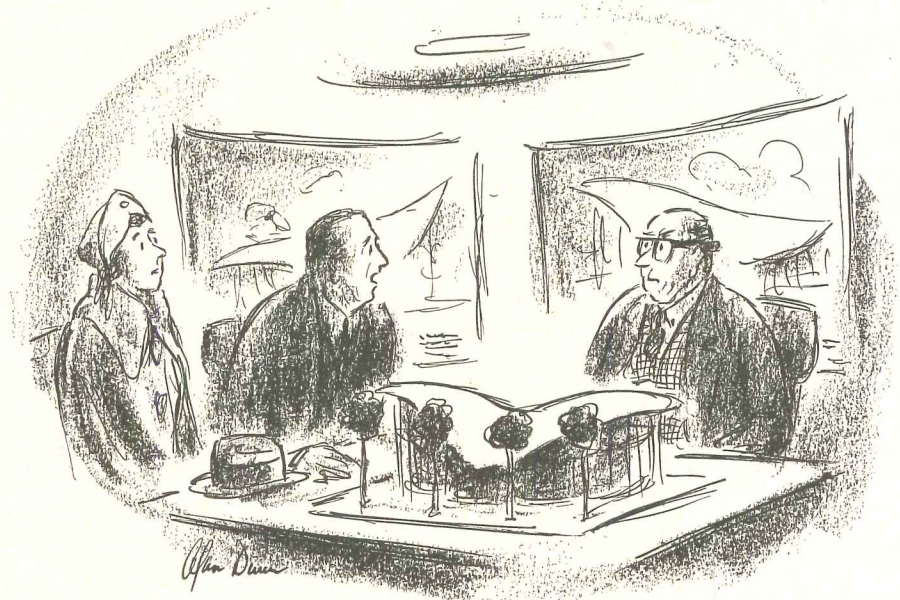
1. Precut and Bundled

Framing lumber including studs, plates, and framing around openings is precut at the shop, bundled, marked according to a code, and shipped to the site for assembly and erection. This approach is most commonly used for walls and partitions, but is also used for floors. The principal advantages lie in eliminating cutting at the site and efficient use of material in the shop.

2. Precut and Assembled Framing

Framing lumber is not only precut in the shop but is assembled on jig tables and the resulting framed panels are sent to the site for erection. In addition to the advantages inherent in precutting, shop assembly on jigs is faster than assembly in the field. A principal disadvantage lies in the increased shipping space taken up by the framed panels compared with the compact bundles

continued on page 9



—Drawn for the RECORD by Alan Dunn

“Do I have to live in a ‘statement?’ Can’t I just have a home?”

* Adapted from the report, COMPONENTS IN THE HOMEBUILDING INDUSTRY, prepared at the Massachusetts Institute of Technology for the National Association of Home Builders, Washington, D. C. The complete report is available from the Association.



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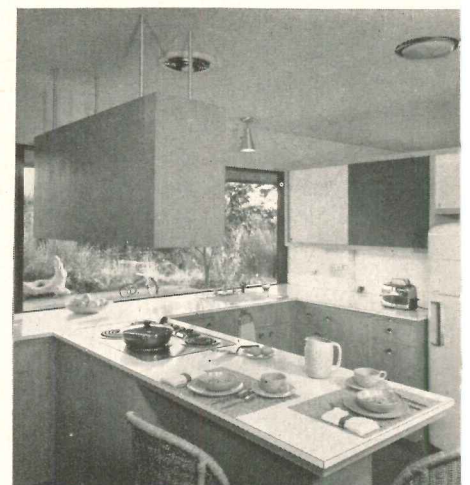


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PRE-BUILT COMPONENTS

continued from page 7

of precut but not assembled components. Assembly is most commonly employed with wall and partition panels, less often with floor panels because of their size and weight.

3. Precut Framing, Assembled, and Applied Sheathing

This is the logical next step beyond precutting and assembling. It is widely employed for wall panels. Sheathing is applied in the shop while the assembled frame is on the jig table. Sheathing is commonly plywood, but other wallboards are also extensively employed. Sheathing is nailed or stapled, and it may be glued at the same time, sometimes by hand, sometimes by elaborate powered rigs.

Principal advantages of adding sheathing are speed and efficient cutting. Principal disadvantages are added weight and added bulk.

4. Precut, Assembled, and Applied Finish Surfaces

There are many variants. Commonly, exterior wall panels have sheathing applied and over that some kind of finish such as wood or metal clapboards, vertical boarding, or shingles. Corner boards are sometimes applied and sometimes omitted. At intermediate joints in a wall clapboards and shingles may be cut back in a random pattern, to be filled in at the site.

Insulation may or may not be shop applied.

Interior finish for wall panels and partitions is sometimes applied in the shop but more commonly is left for field application.

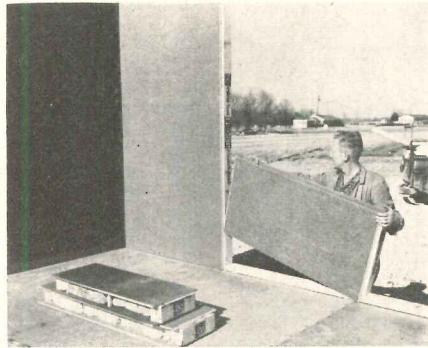
When finish is applied in the shop, at least one shop coat of paint or other coating is also applied.

Wiring needed in any given panel is commonly incorporated in the shop, or suitable provisions for wiring, such as raceways or conduit, are made.

The principal advantages of applying interior finish in the shop are the greater speed and efficiency of cutting and applying the finish, the considerable advantage of reducing the number of field coats of paint or other finish, and the greater latitude in the types of coating that can be applied. Principal disadvantages are the marked increase in weight and bulk, the great care that must be taken to avoid damage to the

surfaces, the knotty problem of the joints, and the problems associated with wiring and running other utility lines such as plumbing and heating.

The problems associated with the shop-applied finish have often appeared to be so formidable, especially of possible damage, that relatively few wall and still fewer partition components are so finished. Nevertheless, the potential advantages in savings, especially of time in the field, are such that compo-



Factory-assembled wall panel

nents fabricators are increasingly considering ways and means of providing such components as nearly completely finished as possible.

5. Roof Trusses

These are by far the most commonly used components of all. Depending on spans, loads, and local codes, top chords are usually 2 in. by 4 in. or 2 in. by 6 in. members; lower chords are usually 2 in. by 4 in. but may be 2 in. by 6 in., and webs are usually 2 in. by 4 in. although some are 1-in. boards, rough or dressed. Members are usually fastened together with nail-glued or staple-glued plywood gussets, or by means of pronged metal plates. Some are merely nailed, others use split-ring or similar timber connectors.

When combined with plywood sheathing, sometimes precut, the erection and enclosure of roofs with trussed rafters goes forward rapidly.

6. Window and Door Assemblies

Shop-assembled and fitted door and window assemblies are often used by themselves, but are also often fitted into wall and partition panels. Trim is usually applied to one

side and precut for the other side, but when incorporated into finished wall or partition panels, trim for windows and doors may be shop-applied on both sides. Quite commonly a priming coat of paint or other coating is shop-applied.

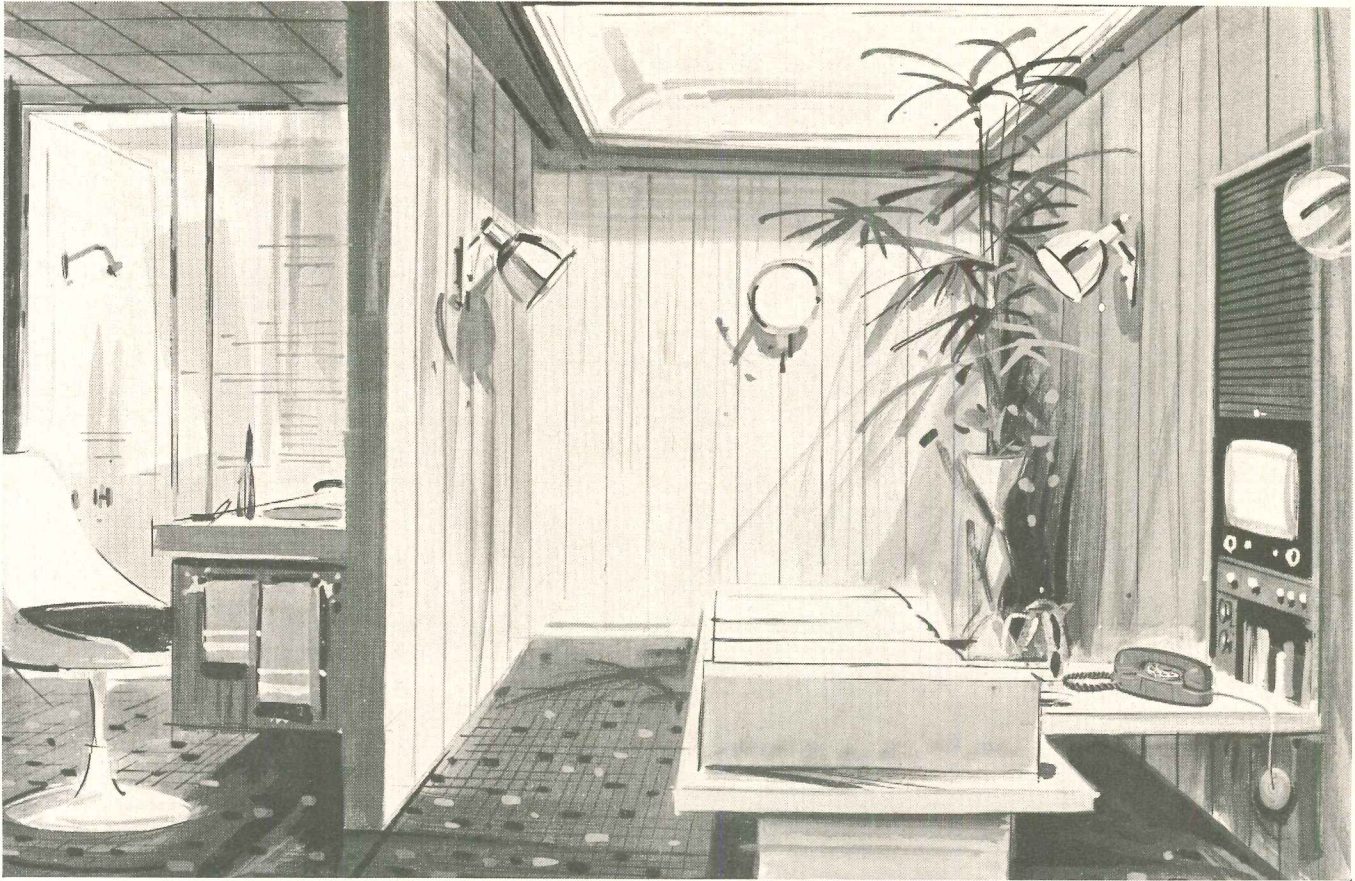
At least one window manufacturer is supplying window components with framing lumber—studs, headers, cripples—included in the package to form a framed unit that needs only to be incorporated with the rest of the wall framing, either by conventional field methods or in the shop.

Shell components are intended for various end uses. Some are produced to order for a specific house and may therefore be called custom components. The plans for a given house are analyzed and the walls, partitions, and possibly the floors broken down into sections of sizes convenient to be handled on the fabricator's jig tables. Dimensions may be slightly altered to fit the fabricator's module. Components are then fabricated for the specific house, shipped, and assembled. These components do not necessarily fit any other house.

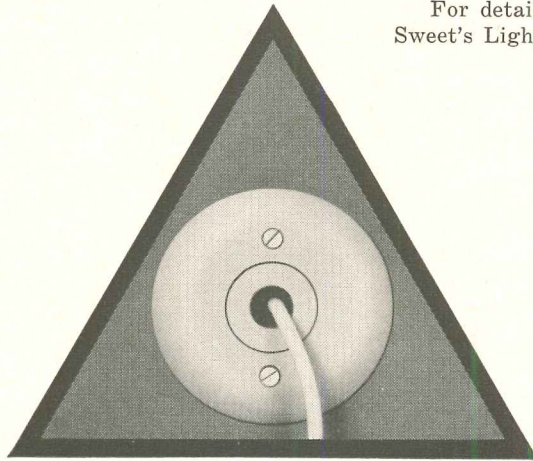
Prefabricators also use components designed as parts of specific plans. Although these are not custom components in the sense that they are intended for one specific house, they are designed for specific plans, even though each type of component may be produced in large numbers of identical units. Prefabricators make every effort to achieve as much interchangeability as possible among the components for their various houses. In general, however, the components produced by a prefabricator are restricted to the particular line of houses he is producing.

At the other extreme from the custom component fabricator is the manufacturer who produces a line of components: roof, wall, partition and possibly floor sections, not designed specifically for any particular house or series of houses, but intended to be put together in a large variety of configurations. Given any house plan, such alterations in dimensions and other aspects of the house as may be necessary are made, and the stock components, with possibly a few

continued on page 11



For details of home installations, see
Sweet's Light Construction File, 11c/Be. ▲



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PRE-BUILT COMPONENTS

continued from page 9

specials, are then shipped to be assembled according to that modified plan.

Equipment and Appliances

Generally speaking, not as much thought or effort has gone into adapting equipment and appliances to component construction as has gone into the shell of the house. In most instances existing plumbing, heating, and electrical equipment and appliances are adapted to the component system which, in turn, must accommodate existing units as furnished by the manufacturers. This situation comes about largely because of the lack of uniformity in component construction among the various fabricators of component houses. Unless one fabricator can alone generate sufficient demand for equipment and appliances to be produced to his system, it does not pay equipment manufacturers to produce a limited number of specialized components. The alternative is for the manufacturers themselves to determine what components they will manufacture and then require the fabricators of component type houses to adapt their systems to these components.

Today's practice is largely to arrange the house plan as far as possible for the most compact arrangement of equipment and appliances so as to minimize the need for long runs of piping and ducts.

Heating appliances with their controls are today largely pre-assembled into compact packages at the manufacturer's plant. As much as possible, heating lines and ducts are pre-cut in order to avoid excessive fabrication time in the field. Ducts may be pre-assembled to some extent into the shell components, particularly if the latter have interior finish applied.

As is the case with heating, plumbing systems are laid out for the most compact arrangement and some pre-assembly is practiced depending on local conditions. Part or all of the plumbing tree may be pre-assembled in the shop. Fixtures are then assembled to the tree in the field. The often-expressed ideal of a completely pre-assembled bathroom unit has not been realized to any appreciable extent. One manufacturer has indeed brought out a compact kitchen unit which includes

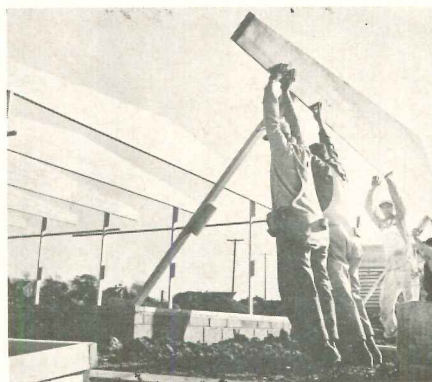
range, refrigerator, dishwasher, garbage disposer and laundry in one cabinet.

There is some use of pre-assembled wiring harnesses which frequently go over the tops of ceiling joists. The ends are dropped to outlets in partitions and wall panels. If partitions and wall panels are pre-finished on the inside, wiring may be partially incorporated in the panels and then assembled to the wiring harness, or such wiring may have long enough leads so that these, in turn, can be assembled into what amounts to a harness in the field. There is some use of continuous baseboard outlet strips.

Millwork

Cabinets of all kinds are generally shop made and at least partially if not completely pre-finished in the shop. This is true of kitchen cabinets in particular, and is also quite generally true of storage walls.

Trim is to some degree shop fabricated and finished. This is espe-



Factory-fabricated structure

cially true, as noted above, of doors and windows. Other items of pre-assembled and pre-finished trim include soffits for roof overhangs, but most exterior trim is field applied.

ADVANTAGES OF COMPONENTS

The reasons advanced for using components are many and various, but in general, they add up to a number of small direct savings plus indirect benefits that are frequently of much greater importance than the direct savings.

Direct Savings

Some fabricators claim that direct savings exist, other say that they cannot be demonstrated. By direct

savings is meant reduction in cost of materials and labor in the production of components in the shop, transportation to the field, and erection, as contrasted with conventional construction of the same house.

Field Savings

The most obvious and in many ways most important savings achieved by components are reduction of field time and labor, reduction of over-all construction time, and the simplification of field operations. The uncertainties inherent in the field are considerably reduced.

Capital Turnover

Because of the reduced over-all construction time, capital can be turned over more quickly and the same amount of capital be used to finance a much larger volume of construction than otherwise would be possible. Important savings in interest and other carrying charges are often effected, and where a builder must operate on limited capital, this can be of considerable importance.

Extended Building Season

Because the house can be closed in quickly even in bad weather, the building season may be extended considerably and may go right through the winter. This, in turn, leads to better and more efficient use of facilities and gives labor steadier employment.

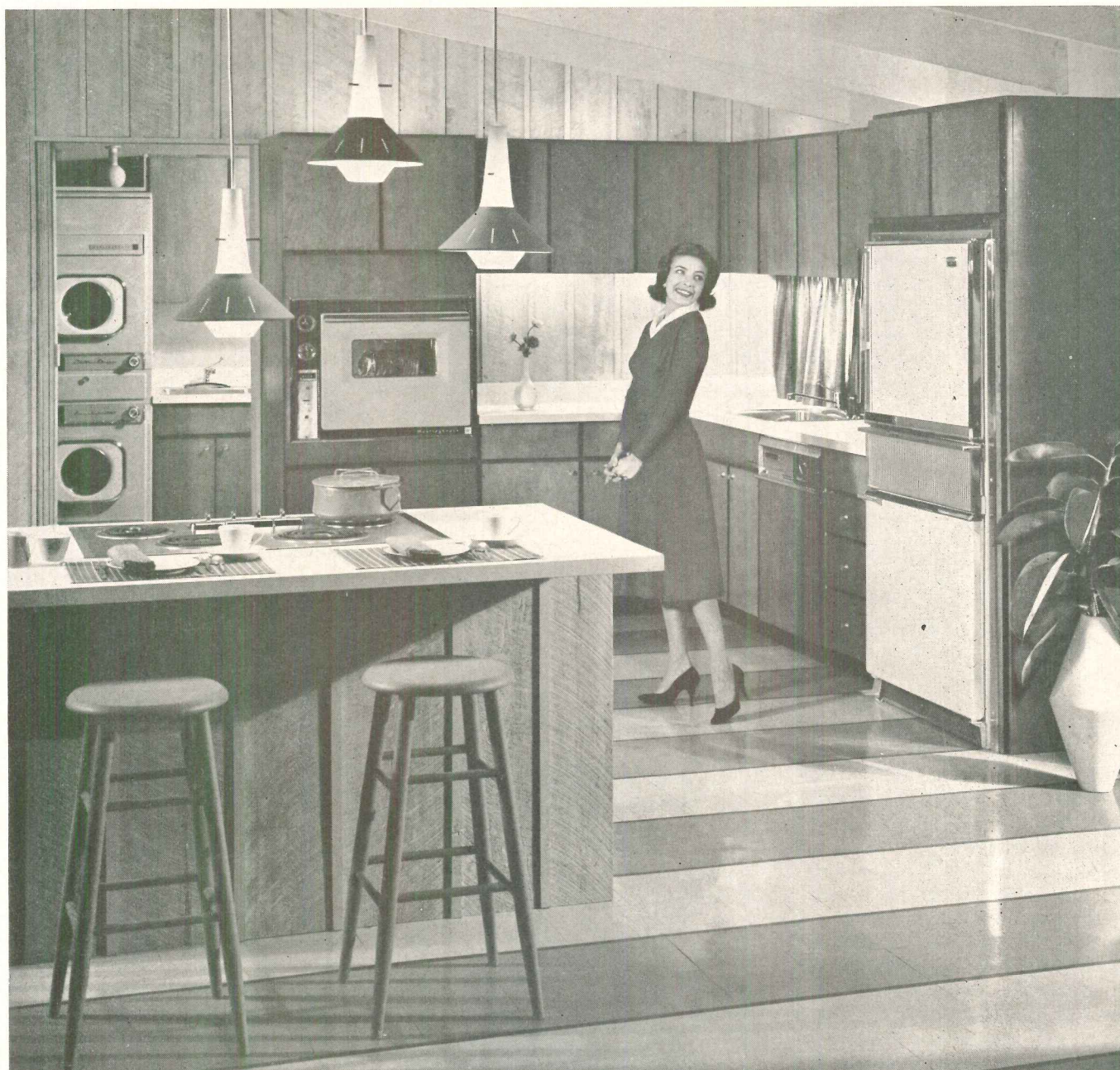
Control

This is perhaps the most important factor. Because relatively few large parts are employed instead of many small parts, loss and pilferage are reduced, use of the wrong part in the wrong place is largely eliminated, excessive time required to sort over pre-cut pieces is reduced, and the handling of the small pieces which go to make up the larger components is transferred to the shop where good inventory control, expeditious handling, and efficient assembly can be exercised.

Flexibility

Greater flexibility in planning operations is achieved, especially if a single builder operates on several different building sites. Instead of

continued on page 150



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CONTEMPORARY KITCHENS

By RUDARD A. JONES *A.I.A., Research Professor of Architecture;*
Director, Small Homes Council-Building Research Council, University of Illinois

And HELEN E. McCULLOUGH *Associate Professor of Home Economics,*
Department of Home Economics, University of Illinois

The kitchen, as the key work space in the home, continues to be the room that must be the most carefully planned. Since the homemaker is likely to spend more time in this one room than any other, it is essential that it be designed to function as efficiently as possible.

Following the war, one of the first research studies of the Small Homes Council was in the field of kitchen storage. In this project, a home economist developed rules for the amount and location of storage in the kitchen ⁽¹⁾, and architects used this basic information to derive certain planning standards for the kitchen. ⁽²⁾ ⁽⁴⁾. These standards, published by the Small Homes Council, have been and still are widely used throughout the United States for designing new kitchens and judging existing ones.

The great variety of new equipment available for the kitchen plus the changing pattern of kitchen use make it necessary to re-examine the basic rules from time to time. Of

particular importance is the increasing use of built-in appliances, a greater number of portable table-top appliances, and the desire of many people to have an eating space in the kitchen. These were among the factors that led the University of Illinois Department of Home Economics to undertake new investigations of kitchen planning, considering the most frequently used built-in appliances as well as the more common units. ⁽³⁾ ⁽⁶⁾.

Although the new research indicates some changes in specific allotment of space, the basic principles for the successful design of a good working arrangement for the kitchen remain the same as published over a decade ago. These principles are:

- A. Provide the proper amount of storage for food, utensils and dishes, located as near as possible to the point of first use.
- B. Provide a suitable amount of counter space.
- C. Provide adequate space for

the installation of appliances.

D. Provide adequate floor space and clearances in front of cabinets and appliances for convenience.

E. Arrange the storage cabinets, the appliances, and the counter space to achieve maximum efficiency.

WORK CENTERS

A good plan will efficiently accommodate all the activities that occur in the kitchen. The usual home kitchen will have to function both as a galley (food preparation and cooking) and as a scullery (clean-up operation), and it may also serve as a dining space. In the "contemporary" kitchen (defined as a kitchen having a built-in dishwasher, oven, and counter-top range unit), the first two functions are generally carried on in certain work centers which are most logically divided as follows:

1. Refrigerator Center
2. Mix Center
3. Sink Center
4. Range Center (surface burners)
5. Serve Center
6. Oven Center

Storage in Centers

Certain operations are carried on at each center, and, in order to function efficiently, each center must be accompanied by counter space, wall cabinets, and base cabinets. Also, in those centers which have appliances themselves. In the most recent work done at the University of Illinois ⁽⁶⁾ it was determined that in a contemporary kitchen the counter space requirements were more critical than base cabinet storage requirements. It followed, then, that if adequate counter space was provided, the base cabinet storage space would be sufficient. Such an arrangement, however, may mean the principle of storing each item of food and each utensil at the point of first use may be violated to some extent, but the amount of necessary

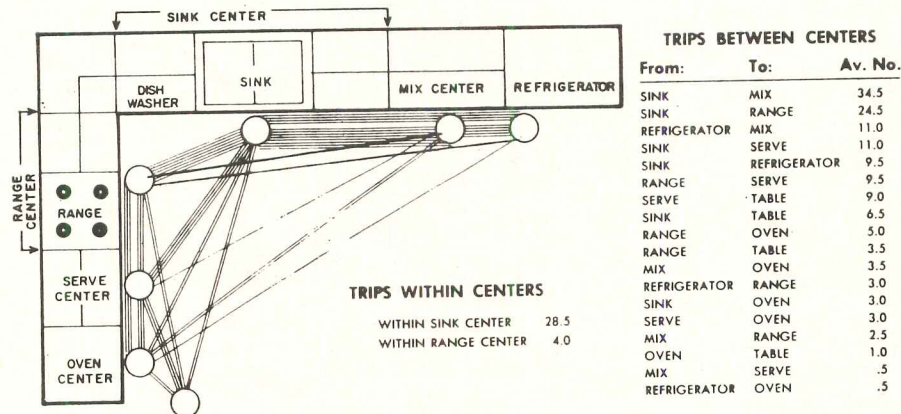
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Use of Centers, as Influenced by Location of Mix Center

Type of kitchen or arrangement	Percentage use of center							No. of trips	Distance feet
	Sink	Range	Mix	Serve	Refrig.	Table	Oven		
"L" kitchen, refrigerator mix ^a Contemporary	42	16	15	9	7	6	5	173	712
"L" kitchen, range mix ^b Contemporary	47	14	11	10	6	7	5	180	805

(Taken from reference 6)

- ^a Mix center between refrigerator and sink centers.
^b Mix center between sink and range centers.



Average number of trips made to prepare a meal in one study of the contemporary kitchen

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CONTEMPORARY KITCHENS

continued from page 13

adjustment is not significant.

Wall cabinets should be located above each base cabinet with a counter-top, and if this guide is followed, there will be sufficient wall cabinet storage to accommodate a dinnerware service for six as well as the usual utensils and food items stored in wall cabinets. This set of dishes may be considered the "everyday" dishes.

The type of cabinets used in the kitchen is extremely important. Wall cabinets can be used much more efficiently if they have movable shelves. Also, small shelves on the back of wall cabinet doors are excellent for storing spices and other small items. Base cabinets with drawers are much more useful than the usual kitchen cabinet which has a single drawer above a section with a door. Deep drawers can be divided so that pan covers, pie tins, skillets and the like may be stored most conveniently. At least one drawer of this type is recommended. Sloping dividers can be arranged so that canned goods may be placed in the drawer in such a way that all labels are visible.

In some special kitchen designs there may be a shortage of space for wall cabinets. In this case base cabinets may be substituted to a limited degree, but the base cabi-

nets should be of the drawer type.

The amount of storage needed and as specified below for each individual isolated center was determined by storing the food and utensil items found in the usual home. The standards used here are those for an optimum kitchen; an ample amount of space is provided for a liberal list of supplies.

Dish Storage

In addition to everyday dishes, most families will have need for space to store the "good" dinnerware. An extra five feet of wall cabinet will store a service for 12 persons. Sometimes this may be located in the kitchen; other times there will be more space available in the dining area of the house. In these instances, a suitable type of storage wall can be designed making use of standard upper wall cabinets for both the wall and base sections of the storage unit. Sometimes a free-standing storage wall is an excellent answer⁽⁵⁾.

ISOLATED CENTERS

The function of each center, along with the recommended counter space and storage cabinets for the center when it is isolated, is described below. The major portion of this article is limited to a discussion

of the design of the "contemporary" kitchen.

Refrigerator Center

A frontage of 3 ft is sufficient to accommodate the usual refrigerator. If the refrigerator is isolated from other centers, a wall cabinet, base cabinet and counter space 1.5 ft wide should be provided on the latch side of the door.

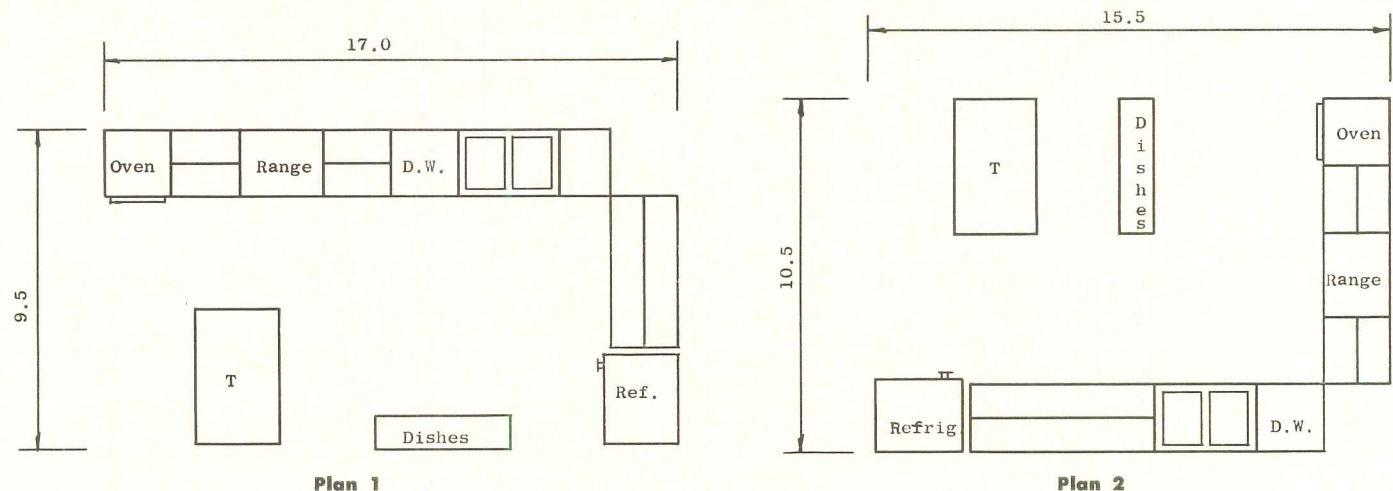
Mix Center

As the name indicates, the mix center is the location at which most of the work involving mixing is carried on. Foodstuffs used in these operations—baking, the preparation of salads, etc.—and the utensils necessary to the operation, are located in this area. A prime requirement is a large counter surface. McCullough and Farnham recommend a minimum of 3.5 ft, and suggest that 4 ft would be better. Corresponding wall and base cabinets should be provided. When this unit is combined with an appliance to form an isolated combination of centers, the suggested minimum of counter, wall and base storage is 4.5 ft, and when the mix center is located between the refrigerator and the sink, a counter of 5 ft is recommended.

continued on page 29

ILLUSTRATIVE PLANS: Seven plans are presented to illustrate the application of principles of planning developed in this article. In six of the examples, wall cabinets for "good" dish storage are provided in the kitchen proper. Also, certain plans have space for a table for eating; in other cases, a separate breakfast room or dining area must be added.

For purpose of comparing the area required for the various plans, a space 7.5 ft wide will be added to those kitchens which do not have dining space within them. The plans are presented in the order of the areas required for the combined dining-kitchen space. Smallest area plans are presented first.



The most compact kitchen which meets all of the standards previously suggested is illustrated in *Plan 1*. The area of the plan is 161.5 sq ft. Some persons might object to the fact that the dining table would probably be on an inside wall. This objection is overcome in *Plan 2*, but here the sink is on the inside wall. This would seem to be a greater fault than that in *Plan 1*

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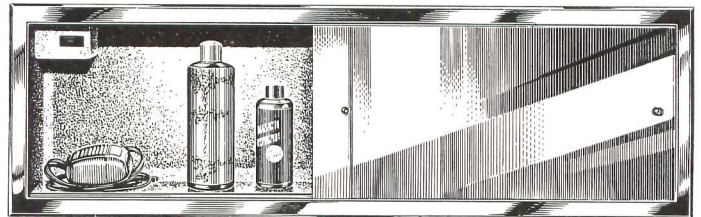
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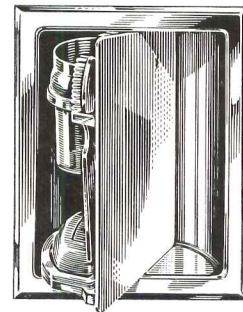
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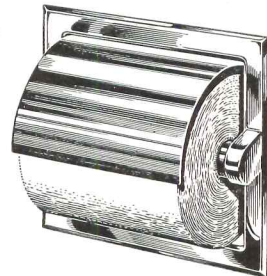


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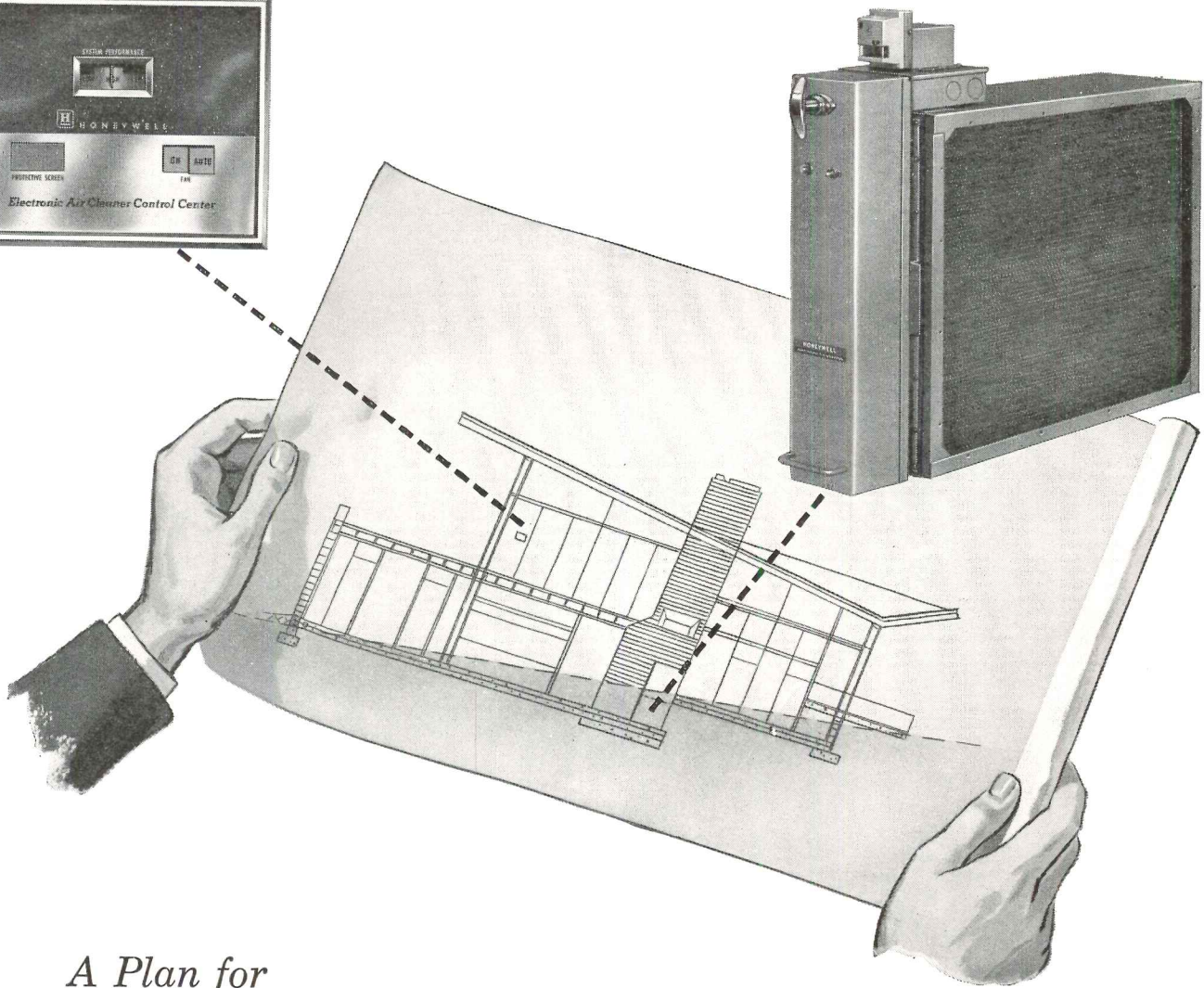
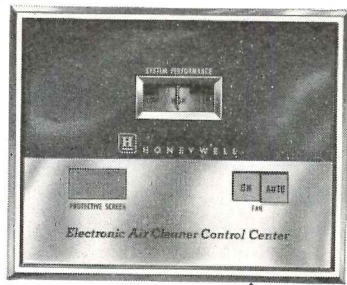
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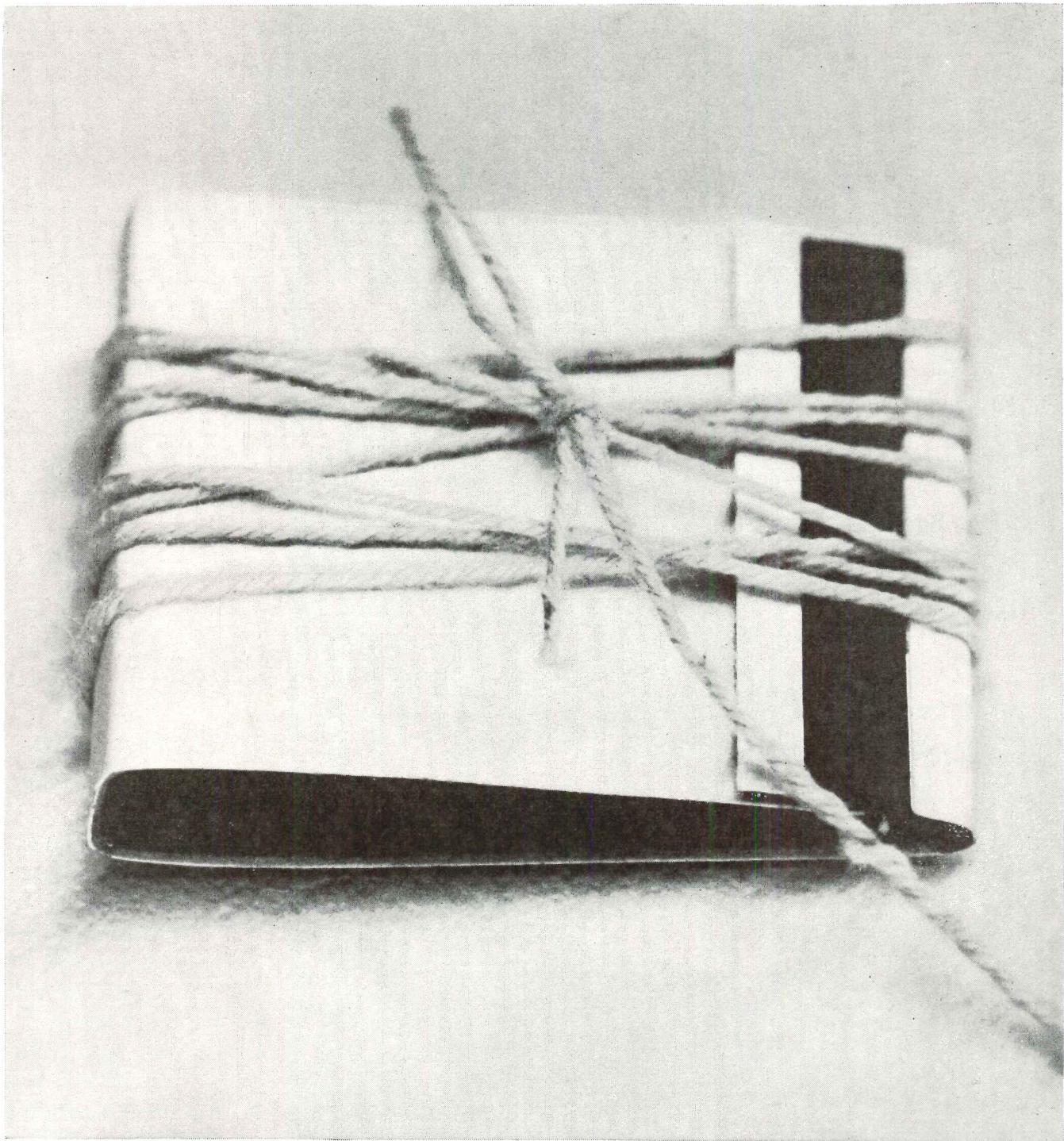
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of hardwood flooring

A feature floor for "special" rooms



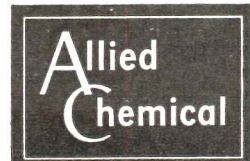
BARRETT BAR-FIRE[†] ... the shingle that's impossible to match!

A class "A" fire rating is but one of the reasons why! This rating means top fire protection through fire-barrier layers of giant size granules, vermiculite and long asbestos fibers. In addition, this classic, heavy-weight shingle is ideal for the highest-quality roofing jobs where an attractive, distinctive look is important. Available in 4 modern, muted tones ... Barrett Bar-Fire shingles are bonded for 25 years. The only shingle providing 1) CLASS "A" FIRE RATING; 2) 300# WEIGHT; and 3) GIANT SIZE GRANULES. Play safe. Write in today!

Offices in: Birmingham, Boston, Charlotte, Chicago, Cleveland, Houston, New York, Philadelphia, St. Paul

[†]Trade Mark Allied Chemical Corporation

BARRETT DIVISION
40 Rector Street, New York 6, N. Y.

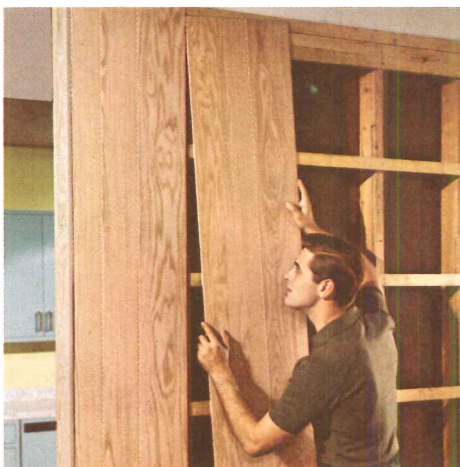




6110

BEAUTIFUL MARLITE PANELING

...for modern wash-and-wear walls in any room



Fast installation. 1/4" thick tongued and grooved Random Planks are 16" by 8' . . . go up with simple clips over furring strips or existing walls.

From the basement recreation room to the attic bedroom, Marlite provides soil-proof walls that need no painting or further protection — speed modernization and new construction.

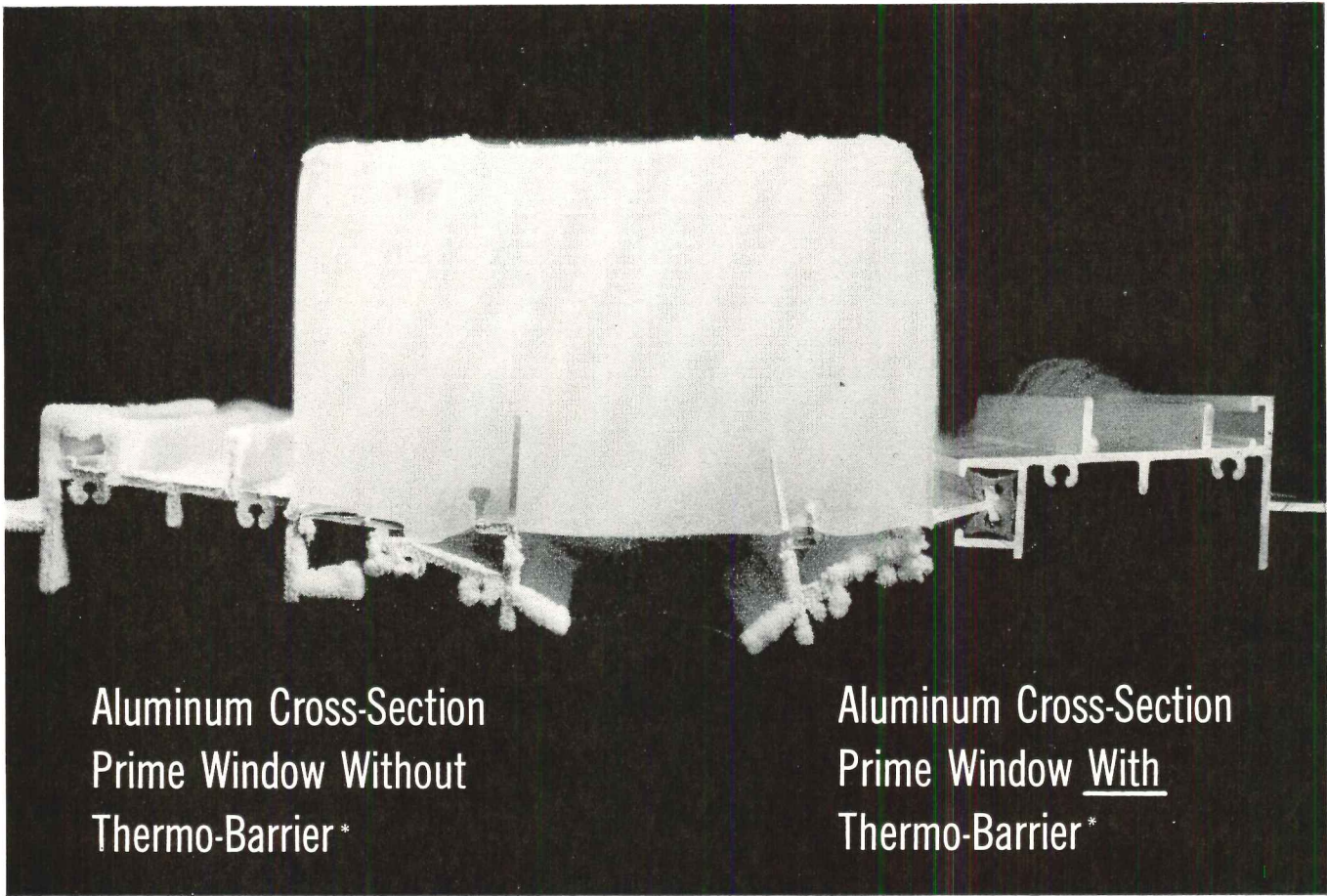
Unlike many "finished" wall panels that dull with age and damage through use, Marlite's soilproof baked melamine finish shrugs off grease, stains, mars—even heat! Dirt just can't penetrate its hard,

dent-resistant surface. A once-over-lightly with a damp cloth keeps Marlite bright and new-looking for years. And Marlite's ease of installation over old or new walls saves time and work, assures a better finished job.

Get complete details from Sweet's File, Building Supply News Directory, or write Marlite Division of Masonite Corporation, Dover, Ohio.

Marlite[®]
plastic-finished paneling

ANOTHER QUALITY PRODUCT OF MASONITE[®] RESEARCH



This unretouched photo of dry-ice used to lower temperature of two window frames simulates extreme weather conditions and illustrates effectiveness of DeVAC's new Thermo-Barrier *

New DeVAC Thermo-Barrier* Substantially Reduces Heat & Cold Transfer Through Aluminum Windows!

Here's visual proof that any DeVAC representative would be glad to demonstrate to you. Laboratory tests conclude that heat or cold transfer in this new DeVAC window is stopped down to less than one-fourth the amount in windows with solid aluminum frames.

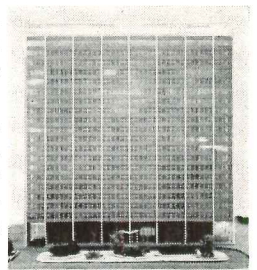
Even if the DeVAC Thermo-Barrier* window were installed in your home and coated with ice outside, as in the photo above, the inside frame, under all but extreme humidities will protect against condensation, against buildup of frost—protection against stained drapes and decorating. And, of course, it works both ways, heat or air conditioning coolness cannot get out the windows either. Think of the savings on fuel and cooling bills!

Functionally the new Thermo-Barrier* surrounds the windows completely. Made of high impact dry vinyl, the strip separates while securely interlocking the frame of the prime aluminum windows with the frame of the combination, self-storing storm and screen windows.

A new outlook on Family Living **DeVAC** through DeVAC Windows

DeVAC, Inc., 5900 Wayzata Boulevard, Minneapolis 16, Minnesota

The double-frame windows, ideal for cold weather climates, are made in double-hung or Glider styles of anodized aluminum for permanent beauty. T6 temper is specified for extra strength (approximately 50% greater than T5), allowing trim design and neat appearance on all style homes. Triple weather-stripping keeps air infiltration to a minimum—less dust and no drafts! Sensibly priced, too.



The luxurious 740 River Drive apartment house, overlooking the Mississippi River valley in St. Paul, is being built by Kraus-Anderson, Inc., using DeVAC'S new Thermo-Barrier* windows—640 of them! This same outlook on good family living is available for new homes you may be planning... from DeVAC.

*Patent Pending

DeVAC, Inc.

5900 Wayzata Blvd., Minneapolis 16, Minn.

Please send me complete information about the new Thermo-Barrier windows. Include a copy of laboratory tests on:

- Thermo-Barrier resistance to heat and cold transfer
- I am an architect
- I plan to build a new home

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

In 1961
put a Flair in your
kitchens with
**Frigidaire
Appliances**

- ★ OVEN-COOKING WITH A FLAIR
- ★ FROST-PROOF FOODKEEPING
- ★ ONCE-A-DAY DISHWASHING
- ★ "SOLID COMFORT" AIR CONDITIONING
- ★ WASHING WITHOUT SLAVING
- ★ FLOWING HEAT CLOTHES DRYING

Whether you are building or remodeling, these benefits are what most homemakers want. Frigidaire Appliances have been designed with these features to lighten household tasks, to give women a "Holiday from Apron Strings."

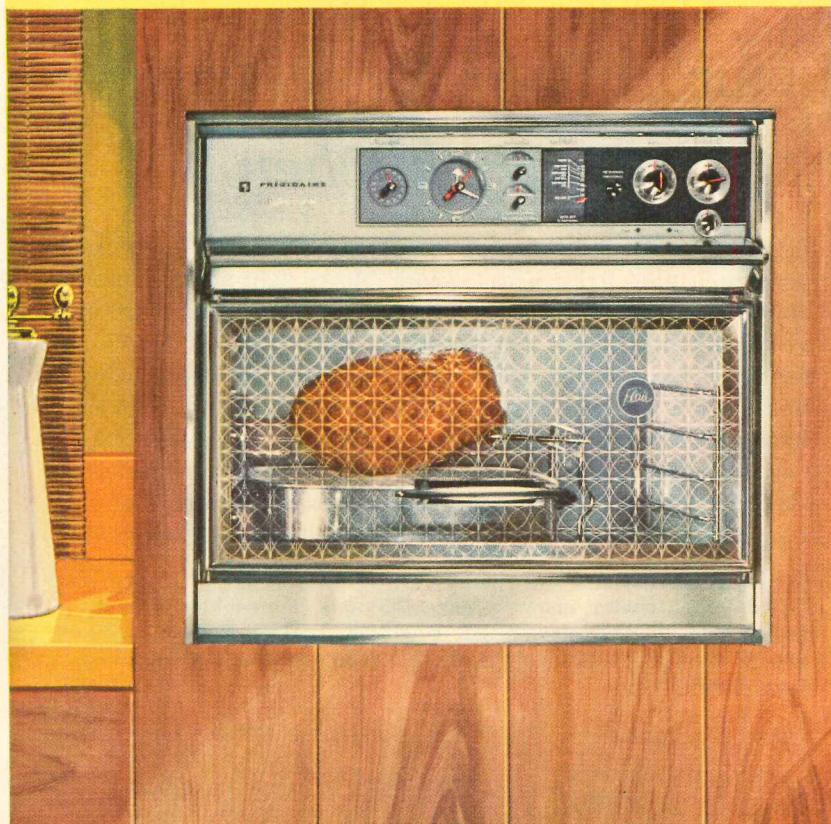
Here, in ready reference form, is a 1961 Planning Guide for using Frigidaire Appliances to design kitchens with a Flair. It's organized for easy use, complete with dimensions. A similar consumer version is appearing in many leading home-building annuals and semiannuals. These help your prospects express their kitchen ideas to you.

Why Choose Frigidaire?

- *Sculptured Sheer Look styling that blends in beautifully with standard wood or steel cabinetry.*
- *Most models available in 4 colors: Sunny Yellow, Mayfair Pink, Turquoise, and Aztec Copper—plus Snowcrest White and Satin Chrome. Most Wall Ovens and Dishwashers also in Charcoal Gray.*
- *Products of General Motors, engineered and built to be a lasting improvement to your home.*
- *Factory-trained service through Frigidaire Dealers everywhere.*

**When she can see herself in your kitchen
she can see herself in your home!**

Millions of Americans own Frigidaire Refrigerators, Ranges and other Frigidaire Appliances. From the standpoint of styling, design, engineering, performance and product quality, these Americans have come to regard Frigidaire Appliances as the standard toward which all others strive. This is a built-in market for you when you install and use Frigidaire Appliances to help sell your homes.



Flair Custom Imperial

NEW! Dazzling *Flair* Wall Ovens!
Feature stunning, daring, new-fashioned oven-cooking with a Flair!

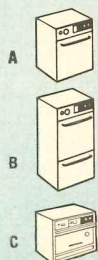


Custom Imperial RBB-92

Must all wall ovens look alike? Answer: No! And Frigidaire proves it with the new *Flair* Wall Oven. Daringly styled Flair looks like a picture, cooks like the finest Frigidaire Oven ever built. The Custom Imperial offers all the top-of-the-line cooking features including automatic Cook-Master, Meat Tender Control and Spatter-Free Broiler Grill. Lower cost DeLuxe model, too. Both have exclusive Glide-Up Glass Door. Fit standard 33-inch cabinets.

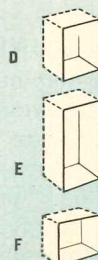
**If you prefer a wall oven
for 24-inch cabinets...**

choose one of the other Frigidaire good-lookin', good-cookin' — and easy-cleaning — models. Drop-Leaf Doors hold heaviest roasts, lower all the way down to clean. French Door models require only 12 1/4" of aisle space when open. Pull 'N Clean lower ovens. 8 double and single oven models.



Model	Exterior Dimensions — Inches		
	Height	Width	Depth
A. Super RBB-93	29 5/8	23 1/4	23 3/4
A. DeLuxe RBB-94*	29 5/8	23 1/4	23 3/4
B. Custom DeLuxe RBB-98	44 7/8	23 1/4	23 3/4
A. Imperial RBB-90	29 5/8	23 1/4	23 3/4
B. Imperial RBB-99*	44 7/8	23 1/4	23 3/4
B. Custom Imperial RBB-92	44 7/8	23 1/4	23 3/4
C. Flair Wall Ovens (Custom Imperial and DeLuxe)	27 1/2	30 1/8	17 1/8

*Specifications also apply to glass window door models RBGB-94 and RBGB-99



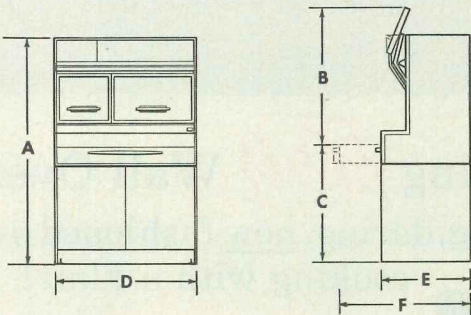
Model	Wall Opening Dimensions — Inches		
	Height	Width	Depth (Min.)
D. Super RBB-93	28 1/2	21 1/2	23 3/4
D. DeLuxe RBB-94*	28 1/2	21 1/2	23 3/4 †
E. Custom DeLuxe RBB-98	44	21 1/2	23 3/4 †
D. Imperial RBB-90	28 1/2	21 1/2	23 3/4 †
E. Imperial RBB-99*	44	21 1/2	23 3/4 †
E. Custom Imperial RBB-92	44	21 1/2	23 3/4 †
F. Flair Wall Ovens (Custom Imperial and DeLuxe)	26	30 5/8	18 1/2

*Specifications also apply to glass window door models RBGB-94 and RBGB-99
†For optional Rotisserie, add 1/4" to depth.

Here's the *Flair* Range by Frigidaire for glamorous cooking in any kitchen

Available in 30" and 40" sizes, Flair is one of the most beautiful things to happen to kitchens in years! Moves right into the space provided for any 30" or 40" range, offers built-in appearance in a free-standing range, too. Cooks at best "comfort level"—See-Level controls and ovens, exclusive Glide-Up Oven Doors, Roll-To-You Cooking Top, Cook-Master oven control. Custom Imperial models offer every advanced Frigidaire cooking feature, including Spatter-Free Broiler Grill, Heat-Minder surface unit, Speed-Heat surface unit, Automatic Meat Tender, 4 glorious models. Base cabinet, exhaust hood and rotisserie optional.

If you prefer a conventional free-standing range... choose a Frigidaire automatic electric range that lets her cook with confidence, clean without slaving. All Frigidaire cooking features available, including revolutionary Pull 'N Clean Oven and 4 colors on some models.



Dimensions Inches	Custom Imperial		Custom DeLuxe		Dimensions Inches	Custom Imperial		Custom DeLuxe	
	30" RCIB-635	40" RCIB-645	30" RCDB-630	40" RCDB-640		30" RCIB-635	40" RCIB-645	30" RCDB-630	40" RCDB-640
*A	62 $\frac{1}{8}$	62 $\frac{1}{8}$	62 $\frac{1}{8}$	62 $\frac{1}{8}$	D	30	40	30	40
B	37 $\frac{1}{8}$	37 $\frac{1}{8}$	37 $\frac{1}{8}$	37 $\frac{1}{8}$	E	25	25	25	25
C	32	32	32	32	F	38 $\frac{3}{8}$	38 $\frac{3}{8}$	38 $\frac{3}{8}$	38 $\frac{3}{8}$

*Total height with optional exhaust hood: 70".

Choose one of these cooking top *Ideas* for convenience, space, matching Frigidaire style



BUILT-IN COOKING TOPS match Wall Ovens perfectly—in styling, performance and convenience. Models for every budget in colors and Satin Chrome. 4 models include combinations of features such as 6" and 8" units; Speed-Heat Units; Heat-Minder Units; Infinite Heat Switches; Remote controls; porcelain enamel drip bowls on most models, shallow depth for maximum drawer space.



FOLD-BACK SURFACE UNITS—fold back neatly and safely out of the way, even while hot. Add important counter work space. Easy to clean in Satin Chrome. Single 2-unit or double 4-unit assemblies. Feature 6" and 8" units; Heat-Minder and Speed-Heat Units on some; Infinite Heat Switches; porcelain enamel drip bowls; LH and RH control panels.



Cooking Top Dimensions—Inches

Model	Width	Depth	Depth Below Top of Counter	Counter-Top Opening	
				Width	Depth
Super RBB-102	23	21	3 $\frac{3}{8}$	22 $\frac{1}{8}$	20
DeLuxe RBB-100	32 $\frac{1}{4}$	20 $\frac{1}{4}$	3 $\frac{1}{4}$	31	19
Imperial RBB-101	32 $\frac{1}{4}$	20 $\frac{1}{4}$	3 $\frac{1}{4}$	31	19
Custom Imperial RBB-201	32 $\frac{1}{4}$	20 $\frac{1}{4}$	3 $\frac{1}{4}$	31	19

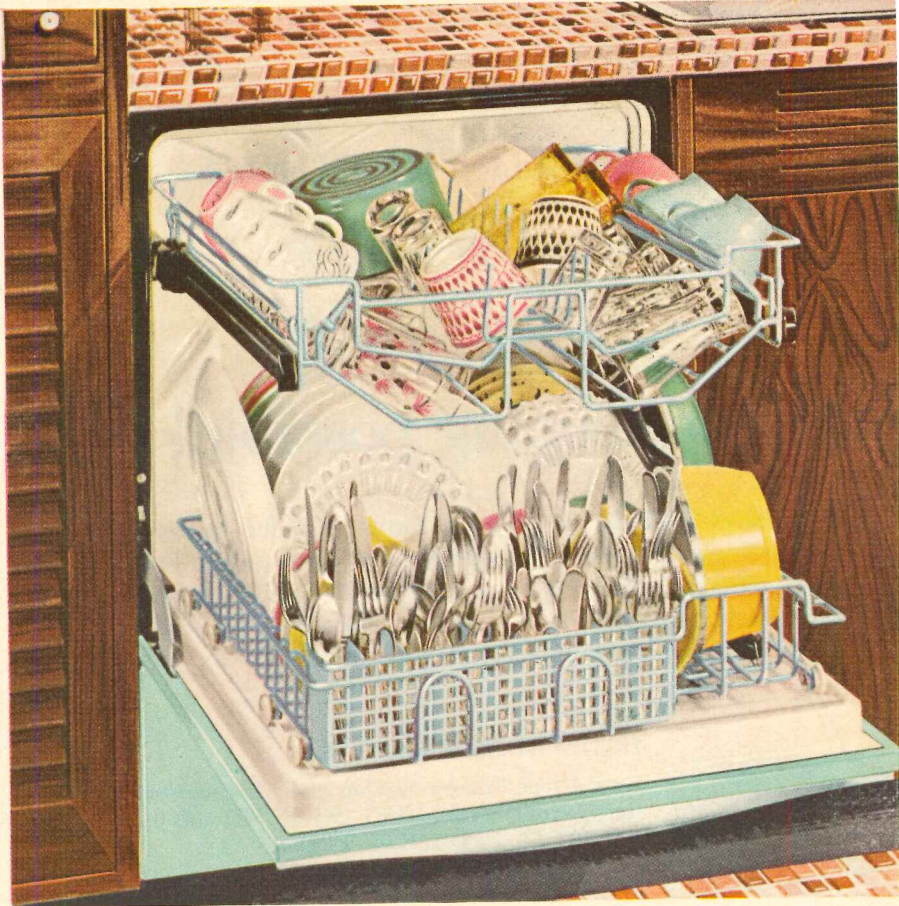


Fold-Back Surface Unit Dimensions—Inches

Model	Width			Height		Depth	
	Overall	Each Fold-Back Section	Control Panel	Overall	Units in Operating Position	Closed	Units in Operating Position
DeLuxe RBB-81	23 $\frac{1}{8}$	20 $\frac{1}{8}$	3 $\frac{1}{2}$	14 $\frac{3}{8}$	4	5 $\frac{1}{8}$	17 $\frac{3}{8}$
Imperial RBB-82	23 $\frac{1}{8}$	20 $\frac{1}{8}$	3 $\frac{1}{2}$	14 $\frac{3}{8}$	4	5 $\frac{1}{8}$	17 $\frac{3}{8}$
Custom Imperial RBB-84	47 $\frac{3}{8}$	20 $\frac{1}{8}$ (2)	3 $\frac{1}{2}$ (2)	14 $\frac{3}{8}$	4	5 $\frac{1}{8}$	17 $\frac{3}{8}$

Sparkle-clean and sanitary dishes with once-a-day Frigidaire Dishwashing

Custom Imperial or DeLuxe Under-counter models offer easy front-loading, powerful Swirling Water Washing Action and full capacity for once-a-day dishwashing for an average family of 4... while housewives are out of the kitchen! Load both Roll-To-You Racks easily. Dish-Minder Dial offers 4 cycles, including plate-warmer. 2400 walls of searching hot water per minute seek every surface. Radiantube Heating Unit maintains temperature for complete sanitation. No extra scraping or rinsing. Add a dish any time. Also convertible front-loading Dishmobile, plus top-loading mobile models! 5 colors, white, and Satin Chrome on most models.



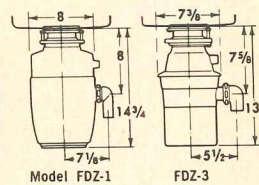
Dishwasher Dimensions — Inches

Model	Height	Width	Depth	
			Over Hardware	Door Open
DeLuxe Under-counter DW-DUB	34 $\frac{1}{4}$ "	23 $\frac{1}{8}$ "	25 $\frac{1}{8}$ "	45 $\frac{1}{4}$ "
Custom Imperial Under-counter DW-IUB	34 $\frac{1}{4}$ "	23 $\frac{1}{8}$ "	25 $\frac{1}{8}$ "	45 $\frac{1}{4}$ "

FRIGIDAIRE DISPOSERS

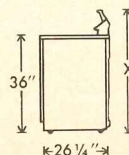
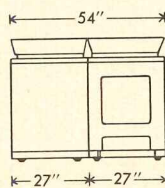
(Model FDZ-1, shown)

Perfect mate for a new Frigidaire Dishwasher. 30% to 50% faster! Quiet—insulated jacket (FDZ-1) and rubber-cushioned connections. Fits most 3 $\frac{1}{2}$ " drain-opening sinks.



Extra Care Laundering without slaving! Flowing Heat drying, too!

Here are the 3-Ring Agitator Washers that feature "Somersault" Washing Action, the action that bathes deep dirt out without beating. Automatic Soak Cycle on most models, Automatic Bleach Dispensing, Lint-Away wash and rinse and many other features. And the laundry pair for wash 'n wear includes a perfectly matched Frigidaire Dryer with Flowing Heat. No-Vent models with exclusive Super Filtrator available. 27 matching combinations of models to choose from; each offers the basic Frigidaire top-of-the-line washing and drying performance.



WASHER AND DRYER DIMENSIONS

Height to top of control panel
 All Custom Imperial Washer and Dryer models—45" (Console Cover open)
 42 $\frac{1}{2}$ " (Console Cover closed)
 All Imperial Washer and Dryer models—43 $\frac{1}{4}$ "
 Custom DeLuxe Washer WCD-61—41"
 Deluxe Washer and Dryer models WD-61, DD-61, DDG-61—41"
 Deluxe Washer and Dryer models WDA-61, DDA-61, DDAG-61—40 $\frac{3}{8}$ "
 Height to top of washer lid when open—54"
 Width of washer with lid open—40 $\frac{1}{4}$ "
 Allow approximately 18" at front of dryer for door clearance swing

No defrosting ever! Here's the handiest, most reliable *Frost-Proof* foodkeeping possible!

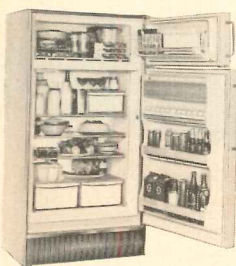
IT'S GUARANTEED.* Frost never forms... in the freezer... in the refrigerator section. So—nothing to defrost ever in Frost-Proof refrigerator-freezers or upright freezers. All Sculptured Sheer Look, all perfect for matching recessed "built-in" installation. Many available in 4 colors plus white.

FRIGIDAIRE REFRIGERATORS

Frost-Proof Freezer Section and Flowing Cold Refrigerator Section (FPI-15B-61, FPI-13B-61, FPI-13T-61, FPD-13B-61, FPD-13T-61).

Cycla-matic Defrosting in refrigerator section**
Completely separate zero zone Food Freezer**
Flip-Quick Ice Ejector (FPI-15B-61, FPI-13B-61, FPI-13T-61, FI-13T-61)—optional in all other models.

**FPI-15B-61, FPI-13B-61, FPI-13T-61, FPD-13B-61, FPD-13T-61, FI-13T-61, FDA-13T-61, FDA-13-61, FD-11-61.



FPI-13T-61

FRIGIDAIRE UPRIGHT FOOD FREEZERS

Frost-Proof models—UFPI-16-61, UFPD-16-61, UFPD-12-61.

Full-width door shelves—all models.

Sliding basket drawer—UFPI-16-61, UFD-21, UFD-15-61.

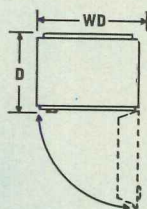
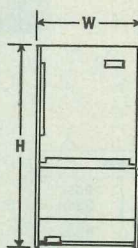
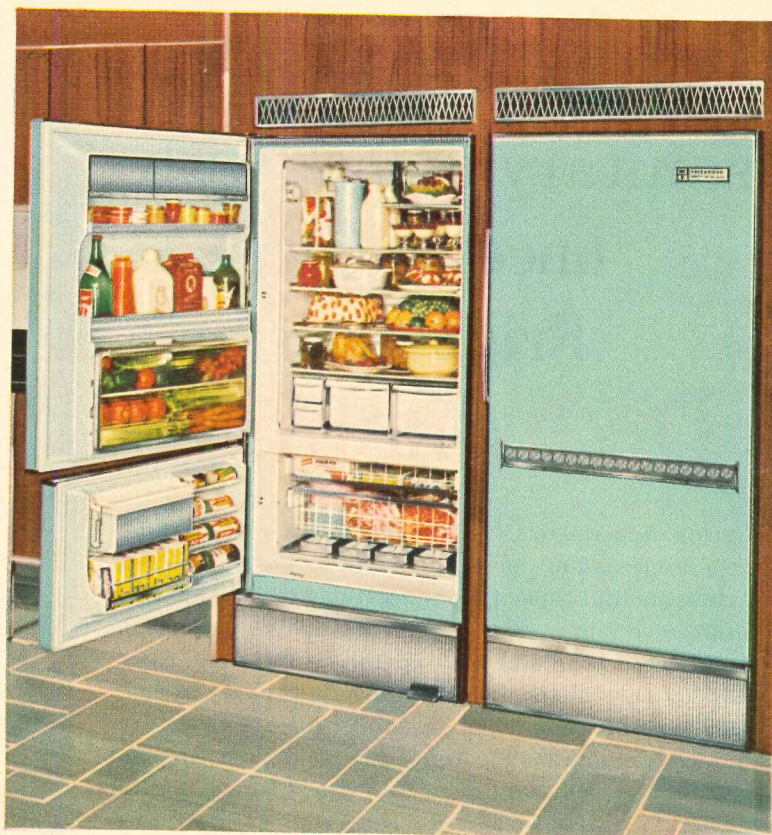
Choice of 4 colors—UFPI-16-61.

Ask about the Food Spoilage Warranty.



UFPD-16-61

*Frigidaire Frost-Proof Guarantee. Without any cost to owner or user, at any time within one year from date of delivery, Frigidaire will make all necessary adjustments to the Frost-Proof Refrigerator-Freezer or Food Freezer to prevent accumulation of frost.



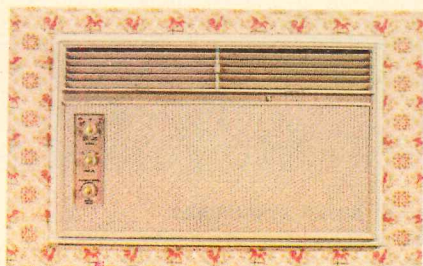
Refrigerators	H	*W	D	**WD
Super SA-9-61	57½	24	28¾	25¼
DeLuxe DA-9-61	57½	24	28¾	25¼
DA-11-61	59½	30	28¾	30
D-11-61	59½	30	28¾	30
FD-11-61	59½	30	28¾	30
DA-13-61	64	32	28¾	35¼
FDA-13-61	64	32	28¾	35¼
FDA-13T-61	64	32	28¾	34¾
Frost-Proof DeLuxe FPD-13T-61	64	32	28¾	34¾
FPD-13B-61	64	32	29¾	35¼
Imperial FI-13T-61	64	32	28¾	35¼
Frost-Proof Imperial FPI-13T-61	64	32	28¾	35¼
FPI-13B-61	64	32	29¾	35½
FPI-15B-61	69¾	32	29¾	35½
Upright Food Freezers	H	W	D	**WD
DeLuxe UFD-11-61	59¾	30	29¼	30
UFD-13-61	64	32	29¾	33¼
UFD-15-61	69¾	†32	30¾	39
UFD-21	70	†36	32¾	43¾
DeLuxe Frost-Proof UFPD-12-61	64	32	30¾	33¾
UFPD-16-61	69¾	†32	30¾	33¾
Imperial Frost-Proof UFPI-16-61	69¾	†32	30¾	35½

*Allow ¼" additional width for recessed installation.

**Required only when cabinet is against wall on hinge side of door.
†Additional 2" to insert key in lock if built in flush with front.

and don't overlook

Solid Comfort Frigidaire Room Air Conditioners!



Full capacity, fast cooling; real dehumidifying, quiet operation, draft control—that's *Solid Comfort* Frigidaire Room Air Conditioners. 10 models, do-it-yourself installation, removable, washable filters. Fits almost any window; through-the-wall, too.

Frigidaire reserves the right to change specifications and prices, or to discontinue models, without notice.

10 Room-Designed Models—2 Cabinet Sizes

	Width	Depth	Height	Cooling Capacities BTU/HR.**
Bedroom Models				
DeLuxe AD-6LD	26"	18¼"	16"	6,000 to 9,000
Custom DeLuxe ACD-7LD				
ACD-8MD, ACD-9D*				
Living Room Models				
DeLuxe AD-12D	26"	27"	16"	8,300 to 12,000
Custom DeLuxe ACD-8MD	26"	18¼"	16"	
ACD-9D, ACD-9D*	26"	18¼"	16"	
Imperial AI-10D†	26"	18¼"	16"	
Multi-Room Models				
DeLuxe AD-12D	26"	27"	16"	10,000 to 19,000
Custom DeLuxe ACD-15D	26"	27"	16"	
ACDR-15D*, ACD-19D	26"	27"	16"	
Imperial AI-10D†	26"	18¼"	16"	

All Seasons Model with reverse cycle heating.

**NEMA Standards.

†Provides constant cooling, dehumidification even when weather is mild, humid.

FRIGIDAIRE
PRODUCT OF GENERAL MOTORS

Advanced Appliances designed with you in mind

For more information, see Frigidaire Appliances in model homes, visit your Frigidaire Built-in or Appliance Dealer, or write FRIGIDAIRE DIVISION, GMC, Dayton 1, Ohio.

CONTEMPORARY KITCHENS

continued from page 15

Sink Center

The sink center is used for clean-up operations and also for the preparation of those foodstuffs which first require water. Certain foodstuffs and utensils that are used primarily with water may be stored here. Some dish storage may also be located in this area. An allowance of 3 ft is made for a double-bowled sink, and a counter space of 3 ft is supplied on the right; base cabinets should be installed below these units. At the left there should be a counter 2 ft wide; this is actually the top of a dishwasher.

It is suggested that wall cabinets be located only over the right-hand counter. Cabinets should never be placed over the sink bowl. Wall cabinets can be located above the dishwasher, but in this study they are not located in this position on the assumption that the space above the sink and the dishwasher would ordinarily be occupied by a window.

Range Center

Cooking utensils and food that can be cooked or heated without further preparation are most ideally located in the range center. An allowance of 2.5 ft is made for the built-in surface burner unit. There should be a counter surfaced with a heat-resistant material adjacent to the range unit. Base cabinets should be placed below the counter and the burners; a wall cabinet should be located over the counter. Wall cabinets should NOT be located immediately above the burners.

Serve Center

The serve center is designed as the transfer point from food preparation to the dining area. Ready-to-eat foods, certain serving dishes, and some small appliances may be stored here. A counter of 2 ft along with a base cabinet and a wall cabinet of the same dimensions is recommended. The serve center is usually located adjacent to the range.

Oven

A frontage requirement of 2 ft is necessary for the oven, and, if the oven forms an isolated center, a heat-resistant counter surface 1.5 ft wide plus accompanying wall and base cabinets is required. No extra counter is needed if the oven is combined with other centers and has a counter adjacent to it. Space underneath the oven can be used for certain types of storage.

COMBINED CENTERS

In the usual kitchen, certain centers are usually combined. Not only does this provide desirable continuity between the centers, but it also makes it possible to achieve certain savings in counter space and storage cabinets. Also, the excess of storage in one part of the kitchen may be used to compensate for the shortage in another section. To some degree, this violates the principle of storage located at the point of first use, but very often it is necessary in order to achieve some economy in the design. In all in-

stances, however, certain minimums must be maintained.

The two most common groupings of centers are:

Refrigerator-Mix-Sink

This combination totals a frontage of 13 ft and includes dishwasher (2 ft), sink (3 ft), 7 ft of counter including the top of the dishwasher, 5 ft of base counter exclusive of the base cabinet below the sink, and 5 ft of wall cabinet.

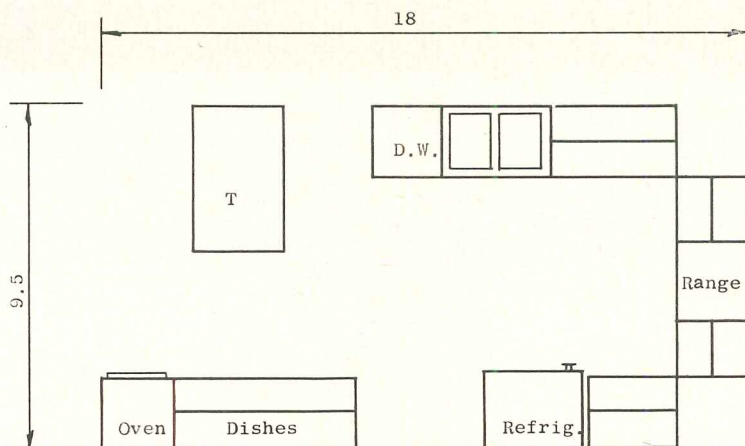
Oven-Serve-Range

This combination totals 8.5 ft of frontage including the range surface burners (2.5 ft), 4 ft of counter, and wall cabinet, and 4 ft of base cabinet exclusive of the cabinet below the surface burners and oven. When this center is located adjacent to the dishwasher, a minimum of 1.5 ft of counter should be between the dishwasher and the range. Very often the base cabinet is omitted below the raised wall oven to make available space for a wastebasket.

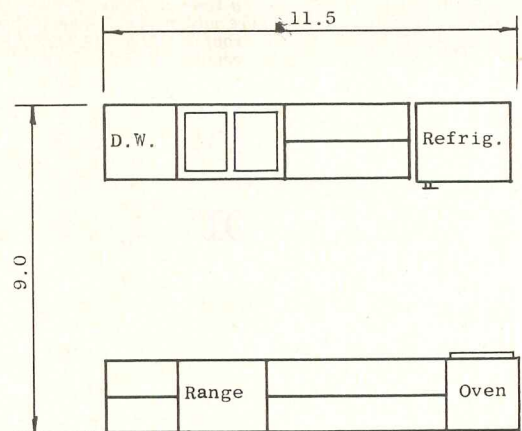
ARRANGEMENT OF CENTERS

The most efficient kitchen arrangement (in terms of effort) results when the five centers are arranged in sequence from right to left. This sequence is borne out in the research studies of the time spent using each center as well as the trips between centers during the preparation and clean-up operations for a standard meal. In this particular study, the

continued on page 152



Plan 3



Plan 4

Plan 3, at the cost of an increase in area of slightly less than 10 sq ft, overcomes both of the difficulties noted in the previous plans. The total area is 171 sq ft. Part of the efficiency of the arrangement is achieved by installing the oven in the dining alcove along with the extra storage for dishes. The corridor arrangement of Plan 4 occupies exactly the same area as Plan 3, but it was necessary to place the mix center adjacent to the range rather than the refrigerator. Extra dish storage must be located in the dining space



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Designed by Paul Hayden Kirk

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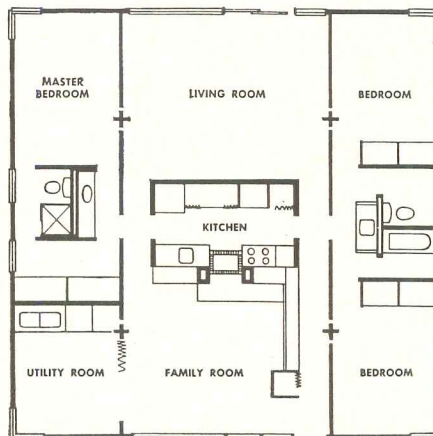


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PLAN: Forty feet square. Only fixed members are the four supporting columns allowing maximum design flexibility.

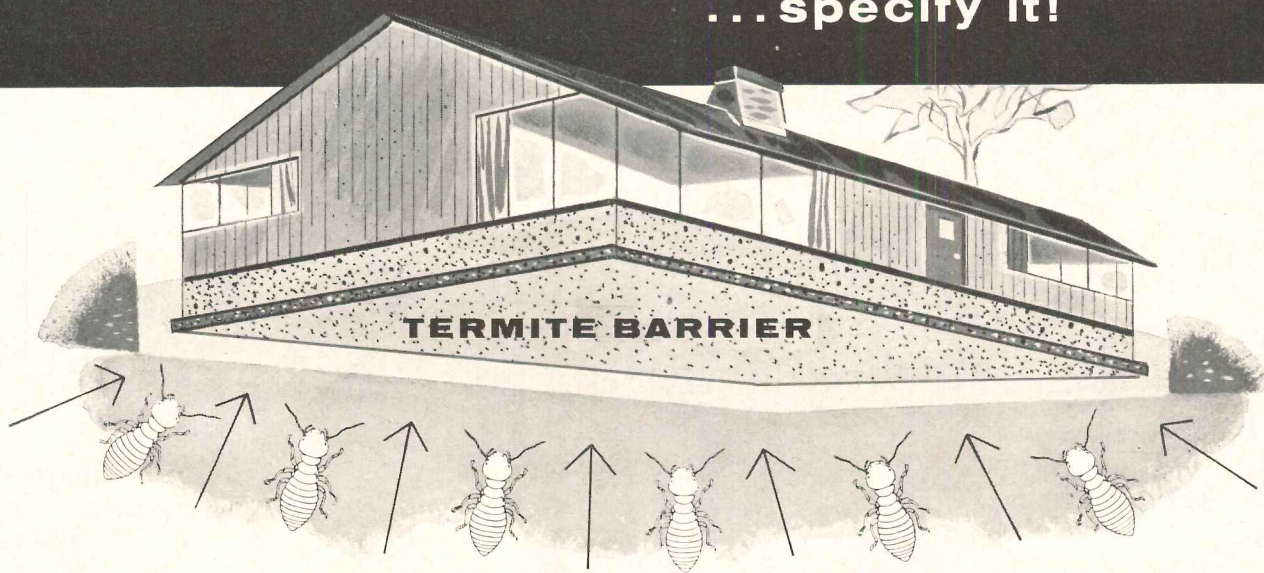
Architects will find Andersen Windows available from lumber and millwork dealers throughout the United States and Canada. Check Sweet's File, or write for Detail Catalog and Tracing Detail files.

The home that states a new tradition in wood.
Photo courtesy of Living for Young Homemakers Basic Materials, Research and Design Program.



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YEAR-ROUND AIR CONDITIONING SYSTEMS FOR HOMES

BY H. T. GILKEY, *Director of Technical Services, National Warm Air Heating and Air Conditioning Association*

Since houses are built for people, consideration of a number of individual factors is required in order to satisfy the needs and wants of the occupants of any home. As people vary, so must houses (and year-round air conditioning systems) vary to suit the occupants of any home. In designing any home five environmental factors usually considered are:

1. Adequate space, properly arranged;
2. Natural and artificial lighting for both utility and appearance;
3. Interior decoration and furnishings for comfort, use, and beauty;
4. Appliances for convenience and utility; and
5. Comfortable, healthful atmosphere.

All of these are in addition to the single, fundamental need—protection from the elements—and all must enter into the design in one way or another.

Each owner will decide for himself the relative importance of these five considerations; yet there is only one factor which, unless it is placed near the top of the list, will almost invariably result in owner dissatisfaction with his home. If the atmosphere—the air—in the house is not maintained at comfort levels, nothing else in the house can be enjoyed.

WHAT IS COMFORT?

There is no doubt that comfort is affected by the state of mind. It is impossible for an individual to be comfortable if he is unpleasantly aware of his environment. The instant he senses any such characteristic of the air around him, he is uncomfortable. This is much more important than is usually realized, for it is the one characteristic of the house from which no one can ever escape. We can close our eyes to the draperies which aren't quite what we should like them to be. We can,

within limits, close our ears to the blaring television set or the bedlam raised by the children. While we are in the living room, we can ignore the stack of dirty dishes in the kitchen sink and forget that we had intended to put in a dishwasher. There is no way in the world, however, that we can shut ourselves off from the air around us. If the house is too warm, we are uncomfortable; if the house is too cool, we are uncomfortable; if the house is too dry or too humid, we are uncomfortable; if there is a draft, be it warm or cold, we are uncomfortable. If it does its job properly, the air conditioning system must operate so that we are not consciously aware of its existence.

YEAR-ROUND AIR CONDITIONING

When speaking of year-round air conditioning in a home, which includes automatic heating and cooling, it is essential that we remember some very important things about this system. In the first place, it is a built-in. Except in the smallest "unit" installation, it is not an appli-

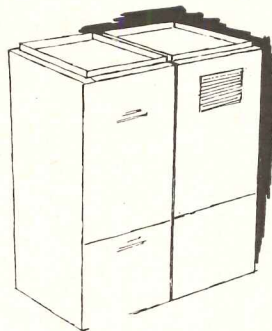


Fig. 1

ance; it is not an accessory. We cannot have it delivered, plugged in, and put to work. Rather, it is just as much a part of the house as the roof or the floor. It cannot be separated from the house.

Secondly, it must be remembered that the best air conditioning sys-

tem is custom-designed for the house in which it is installed. After all, houses differ one from another just as people do. Hence, the air conditioning system should be designed for the house in which it is installed, and the people who live in that house must be kept in mind when a system is being designed.

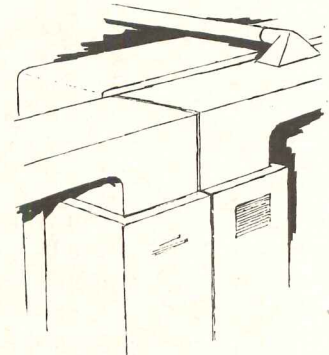


Fig. 2

The system must fit the thermal requirements of the house—it must be of adequate capacity to remove the heat which flows into the house from the outside. Each house is just a little bit different—the windows may be of slightly different size, or the house may face a slightly different direction from that of its neighbors'. Even those little things are important in air conditioning. Furthermore, the system design must satisfy the load imposed on it by the climate in which the house is located. An effective air conditioning system, then, is literally tailor-made to do the job where and when it is installed.

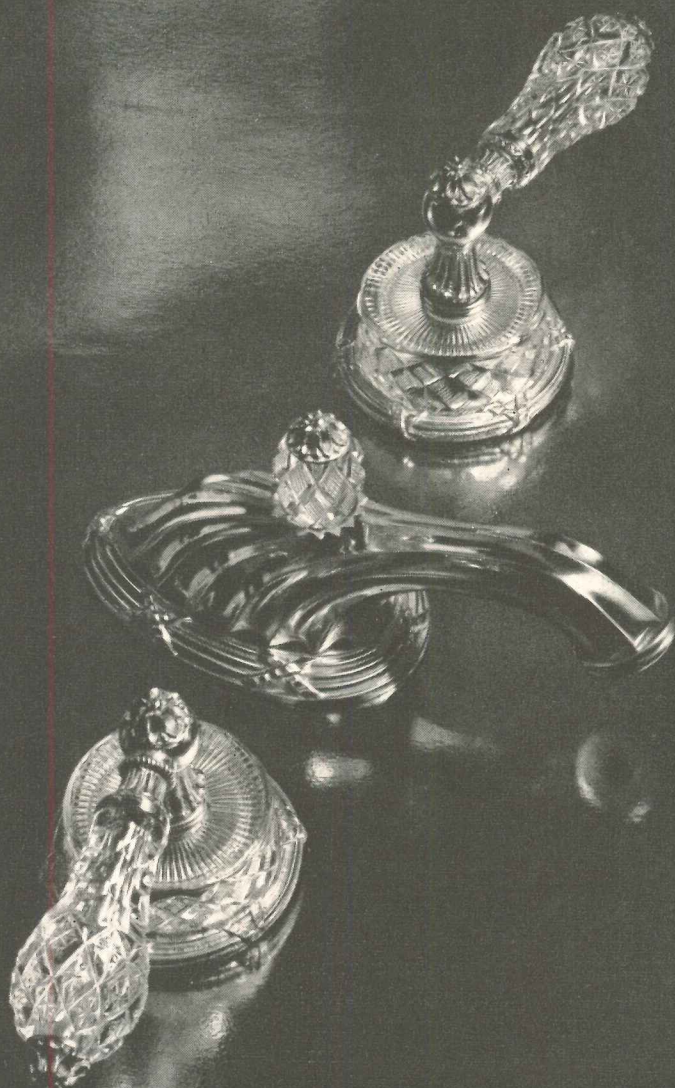
In choosing between a gas-fired air conditioning unit and electric air conditioning unit, such considerations as first cost, operating cost, and applicability to the specific installation needs must be considered. Each type has its advantages.

INSTALLATION STEPS

1. Heat Gain Calculation

Regardless of the method of sup-
continued on page 34

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**YEAR-ROUND
AIR CONDITIONING**

continued from page 33

plying the motive power for operating the cooling unit, there are four basic steps to be followed in making a successful, comfort-producing air conditioning installation. The first of these is calculation of the heat gain—determining the amount of heat which the air conditioning unit must remove from the house. This is important, for the odds are against a successful installation unless the load is accurately determined. A new, more accurate procedure for calculating residential heat gains has recently been developed by the air conditioning industry. (For full

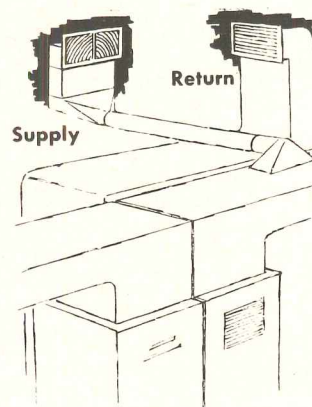


Fig. 3

details, see ARCHITECTURAL RECORD February 1961, page 170.) This procedure should be used, for air conditioning equipment must be carefully selected—if it is too small, it cannot remove enough heat to cool the house comfortably, while if it is too large, heat is often removed in large quantities with an on-off effect rather than smoothly and uniformly. Furthermore, an oversized unit results in less effective control of the humidity within the house. An accurate load calculation is the essential first step to successful summer air conditioning.

2. Air Distribution Design

The air distribution system—the duct system—must also be carefully designed. It is not enough to “dump”

continued on page 36



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YEAR-ROUND AIR CONDITIONING

continued from page 34

cooled air into the house. It must be delivered in the proper quantities and in the right manner to each room of the house. This does not just happen. It requires a carefully thought out plan, supported by accurate calculation. Each duct must be properly sized, taking into account its length and the amount of air it is to deliver. Each supply diffuser must be selected so that it delivers the air at the velocity required

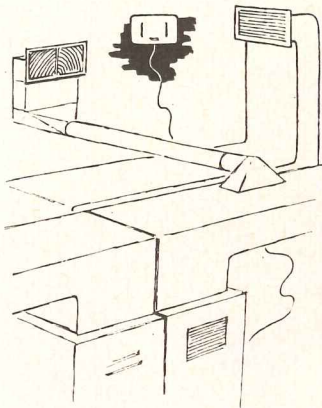


Fig. 4

to cool the room uniformly. Furthermore, each diffuser must be located where it can do its job best. Generally, in residential work, a perimeter system, shown in Figure 8, is recommended for low-cost central distribution. In some areas, supply outlets located in the ceiling or high on the inside wall of rooms can also be acceptable.

3. Installation

The entire installation must be completed in accordance with the plans. The equipment must be that specified, and it must be located where the design says it should be. Furthermore, it must be carefully installed and adjusted in accordance with the manufacturer's written instructions so that it will operate as it is intended to operate.

The duct system itself must be carefully installed. The ducts must be of the size and length called for

in the air conditioning layout. Duct fittings, such as elbows and trunk-duct take-offs, should be of the best possible type to permit free flow of air through the duct system. In no case should there be restrictions which do not permit the air to flow freely through the duct system.

4. Adjustment of System

Finally, the system must be adjusted to make sure that it is working properly. This is true of any type of mechanical equipment—after the manufacturing process is completed, the equipment should be started up and adjusted for best operation. Inasmuch as an air conditioning system is “manufactured” in the home in which it is installed, the home becomes the test floor. Only after the adjustment has been successfully completed, is the installation complete.

THE CONDENSING UNIT

Many summer air conditioning units installed today have part of the equipment located outside of the house. In the air conditioning industry, this remote component, shown in Figure 7, is called the “condensing unit.” Most home owners realize that this condensing unit has something to do with the air conditioning system and recognize it as being a part of the air conditioner, but they often don't know what function it serves. This can be explained without going into a lot of detail.

In the first place, the heat which is removed from the house must be put somewhere else. This heat does not simply “disappear.” It is literally pumped out of the house to the outdoors. The condensing unit is that part of the air conditioning unit which transfers the heat to the outdoor air. In order to do this effectively, it must be located where it can receive a good supply of outdoor air. This means that it should not be placed so that obstructions, such as shrubbery or the house itself, prevent air from getting to it.

Furthermore, the condensing unit contains a blower. Therefore, the condensing unit should be located so that the air discharged from this blower does not damage shrubbery, flowers, or adjoining properties.

THE HEAT PUMP IS ANOTHER TYPE SYSTEM

The function of the remote condensing unit gives us a clue concerning the operation of an increasingly popular air conditioning device which is called “the heat pump.” In the summer, the heat pump operates exactly as a conventional air conditioning unit—it removes heat from the house, and pumps it to the outdoor air. In the winter, when the outdoor air is cooler than the indoor air, the heat pump acts in reverse—it removes heat from the outdoor air, and pumps it into the warmer air within the house. Actually, any air conditioning unit pumps heat from a cooled area to a warmer temperature area. A heat pump also pumps heat from the cooler outdoor air in

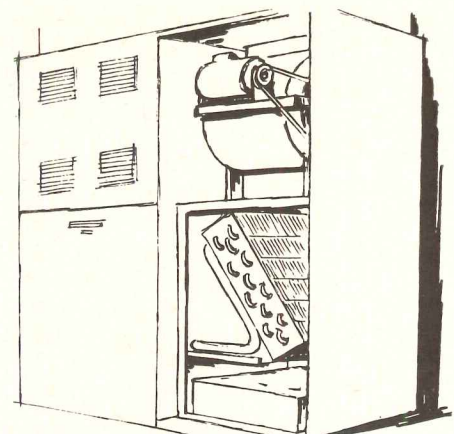


Fig. 5

the winter to the warmer inside air. Of course, for year-round use this requires a special type of refrigeration system—one that can be operated in reverse.

continued on page 40

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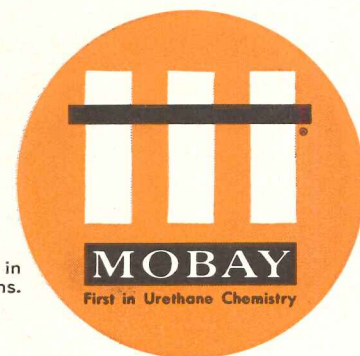
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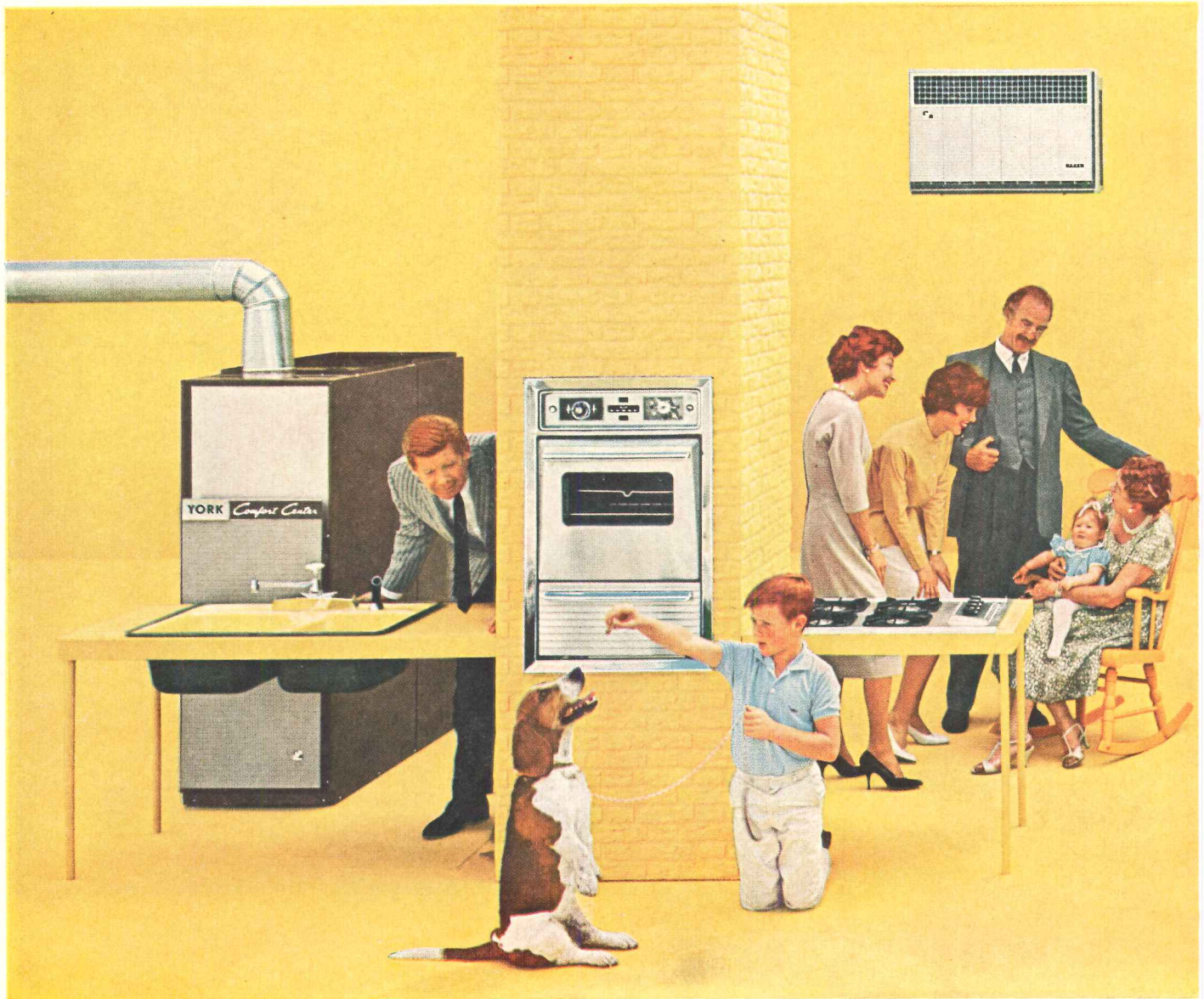
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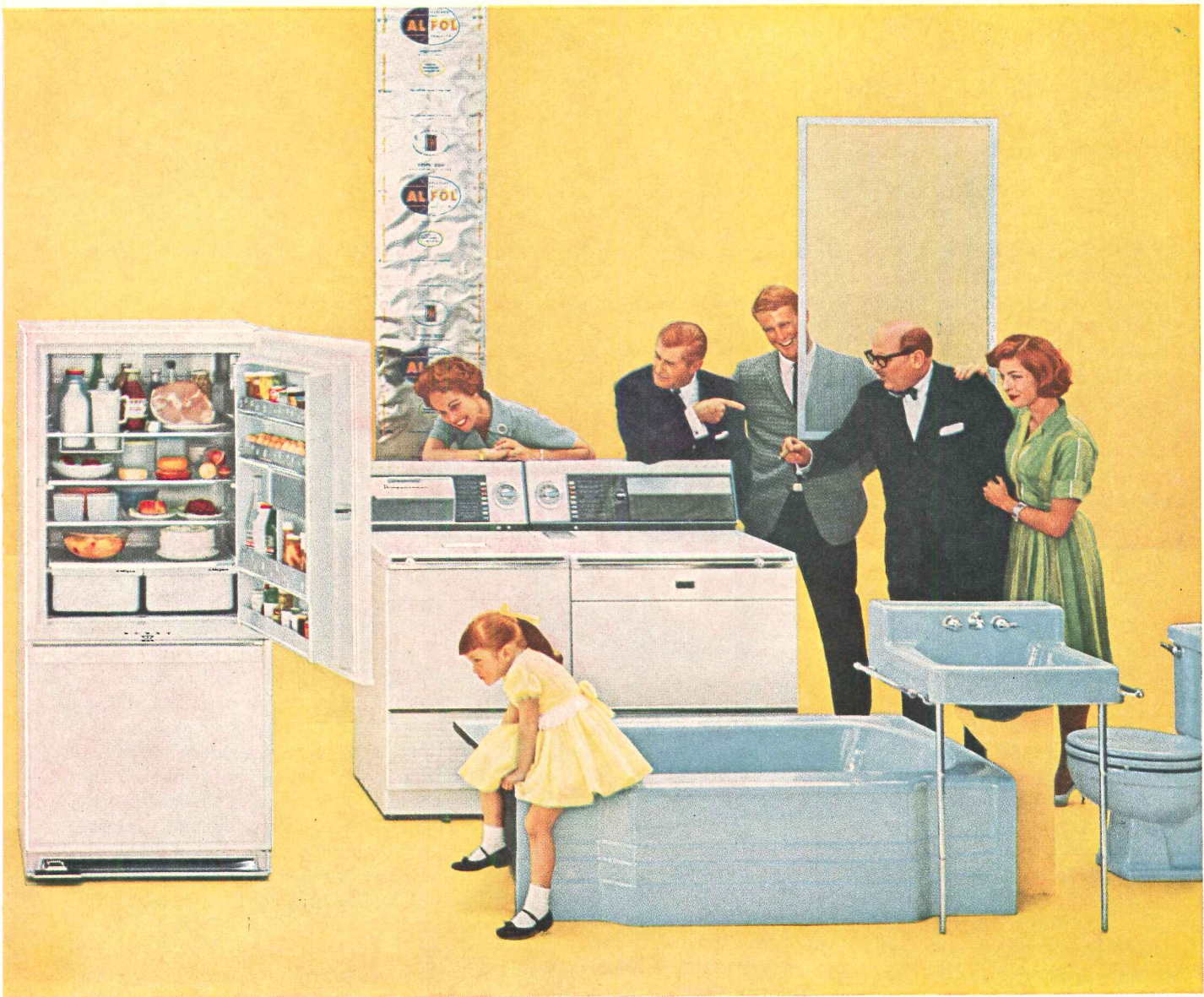
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YEAR-ROUND AIR CONDITIONING

continued from page 36

HEAT-OPERATED UNITS

New developments in air conditioning are not limited to the heat pump. Other interesting developments are in the field of "heat-operated" air conditioning units. Generally, these units utilize a natural gas flame to provide the motive force for cooling. Several distinct types of gas-fired air conditioning equipment have been developed, but all utilize a cooling device inside of the house and a remote component of some type. Hence, so far as the home owner is concerned, the gas-fired units are similar in appearance to the electric units. The internal workings of a gas-fired unit are, of course, quite different from electric units.

This must be the case if the system is to do the best job for which it is intended—providing comfort for the occupants of the house. An air conditioning system is not a status symbol, and it has no decorative value whatsoever. It is a working part of the structure, one whose only function is to provide comfort day and night in all seasons for the occupants of that structure. If it does not do this, it is not a successful system.

THE MAJOR PARTS OF A SYSTEM

Although we have said that the system is specifically designed for the house in which it is installed, it is composed of standard components. The heart of the system is the air conditioning unit itself, shown in Figure 1. This may take one of several forms, some of which will be discussed later. In general, however, the summer air conditioning unit will be next to or be a part of a winter air conditioning (heating) unit.

Attached to the air conditioning unit (in all but the smallest installations) is the duct system, illustrated in Figure 2. This distributes the air, which is cooled in summer and heated in winter, to the rooms of the house and also carries the

air which is returned to the air conditioning unit for reconditioning. Most systems have main ducts called trunk ducts, and smaller ducts which distribute the air from the trunk to the room. These smaller ducts are called branch or feeder ducts.

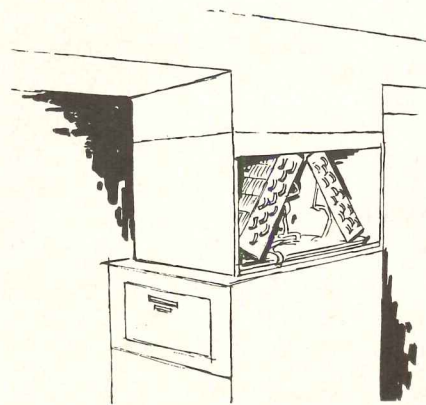


Fig. 6

The conditioned air is introduced into the rooms through supply outlets or diffusers, and drawn from the rooms for reconditioning through return grilles. (See Figure 3). The final component of the installation, at least that which is readily visible, is the thermostat which senses

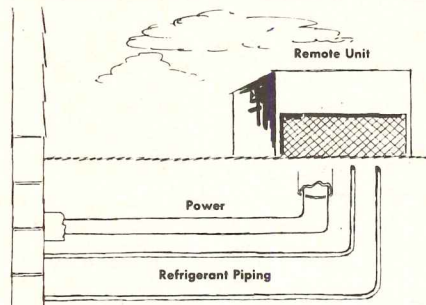


Fig. 7

the room air temperature and transmits operating instructions to the air conditioning unit. (Figure 4). All systems must have all of these components—the winter and summer air conditioning unit, the supply and return ducts, including trunk ducts and branch ducts, supply diffusers and return grilles, and controls.

THE CONCEALED MACHINERY

Although these are things which are visible within the house, many more components go into the air conditioning equipment itself. First of all, there must be a blower or fan for moving the air through the air conditioning unit and the duct system. In some instances, this fan will be the same one used for winter heating. The actual cooling takes place as the air passes through the cooling coil. This coil contains a refrigerating fluid, and the air gives up heat and moisture as it is cooled. This cooling coil may be located in a summer air conditioning unit which sits beside the furnace, as shown in Figure 5, or it may be located between the furnace and the duct system. In modern practice, this latter arrangement, having the cooling coil located between the furnace and duct system, is the more common. The same principle applies whether the air is delivered out of the furnace in an upward direction, as shown in Figure 6, in a downward direction to a duct system beneath the floor, or horizontally.

EFFECTIVE OPERATION

Generally, it is recommended that the system be permitted to operate under thermostatic control throughout all of the cooling season. Some home owners feel they can improve the operation by shutting off the cooling unit at night and opening the windows. This is usually a mistake, for the house loads up with air which, though cool, is very humid. The cooling unit then has difficulty removing this moisture during the next day. Similarly, when the house is empty during the day, the cooling unit should be left in operation. If it is not, the house overheats and the cooling unit is unable to catch up with the load during the night. Hence, unless the house will be unoccupied for several consecutive days and night, the system should be left "on."

continued on page 42

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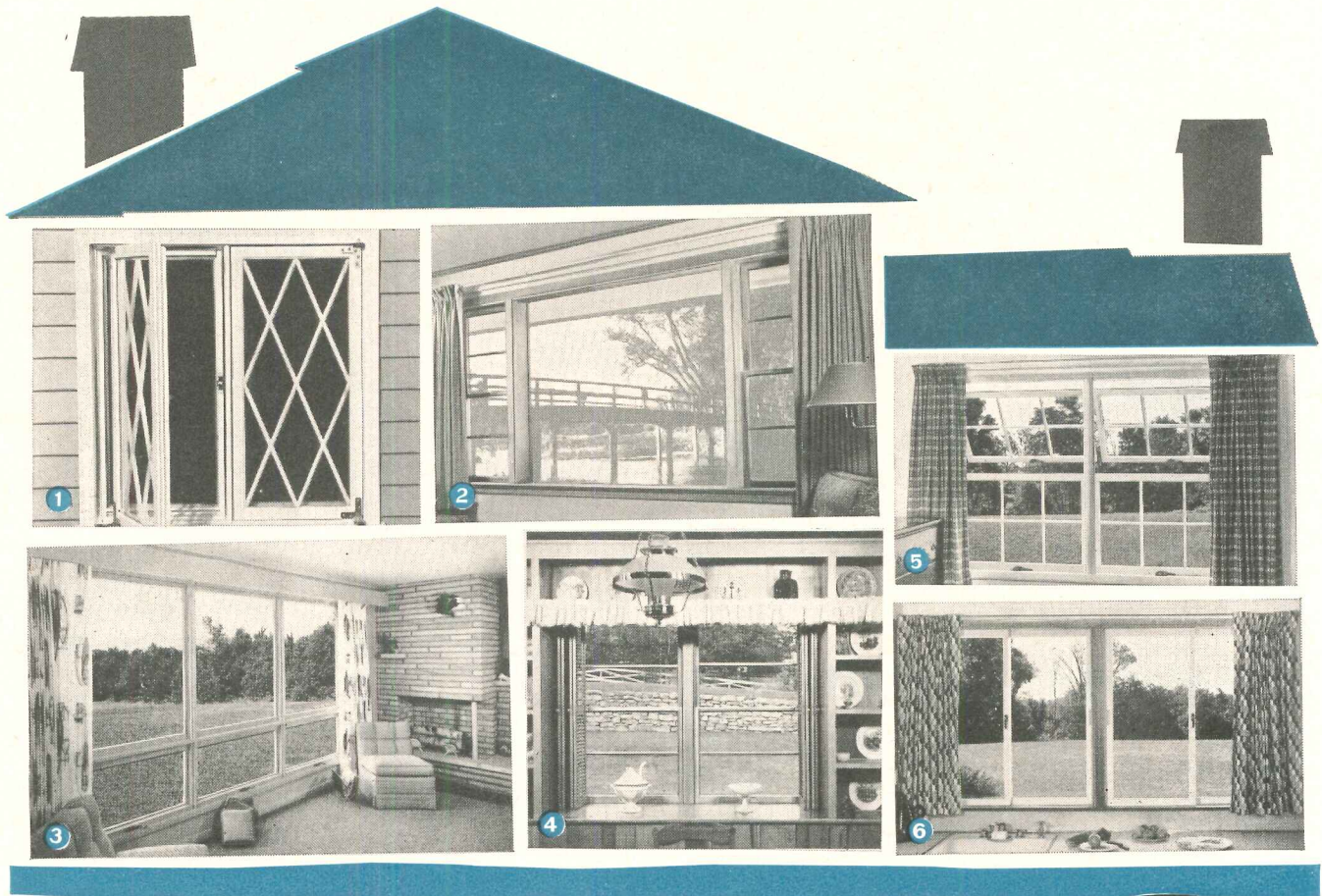
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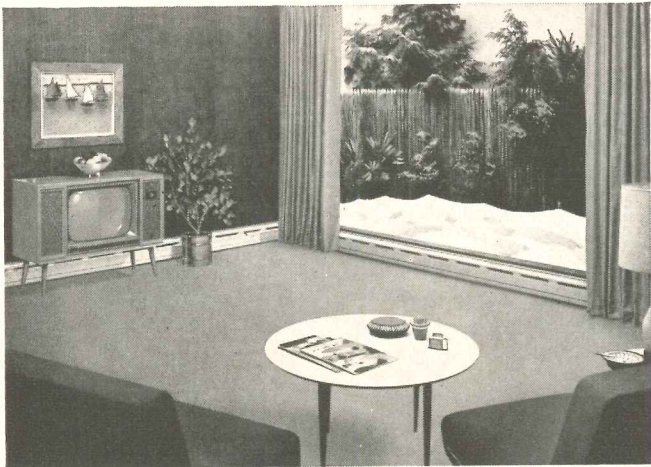


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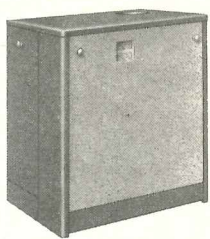


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YEAR-ROUND AIR CONDITIONING

continued from page 40

In addition to the architect and engineer, the importance of the installer of the system—the air conditioning dealer-contractor—cannot be overemphasized. He offers invaluable help in calculating the heat gain of the house, designing the system, installing it, and adjusting it. He also backs up the installation to assure the home owner of satisfactory maintenance and service.

In the design of a new home, the architect and owner should select the air conditioning early in the game. They should make sure that the dealer-contractor understands thoroughly the conditions which are to be maintained in the house. They should show him the preliminary drawings of the structure so

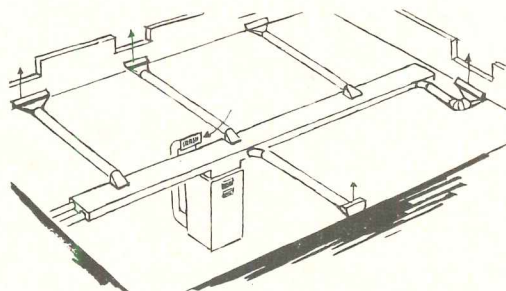


Fig. 8

that he will understand what problems might be encountered in designing and installing the system. On the other hand, the architect and owner should listen to the air conditioning dealer-contractor for his suggestions on the particular system. For example, more insulation might be used, or a window be moved slightly so the sun does not pour so much heat into the house. A south window might be shaded or the plan be otherwise altered slightly so that the ducts can be run more conveniently to the second story rooms.

It is this dealer-contractor's job to actually construct the comfort-producing system for the home. If it is never forgotten that a house exists to provide comfortable, pleasurable living for its owner, then the air conditioning deserves utmost attention.



Presenting
the **PREMIERE** Series
in Vina-Lux® floors

Azrock proudly announces the Vina-Lux Premiere Series . . . beginning a new era of elegance in vinyl asbestos tile. A totally new and exclusive design creation with delicate, subtle styling, Premiere for the first time makes it possible to achieve custom-floor effects on modest budgets.

And Premiere beauty is permanent, because the pattern is evenly distributed at every level of the tile . . . retains its matchless good looks throughout a long lifetime of wear.

There are seven classic colors — including two metallics — in magnificent new Premiere Series by Vina-Lux. May we send you samples? No obligation, of course.

AZROCK FLOOR PRODUCTS DIVISION

Specialists in the manufacture of vinyl asbestos tile and asphalt tile flooring

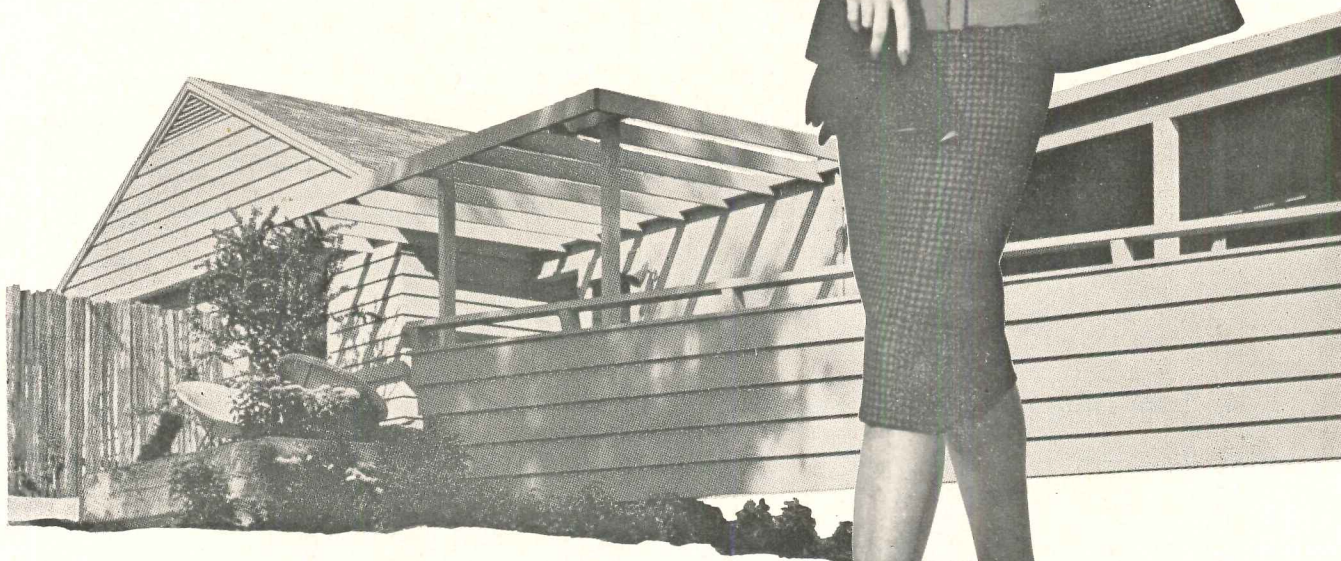
UVALDE ROCK ASPHALT COMPANY • 513A FROST BANK BLDG. • SAN ANTONIO, TEXAS



Genuine wood siding by Weyerhaeuser does so many things so well. It offers the designer countless opportunities for variety in exterior styling—plus practical, functional benefits of strength, durability and insulation for the homeowner. And always present with real wood is the bonus of natural beauty. Here is an ever-modern material that enjoys unmatched versatility, prideful acceptance and centuries of universal preference . . . genuine WOOD siding. Specify Weyerhaeuser 4-SQUARE®—the most dependable name in wood.

“clothing” can make the difference

Discerning clients realize the importance of the right “wardrobe”



Weyerhaeuser Company
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RECORD HOUSES[®] OF 1961

ARCHITECTURAL RECORD takes the greatest pride in presenting its annual Awards Of Excellence For House Design in the twenty houses in this issue. For the sixth successive year, the country has been thoroughly searched for the most significant houses that would reflect the great variety of creative design that has been recently built.

In this issue, a new cost comparison chart has been included to help translate the given costs of the houses into comparable costs for 14 cities across the country. That good design is possible in any price bracket is well borne out by the houses of this year; the costs range from \$14,500 to \$150,000, with eleven costing \$35,000 or under.

We wish to thank the nation's press again for their continued efforts to show, and help us promote better architecture through the RECORD HOUSES program. This issue will be available to the public in bookstores.





SKILL AND CARE BUILD A FAMILY HOME

The creation of a good house is not a simple process. Though houses are smaller in scale or size than many types of buildings, it should be more widely recognized that the best architectural work for a house often requires proportionately more care and imagination in programming, budgeting, planning, selection of materials, and supervision of construction.

But the results are dramatically worth the effort. Few things have the impact on a family that their home does—on the way of life, on health and mental attitudes, and on finances. For every moment of tribulation a “Mr. Bland-

ing” may have had, there can be years ahead of comfort, solid pride and pleasure through really good architecture.

How this all comes about is briefly presented in the picture series on the next several pages of the home for Mr. and Mrs. Elliot Erwitt. The photographs were taken by Mr. Erwitt, who is president of Magnum Photographers, one of the foremost groups of photo-journalists.

Roy Johnson was selected by the Erwitts, after considerable research, as the near-by architect whose work they liked best, and with whom they would like best to work.

BLACK AND WHITE PHOTOS: ELLIOT ERWITT-MAGNUM

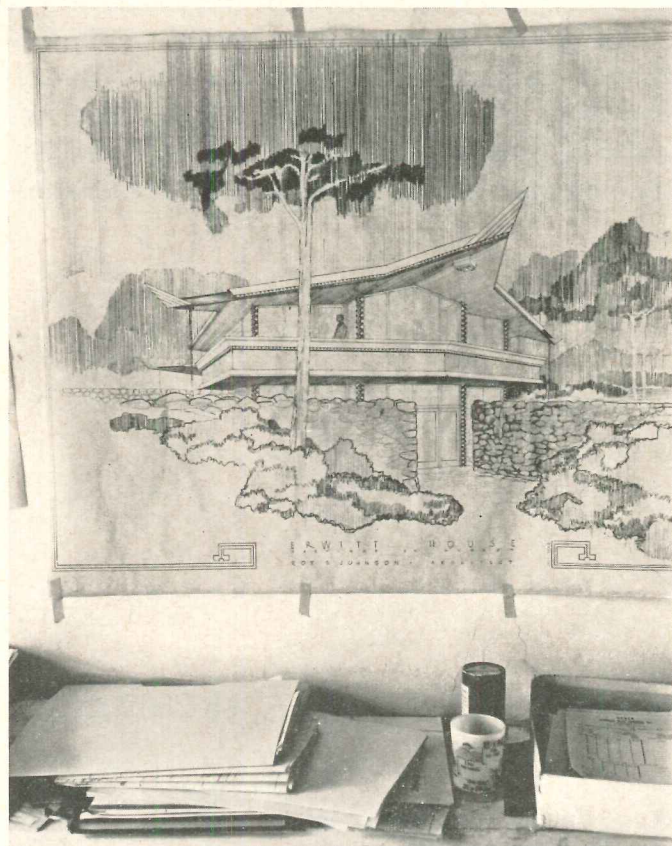
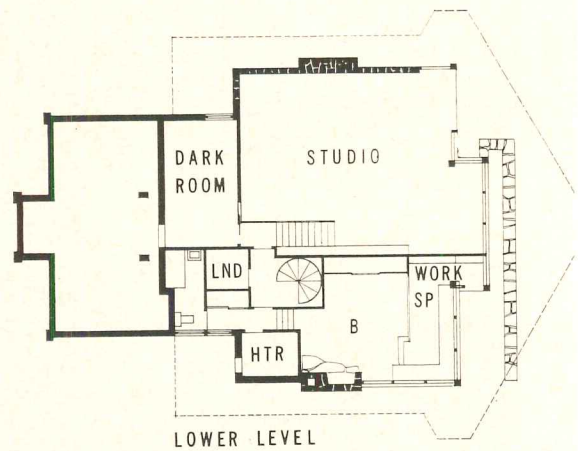
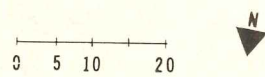
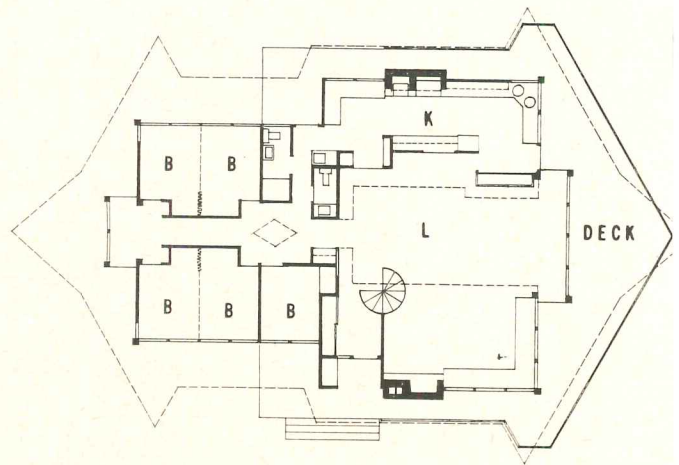


ROY SIGVARD JOHNSON, ARCHITECT

*Residence for Mr. & Mrs. Elliot Erwitt
Hastings-On-Hudson, New York
Charles Middleleer, Landscape Architect
George Nelson and Company, Inc., Interior Designer*



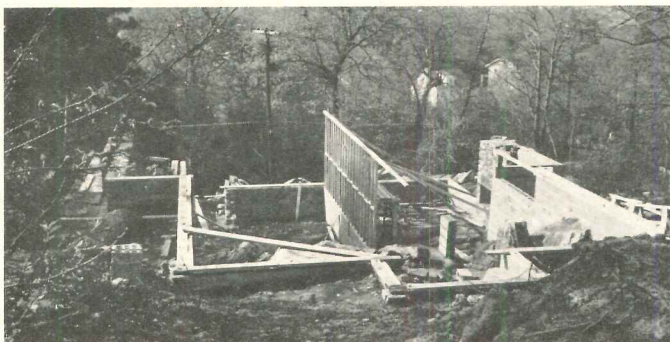
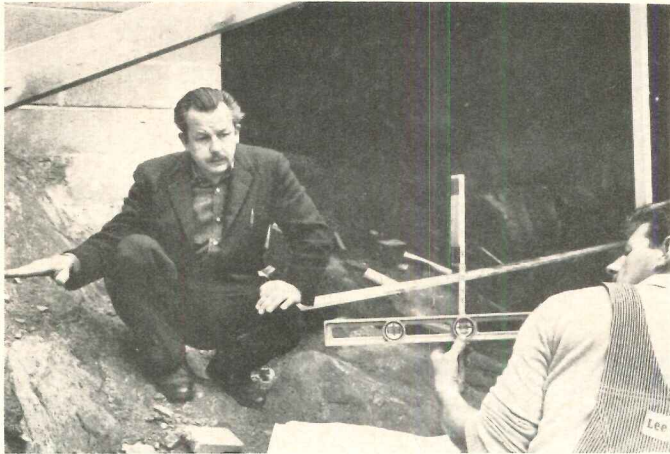
PHOTOS: ELLIOT ERWITT



THE ERWITT HOUSE: DISCUSSION, PLANNING AND CONSTRUCTION

The next step was the lengthy series of discussions between owners and architect to make the basic decisions, as in the photo at left (the Erwitts flank Mr. Johnson). Here they are considering the underside of the roof tile selected. The program evolving from this is summed up by the architect as follows:

- House for photographer, his wife, four children, one maid, two dogs, one cat and a number of birds.
 - Space needed for studio, darkroom, etc.
 - Separate parent's quarters from children's.
 - Separate children's from living rooms.
 - Family lives informally, house always full of guests.
 - Little upkeep wanted on grounds.
 - All to be accomplished on small, sharply sloping, very rocky site of the kind ignored by most people.
 - Land has distant view of Hudson.
- The beginnings of such a house are shown here.





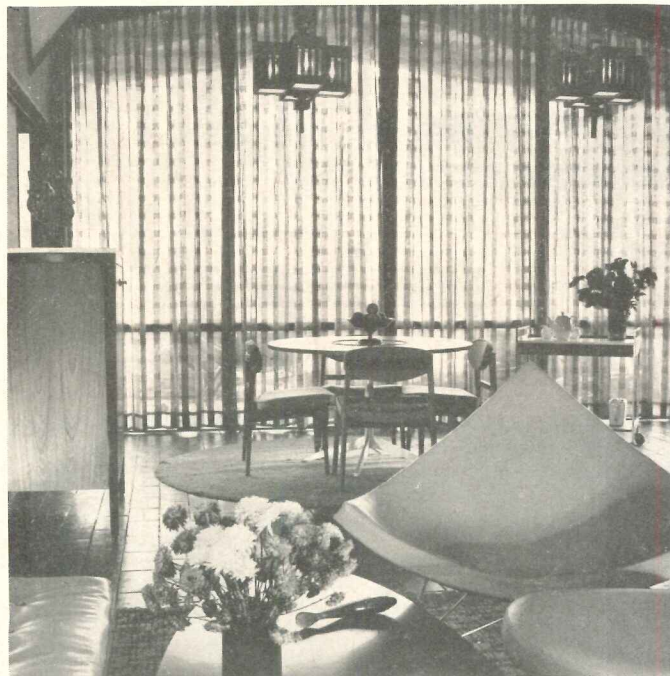
PHOTOS: ELLIOT ERWITT

THE ERWITT HOUSE: GOOD PLANNING PROVIDES GOOD LIVING

THE STRUCTURE uses rock that had to be blasted from the site; to minimize blasting, the house is tucked into nine levels against the side of the hill. A post-and-beam frame of Douglas fir was used for economy; foundations are concrete block. Exterior siding is rough-sawn cypress. Sash and doors are stock Ponderosa pine, as are all interior doors. Kitchen cabinets are stock items, as are all cabinet doors, louver doors. The cost was about \$45,000, including blasting, but excluding lot, landscape and furnishings.



THE LIVING ROOM is divided into four use areas; two sitting spaces, a book corner, and a dining area. Interior walls are plasterboard, ceilings are exposed wood, and floors are tile purchased in Spain. A glassed-in aviary was built between kitchen and living room.



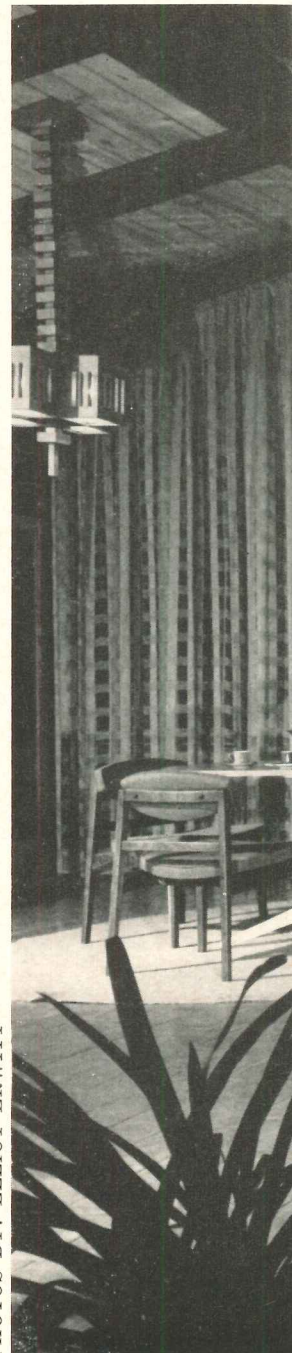
INTERIOR DECORATION was done by Lucia De Respinis and Irving Harper (right in photo) of George Nelson and Company, Inc. Furniture and fabrics are Nelson's designs for Herman Miller, Inc. Sculptural shapes and cheerful bright colors accent the neutral materials of the big room.



EACH CHILD has his own room, with plenty of storage and display space. Surfaces are durable. A sleeping loft is above the central corridor for guests of the children. The maid's room adjoins the children's rooms.



THE ERWITT HOUSE: ZONING
GIVES PRIVACY FOR ALL



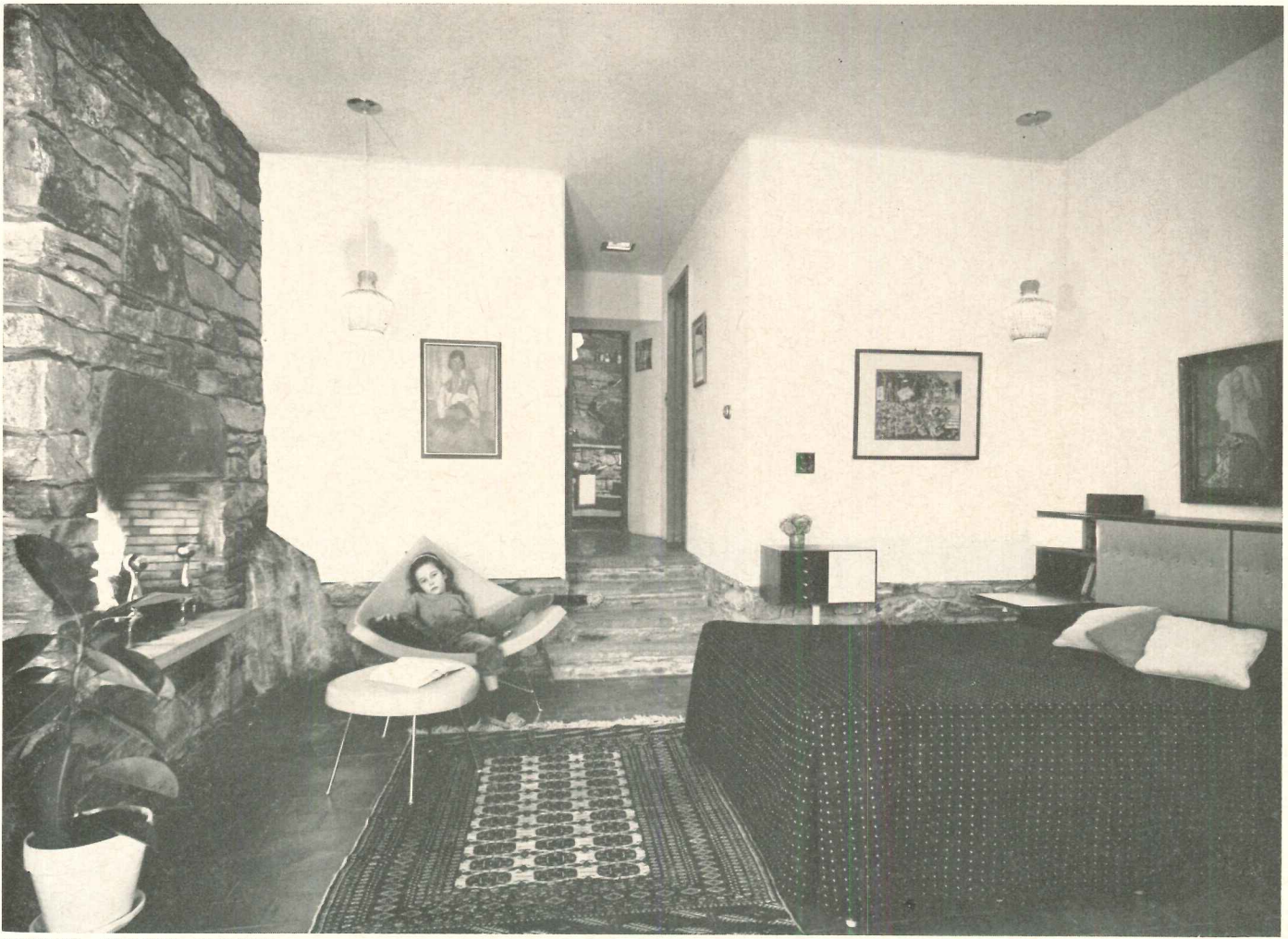
PHOTOS BY: ELLIOT ERWITT

THE CHILDREN'S HALL doubles as play and TV room for the children and their friends. A skylight supplements light from the big window bay at the end of the hall. This entire wing can be closed off from the rest of the house, and it has its own entrance and mud room area.

A BREAKFAST CORNER at the end of the big friendly kitchen serves for children's and informal family meals. It can be reached from the children's wing or the living area.

FORMAL LIVING REQUIREMENTS are amply met by the dramatic room shown below, together with the flanking balconies for outdoor entertaining. The forced warm air heating system has two units to supply the two major zones of the house.





PHOTOS: ELLIOT ERWITT

THE ERWITT HOUSE: THE PARENTS QUARTERS DOWNSTAIRS



THE MASTER BEDROOM provides comfortable sitting and study space along the broad-windowed front to serve as a retreat when children's parties may occupy the upper floor.

THE MASTER BATH utilizes the natural rock ledge against which the house is built. Stock fixtures are set into a stone shelf built out from the rock. The decorative wall tiles are European.

THE STUDIO is placed at the lowest point of the site to get a 14-foot ceiling. The room adjoins the master bedroom, and is reached from a balcony. Besides its functions for photographic work, the room serves as game room and projection room for movies. The painting is by Wilma Ervin.



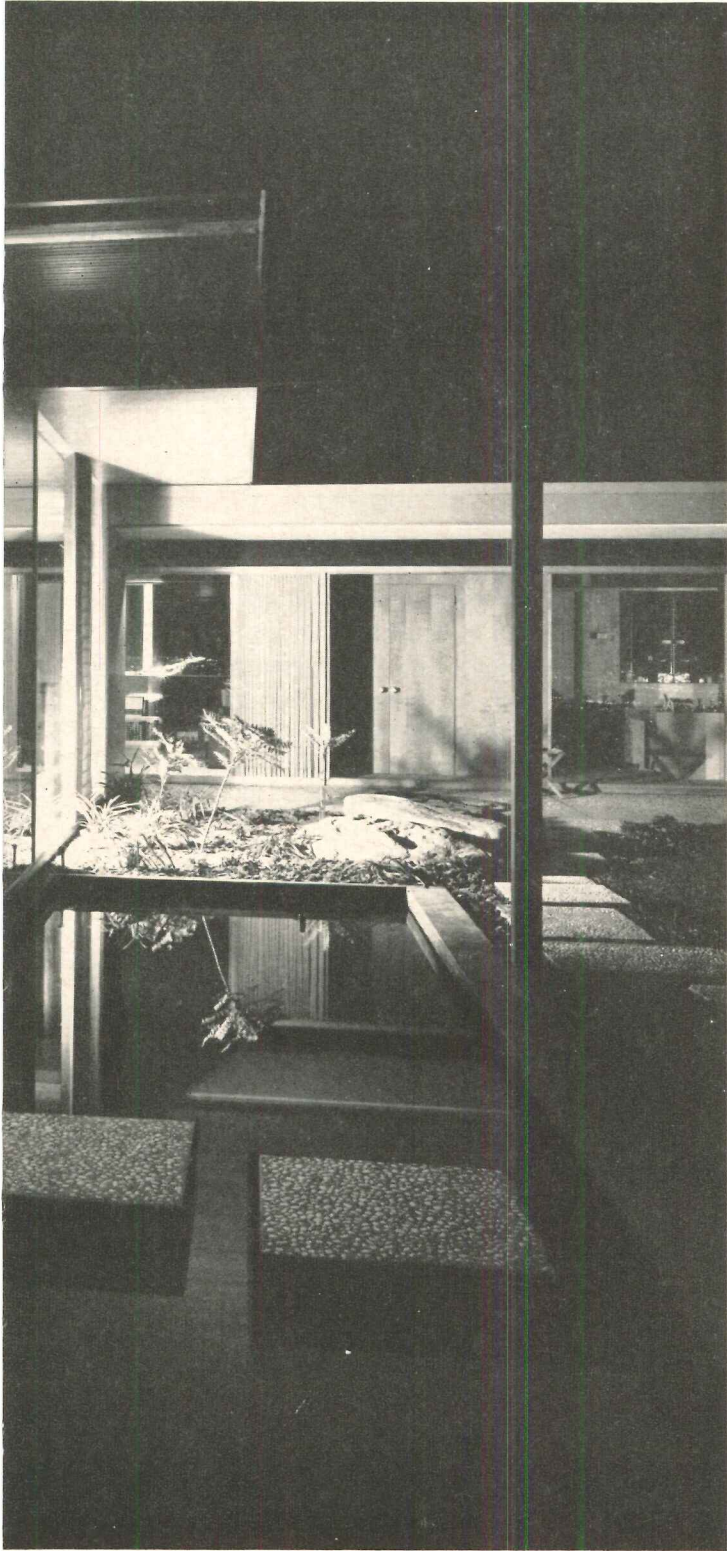
POOLS AND VIEWS
DRAMATIZE THIS
ELEGANT HOUSE

RICHARD J. NEUTRA, ARCHITECT

*Residence for Henry Singleton
Los Angeles, California
Fordyce S. Marsh, Contractor
Jocelyn Domela, Landscape Architect
Richard J. Neutra and Office, Interior Designer*

PHOTOS: JULIUS SHULMAN





With their typical and sure hand, Neutra and his staff have integrated the owners' requirements and the benefits of a picturesque site to produce this handsome house.

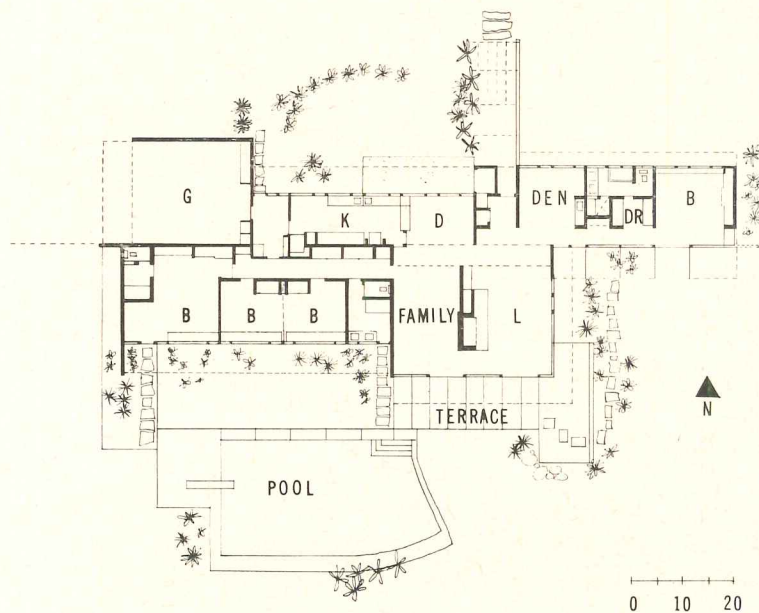
Principal family requirements included ample facilities for parents and the several children to be together, and to have individual privacy—both indoors and out. They also wanted adequate space and facilities for entertaining large groups of friends.

The site is a hilltop one, with commanding views over a small mountainside lake, past the plains toward a wide sweep of the Pacific Ocean, and of the mountains framing the San Fernando Valley.

The plan provides bedroom wings for the parents, and for the children, with living areas between. Lots of terraces, glass walls and open planning in the living areas serve to visually increase the already sizeable space inside the house.

Careful planning of landscaping and reflecting pools (including a swimming pool off the children's wing) emphasize the indoor-outdoor relationships of the rooms, and serve to frame the big natural vistas.

A GREAT SENSE OF SPACE IS CREATED IN THE HOUSE
BY OPEN-PLANNING, A LIGHT POST AND BEAM FRAME



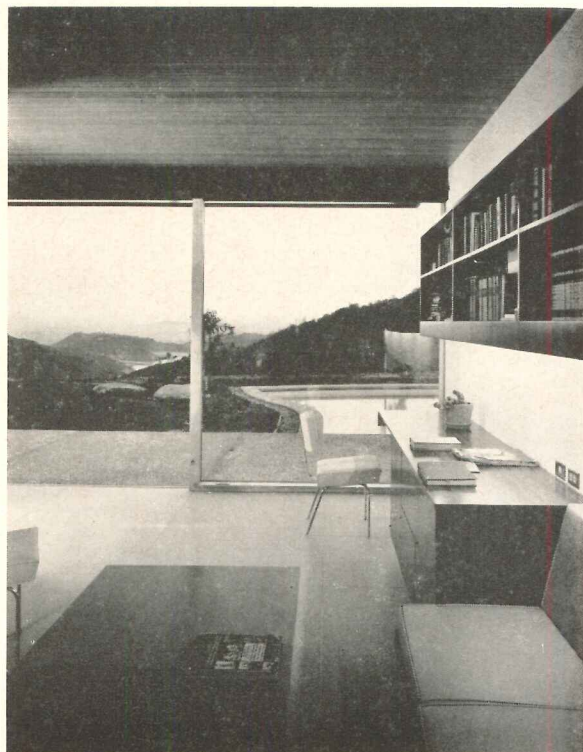
THE STRUCTURE: A post and beam frame of wood and steel permits considerable flexibility in the plan, and adds to the sense of openness and space. The exterior is finished with non-bearing walls of wood, stone and stucco. Floors are reinforced concrete slab. The roofing is composition. Window sash is aluminum.

INTERIOR FINISHES: Living areas are finished with painted plaster and varnished wood; ceilings are wood in the living areas, plaster elsewhere. Floor surfaces are terrazzo and vinyl tile. Bathrooms are finished in plaster and tile; kitchen walls are plaster and plastic. Counters are plastic.

THE COST: Excluding lot, landscaping and furnishings, the cost was about \$90,000.

HEATING SYSTEM: Thermostatically-controlled radiant heating is used throughout the house. The terrace extending from the living and family rooms to the pool is also radiant heated for added comfort on cool evenings. Extra exhaust fans are provided in bathrooms and kitchen.

EQUIPMENT: The house has a built-in hi-fi and radio sound system, washer, dryer, dishwasher, garbage disposer and its own septic tank.



PHOTOS: JULIUS SHULMAN

AN ARCHITECT GIVES STYLE TO A BUDGET BUILDER HOUSE

EDWARD J. SEIBERT, ARCHITECT

Residence for T. H. Mitchell

Sarasota, Florida

Frank S. Thyne, Contractor

Phil Hall, Interior Designer

PHOTOS: JOSEPH MOLITOR

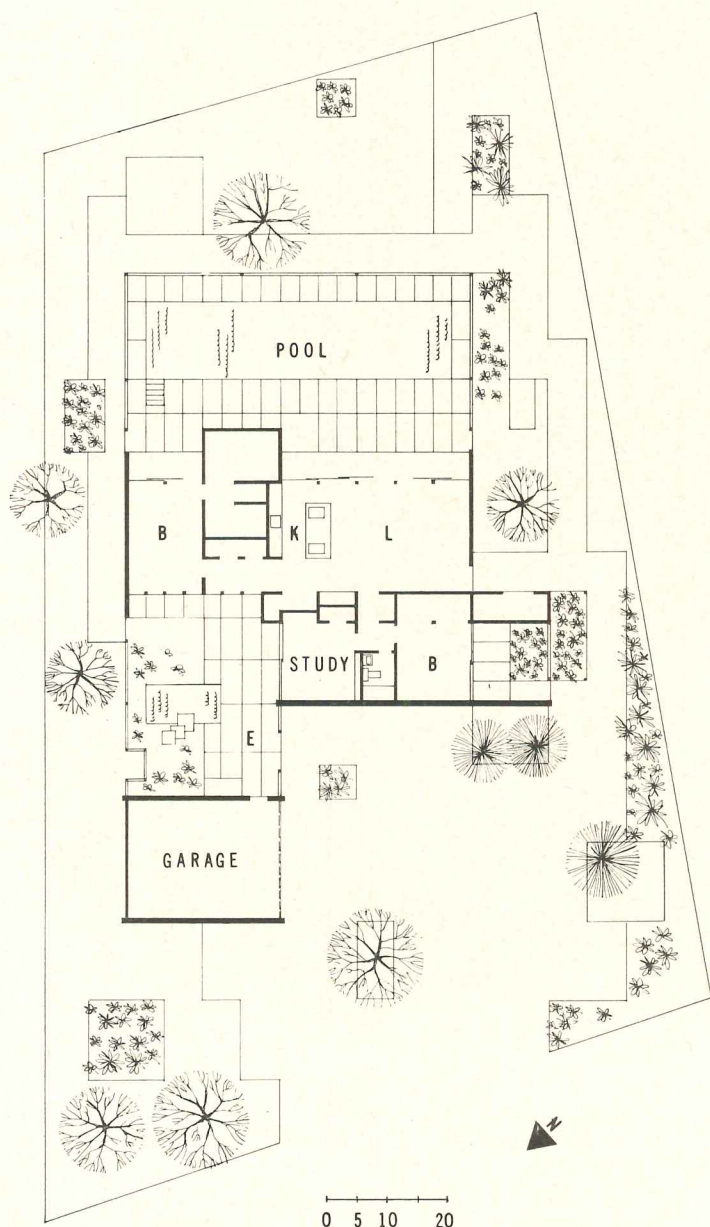


This house is an excellent example of the style and considerable luxury that can be produced for a reasonable price by close collaboration of architect and contractor. The house was originally designed for the contractor as a stock or builder house. There are several other examples built in Sarasota. In this case, the owners decided it was simpler to buy a house they could see, and one that had a known price. Their requirements were typical ones.

The scheme includes a motor court, an entrance garden with pool, and a large "Florida Room"—a screened in swimming pool. The house has year round air-conditioning. The architect states that he "added a little romance (to the stock plan) in the way of a redwood lattice over the entrance court, refined some details, and worked to improve the mechanical system."



A MODULAR STRUCTURE OF CONCRETE BLOCK KEEPS COSTS DOWN

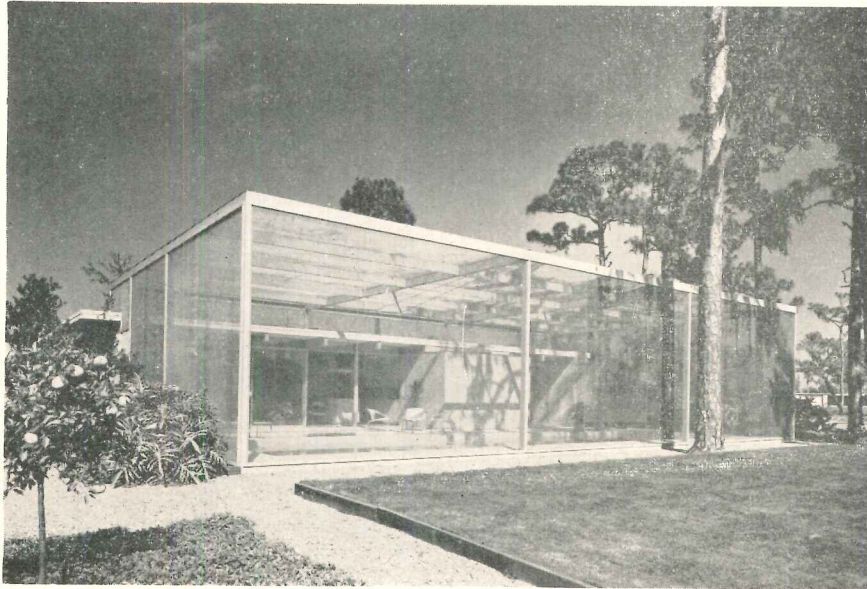


THE STRUCTURE: The house is built of a special concrete block, exposed inside and out and finished with silicone. The blocks are 8 by 16 in. and precisely stacked for neat appearance. Beams are spaced on a 6-ft module, which becomes a module for the interior spaces. The foundation is reinforced concrete, with all floors finished in terrazzo. The roof is surfaced with 4-ply tar and gravel. All wood is pressure treated. Insulation is foil-enclosed, 4-in. batt.

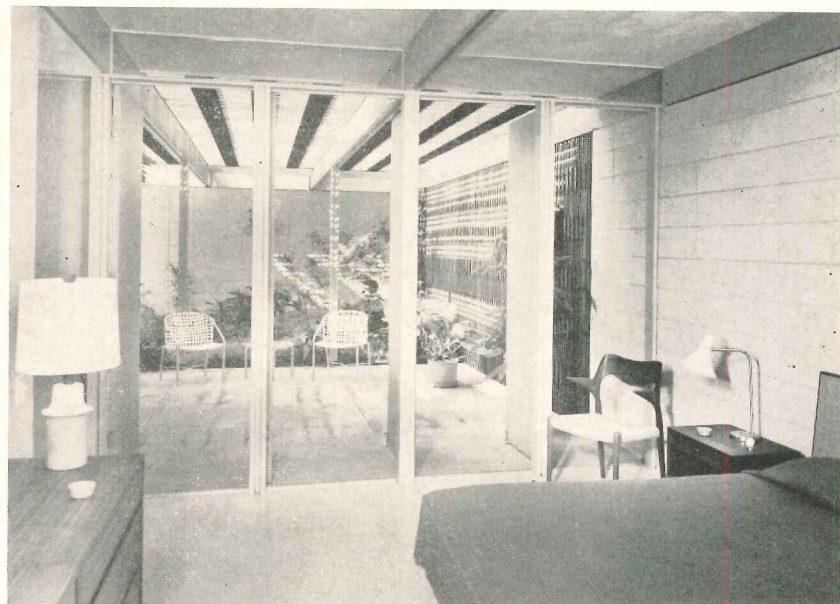
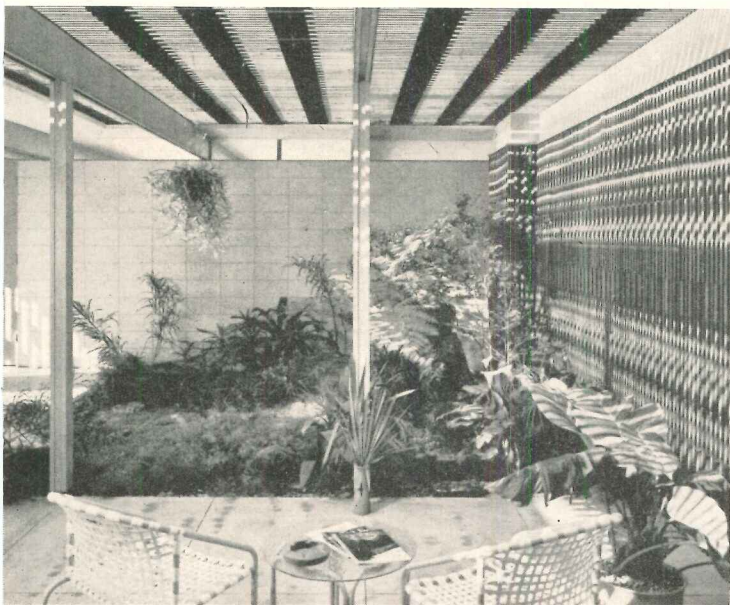
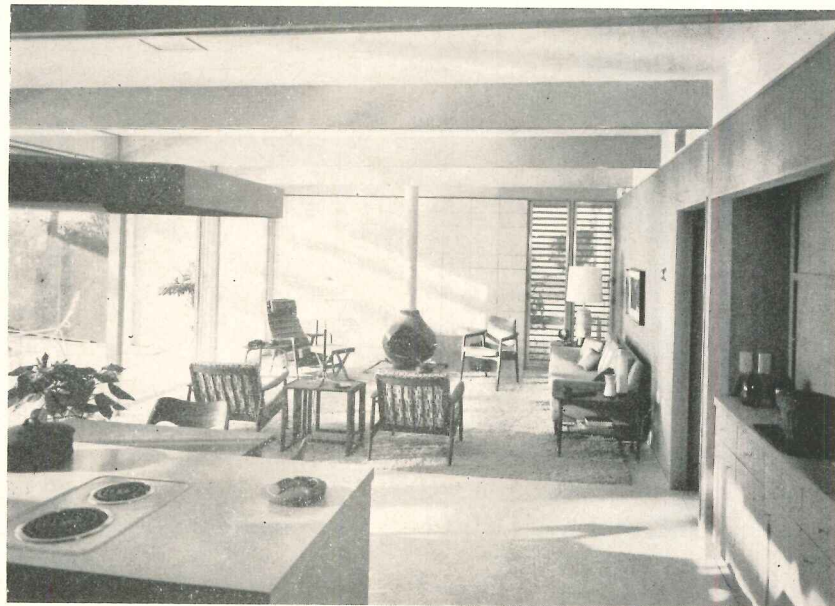
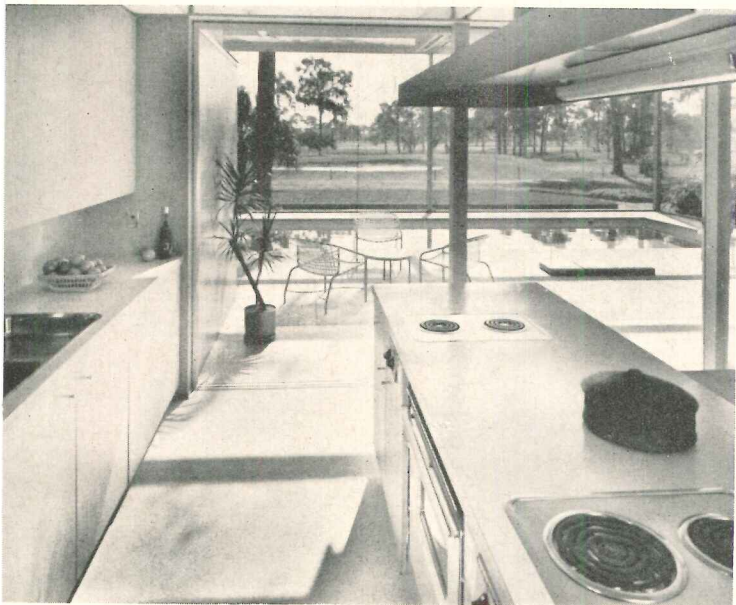
INTERIOR FINISHES: Partitions are wood, surfaced with plywood, tile and plastic. Ceilings are plaster. A plastic skylight is used over the bathrooms. Sliding glass walls are aluminum framed; other doors are wood.

EQUIPMENT: As noted, the house has both heating and air conditioning. There are supplementary exhaust fans in kitchen and bathrooms. All kitchen and laundry equipment is electric; the hot water heater is gas. Kitchen equipment includes garbage disposer and dishwasher; counters are plastic. Swimming pool equipment includes special pumps, water purifiers. The refrigerator and washer are in a closet alongside the kitchen end of the living area.

THE COST: The house cost approximately \$35,000, excluding lot, landscaping and furnishings.



PHOTOS: JOSEPH MOLITOR



PHOTOS: NORMAN F. CARVER, JR.



A MODULAR HOUSE THAT PERMITS PLAN VARIATIONS

NORMAN F. CARVER JR., DESIGNER
JOAN WILSON CARVER,
GENERAL ASSISTANT

*Residence for Dr. and Mrs. Frederick Rogers,
Kalamazoo, Michigan
Harry Jepkema, Contractor*

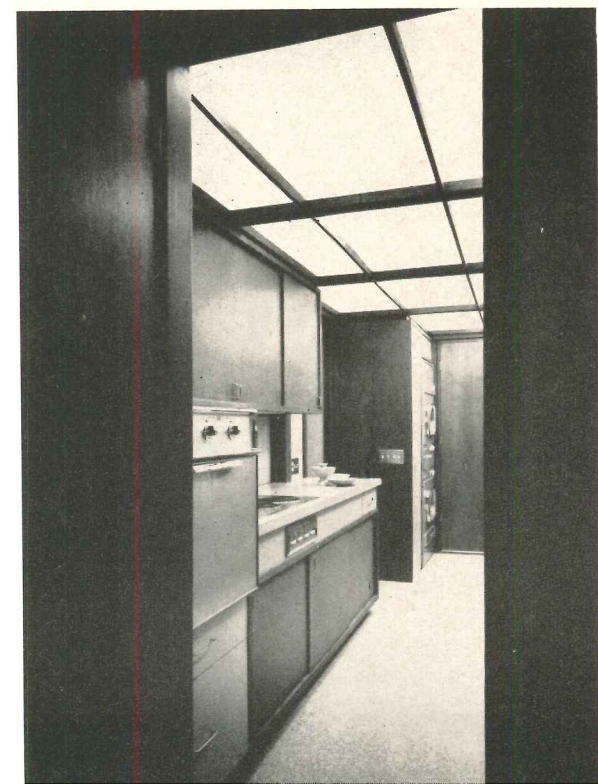
This extremely pleasant and comfortable house is one of a group of three constructed for three Western Michigan University professors and their families. Acquisition of adjacent building sites led them to the idea of having their homes designed as a single integrated project. Emphasis was to be on moderate cost of construction, with the development of a systematized structure and standard details which would permit flexibility of planning to suit the individual needs of each family. And the clients' requirements were rather varied: Dr. and Mrs. Rogers, whose house is shown here in some detail, are a middle-aged couple, both of whom teach; Mr. Charles Starring, is a bachelor; and Mr. and Mrs. Bowers, are a younger couple with two small children. (For plans and photos of the other two houses, see pages 68 and 69.)

Yet there were also a number of similarities. All three greatly appreciated contemporary design and wanted houses which would form a harmonious group on the wooded hillside sites. All three also entertain large groups of faculty and students, thus emphasis was to be placed on space and the subsequent use of low-priced finished materials and fixtures.

As can be seen, the results are extremely successful, with costs ranging from \$22,000 to \$30,000. There are current plans to add two more houses to the group.



PHOTOS: NORMAN F. CARVER, JR.



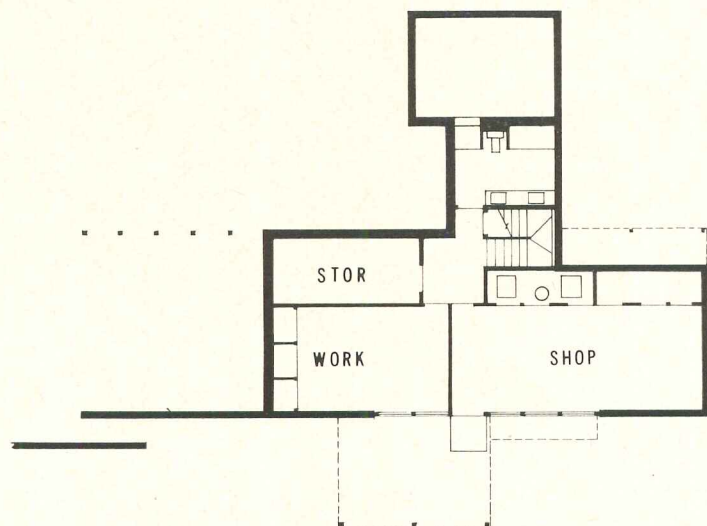
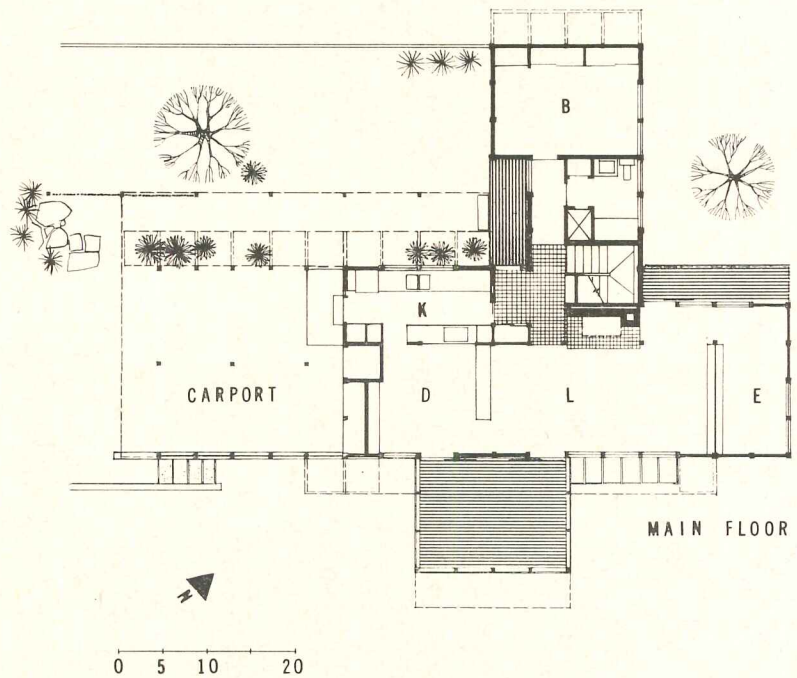
POSTS AND BEAMS WITH STANDARD PANELS AND DETAILS PERMIT VARIETY

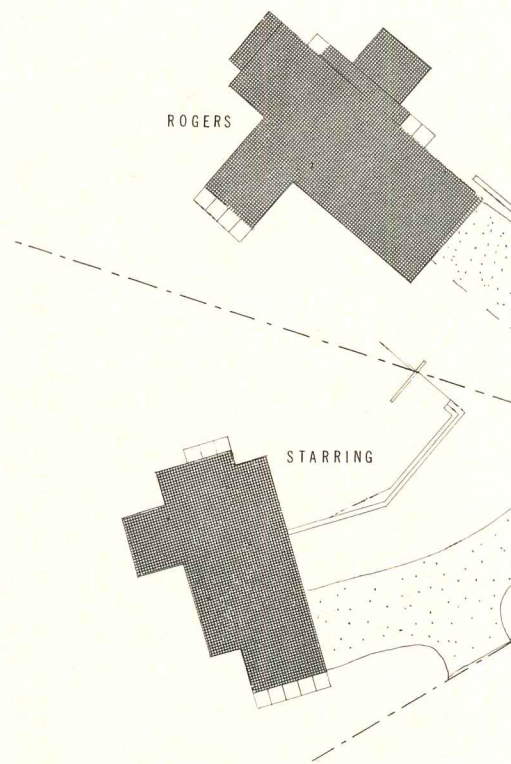
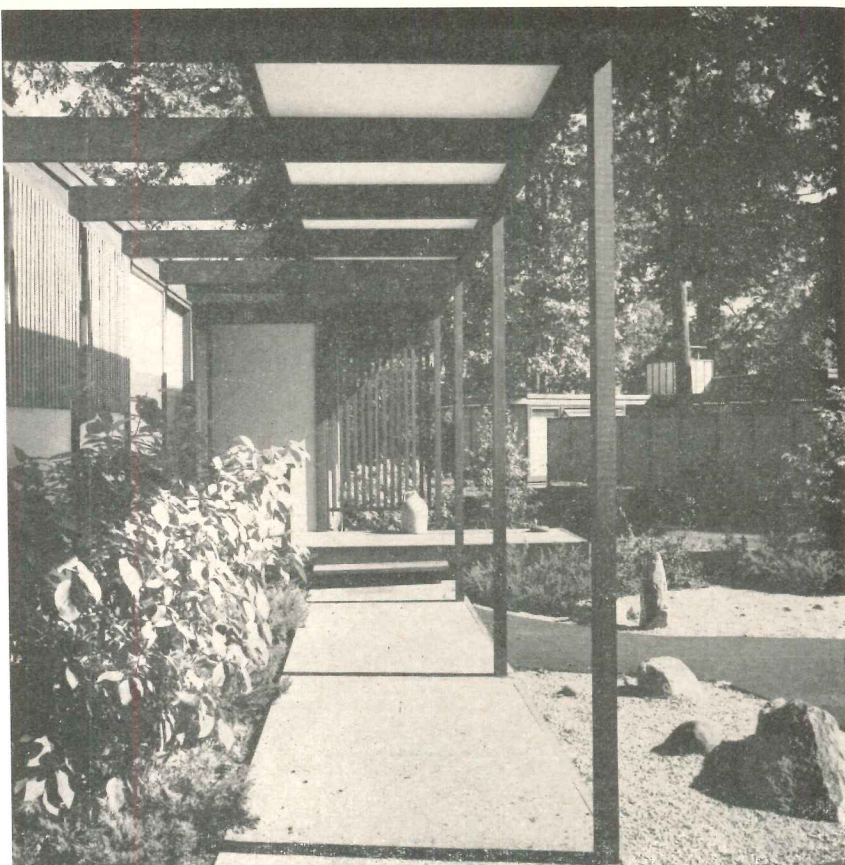
PLANNING: The Rogers house, shown here, provides commodious quarters for work, study, relaxation and entertaining. The entrance is via a covered walk between the carport and a walled-in garden. The bedroom is set apart from living areas for privacy and quiet. All major living areas including kitchen and study (marked E on plan) open into each other to form a big space for faculty gatherings. Advantage was taken of the hillside lot to provide a lower level with floor-to-ceiling glass areas. Provision of a bath permits use of this level for overnight guests. Apparent space in the house is greatly increased by variation in ceiling heights and by use of porches and outdoor areas.

THE COST of the Rogers house was about \$26,000, not including designer's fees, lot, landscaping or furnishings.

STRUCTURE: To allow for the three different and individual plans, a structural system was devised using posts and beams of clear fir on a four foot module, and a concrete foundation. The framing is exposed and stained a deep rich brown. Exterior wall panels are gray asbestos-cement or glass. Roofing is 5-ply tar and gravel. Ceilings are of composition decking except in kitchen, baths and stairwell, where they are translucent plastic lighted from above.

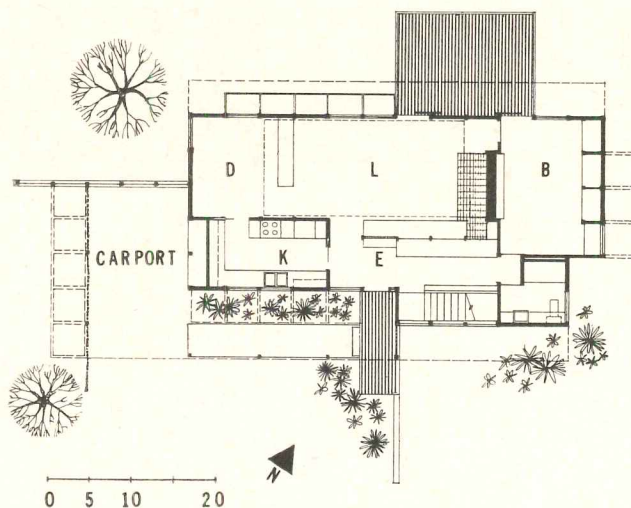
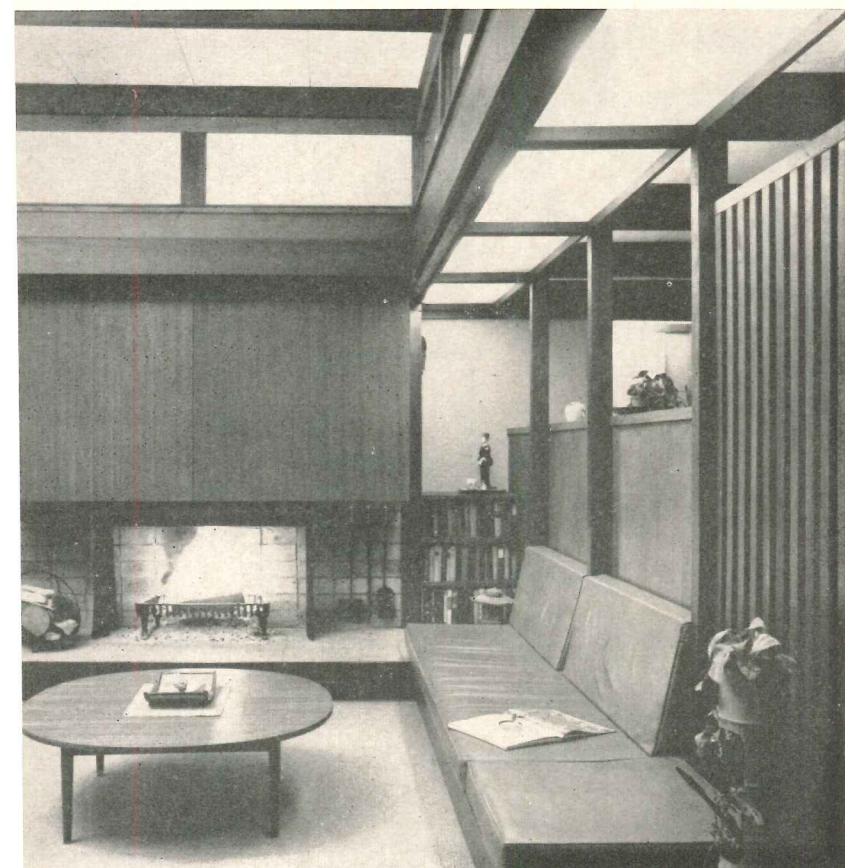
INTERIOR FINISHES: Walls are of asbestos-cement of plaster-board painted a neutral warm beige. Floors are of plywood construction finished with cork, vinyl or asphalt tiles. Woodframed sliding doors and awning windows comprise the moveable sash. Color accents are in draperies, built-in seats, cabinets, and art objects.

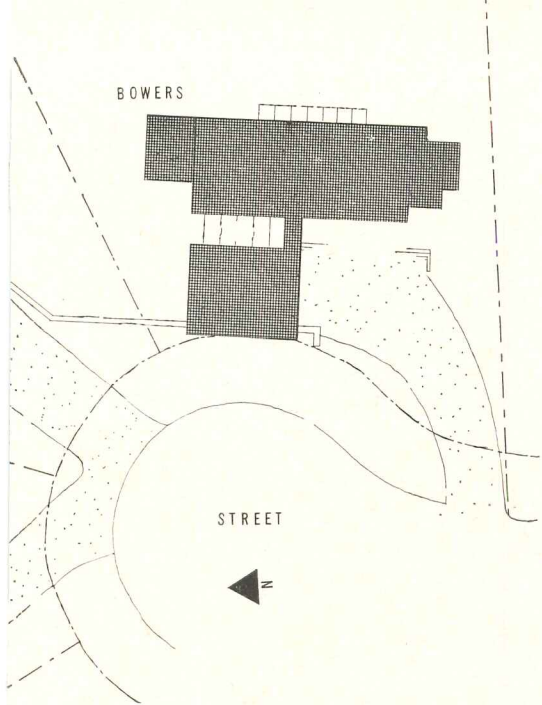




THE STARRING RESIDENCE

THE VARIATIONS on the Rogers house shown here use similar materials and design, and all are tied together by fences and low walls, and landscaped as a single scheme. Construction costs were kept down by having the three houses bid and built as a single project. In spite of the moderate cost, many built-ins were included: seats in living rooms, buffets, chests in all bedrooms, and part of the interior lighting.





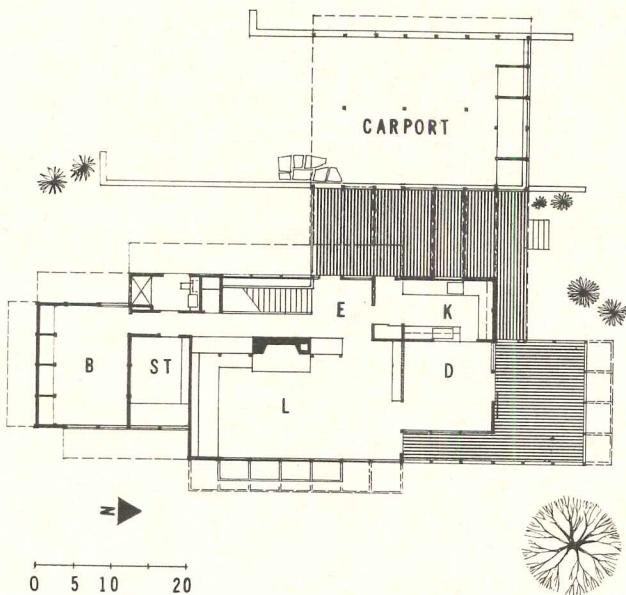
PHOTOS: NORMAN F. CARVER, JR.



THE BOWERS RESIDENCE

THE STARRING HOUSE (left) is for a bachelor professor and uses the lower level for a large study-library and storage. Space (left unfinished) is also provided for two future bedrooms and a bath.

THE BOWERS HOUSE (right) has a large lower level for the young couple's children. There are three bedrooms, bath, storage, laundry and recreation. Heating is warm air.



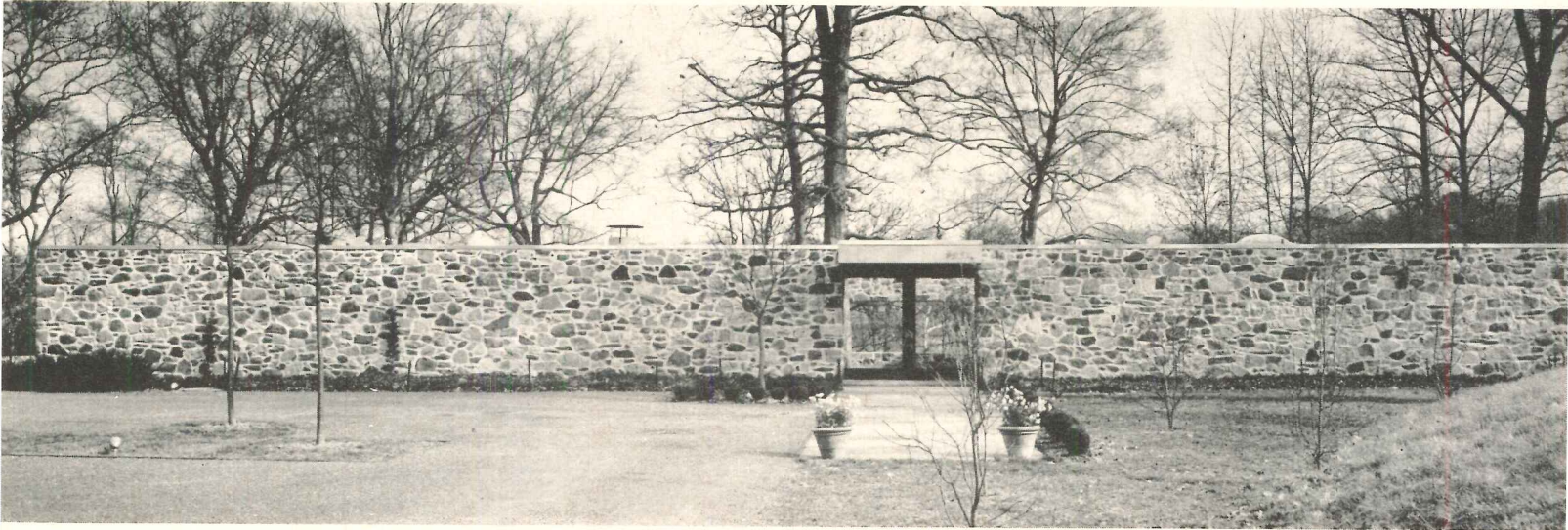


A POWERFUL DESIGN IN FIELDSTONE



MARCEL BREUER, ARCHITECT
HERBERT BECKHARD, ASSOCIATE

*Residence for Arthur V. Hooper, Baltimore, Maryland.
Wiesenfeld Hayward and Leon, Engineers; Harry H.
Hudgins, Contractor; Dan Kiley, Landscape Architect*



PHOTOS: BEN SCHNALL

The forceful simplicity of the Hooper house places it in the proud and solid tradition of many of the great country houses of the past. It is a house that, despite an apparent austerity, will age well and acquire more grace and personal atmosphere with use. Its furnishings can be as grand or simple as evolving family tastes indicate. And it contains two of today's greatest luxuries: spaciousness and ease of upkeep.

The scheme is a refinement of some design ideas and trends that have been developing for some time, notably the central-court, bi-nuclear plan. Living, dining and kitchen areas are on one side of the house, with playroom (or family room) and seven bedrooms on the other. The playroom serves to minimize the usual long corridors for so many bedrooms.

The entry serves as an enclosed link between the two elements; in warm weather, it is left open with screen doors at each end.

FUNCTIONAL EQUIPMENT AND DETAILS UNOBTRUSIVELY ADD LIVING COMFORT

THE SITE of the Hooper house is a heavily wooded plot which was once a bird sanctuary. The house is placed well back from, and invisible to, the main highway. Its location is on a little bluff overlooking a small lake.

THE EXTERIOR of the approach, or western façade, of the house is a rugged wall of Maryland fieldstone, broken only for the opening for the entry. This opening is closed by two 5-ft wide sliding glass doors, permitting a view through entry and court to the lake beyond. The stone façade is an effective barrier to the west sun and helps orient the house to the privacy and view to the east. Other exterior walls are the same stone and sliding glass.

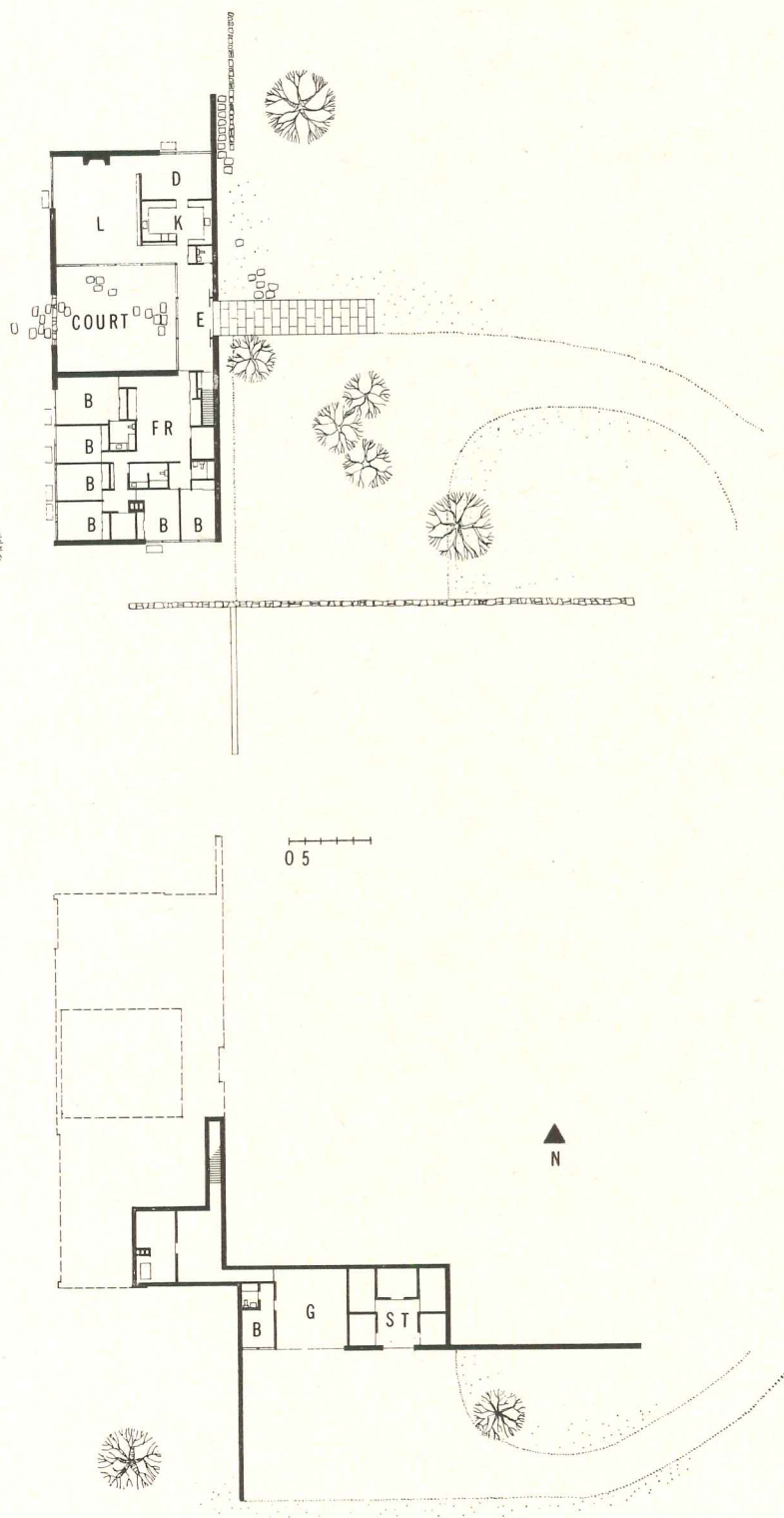
THE PLAN makes use of the drop in the site to provide a lower level housing the heating plant, caretaker's apartment, garage and stables. It touches only a corner of the upper floor, and extends toward the west along the stone wall defining the upper entrance motor court.

THE STRUCTURE is spanned by steel beams, resting on the stone walls or on lally columns, and topped with 2 by 10 wood joists. Floors are concrete slabs on grade or reinforced concrete where not supported by the ground.

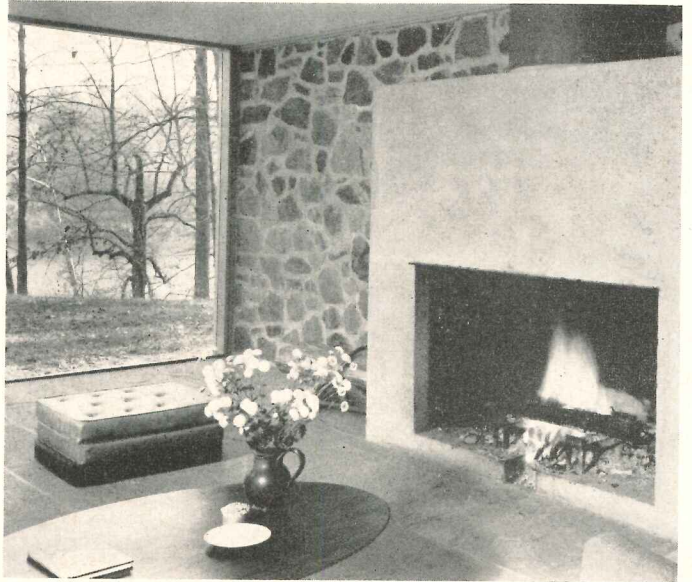
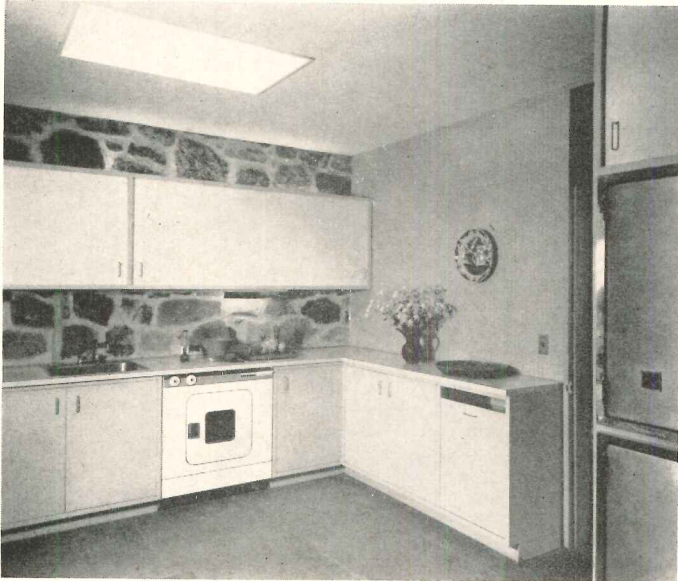
INTERIOR MATERIALS include the same stone as the exterior; here they form backgrounds for paintings, tapestries and sculpture. Other surfaces are gypsum board walls painted gray, acoustical tile ceilings, blue-stone flooring; bedrooms have cedar walls, vinyl tile or sisal mat floors.

THE HEATING SYSTEM is a hot water radiant one, with coils buried in the floor slabs. Baths, kitchen and playroom have plastic skylights and vent fans. Most lighting is recessed in the ceilings.

THE COST of the house excluding lot, landscaping and furnishings was about \$150,000.



PHOTOS: BEN SCHNALL



PHOTOS: BILL MARGERIN, *Courtesy of LIVING FOR YOUNG HOMEMAKERS*



PAUL HAYDEN KIRK, ARCHITECT

Wood Research House

Bellevue, Washington

*Sponsors: Living for Young Homemakers, Weyerhaeuser
Company and Andersen Corporation*

*George Nelson & Co., Inc., Interior Planning; Dolores
Engle, Interior Design*

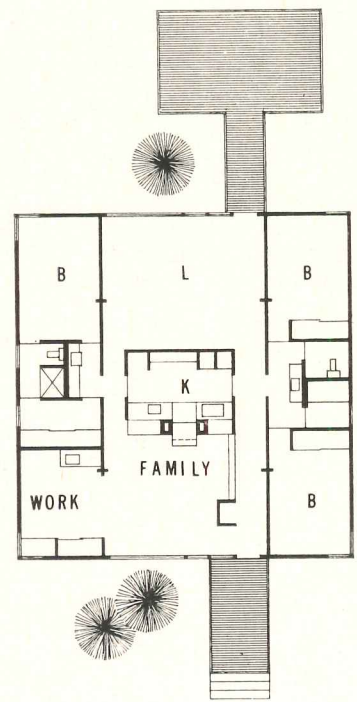
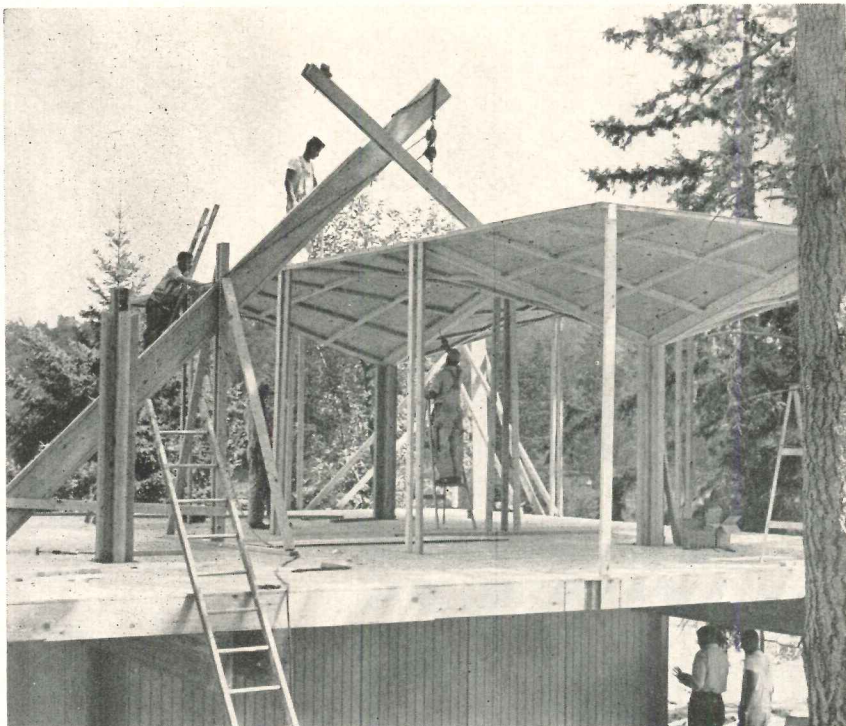
Eric Pearson and Associates, Builders

AN ELEGANT EXPERIMENT IN WOOD STRUCTURE

The architect, taking advantage of the strength revealed in wood since the war by the use of strong adhesives for laminates, has devised for this research house a structural system which is not only a *tour de force* in the material, but which has implications as well for relatively inexpensive building—in construction, in site work, in the utilization of prefabrication of parts.

The house is hung from four X-shaped columns of laminated wood, supporting the four hyperbolic paraboloids of the roof and the floor beams. Because no heavy foundation was needed—only footings for each column—the system is adaptable to the most uneven site without grading. The curtain wall is of pre-cut wood siding and stock windows.

Designed for a hypothetical family of four or five, the house, though not lavishly proportioned at 1600 sq ft, does provide generous room for family activities, and well-arranged and well-separated private areas. Raising the house allowed the exploitation of the pleasant wooded site, and space below the living level for carport, storage and services. The bridge connecting street and house was both a necessity and a dramatic means of entrance.



LIGHT STRUCTURE STATED IN HOVERING CEILING AND SOARING DECK

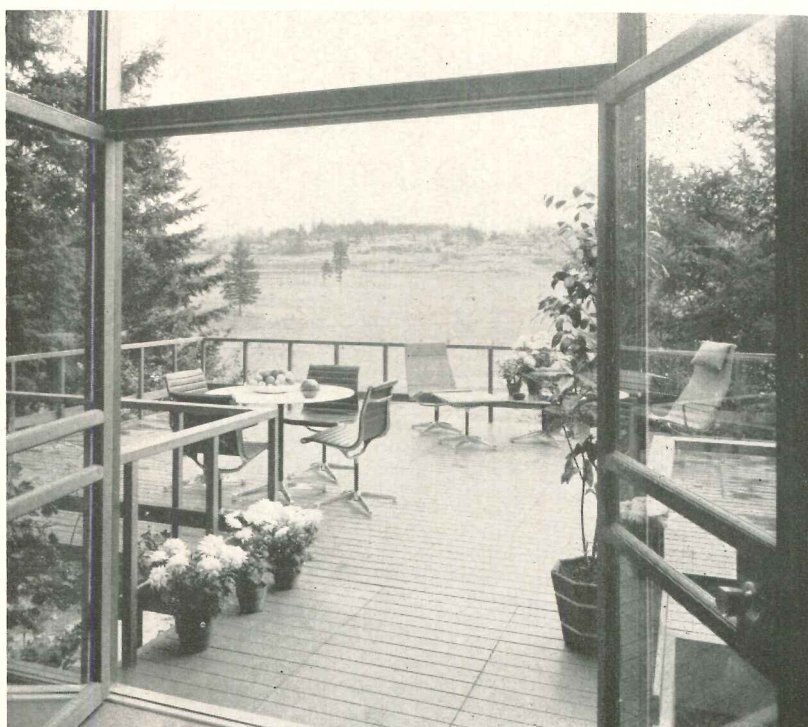
STRUCTURE: The four hyperbolic paraboloids of the roof, each made of four curved sections of plywood stretched over lumber framing, are supported by four columns of laminated wood. This is said to be the first application of wood umbrella h.p.'s to residential building. Also supported by these columns are two sets of paired floor beams, both sets cantilevered perpendicular to the front of the house. Floors are plywood-sheathed panels fabricated on the site.

From a design point-of-view, the architect remarks that the plywood h.p.'s "graphically illustrate the immense strength in wood fiber, and certainly portray the use of a material to its maximum strength. . . . Basically, the entire house tends to illustrate this same concept. Stressed skin wall and floor panels also use their skin surfaces as well as their division members to stress wood to its maximum design strength."

SITE: Some "sculpturing" of land was carried out, but this was for landscaping rather than structural reasons.

FINISHES: Siding is pre-cut cedar planks with interlocking end-joints bonded with glue, and stained green-brown. Interior partitions are lacquered and waxed hemlock. Ceilings are hardboard panels curved to conform to the hyperbolic paraboloids. Flooring, except baths and kitchen, is compressed wood-chip squares; floor covering in baths and kitchen is vinyl asbestos. Decking for bridge and terrace is hardboard, grooved to suggest planking.

COST: Around \$20,000.

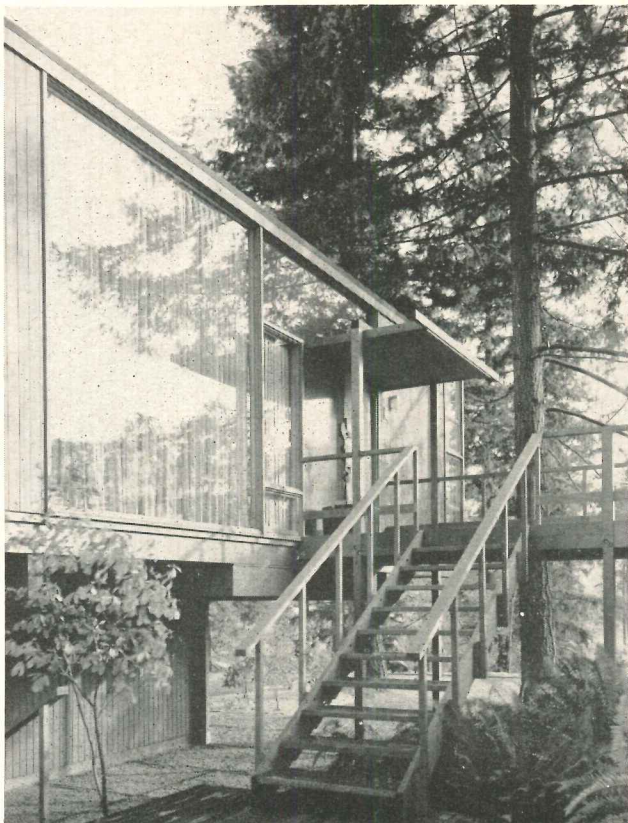


PHOTOS: BILL MARGERIN, *Courtesy of LIVING FOR YOUNG HOMEMAKERS*

CONVERTIBLE SPACES ADD FLEXIBILITY AND VARIETY TO OPEN PLAN

PLANNING: The general "openness" of the plan, in the living and family central area, does not exclude considerable privacy for both adults and children; despite the square plan, rooms were effectively isolated by putting entries to these "suites" near the baths, affording each room a short corridor. Bathrooms are compartmented to simplify the morning rush. In the work room, utilities can be concealed by sliding panels, converting room into small study

EQUIPMENT: *Heating*—gas-fired furnace is hung from floor. *Kitchen*—in addition to the normal modern complement of kitchen equipment—all electric, in this case—there is an electric barbecue unit. *Communications*—stereophonic phonograph, radio and intercom are all combined in same system, utilize same speakers throughout house



PHOTOS: BILL MARGERIN, *Courtesy of* LIVING FOR YOUNG HOMEMAKERS





STRUCTURAL BAFFLES YIELD BOTH PRIVACY AND SUN PROTECTION

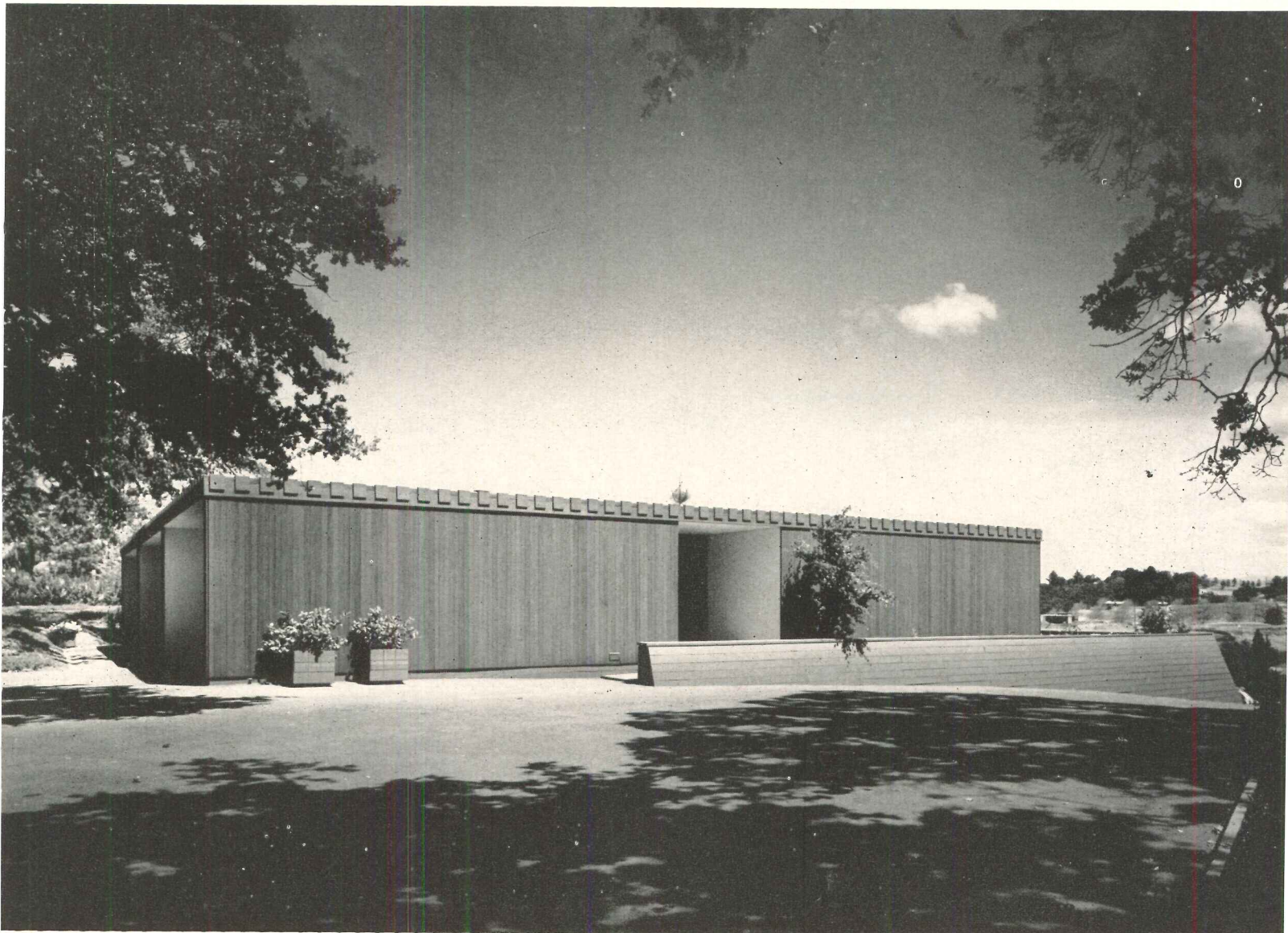
The deep baffles on two sides of this house are designed as "view breaks." Although the site offered fine views to the north and south, neighbors were close on the east, west and south. The recessed glass walls assure the owners' enjoyment of the views, while the blank end walls and the baffles assure their privacy. The baffles also serve to express the bays of the plan, and, with the eight-ft overhang, give protection from the sun.

The clients, a retired couple with no children, were accustomed to apartment living, and gave it up for the pleasures of garden and orchard. But if the surroundings are pastoral, the formality of the plan and design are urbane. Central to both the appearance and the circulation is the atrium, designed for use and not for show. As show, nonetheless, it provides an extremely gracious welcome to the house.

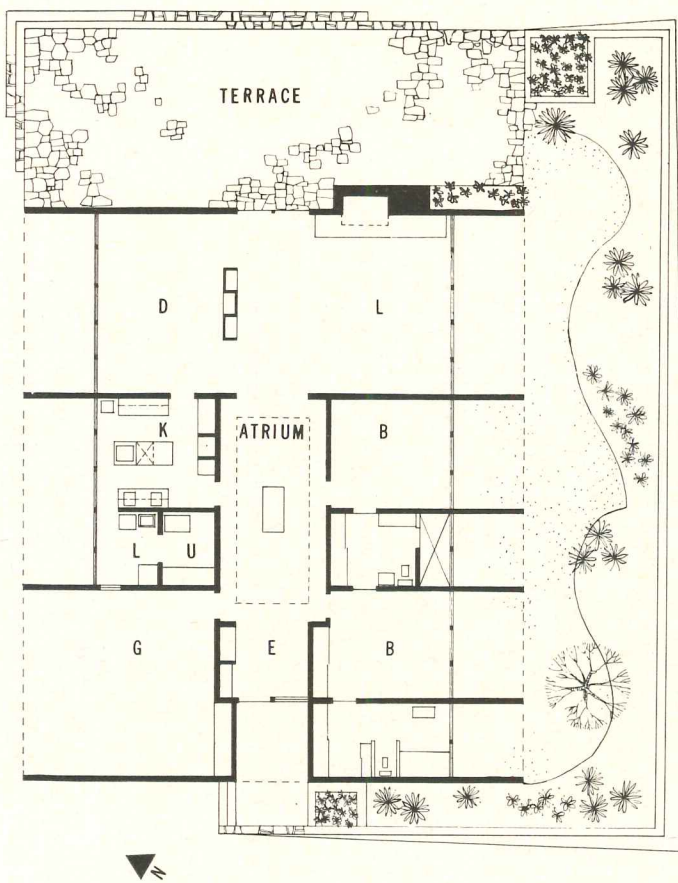
JOHN L. FIELD, ARCHITECT

*Residence for Mr. and Mrs. Arthur Alter
Los Altos Hills, California
Rosalind Wheeler, Landscape Architect
Delano Large, Building Contractor*

PHOTOS: MORLEY BAER



URBANE INTERIORS COMPLEMENT SUBURBAN PLEASURES



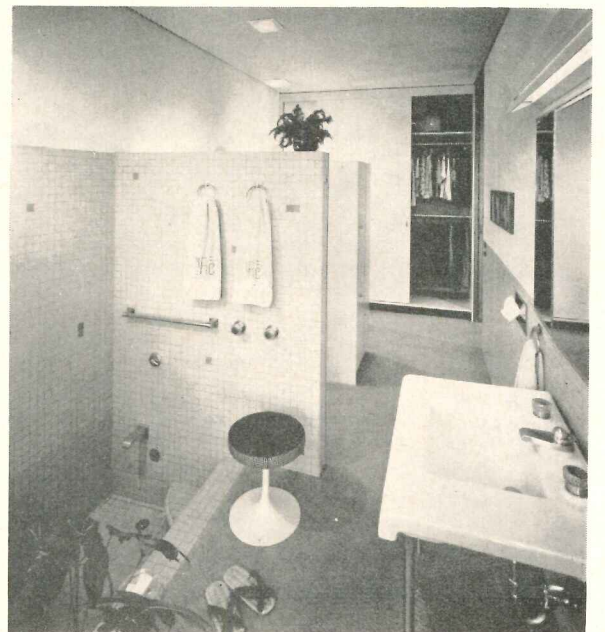
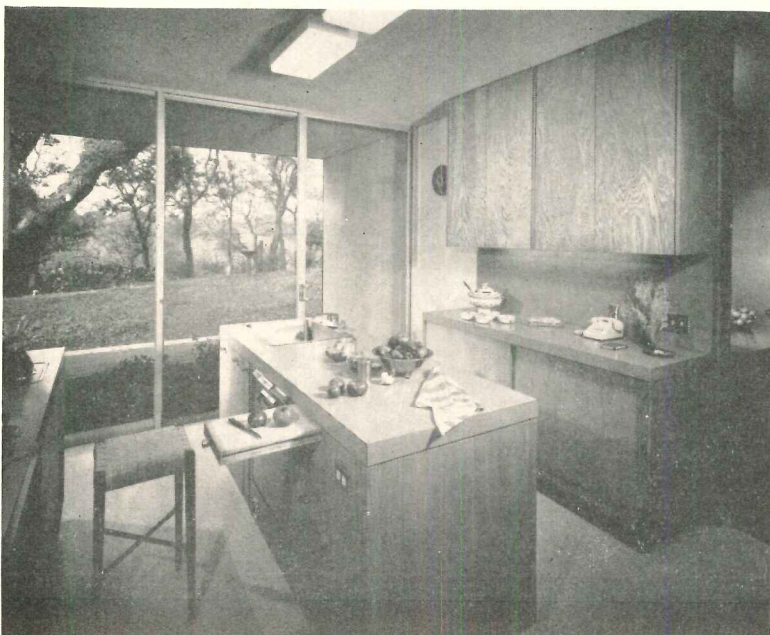
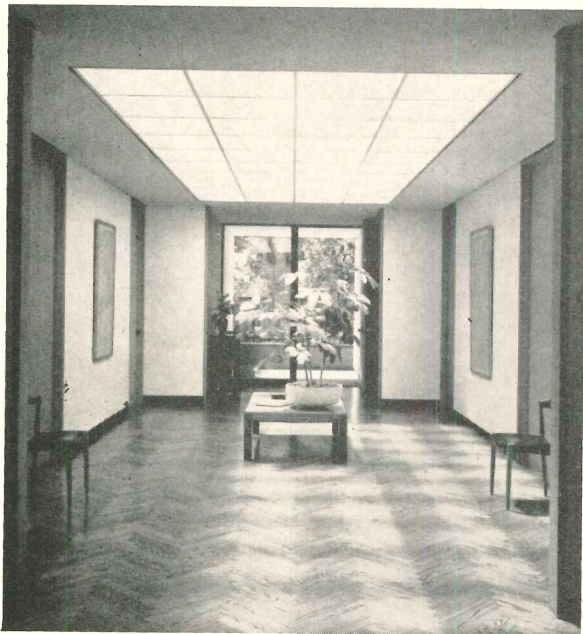
PLANNING: The central hall, or atrium, of the Alter house, besides being basic to circulation within the house, serves as entry both from the street and from the garage, though the garage also has access directly to the laundry and kitchen for deliveries. The guest bedroom ordinarily doubles as a study. The outside living areas include a paved terrace and a garden; the garden is surrounded by a low wall, both to limit the space requiring constant care, and to conceal, at least partially, that area from outsiders.

MATERIALS: The structure is wood frame and wood siding on a concrete slab. Roof is built-up tar and gravel. Interior walls are sprayed integral-color plaster with sand finish. Ceilings are also sprayed plaster, with a wood pulp additive for both texture and acoustic qualities. Flooring in living areas is oak nailed on two-in. scrap framing lumber, laid in mastic over concrete; floor in kitchen is vinyl, in bathrooms is tile. Bathtubs are also tiled. Terrace and drives are paved exposed-aggregate concrete and cobble stones.

EQUIPMENT: *Heating*—radiant heating in concrete slab with copper piping is thermostatically controlled. *Lighting*—atrium skylight, besides providing daylight, is lighted at night by outside flood lights. In living and dining rooms, recessed fixtures reflect light from walls; the whole system is controlled by a dimmer.



PHOTOS: MORLEY BAER



PHOTOS: JOSEPH MOLITOR



FOLDED PLATES ROOF FLORIDA HOUSE

ROBERT B. BROWNE, ARCHITECT

*Residence for Mr. and Mrs. John R. Vereen
Coconut Grove, Miami, Florida
George F. Reed, Associate
Walter C. Harry, Structural Engineer
James Robinson, Contractor*

This house could best be described as two wood cubes within a screen cube within a concrete exoskeleton.

The exterior frame consists of four pairs of Y-shaped precast concrete columns supporting four precast concrete folded plates. This frame in turn supports the suspended second-floor sleeping areas, leaving an almost entirely unobstructed ground floor 36 ft by 72 ft. While the appearance of this exposed skeleton expresses successfully the unimpeded interior space, its chief, and likewise successful, purpose was to effect economical structure.

The free open space satisfies the owners' desire for large informal family space. Their entertainment is mostly small scale and casual, though the space can easily absorb larger parties. Guest room space was yielded in favor of everyday space, and overnight guests are housed with similar casualness on a "sleep-on-the-sofa basis."

The two second-floor elements comprise one apartment for the family's three young daughters, and another apartment for the parents. The first contains a bedroom for each daughter and a common dressing room. The parents' suite is intended as a retreat for adults, and is large enough to accommodate occasional entertainment of guests.

The entrance draws on a traditional device for lending importance to the front of the building: a second-story entrance approached by a flight of stairs.

FAMILY COMFORT COMPATIBLE
WITH DRAMATIC STRUCTURE,
DRAMATIC SPACE,
DRAMATIC ENTRANCE

STRUCTURE: The Vereen house roof's four folded plates are each 9 ft by 72 ft, and are three-in. thick. They are supported by double-legged pre-cast columns, designed to resist lateral forces characteristic of hurricanes, not unknown in this area. The easily cleared lower floor of terrazzo, simplifies the cleaning up after the floods accompanying hurricanes. The house weathered last year's Hurricane Donna with only the loss of a section of screen.

The only fixed wall is on the north side of the house. The other three walls are hinged so that they may lie flat overhead, but can be lowered with facility to function when needed as vertical walls.

The walls on the second floor are fixed panels and jalousies of wood and hinged glass sash.

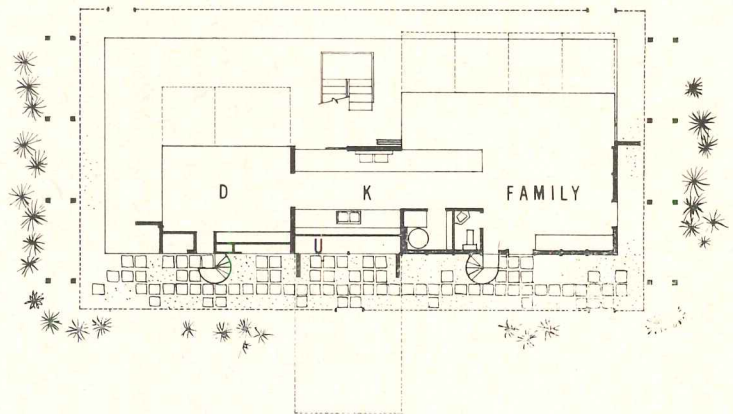
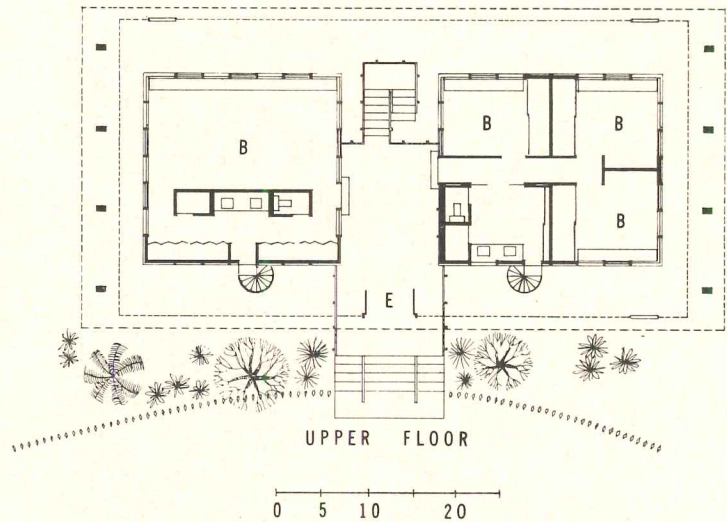
The foundation is reinforced concrete.

SITE: Though not on the water, the site commands a good view of Biscayne Bay, especially from the second level. The house is entered on the top level via stairs and a built-up mound. This mound protects the house from the sometimes chilly northwest winds, and also, in combination with a reinforced concrete fence, assures a degree of privacy from the driveway.

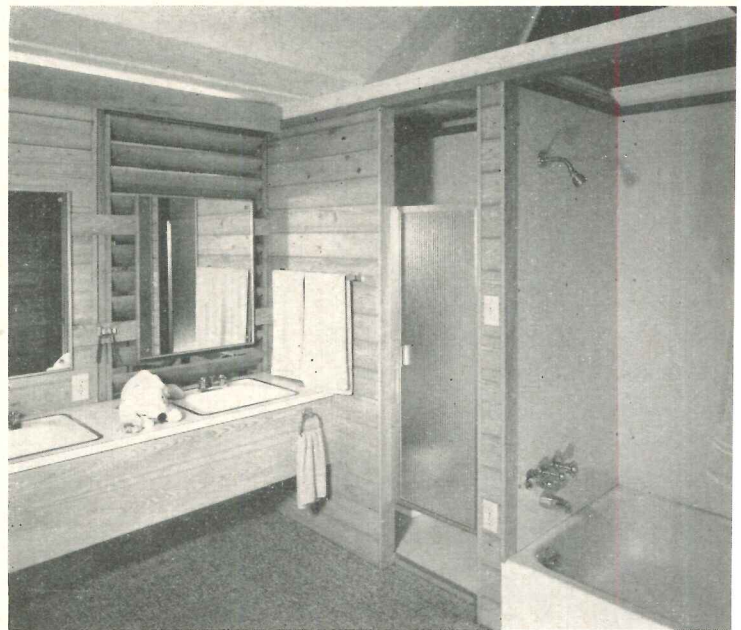
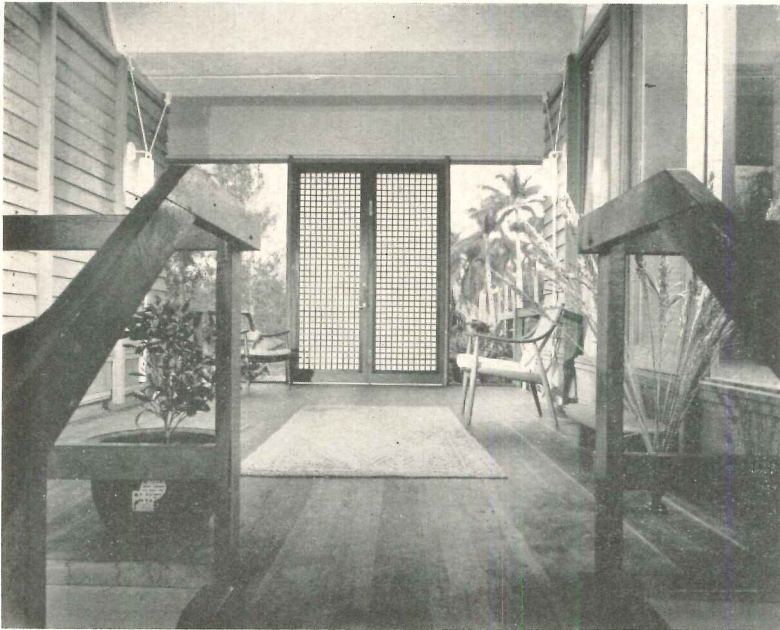
FINISHES: Walls in the living area are cypress treated with bleaching oil. In bathrooms, the walls are finished with vinyl, and in the kitchen with laminated plastic. Floors are terrazzo on the ground floor, vinyl in the bathrooms. Ceilings throughout the house are plaster. Kitchen counters, surfaced with laminated plastic, are augmented by a walnut counter used for family meals. Bathroom counters in master suite are finished with marble, as is the shower stall.

EQUIPMENT: No central heating is provided, but the rooms on the second floor are air conditioned.

COST: \$32,000.

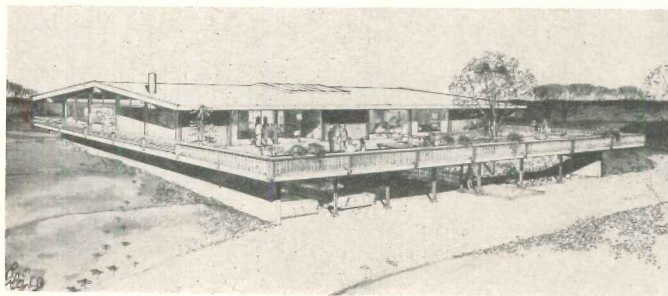


PHOTOS: JOSEPH MOLITOR





PHOTOS: ART FILLMORE



AN INTERIOR GARDEN DRAMATIZES SECOND-LEVEL LIVING AREAS

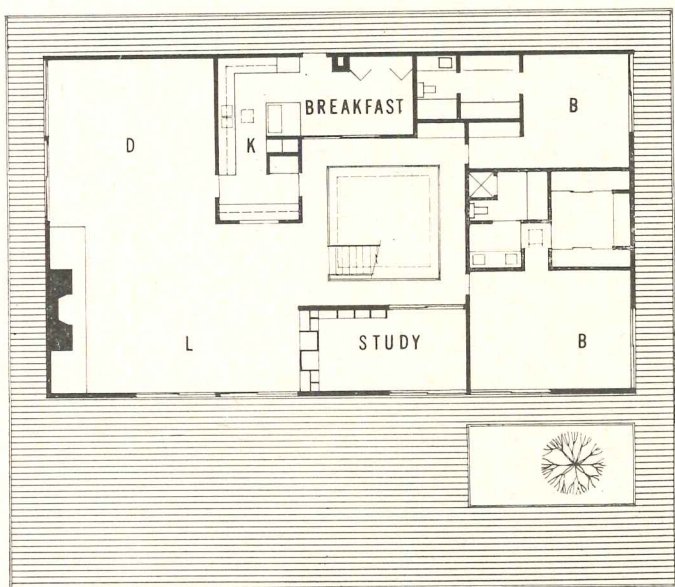
HELLMUTH, OBATA & KASSABAUM,
INC., ARCHITECTS;
GYO OBATA, DESIGN

Residence for John L. Wilson, Ladue, Missouri. Albert Alper, Structural Consultant; Harold P. Brehm, Mechanical Consultant; William H. & Nelson Cunliff, Contractors; Harriet Rhodes Bakewell, Landscape Architect; Eleanor LeMaire, Interior Designer

The traditional custom, especially in Europe, of placing major living spaces on the second level, has been revived in this house with great effect. The site is one of the highest points in St. Louis County, and overlooks a country club and the skyline of downtown St. Louis. The second level rooms take full advantage of the sweep of the view. As the roadway is also in front of the house towards the view, a broad deck was placed in front to screen it from the living areas, and to give those areas privacy from the road. An interior garden and stair was used to focus attention to the upper level. All rooms revolve off this skylighted court.

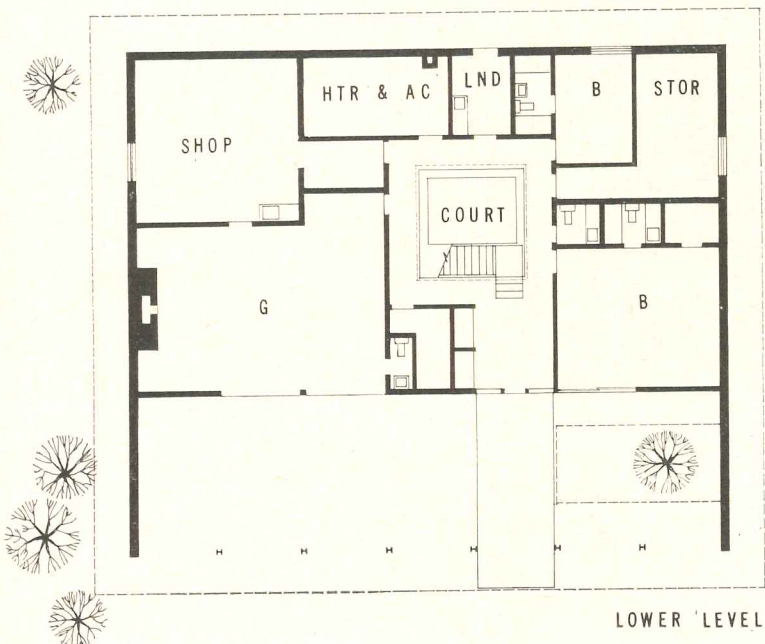
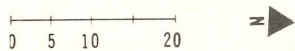
The owner is an executive who lives alone except for a housekeeper. His principal requirement was to be in a relaxed environment when arriving home from office or business trips. The spacious serenity here serves well.

SPACIOUSNESS, NICE DETAILS AND FINISHES GIVE LUXURIOUS COMFORT



THE PLAN: On the second level are all major rooms, including a bedroom for a daughter when she visits home. The large deck opens all rooms to the outdoors, and will accommodate 200 people for a party. The deck also provides car shelter on the lower level for guests.

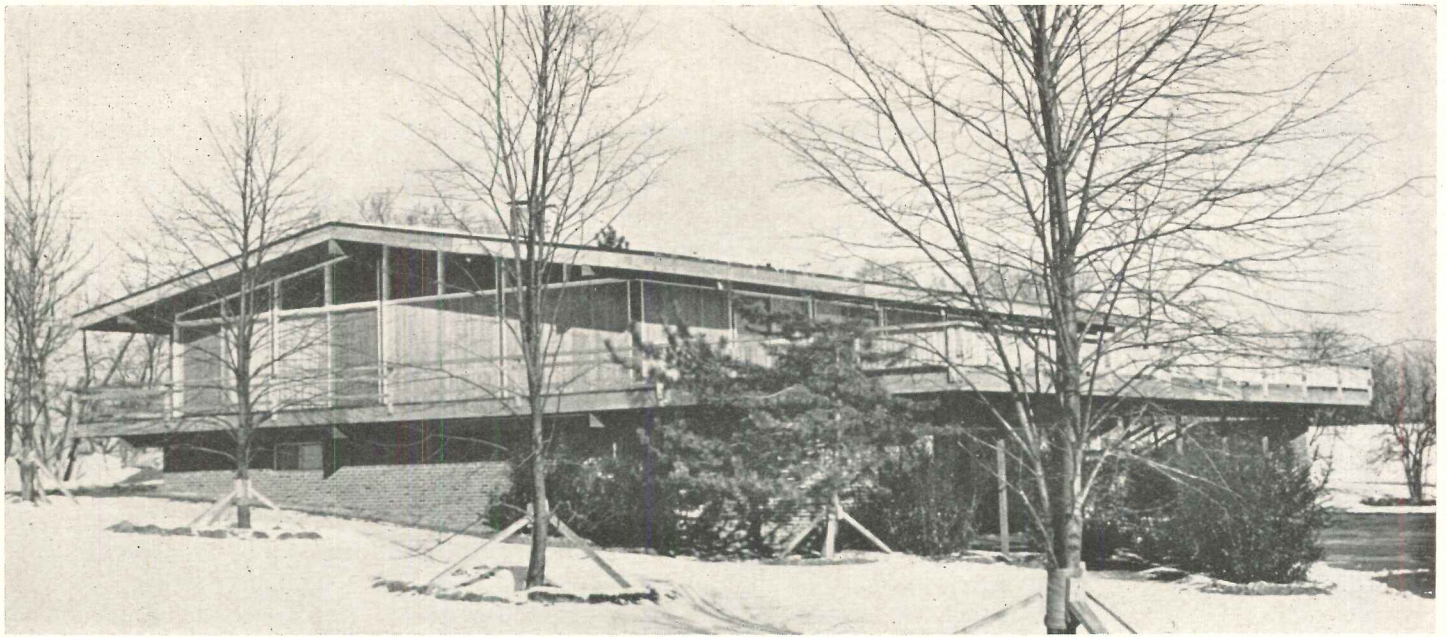
THE STRUCTURE: The lower level has concrete walls, steel columns. The upper level is all framed in wood. The main beams run longitudinally with the joist forming a slight pitch. Exterior walls are fir and brick; the roof is tar and gravel.



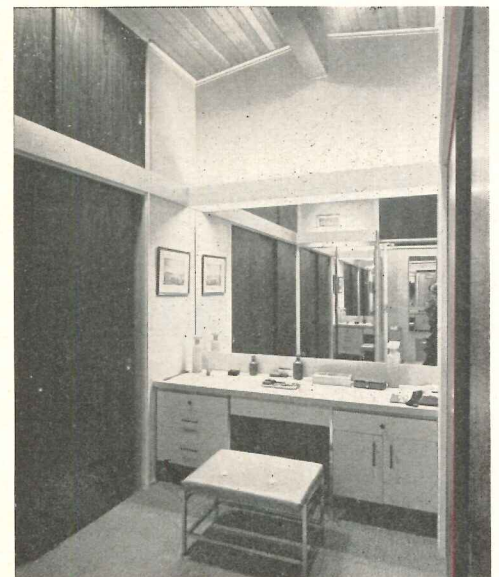
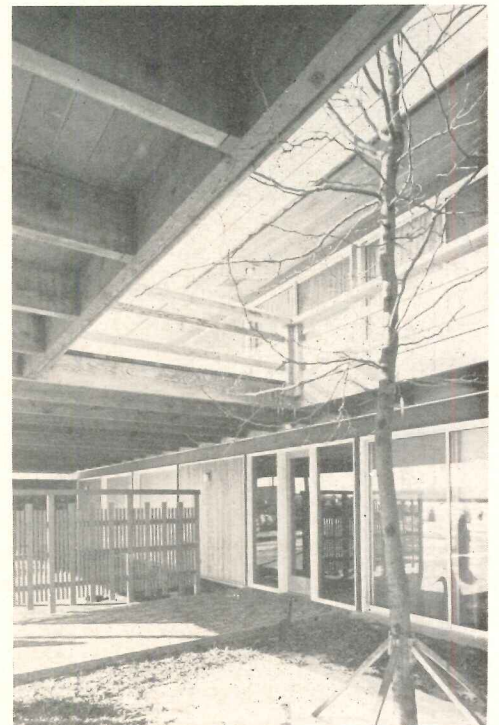
INTERIOR FINISHES: Ceilings are natural edge-grain fir on upper level, plaster on lower level. Most walls are plaster, covered with burlap. Baths and kitchen are ceramic tile. Floors are dark, random width oak, and vinyl, ceramic or asphalt-cork tile.

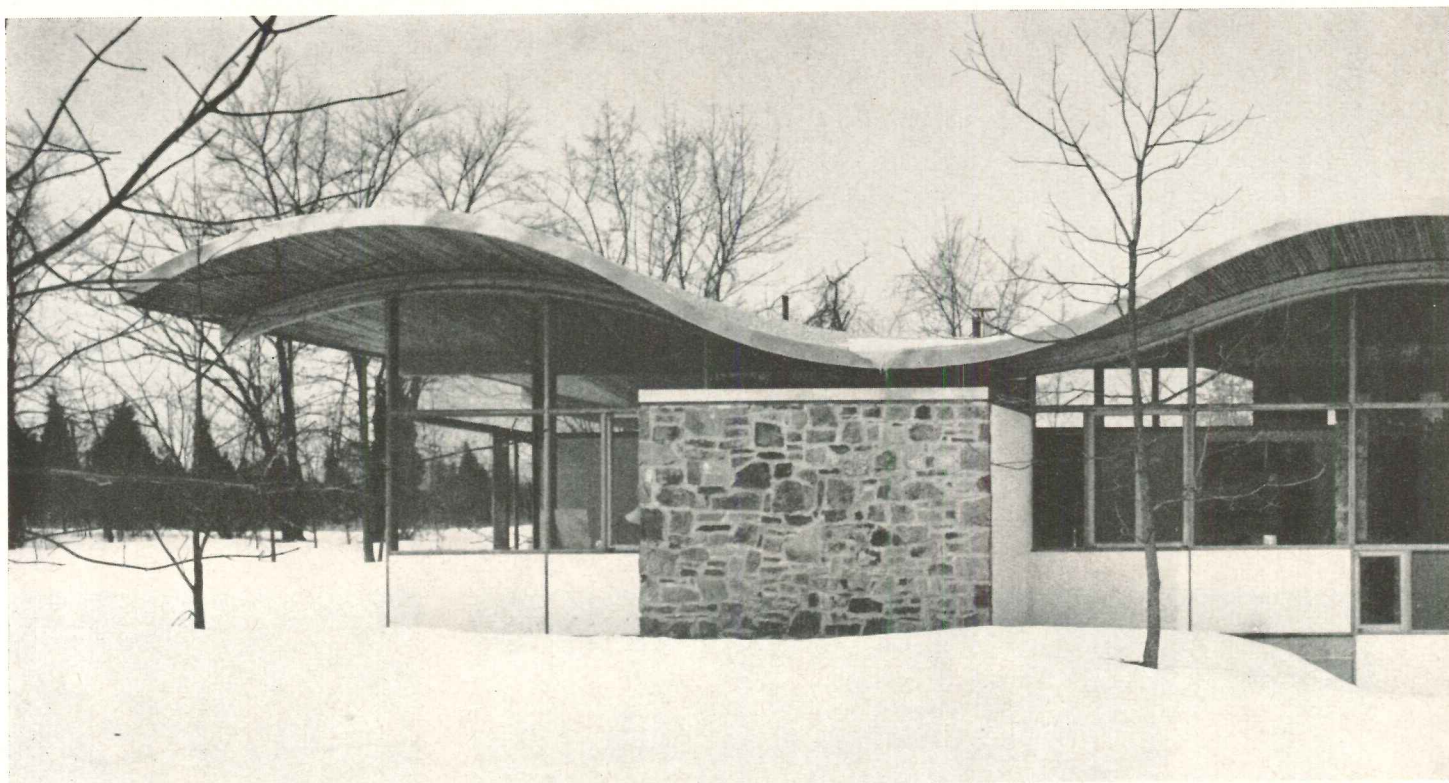
THE COST: Approximately \$125,000, excluding lot, landscaping and furnishings.

EQUIPMENT: The house is completely air conditioned. Air supplies are in the floor below the windows. Kitchen and baths have additional exhaust fans. There is a built-in intercom and sound system.



PHOTOS: ART FILLMORE



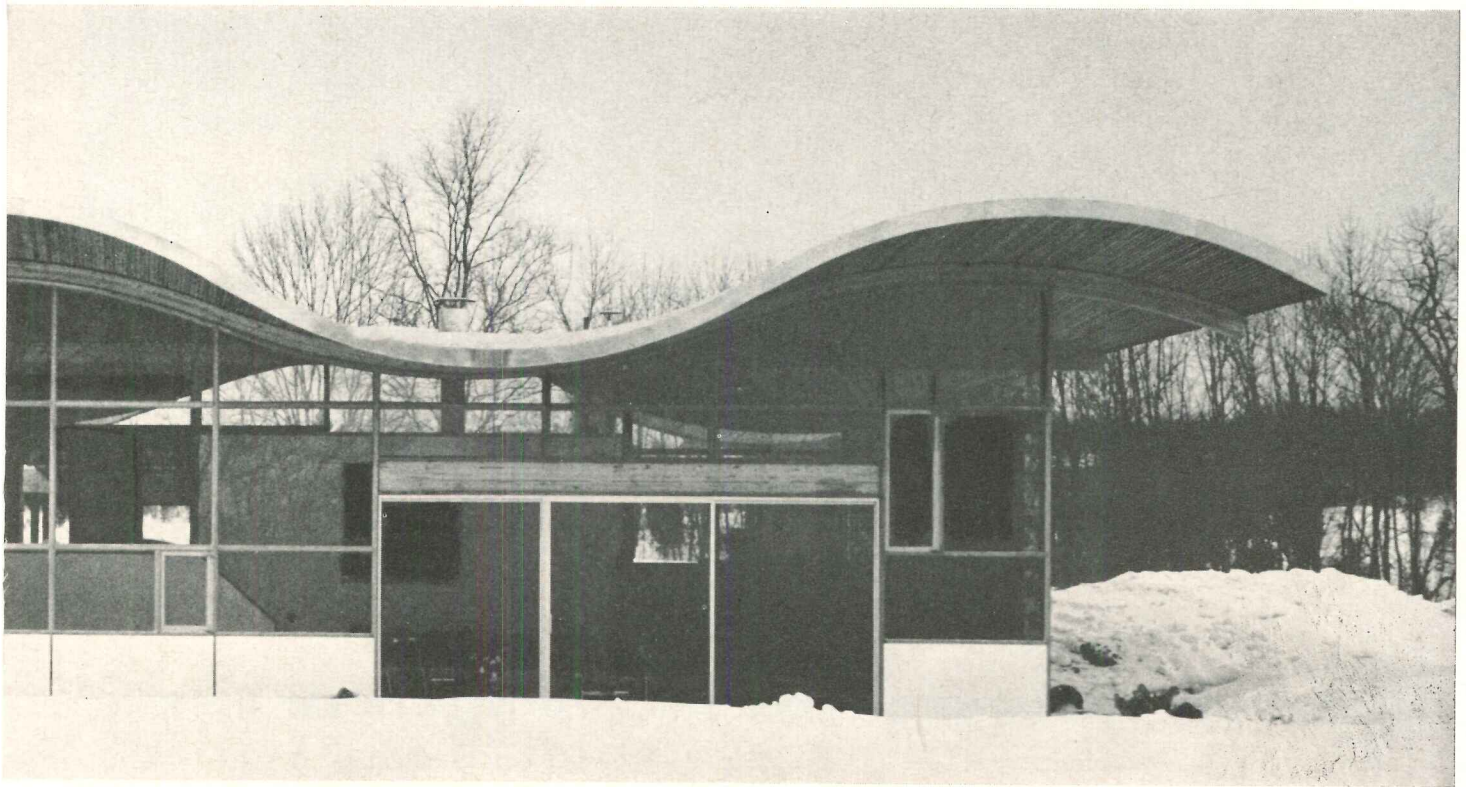


A SOARING DOUBLE CONOID ROOFS A NEW JERSEY ARCHITECT'S HOME

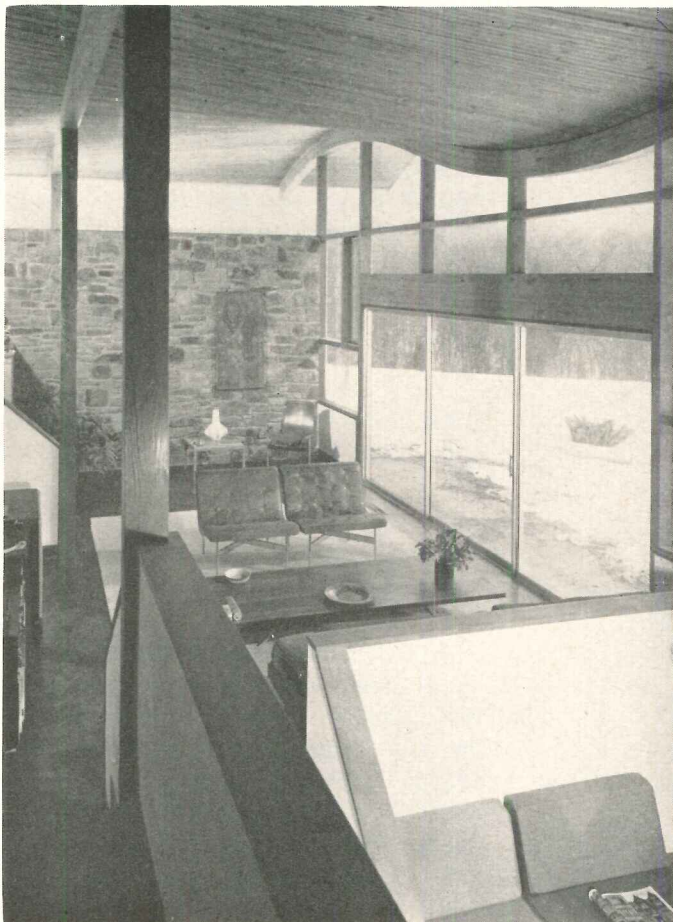
This fanciful house achieves quite an air of distinction from its eye-catching double conoid roof. And the setting is quite appropriate to give such a scheme full play. The house is situated on a ten-acre site that has woods, fields and streams, and is far out in the country. The actual building site is set back about 800 feet from the road.

The double conoid roof is formed by two identical laminated wood beams on either of the long walls of the building. One is used upside-down in relation to the other. (A peak on one side is a valley on the other.) A straight laminated beam is at the center. The roof deck is made of white fir (2 by 3's) nailed to each other with 16d spikes 24-in. o.c. and to the beams with 20d spikes. The roof is freestanding, supported by wood posts.

Full expression of the roof shape is emphasized by running all partitions only to a height of 7 ft, and keeping all of them non-bearing. Acoustic privacy is achieved by sheets of glass spanning from the partition tops to the roof decking. Stone walls give bracing and texture to the stucco and glass panels.



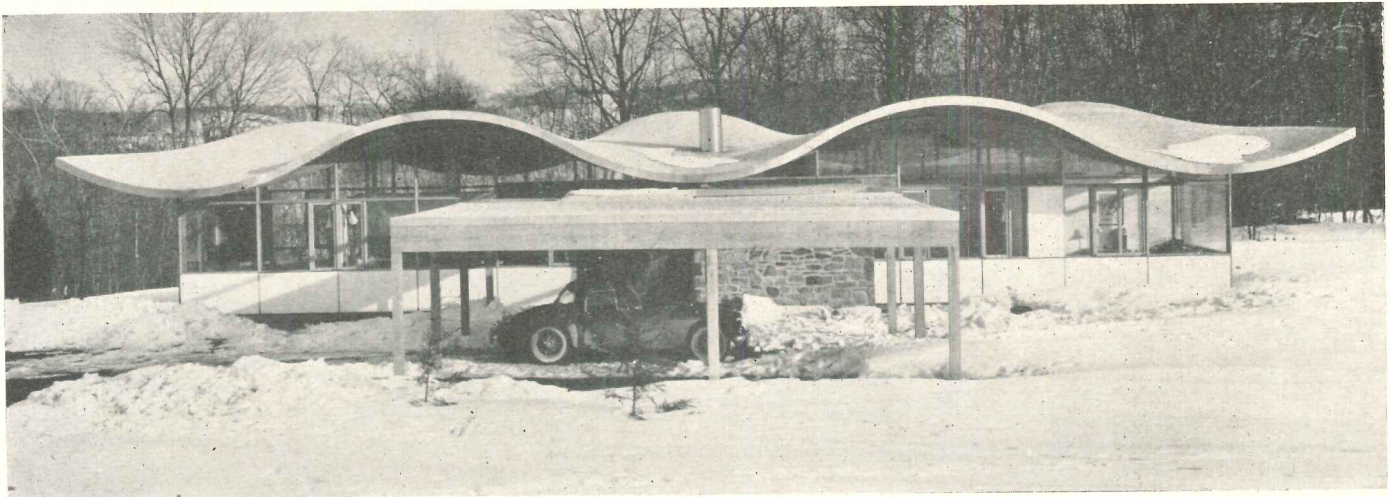
PHOTOS: MARC NEUHOF



JULES GREGORY, ARCHITECT

*Residence for Jules Gregory
Lambertville, New Jersey
Karl Roos, Building Contractor*

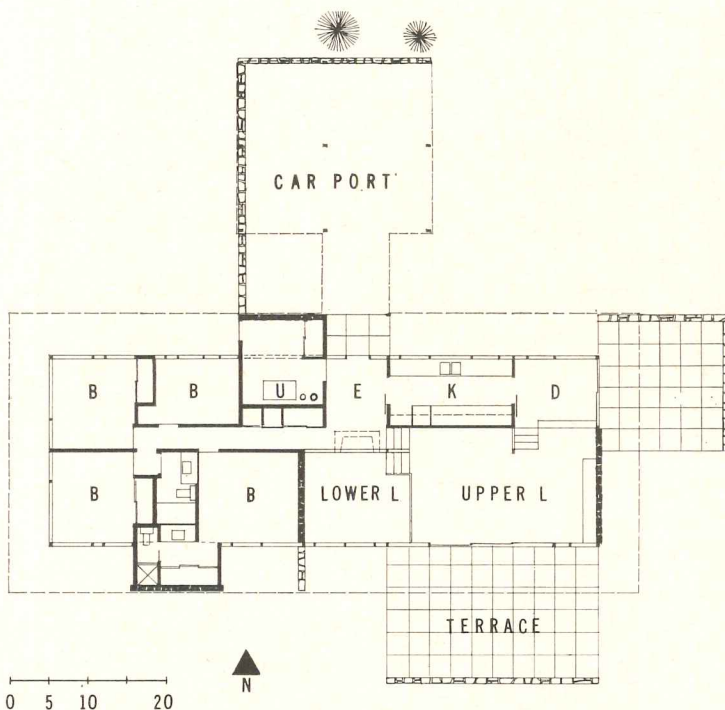
PHOTOS: MARC NEUHOF



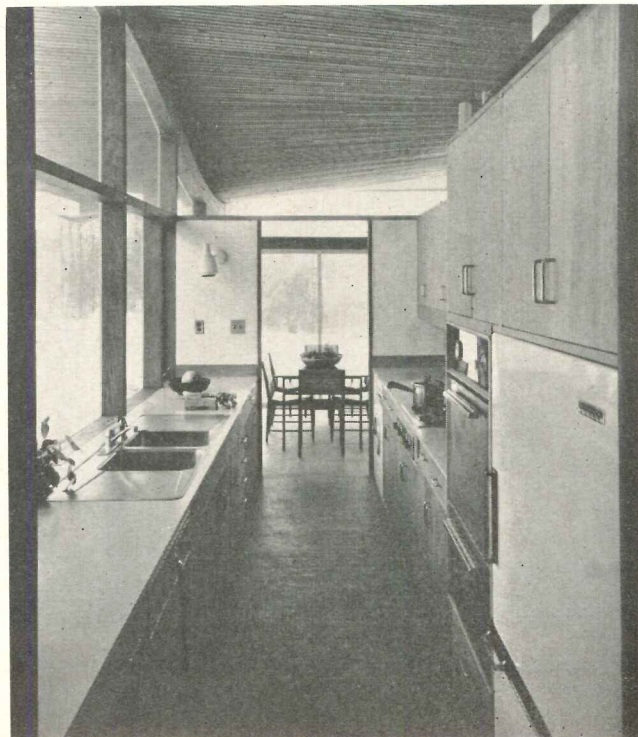
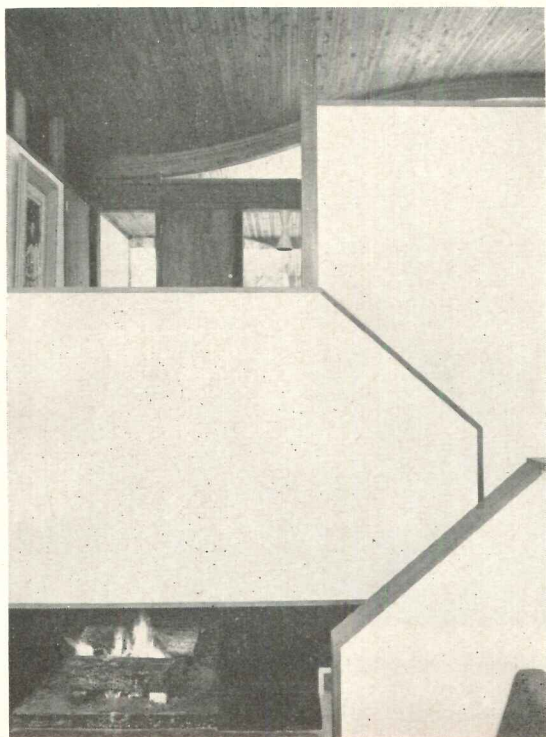
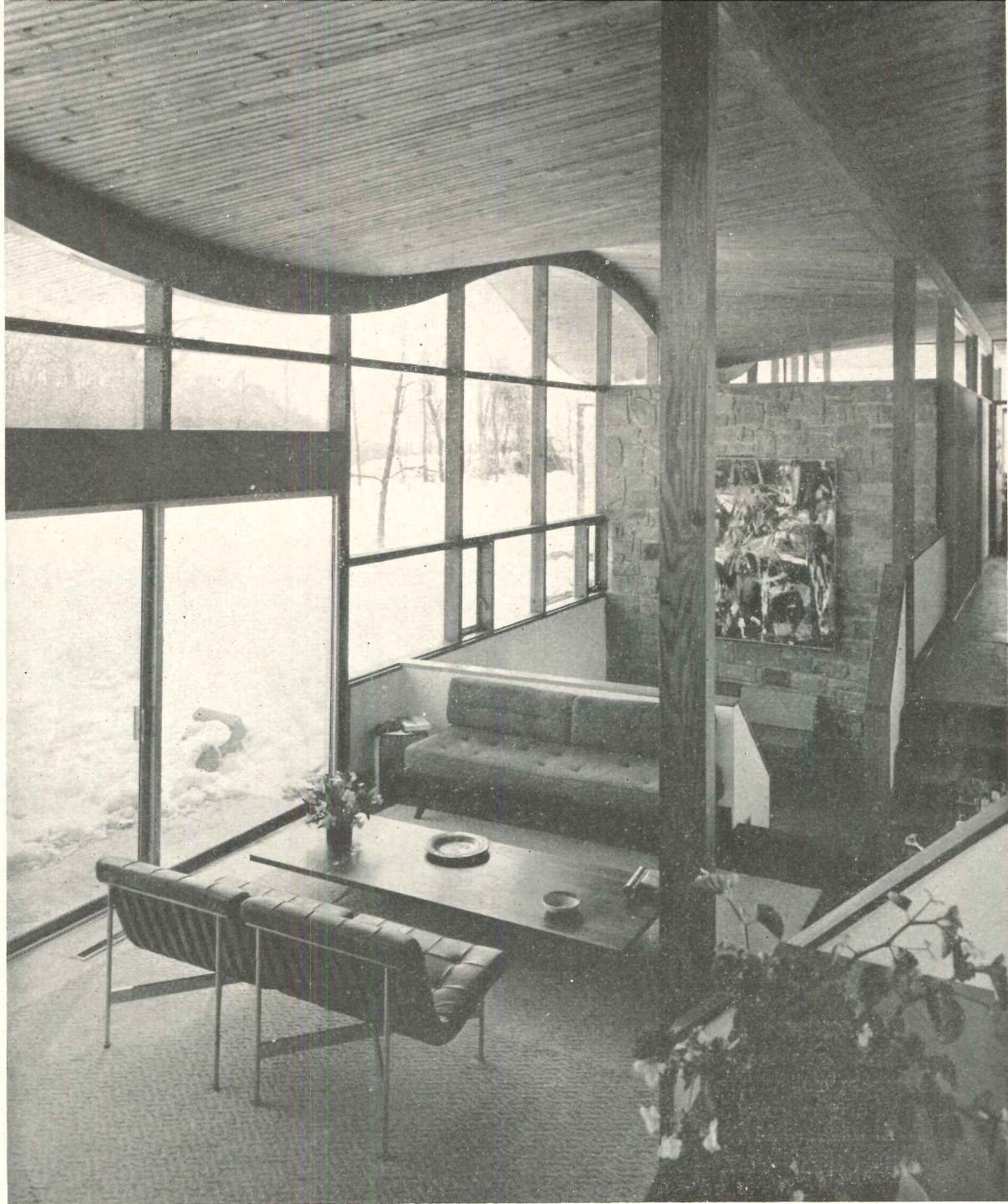
ROOF CONTOURS DRAMATIZE INTERIOR SPACES AS WELL AS THE EXTERIOR

THE PLAN: A slight drop in the site is used to give a multi-level scheme, with ceiling heights varied to the size of the rooms. Entrance, bedrooms, and kitchen-dining areas are on one level, with a step down to the main living area. Below this is a sort of contemporary inglenook with a fireplace. The flue from the fireplace passes underneath the entry slab (5 ft above the floor of the lower living room) and rises through the utility room adjacent.

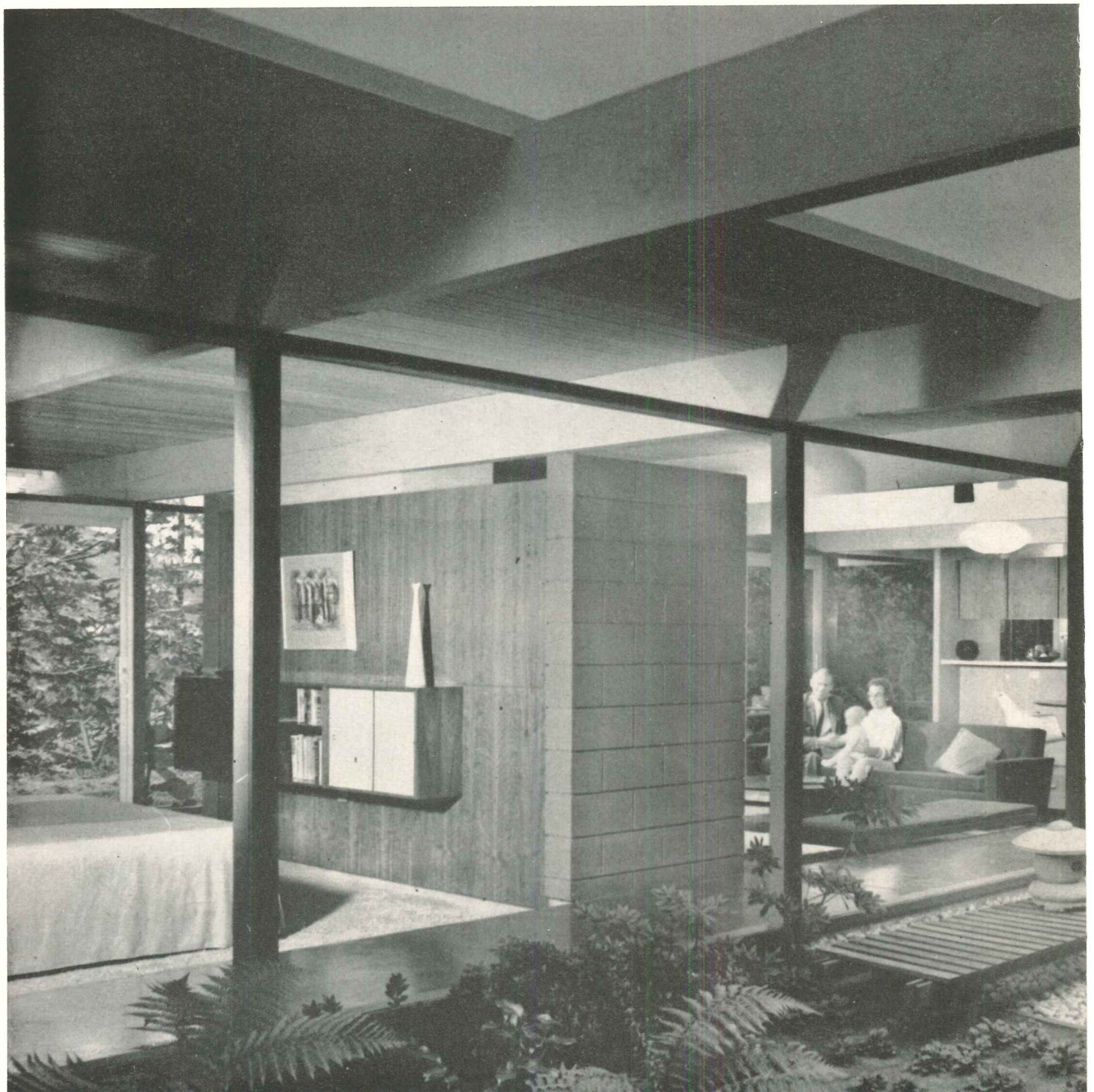
THE COST, excluding lot, landscaping and furnishings was about \$30,000.



FINISHES: Exterior walls are stucco and stone. Interior walls are stone and plaster. Floors are wood mosaic or tile. Doors are flush-panel plywood. The roof decking is covered with 1-in. insulation to receive the built-up tar and gravel roofing. Kitchen cabinets are plywood. The heating is by a warm air system.



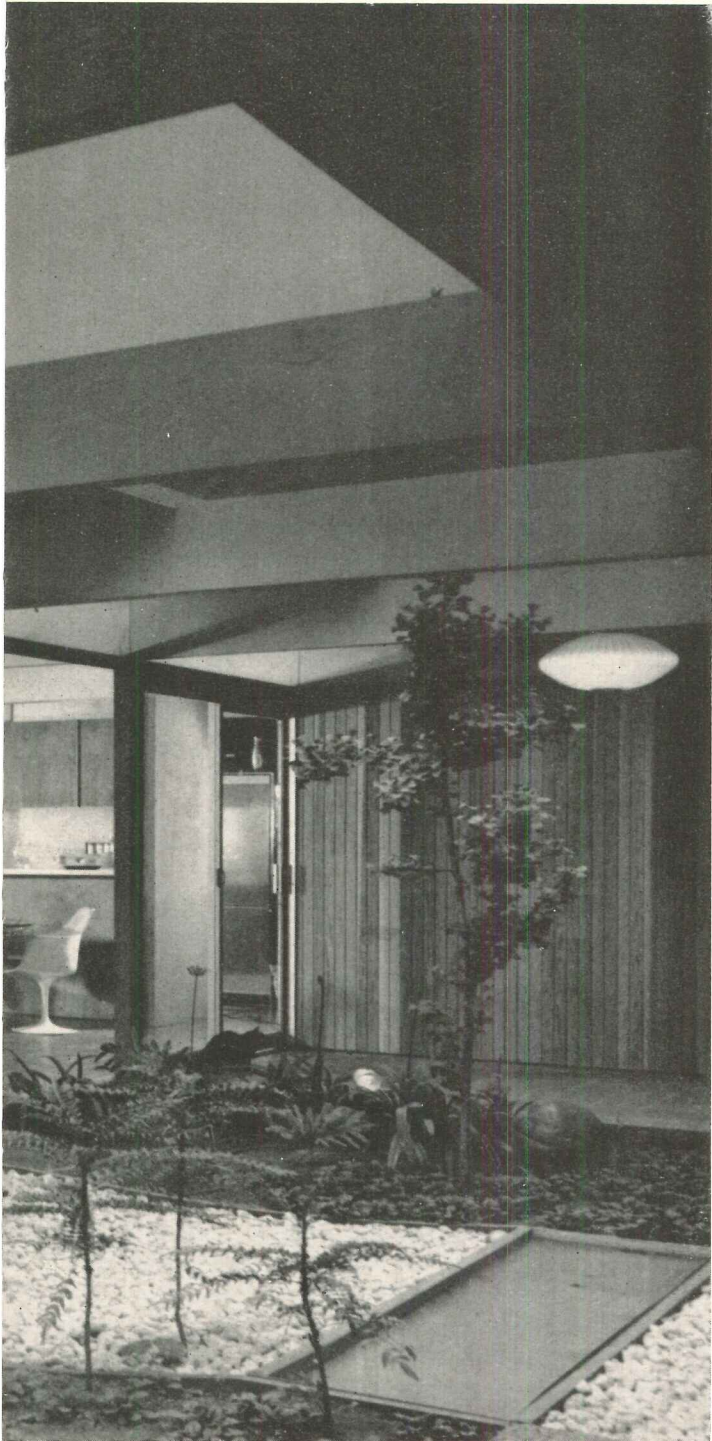
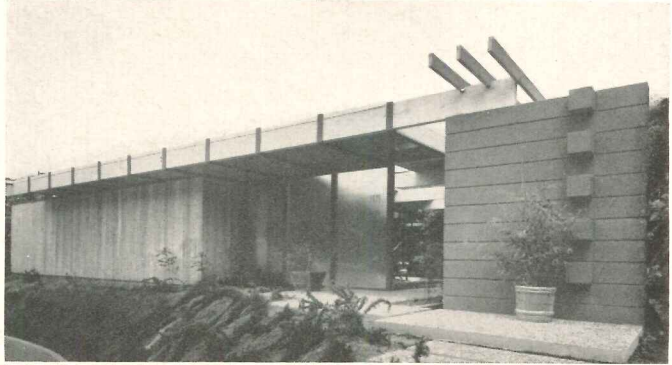
LARGE SPACES ON A SMALL BUDGET



PHOTOS: ERNEST BRAUN

BUFF, STRAUB & HENSMAN,
ARCHITECTS

*Residence for Mr. and Mrs. Porter Jared
Nichols Canyon, Los Angeles, California
Emmet Wemple, Landscape Architect
Mr. Jared, Building Contractor*

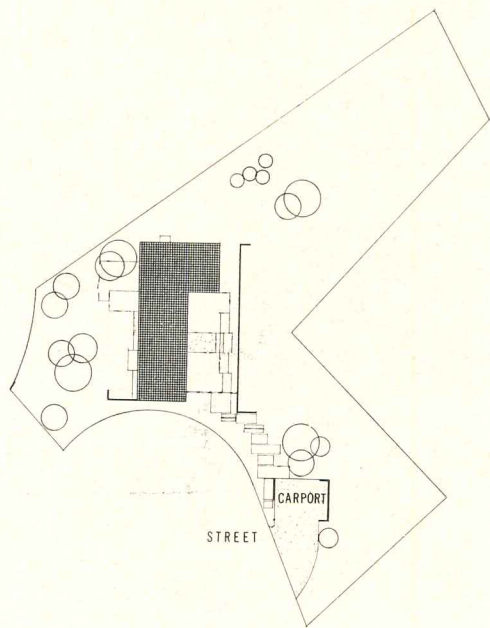


The clients have been long-standing fans of architecture as an art, and knew what they wanted in their own house: a sense of spaciousness, lots of glass and open views, sensitive, "pure" design. Being young, they were also committed to a budget.

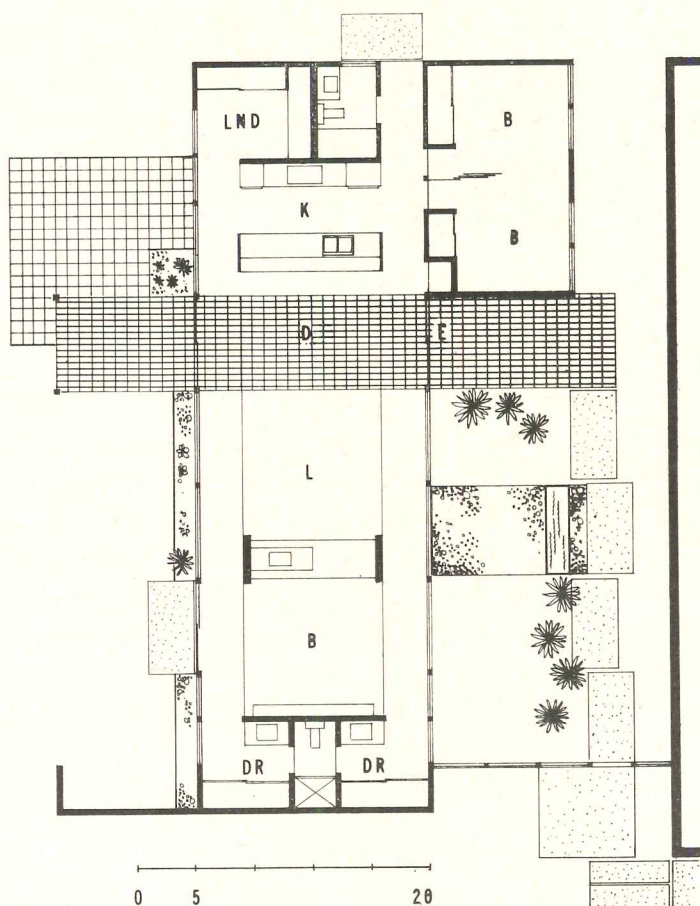
The desire for lots of glass was satisfied by making both sides of the living area and master bedroom entirely glass—looking, on one side, onto an enclosed court, and on the other side onto a valley below. The sense of spaciousness was achieved without sacrificing an adequate separation of functions—the major separation was effected by dropping the level of the living room floor; secondary separations were effected visually, by defining the areas with varying floor textures.

Bedrooms for the family's two small children are isolated in one corner of the house; the common partition is composed of sliding panels, allowing the rooms' conversion to a playroom during the day.

Budget needs were met at a cost of \$20,000.



VISUAL SPACE EXTENDED BY VIEWS
IN ALL DIRECTIONS, INSIDE AND OUT



STRUCTURE: The Jared house is built on a lot which, when acquired, had an existing cut and resultant "shelf," which obviated the necessity for any further site work, though a retaining wall, enclosing the garden, was required. The foundation is concrete, the framing fir timber. To integrate visually the basic structure with the retaining wall, the beams are carried out to "reach out and grab it."

The siding is redwood.

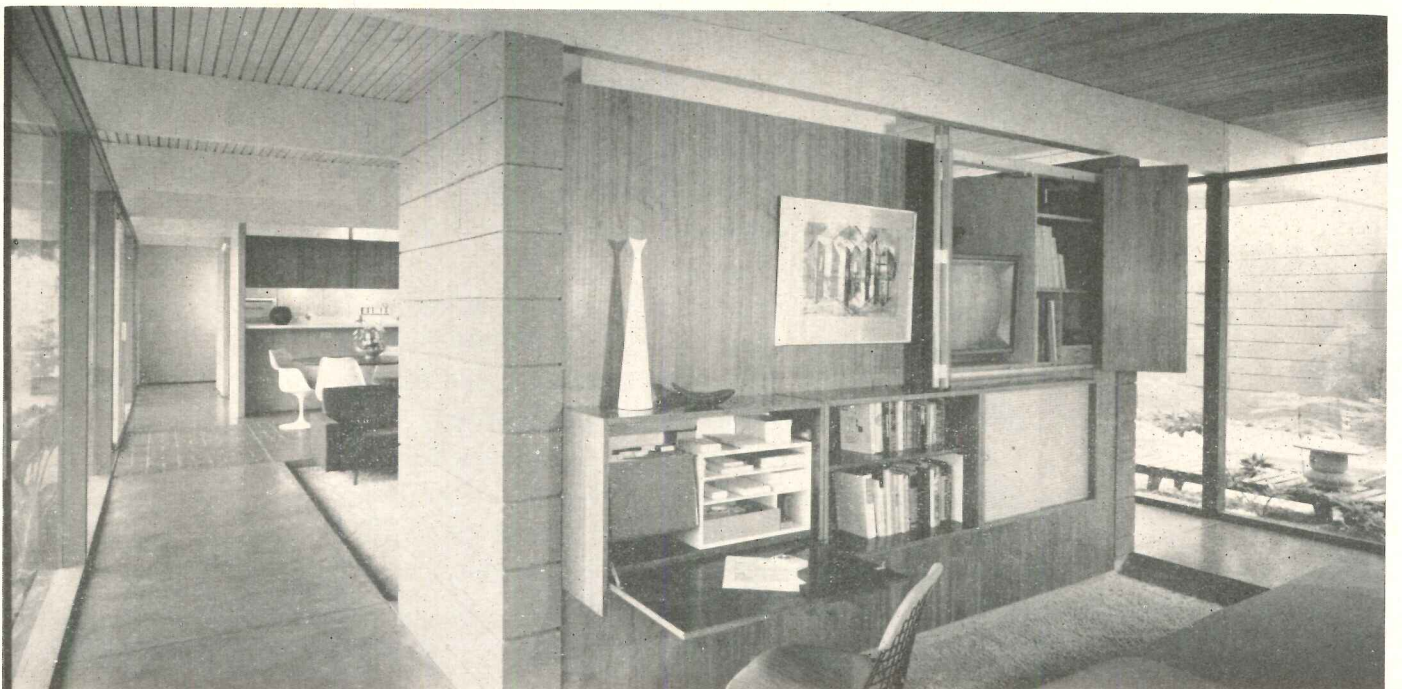
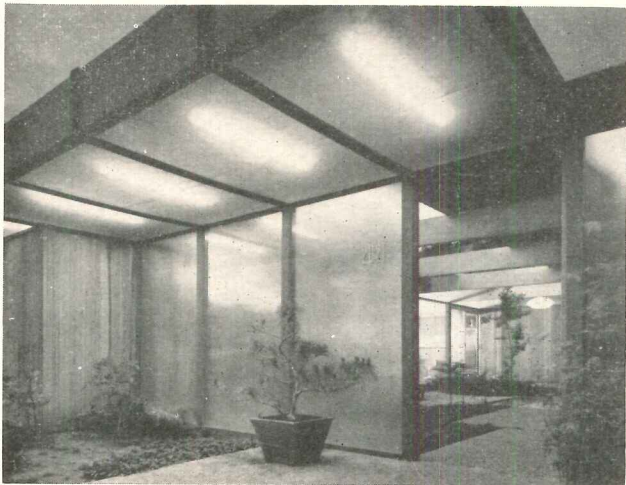
FINISHES AND UTILITIES: Floors in the living area, where not exposed concrete, are carpeted. In the playroom, they are finished with cork; in the kitchen with linoleum, in the bathroom with vinyl. Walls are of plywood and fir strip paneling.

Walnut cabinets in the dining area are custom-built; the counters in both kitchen and bathrooms are surfaced with laminated plastic. Cabinets partitioning living room and master bedroom include niche for revolving television set, permitting viewing from either side.

Heating is supplied by a radiant heating system.



PHOTOS: ERNEST BRAUN



GOOD DESIGN ON A \$14,500 BUDGET

JOAN & KEN WARRINER OF
WYKE & WARRINER,
ASSOCIATED ARCHITECTS

*House for Mr. & Mrs. K. L. Warriner Jr.
Sarasota, Florida
Thomas Cosentino, General Contractor*

Two young architects could hardly have proved their professional competence more handily than the owners of this small house, whose apparent spaciousness was achieved at a cost of only \$14,500.

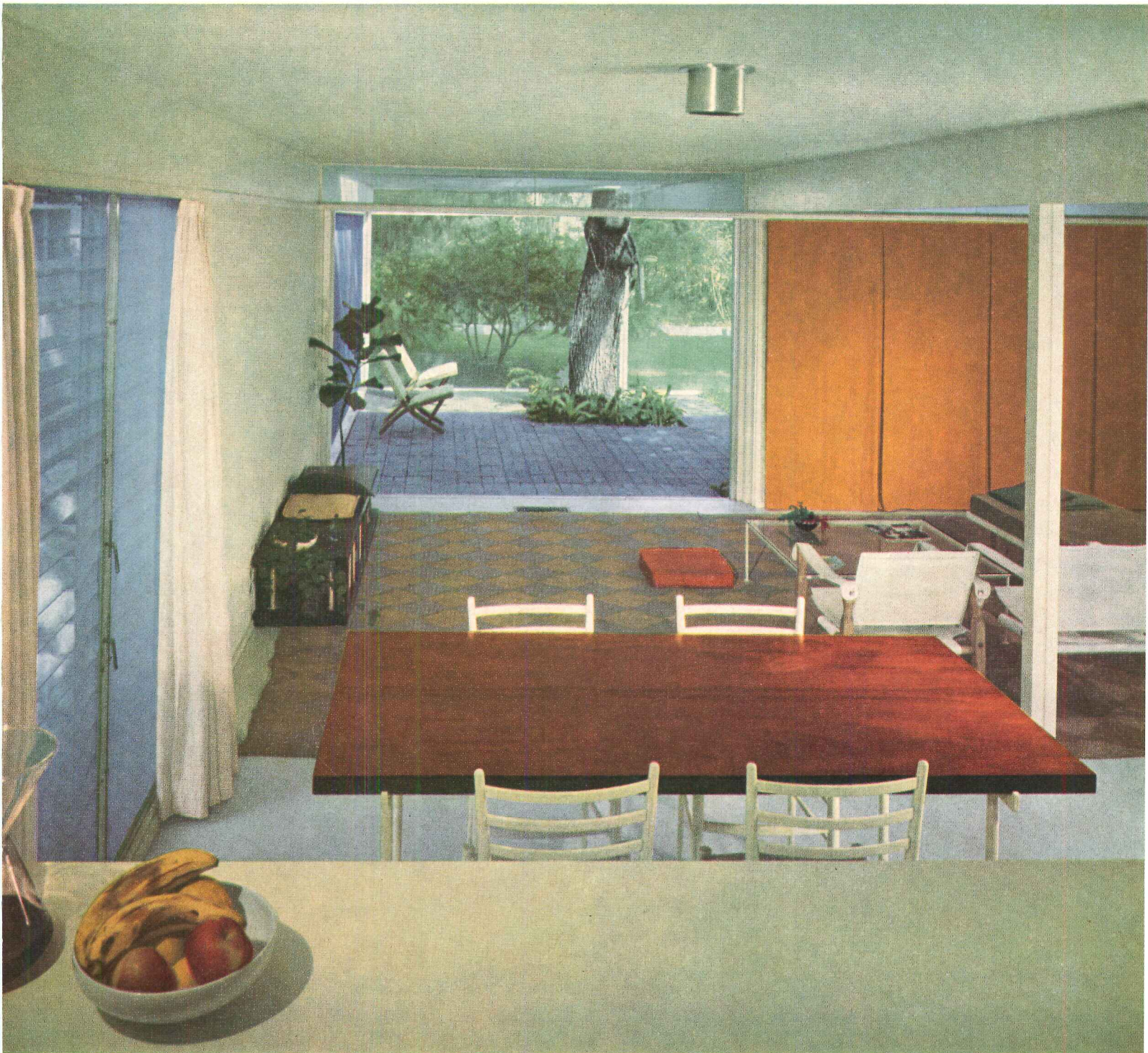
This illusion of more space than is actual is effected by a sense of order, both visual and functional, and by carefully thought out changes of pace and viewpoint.

Visually, this sense of order was established by fencing in the site at the front and on both sides. Although the house does not greatly resemble the other houses in an already settled neighborhood, the horizontal texture of the gray cypress fence does create a link with the siding of nearby houses.

Functionally, extra space was obtained by allowing some areas to accommodate more than one set of uses—for example, the large children's bedroom doubles as a playroom.

The visual "pace" ranges from the sheltered, rather reserved, entrance, to the dramatic flood of light from the monitor over the hall, to the ever-present view of the outdoors.

PHOTOS: JOSEPH MOLITOR





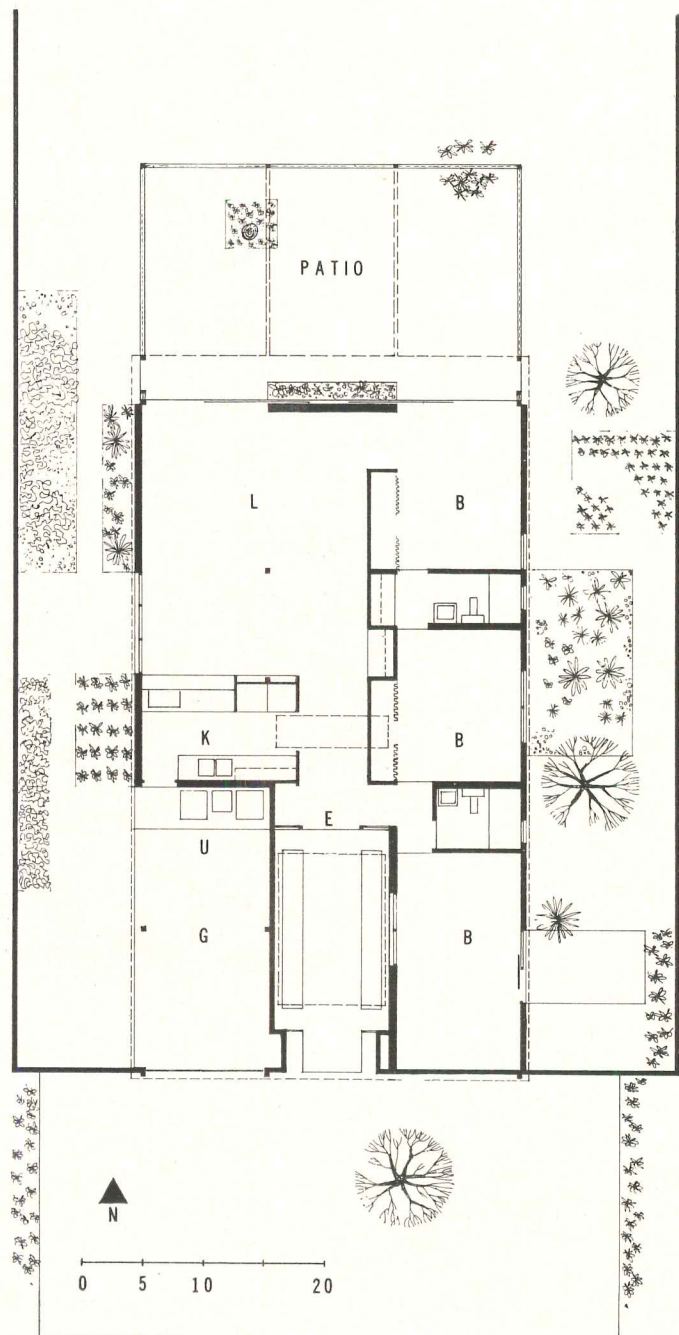
SPACE, VISUAL AND FUNCTIONAL,
GAINED BY FREE ACCESS
FROM ROOM TO ROOM,
FROM INSIDE TO OUTSIDE

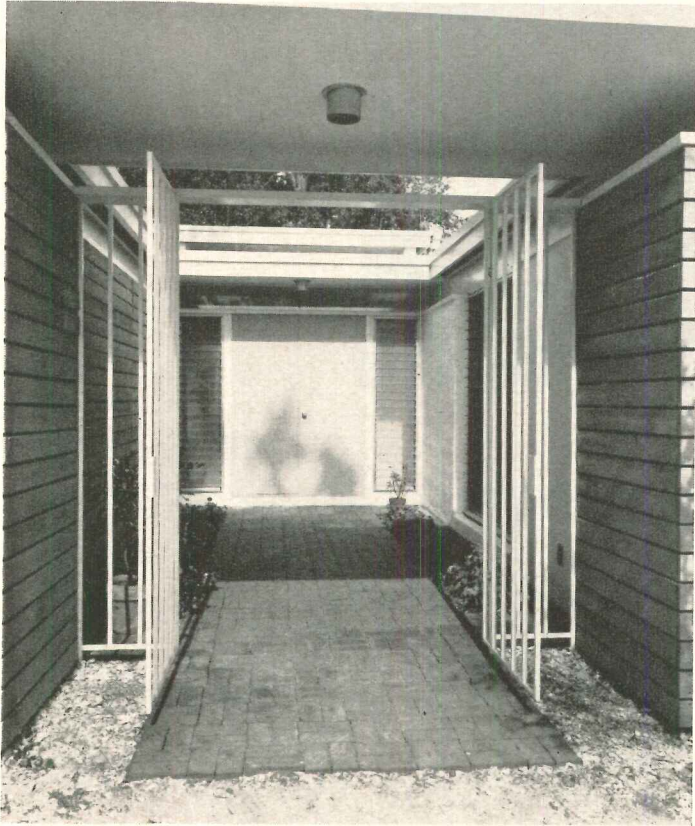
PLANNING: The Warriners are a family of four. The long narrow-lot—55 ft by 140 ft—and the proximity of houses in a built-up neighborhood offered special problems of privacy. The enclosing fence ensures most rooms of privacy as well as of views and access to the outdoors—to the small gardens on either side, and to the large screened Florida room at the back. This intimate relation of inside and outside also allowed the house to borrow extra space from the outdoors.

Though the plan is not much like the “shotgun” house often employed in the South on similar sites, something of the older solution is recalled in the use of the entry and half of the living room for traffic from front to back of the house. This same area doubles as play space and work space; a sewing machine is concealed in a niche in the closet wall.

STRUCTURE: The foundation is a 4-in. concrete slab, with reinforced concrete footings, on compacted, termite-treated fill. Frame is wood post-and-beam. Exterior walls are concrete block sprayed with white stucco, and rough-sawn cypress stained with gray creosote. Floors are white terrazzo.

COST: \$8.45 per sq ft.







KEYES, LETHBRIDGE & CONDON,
ARCHITECTS

*Sponsored by The "Hoo-Hoo Club"—a fraternal group of
lumbermen, in cooperation with the
National Lumber Manufacturer's Association
Mr. & Mrs. Stanley Hoffberger, Owners
Robert W. Lowe, Contractor
Toshiyuki J. Maeda, Landscape Architect*

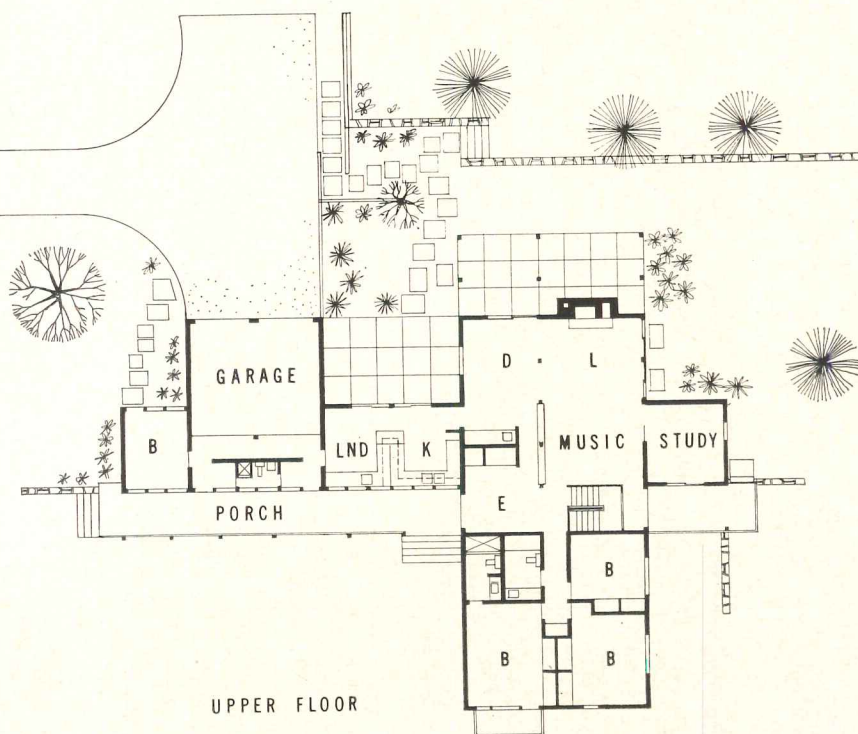
WARMTH AND COMFORT ARE MODERN

Architectural delight, as this house shows, does not depend on the unique or the novel. It can result at least as forcibly from a sensitive approach to materials and an attention to meticulous finish. These qualities have a validity of their own, and may tend, as they do here, to diminish the argument of "traditional" versus "modern."

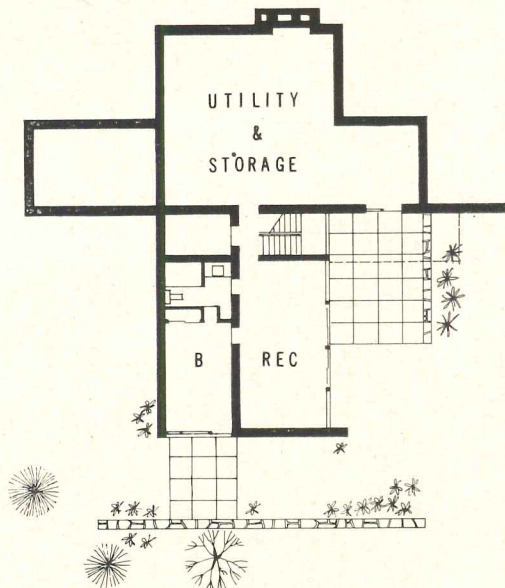
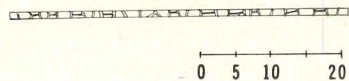
Sponsored by a group of lumbermen to display the attractions of wood as a building material, and bought before completion by an admiring young couple, this house reflects some long-standing conventions in American building—its wood structure, its comfort, its self-effacement in its setting. At the same time, there is no doubt that it is modern. This is evidenced by the planar appearance of broad surfaces, by the hospitality of its open plan, and by the perceptive use of materials for their own sakes.



VARIETY AND SIMPLICITY MADE COMPATIBLE BY IMMACULATE DETAILING



UPPER FLOOR



STRUCTURE: The basic structure of the Hoffberger house is wood stud framing. Subfloors and the sheathing of the outside is 1/2-in. plywood. Siding is redwood board-and-batten.

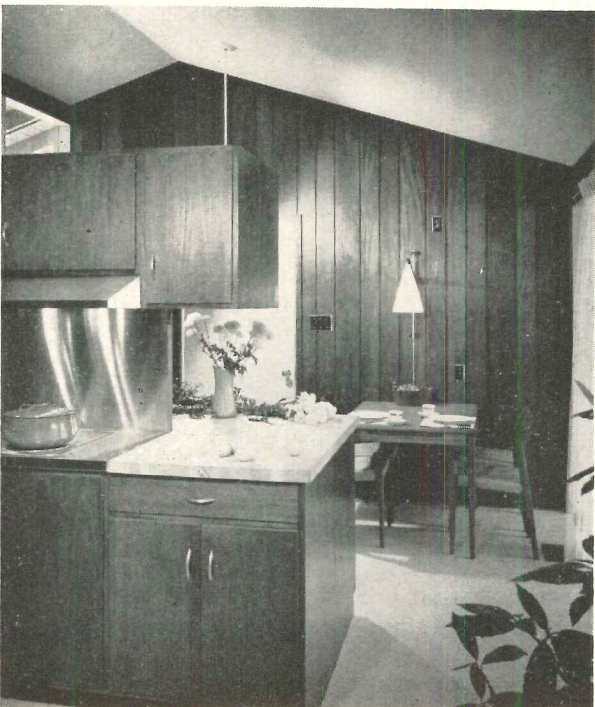
The house is covered by a ventilated roof, which has an air space between the cedar shakes and the inner sheathing; the sheathing is covered with mopped-on, asphalt-impregnated paper, topped with a thin sheet of reflective metal.

INTERIOR FINISHES: The floors in the living areas are pegged, random-width oak boards; in the bathrooms, floors are ceramic tile, in the kitchen vinyl, and in the recreation room wood block.

Most of the walls are wood-panelled—birch plywood in the living room, furniture-finished mahogany in the study, hemlock in the recreation room and mahogany in the kitchen. Exceptions to this general rule are the bedrooms, finished with plaster, and the recreation room with its one wall of exposed brick.

Ceilings are pine in the living and sleeping areas, reinforced plastic screen in the bathrooms, plaster board in the kitchen and acoustical tile in the recreation room.

COST: \$78,000, including architects' fee.



PHOTOS: ROBERT LAUTMAN

MERRILL, SIMMS & ROEHRIG,
ARCHITECTS

*Residence for Mr. & Mrs. Kenneth W. Roehrig
Honolulu, Hawaii*

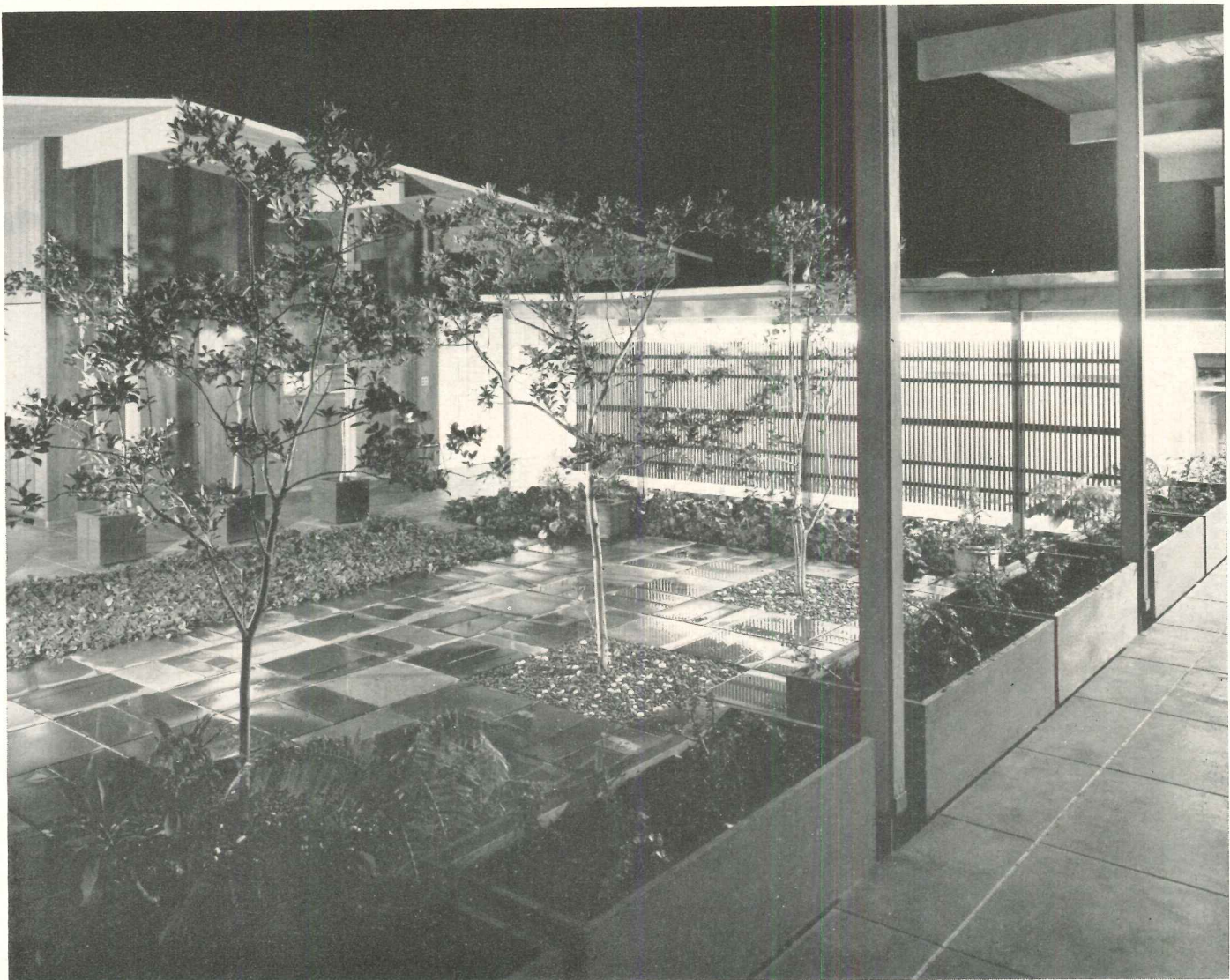
Kaichi Awaya, Structural Engineer

Gene Drane, Electrical Engineer

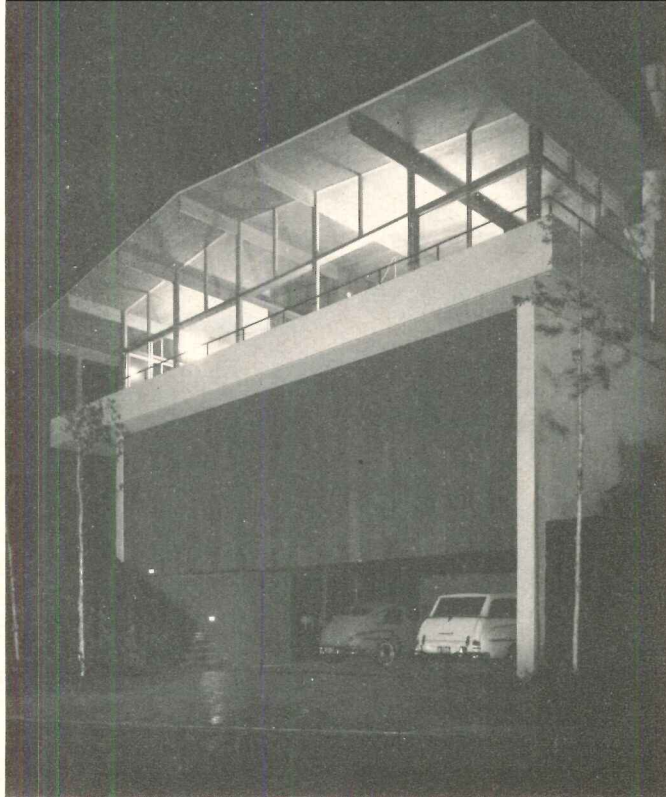
Bert Kanzaki, Contractor

Thompson & Thompson, Landscape Architect

A NOVEL HILLSIDE HOUSE FOR HAWAII



PHOTOS: WILLIAMS PHOTOGRAPHY

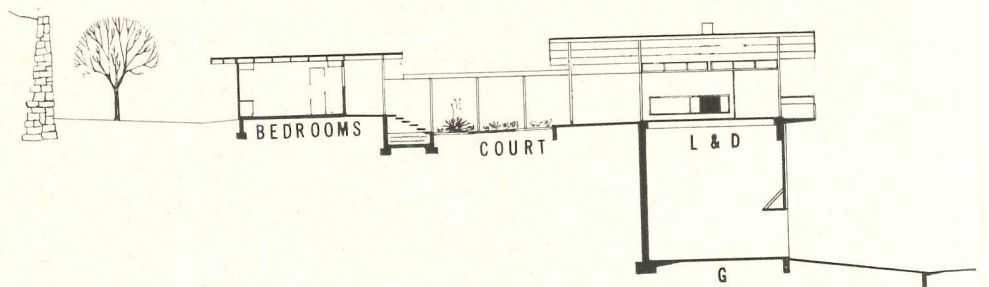
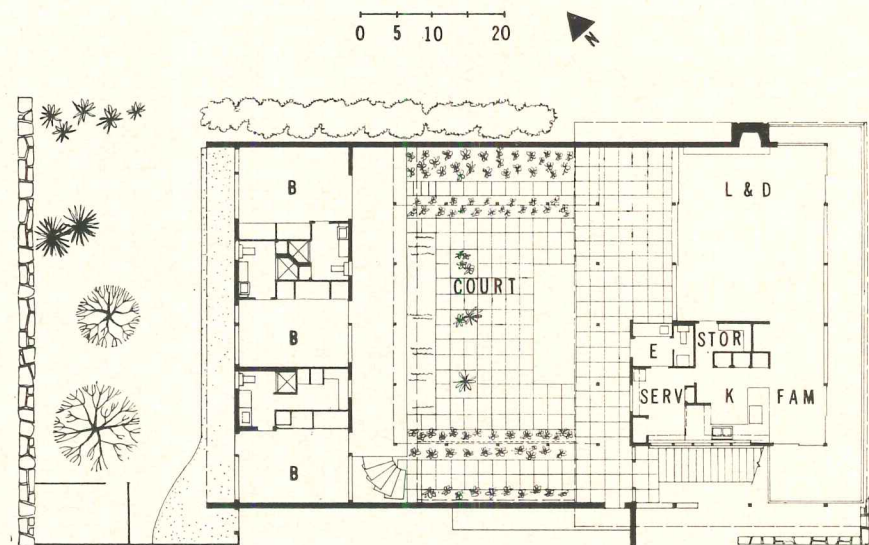


Code restrictions, a steep lot, and a view combined here to effect an unusual design for a hillside house. The local building code requires a five-foot setback at the sides of houses, plus six inches for 100 sq ft over 1,000. A twelve-foot setback is required at the front. The Board of Health further requires a 10-foot setback at the sides for a two-story building. The lot is 60 feet in width, 130 feet deep.

Some planning ingenuity made it possible to use the minimum setbacks. The lowest grade level of the hillside was maintained 12 feet back to the building line, creating a shallow drive and parking area. On the high part of the lot, a "one-story house" was devised, with one-hour fireproof construction at the sides. Thus, only five-foot setbacks were required at the sides, and the view over Oahu was enhanced by the elevation of the living areas. The height also adds privacy to the glass-walled rooms. The garage and storage areas set into the slope at the lower level give the façade an appearance of three stories. Space was left to provide a small future elevator (the larder area on the main floor.)

The saving in land allowed space for a central court or "garden room", plus a 30-foot private garden at the rear off the bedrooms to add to the inside living space.

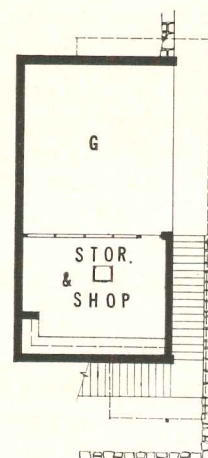
A BI-NUCLEAR PLAN SEPARATES LIVING AND BEDROOM AREAS

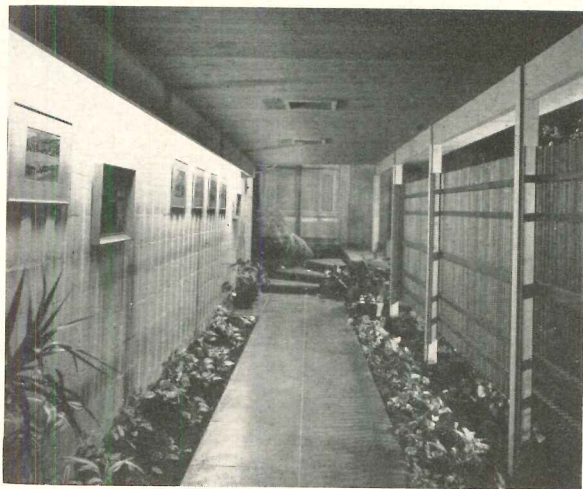
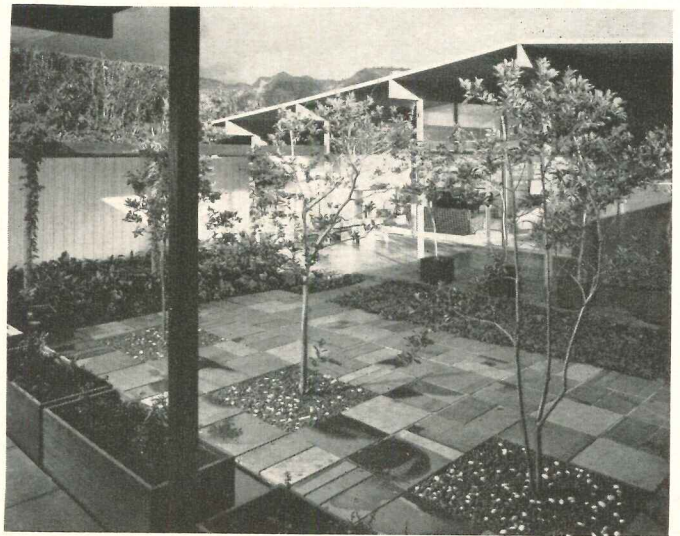
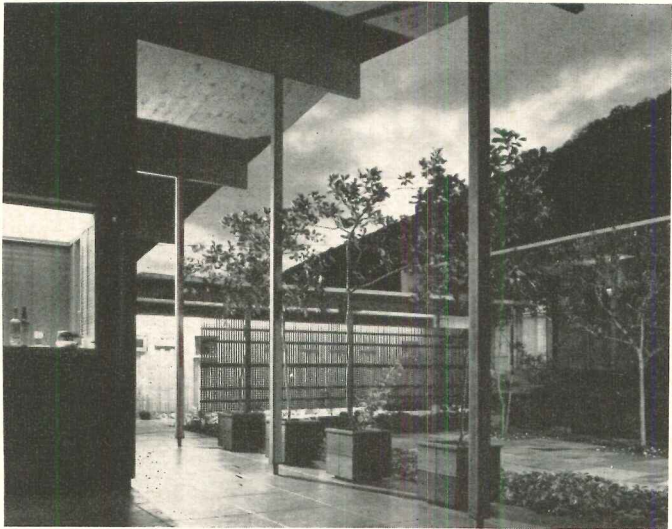


THE PLAN: Living and bedroom areas are actually in two independent structures, linked by an open, but covered, picture gallery—a very attractive possibility in the Hawaiian climate (see center photo at right). Walls at the sides are blank to keep privacy.

THE STRUCTURE: Beams and columns are select structural fir on concrete foundations. The roof is 2-in. striated wood plank, surfaced with crushed coral on a 5-ply membrane. Exterior walls are redwood. Interiors are finished with redwood, plaster board and structural tile. Floors are vinyl asbestos. All equipment is electric.

THE COST: About \$60,000, excluding lot, landscape and furnishings.





PHOTOS: WILLIAMS PHOTOGRAPHY





AN UNUSUAL PLAN FOR HOME PRIVACY

FRANK SCHLESINGER, ARCHITECT

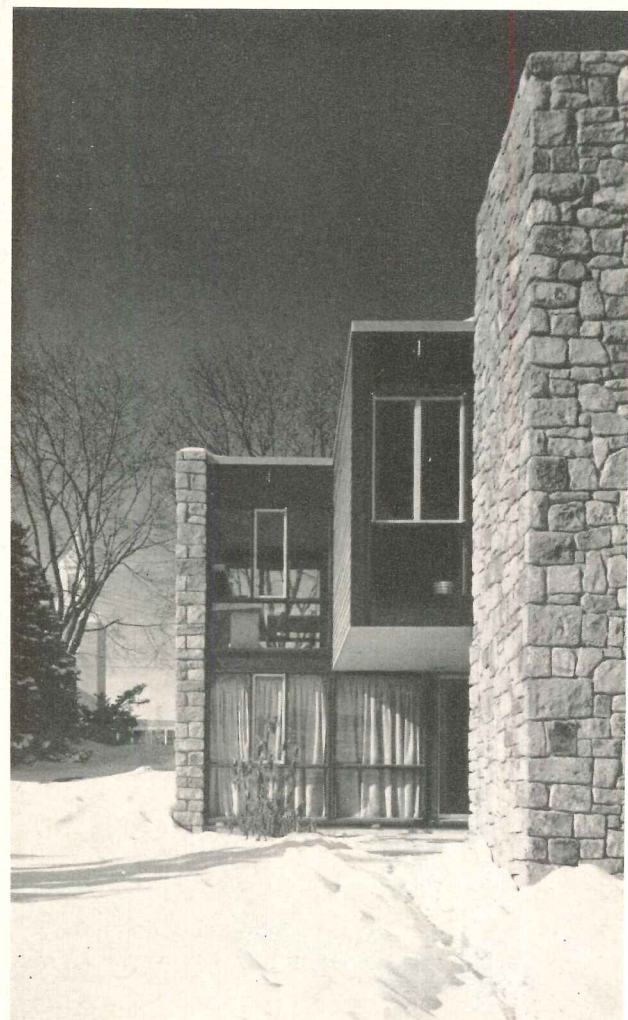
*Residence for Frank Schlesinger, Doylestown, Pennsylvania
Doylestown Building Co., Contractor
Jeanne Schlesinger, Landscape Architect*

A very different scheme has been developed to gain privacy in this Pennsylvania house. The site is a small, exposed corner lot in a typical residential neighborhood. The architect decided to build a two-story house that turned in on itself rather than look out toward non-existent views.

To accomplish this, the smaller utilitarian spaces required in the house (baths, kitchen, stairs, utility room, fireplace) were pulled out to the building's perimeter where they are enclosed by load-bearing masonry walls. The solidity of these walls screen the larger, open living spaces, which are organized around a two-story, top-lighted dining space at the center of the house (photo at left). In effect, the house has a "core" of space rather than of utilities. View windows are provided at the ends of the house (photo at right).

The plan uses a slope in the site to gain an entry at half-level. The lower floor is given over to children's areas and more active family activities, including kitchen and dining. The upper floor is principally the domain of the parents and includes living room, studio, master bedroom. The "well" permits some supervision of the lower level.

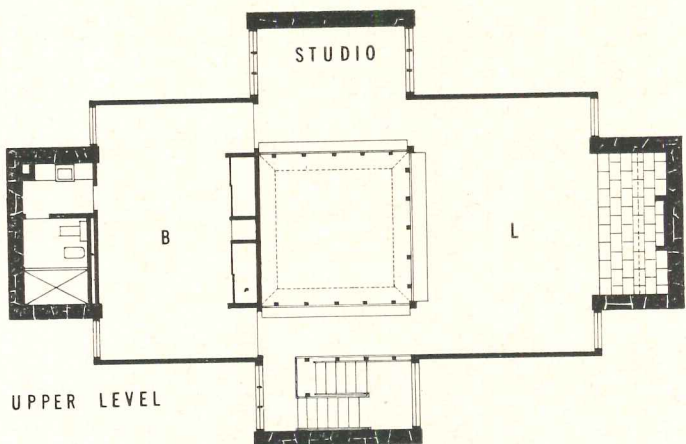
PHOTOS: MARC NEUHOF



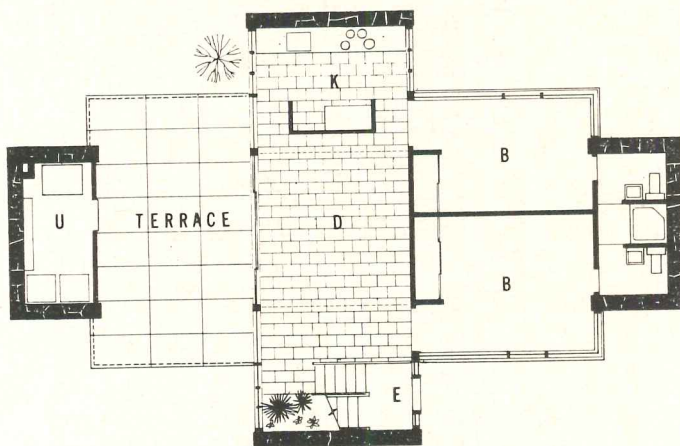
STRUCTURE USES PENNSYLVANIA WOOD AND STONE IN A DIFFERENT WAY

THE PLAN: Although very open, with spaces flowing together, the plan segregates activities, and provides a good degree of privacy. The windows and terrace on the lower level are masked from the street by a hedge.

THE STRUCTURE: As noted previously, all utility or service areas are housed in stone "pylons", which are finished with a silicone waterproofing and are exposed inside and out. The stone forms bearing walls. The rest of the structure is of wood frame, with cedar clapboards on the exterior.



UPPER LEVEL



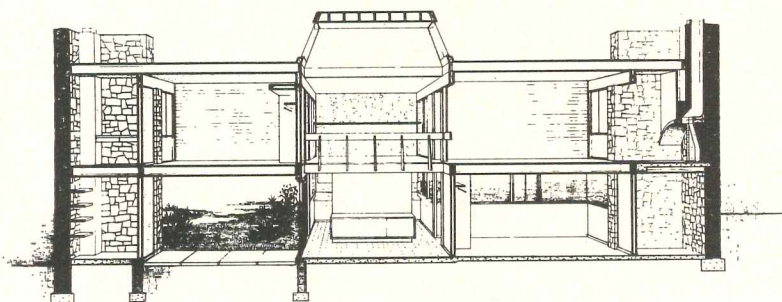
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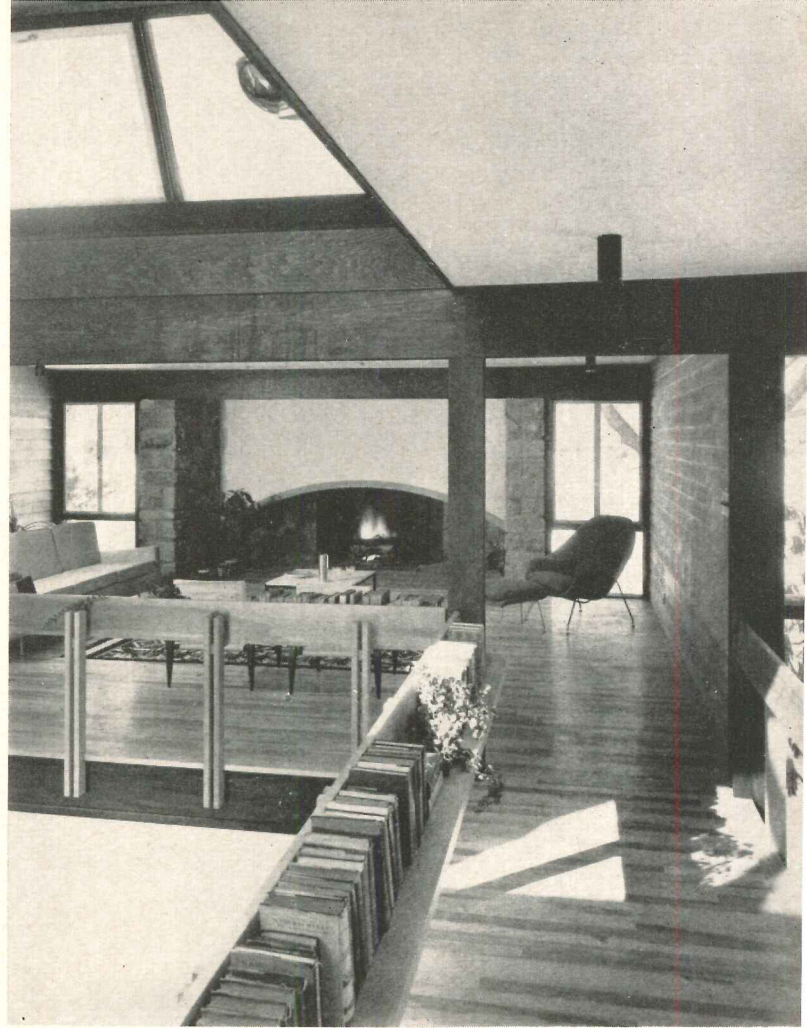


FINISHES: Interior partitions are wood stud, surfaced with clapboards or plaster. Ceilings are plaster, except in the kitchen, where fir is used. The roof is built-up. Floors on the upper level are birch; on the lower level, they are slate and vinyl asbestos tile. Sash throughout is aluminum.

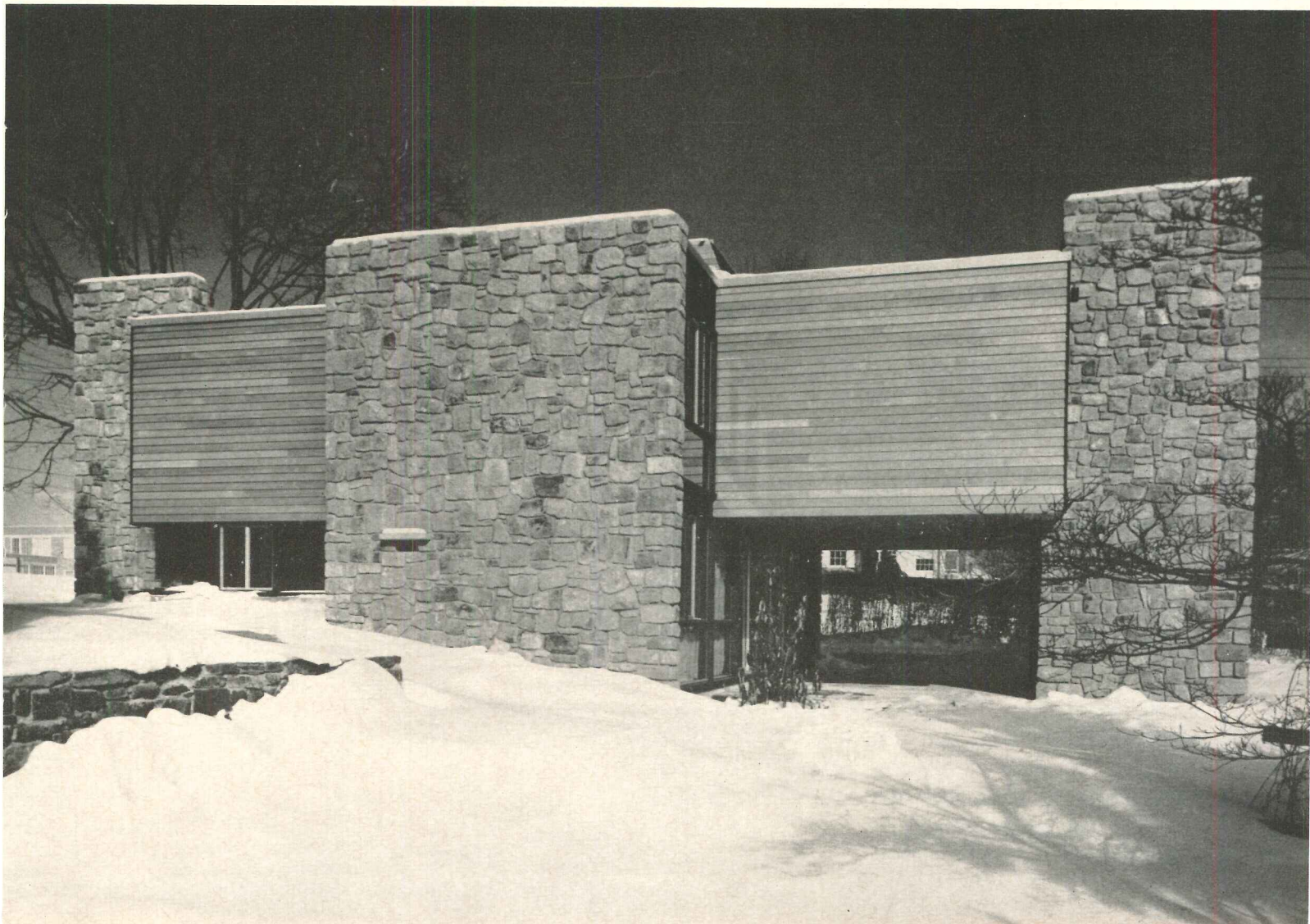
EQUIPMENT: Heating is by a radiant panel system, in the floor slab of the lower level, in the ceiling upstairs. The terrace has floor heat and glass walls for winter use.

THE COST: About \$35,000 without lot, landscaping or furnishings.





PHOTOS: MARC NEUHOF





SPATIAL VARIETY IN A SMALL HOUSE

THE ARCHITECTS COLLABORATIVE,
ARCHITECTS. ASSOCIATE IN
CHARGE: ALEX CVIJANOVIC

House in Norton, Massachusetts
H. Sargent, Swanson Construction Co., Contractor

An extremely varied and sophisticated handling of spaces has been packed into this relatively modest house. The design is dominated by a lofty, 1½-story living room. This area (shown on this page) is bright with daylight all day, and stands in sharp contrast to the adjoining low, intimate and darker den. The two areas are separated by an intricately designed fireplace which fully encloses the den, yet continues the sense of space (see photo next page).

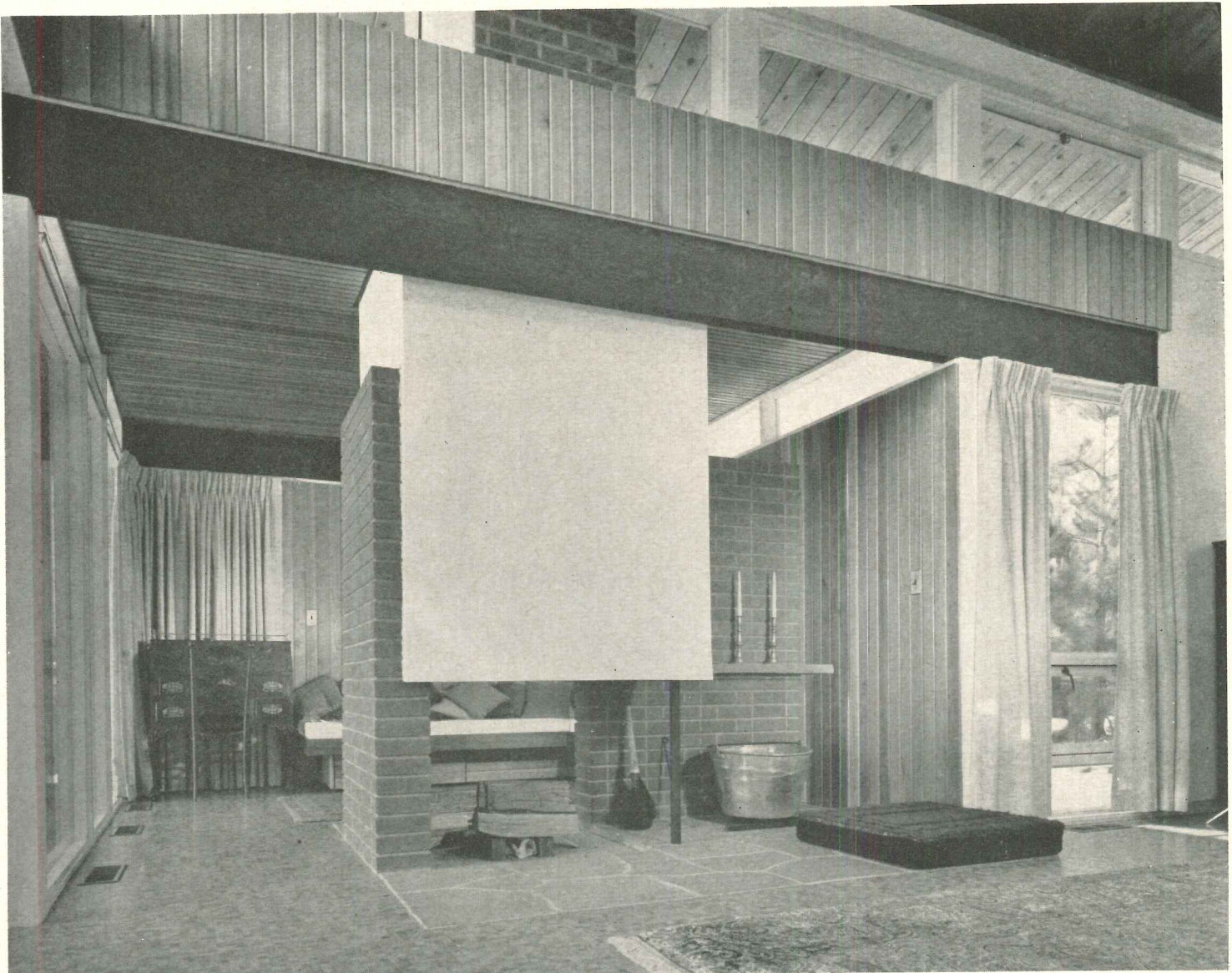
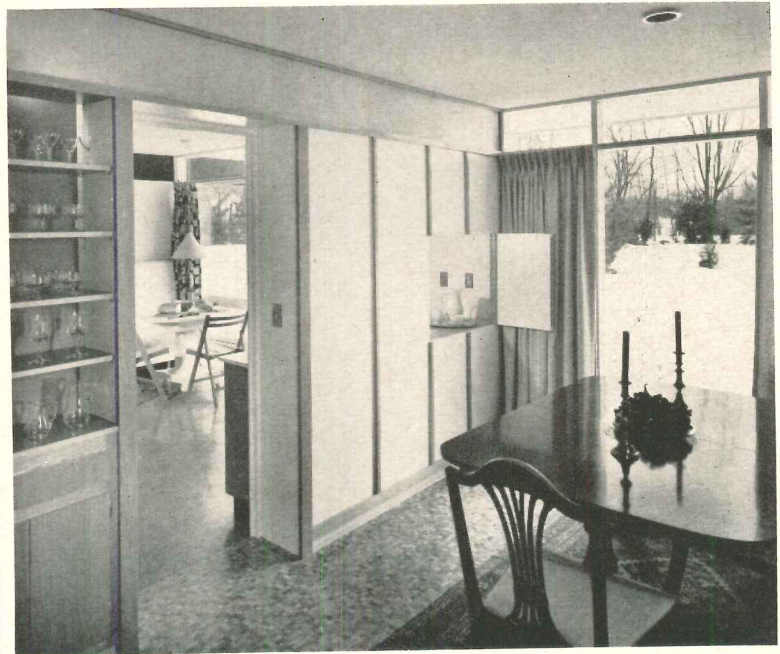
The den, in turn, is visually extended by a glass wall opening on a screened porch. All of these areas, and the dining room can be used together or as separate retreats. There is also a study for quiet work.

PHOTOS: JOSEPH MOLITOR



COLOR CONTRASTS DRAMATIZE STRUCTURE

PHOTOS: JOSEPH MOLITOR



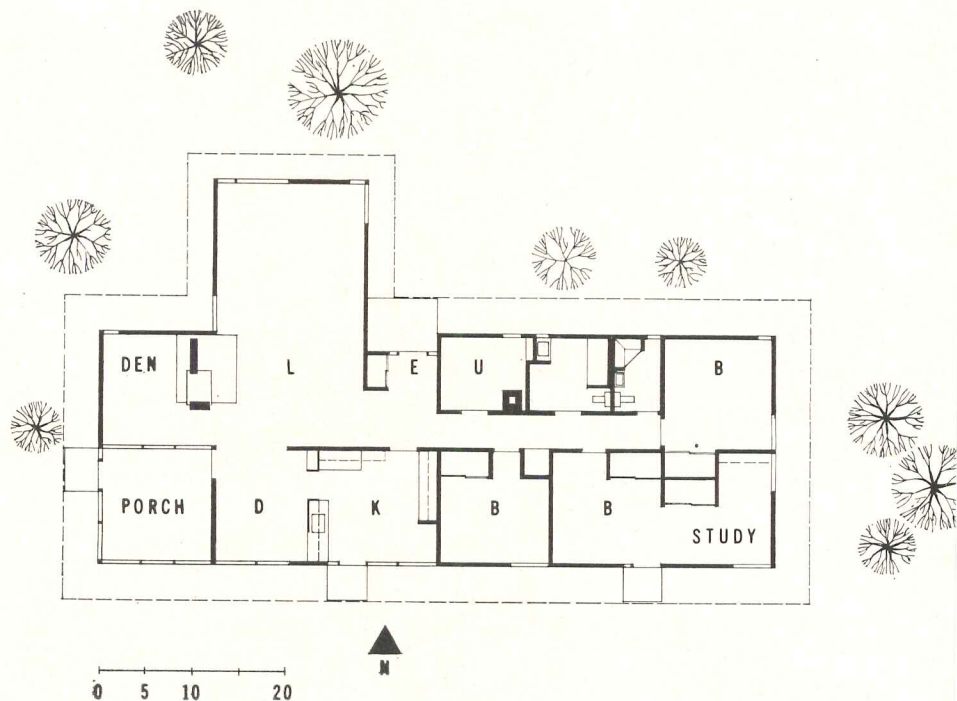


THE STRUCTURE: The frame is wood post and beam on a concrete foundation. Exterior walls are vertical red cedar with a clear finish. Eaves and window sash are painted white. The frame is a darker finish for clear contrast. Ceilings in living areas are 3-in. laminated cedar decking. Roofing is shingle and tar and gravel.

INTERIOR FINISHES: walls of living areas are painted dry wall and waxed vertical cedar. Baths have walls of tile and white-enameled hardboard; the kitchen is painted hardboard, lacquered cabinets. In general, great emphasis has been placed on the expression of natural wood finishes, both inside and out. An interesting new type of wood tile has been used throughout the house— $\frac{3}{4}$ -in. square tile laid on plywood subflooring.

THE COST of the house was approximately \$27,000.

EQUIPMENT: A two-zone heating system is provided by two horizontal warm air furnaces in the crawl space. There is a dishwasher, garbage disposer.



PHOTOS: BALTAZAR KORAB



SCULPTURAL SYMMETRY DISTINGUISHES DESIGN FOR INEXPENSIVE HOUSE

Appropriateness to setting is a hallmark of better contemporary design, and this house is an excellent example. The site is a 400 acre apple farm outside Detroit. The beautiful trees form a rigid gridiron pattern over the property. Outlying farm buildings are sheathed with wood siding. The terrain is relatively flat.

The strong, simple symmetry of the orchard is echoed in both the plan and the structure of the house; and all windows are placed for vistas down the long avenues. Yet by raising the house on a platform and by giving the design a strong sculptural quality, the structure acquires a highly individual air and serves as a focal center in the sea of trees. There is one rather unexpected asymmetrical element: the entrance is marked by an off-center pyramid of steps connected by a bridge to the square platform of the house.

Much of the strength of the design comes from the box-girdered roof, with its deep overhangs for sun protection. A little penthouse contains heating and air conditioning equipment and plenum, and provides bright clerestory lighting for the interiors. White-painted wood siding recalls that of the buildings on the farm.

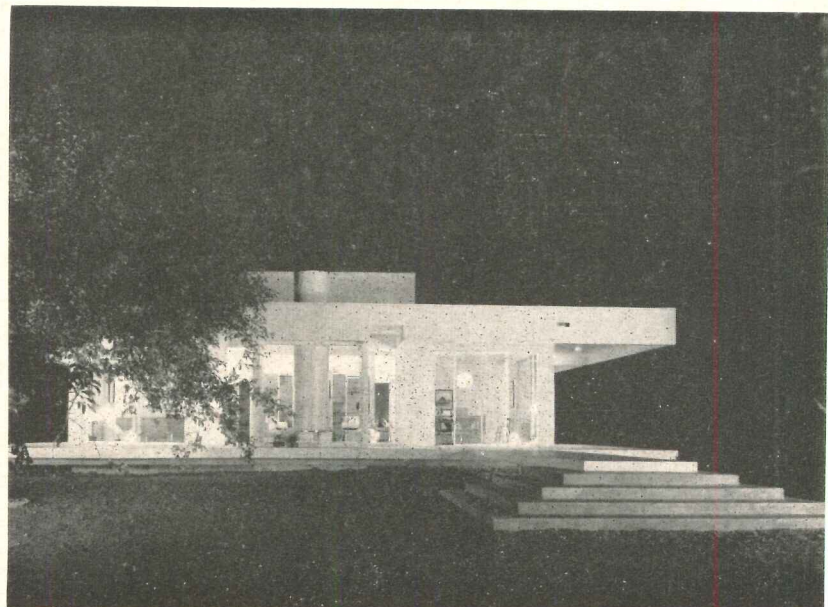
The plan corrals all the utility areas into a band across the house to buffer the four bedrooms from the living areas—a useful sound-deadening device not often found in a small square house. Living areas have an open plan, adding considerable sense of space to a relatively small overall area. Extension of floor and roof planes and the interior light from the clerestory also add to their effect.

GUNNAR BIRKERTS AND FRANK STRAUB, ARCHITECTS

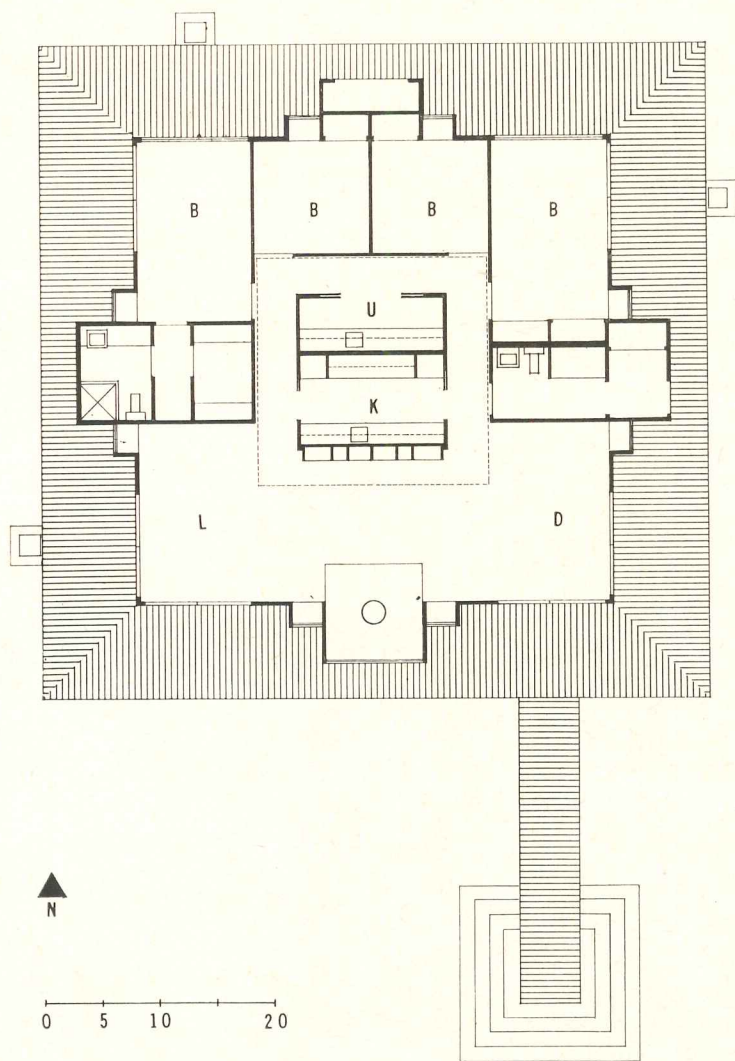
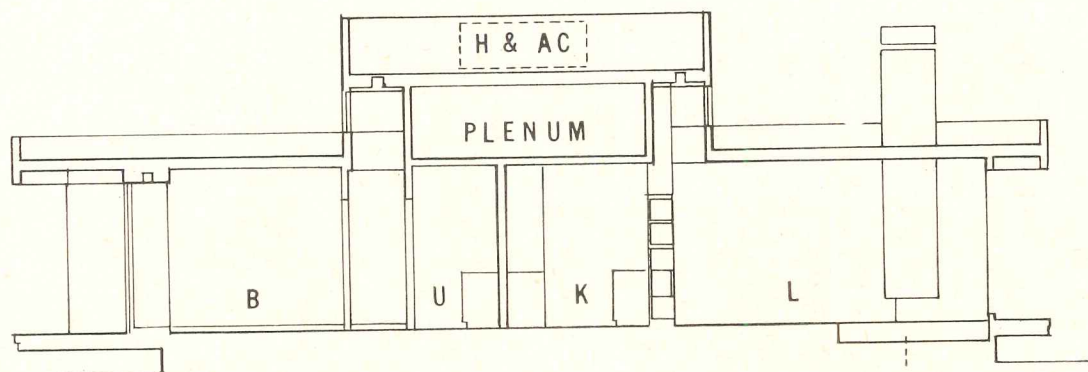
*Residence for Mr. and Mrs. Alan Schwartz
Northville, Michigan*

*Clifford Holforty, Structural Engineer
William Gruenwald, Contractor*

Gunnar Birkerts and Marianne Schwartz, Interior Design



SIMPLE, STRAIGHTFORWARD USE OF WOOD PRODUCES A STRONG, INDIVIDUAL DESIGN FOR THE SCHWARTZ HOUSE

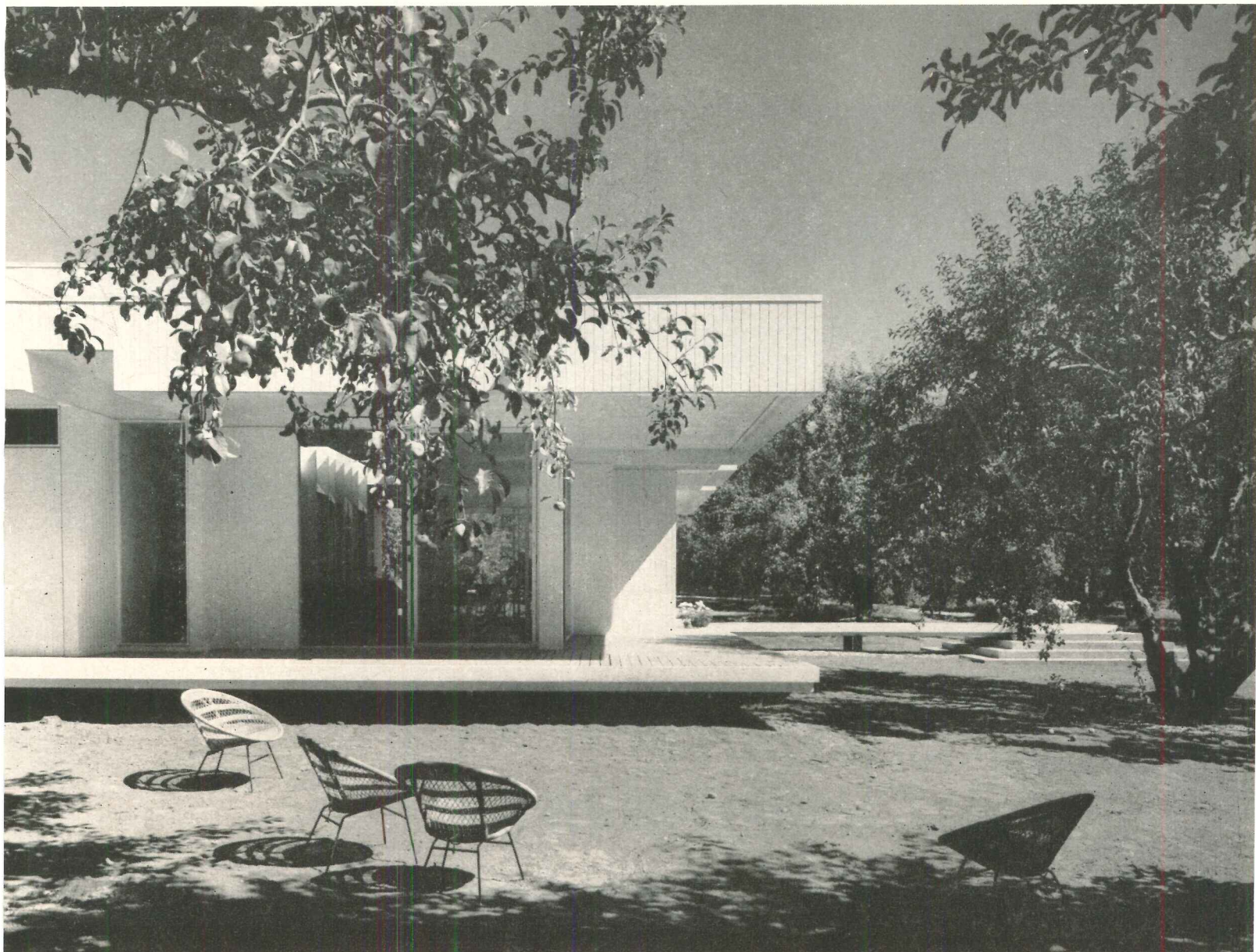


CONSTRUCTION: Foundations are concrete and concrete block. The frame is a standard wood structure supporting deep but lightweight stressed-skin plywood box girders. Roofing is four-ply built-up. Thermal insulation is two-in. aluminum-faced glass fiber batts. Exterior doors have sliding aluminum frames, aluminum screens.

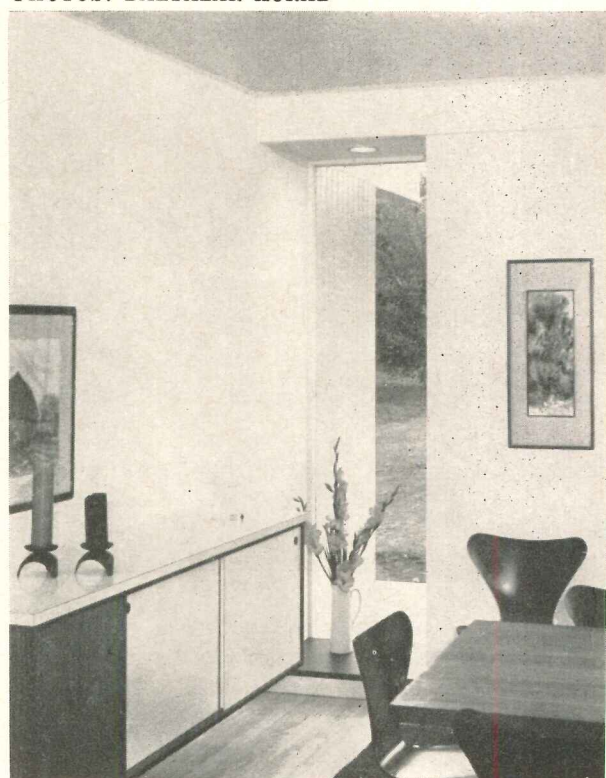
INTERIOR FINISHES: Walls are painted plasterboard, except baths, which are ceramic tile. All ceilings are plasterboard. Floors are oak in living areas, vinyl tile in kitchen, ceramic tile in baths. Interior doors are flush wood.

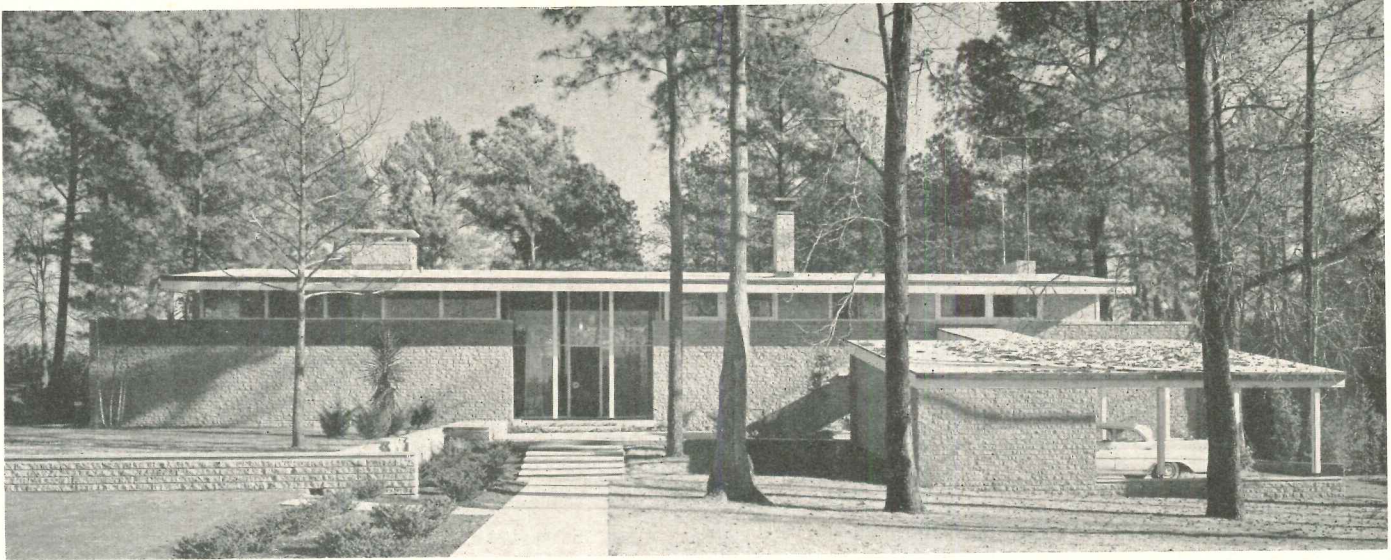
COST: About \$26,000 excluding land, landscaping and furnishing.

EQUIPMENT: The laundry, with washer, dryer and sink is placed off the bedrooms for convenience. Another handy item is the "mud room" entrance from the outside deck into one bathroom. The fireplace is unique—a sunken pit with large suspended flue above it. There is a water system and septic tank for the house, and a garbage disposer. Baths have electric heaters and baths, kitchen and attic have exhaust fans.



PHOTOS: BALTAZAR KORAB





CRISP MODERN DESIGNED FOR A GEORGIAN SUBURB

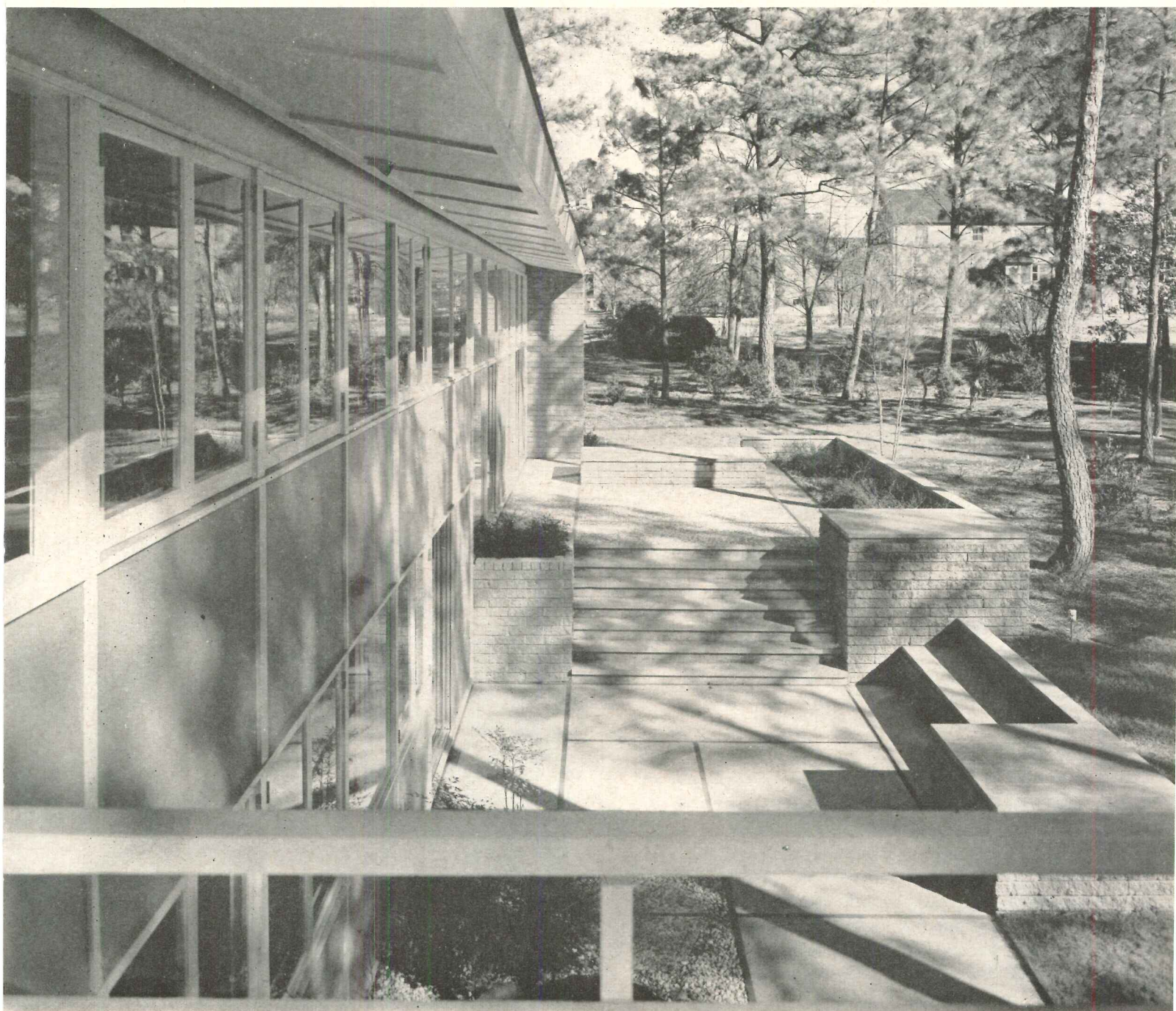
The more conservative side of good contemporary design is dominant in this commodious house. The two-storied Georgian masonry houses of the surrounding neighborhood suggested a number of the design elements: 1½ or 2 storys, sloping roof, masonry, gracious entry, white columns, deep overhangs. The result, though very compatible with the area, is a crisply fresh design.

A split-level plan was adopted to make best use of the sloping lot—a typical suburban one of 150 by 200 ft. The entry is at mid-level, with living room, study-guest room and powder room on the same floor. Informal living areas are on the lower level, and sleeping rooms above. The house is closed to the North and West for privacy from the street.

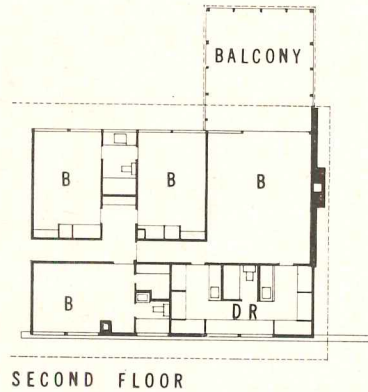
GEORGE MATSUMOTO, ARCHITECT

Mr. and Mrs. Kirkwood F. Adams, Owners
Roanoke Rapids, North Carolina
Charles D. Williams, Mechanical Engineer
William K. Neal, Contractor
Edwin G. Thurlow, Landscape Architect

PHOTOS: JOSEPH MOLITOR



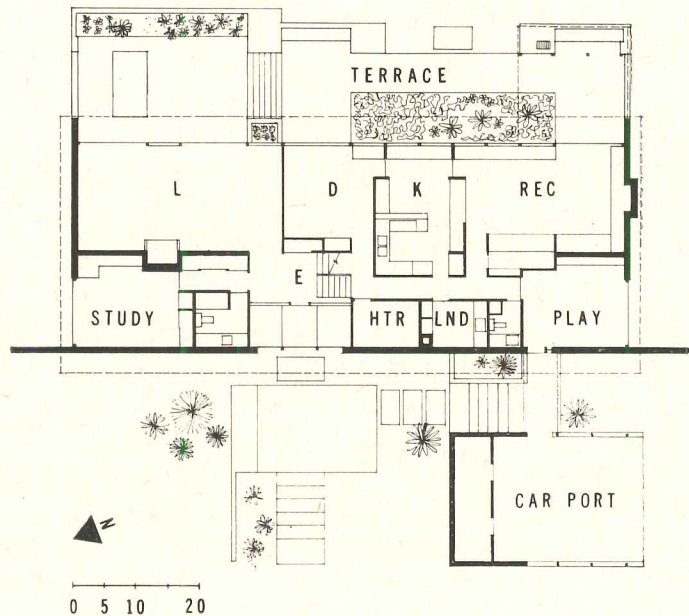
THE ADAMS HOUSE PLAN OFFERS
SPACIOUS LIVING AREAS THROUGHOUT



SPACIOUSNESS is evident throughout the house. Formal and informal living areas are arranged so that they may be used together for big gatherings, or separately for different age groups. The family consists of the parents and three children. All bedrooms are large enough to accommodate occasional overnight guests. The master bedroom suite, with its terrace balcony doubles as a parents sitting room; bath and dressing facilities are closed off from the room.

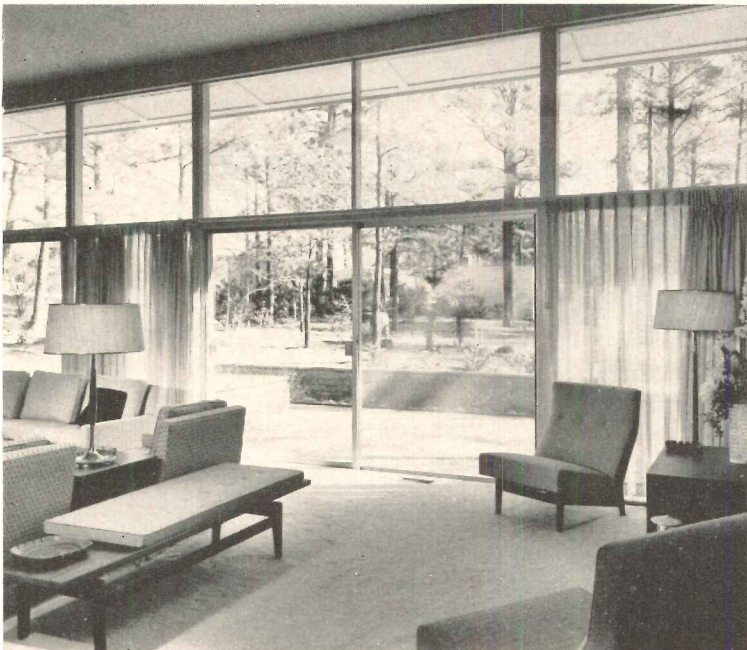
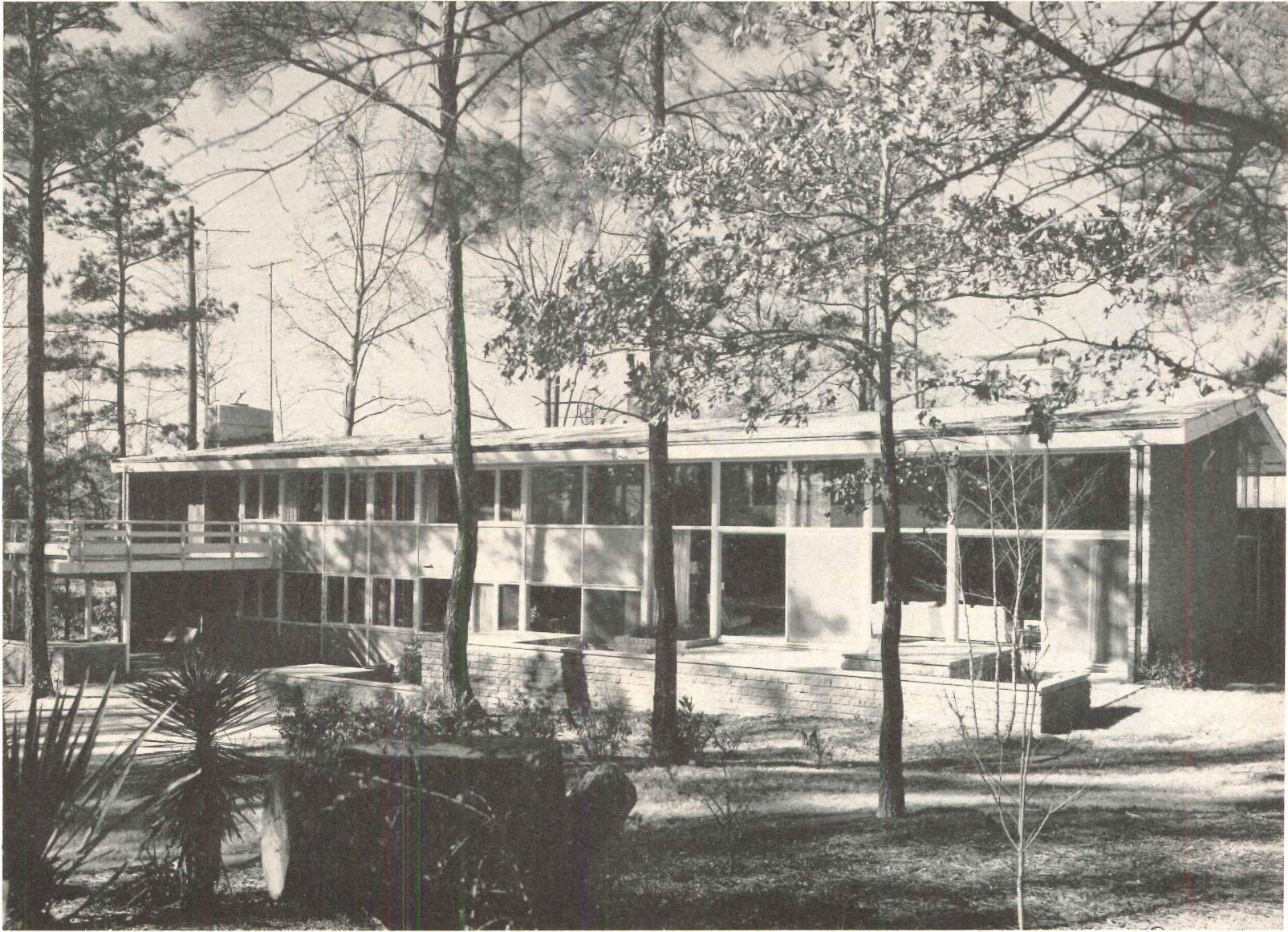
COMFORT is assured in the house by a forced-air heating and cooling system. The climate is generally hot and humid during the summer, with prevailing breezes from the Southeast. Evenings in summer are cool enough for pleasant outdoor entertaining. Winters are mild, but with occasional snow. A separate unit heat pump is used to heat and cool the separate tool shed and storage room off the car port, to isolate the sound of noisy power tools from the rest of the house.

EQUIPMENT in the house includes such items as a lighting system using low voltage wiring with master controls to switch lights on and off. There is also an intercom system throughout the house. Vent fans are in baths and kitchen. Other items include a built-in hi-fi system, built-in range and oven and garbage disposer.



PHOTOS: JOSEPH MOLITOR

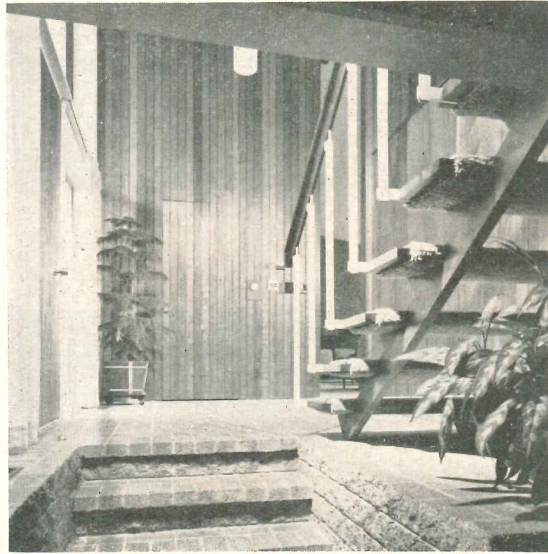




SIMPLE, DURABLE MATERIALS ADD TO EASE OF HOUSE UPKEEP



THE STRUCTURE of the house is of wood frame, with exteriors of bearing masonry walls made from split concrete blocks. Aggregates in the blocks are beige colored. Foundations are reinforced concrete. The roof is built-up.

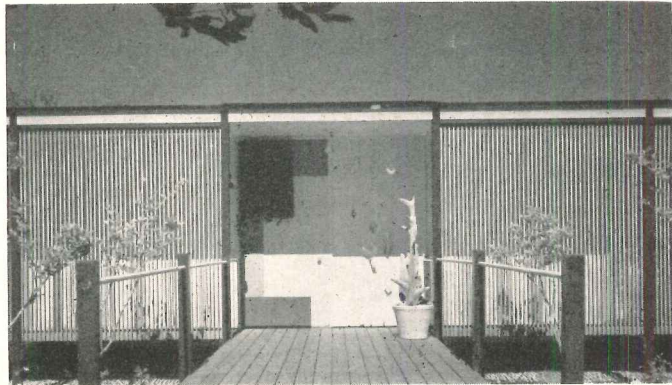


INTERIOR FINISHES include split concrete block, gypsum board, ceramic tile in bathrooms, and plywood in the kitchen. Ceilings are plaster-board, except in the living areas, where acoustic tile is installed. Floors are surfaced with carpet in living areas, vinyl-asbestos tile in the kitchen, ceramic tile in the baths, and slate in the playroom. Windows are set in wood casements; doors are flush-panel wood.

THE COST of the house (excluding lot, landscaping and furnishings) was approximately \$80,000.



JOSEPH W. MOLITOR



SMALL HOUSE PLANNED FOR EXPANSION

Located almost in the shadow of the tall Louisiana state capitol building, this trim little lakeside house is well adapted for privacy and for the southern climate. Its modular post and beam structure makes it easily adaptable for future additions—in fact, the first addition (the enclosed deck visible in the photo at right) was completed just before these photographs were taken. The gate open at the far end of the deck leads to a boat landing.

The entire house, except at the entrance, is surrounded by screens made of 1 by 2 redwood slats which serve to reduce glare, the air conditioning load, and visibility into the house. The slats are set at the edge of the overhangs, about four feet from the actual walls of the house. Exterior walls are, for the most part, panels of fixed $\frac{1}{4}$ -in. plate glass, and help to give the house a more spacious indoor-outdoor feeling, even with the slat screen enclosure.

The house as originally built consisted of a living-dining area, kitchen, study, and master bedroom suite. The next addition, designed by G. Ross Murrell, will be a swimming pool with a bedroom suite above reached by an iron spiral stair (see sketch and plan on the following page.)

Each of the three main areas of the house (living, study, bedroom) have utilities banked between them to add privacy and quiet. The plan could be added to at any point.

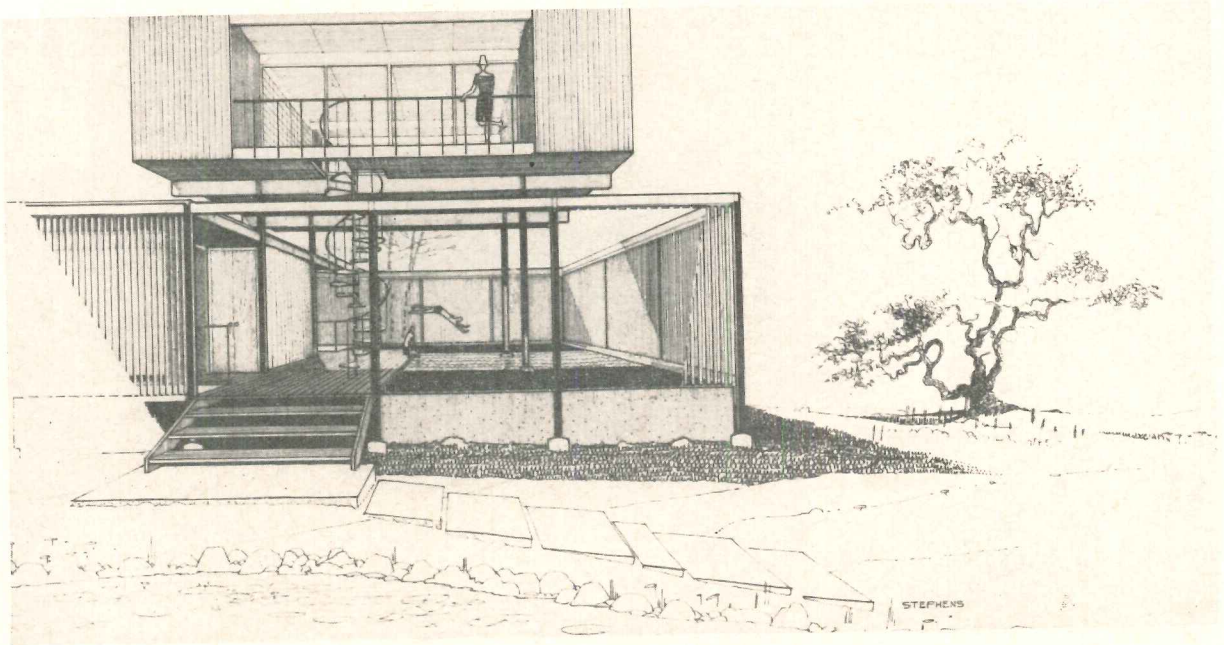
SAM B. SHORT AND G. ROSS MURRELL,
ARCHITECTS
BARRY J. CALLARI, ASSOCIATE

*Residence for Mr. & Mrs. Clyde G. Shaw
Baton Rouge, Louisiana
Alfred G. Rayner, Structural Engineer
P. Schiro & Son, Contractor*

PHOTOS: FRANK LOTZ MILLER



A SIMPLE STRUCTURAL SHAPE, PLAN AND DESIGN KEEP COSTS MINIMUM

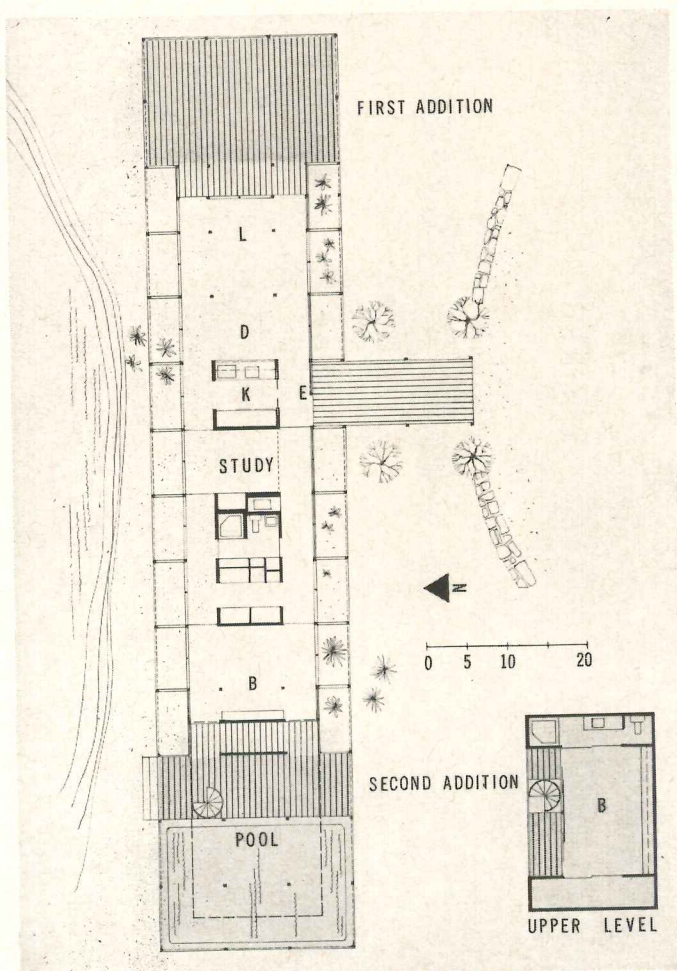


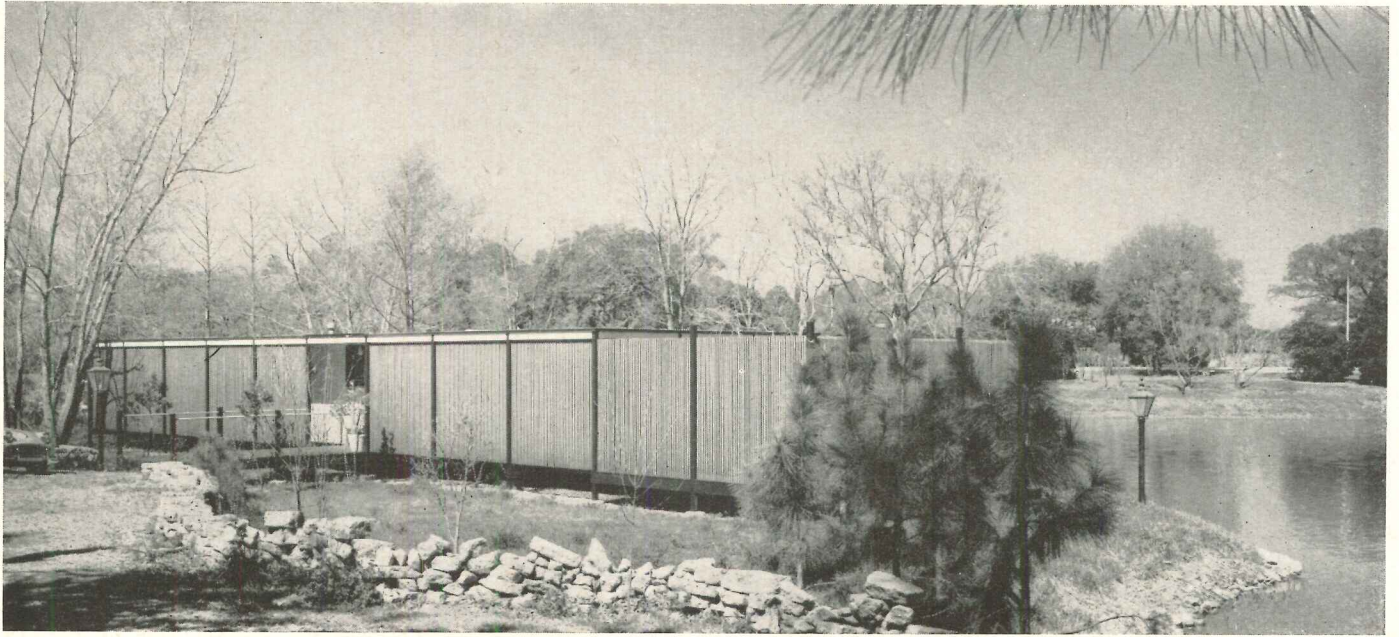
CONSTRUCTION: Due to a somewhat marshy site, the foundation was formed by a grid on 8-ft centers of drilled reinforced concrete shafts, 12-in. diam. and 12-ft long. Wood 4 by 4 columns were erected on these bases. Floor and roof framing consists of two 2 by 8 beams on 8-ft centers, and 2 by 6 joists on 16-in. centers. Exterior walls are glass or asbestos-cement panels painted white. The roofing is built-up tar and gravel. Windows are all fixed 1/4-in. plate glass.

INTERIOR FINISHES: Walls and ceilings are plaster board, with a smooth plaster finish painted white. Floors are oak in living areas, vinyl tile in bath and kitchen. Counters in kitchen and bath are plastic.

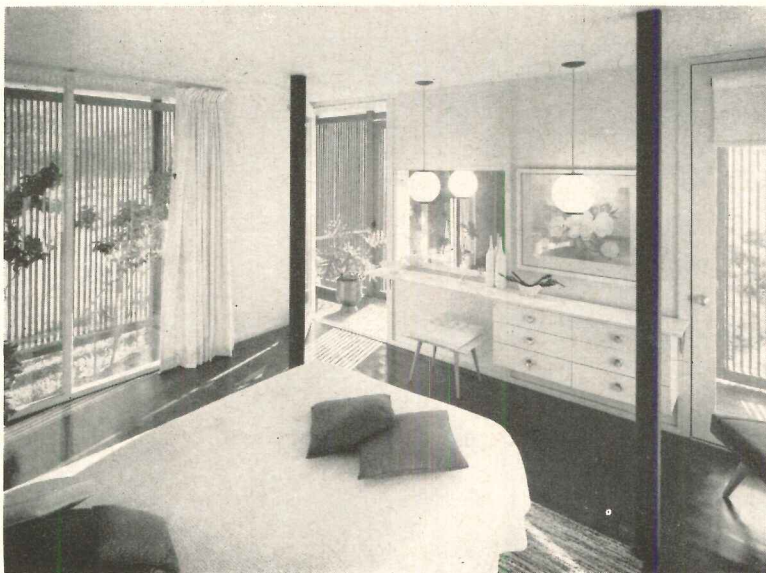
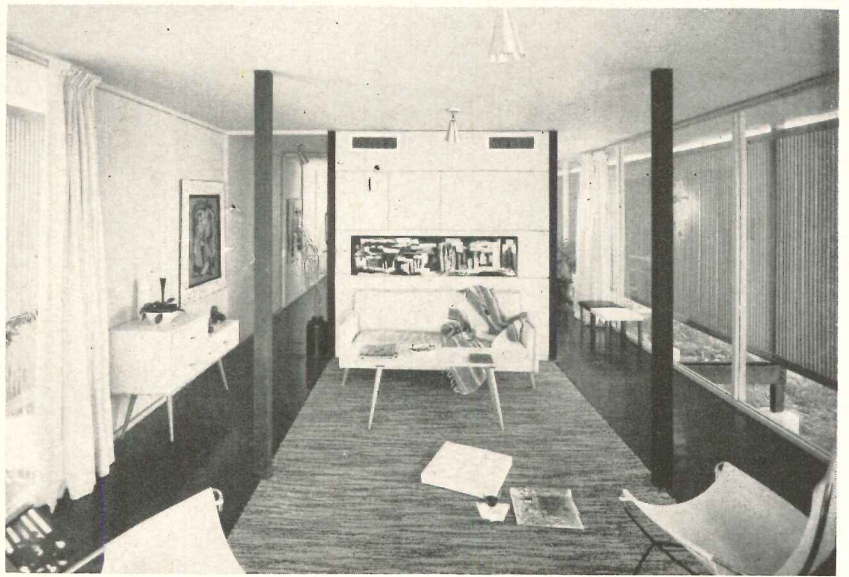
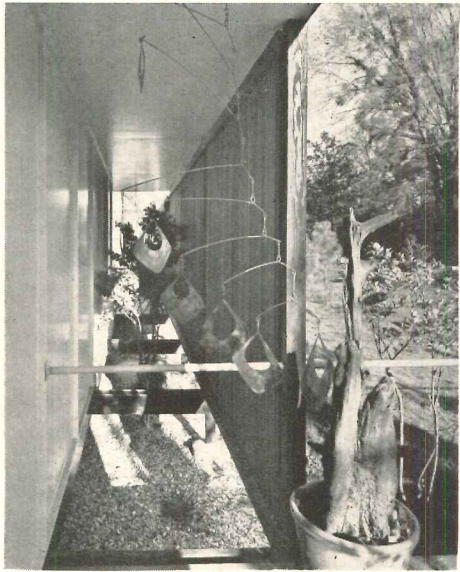
THE COST of the house was approximately \$22,000, excluding lot, landscaping and furnishings.

EQUIPMENT: The house is air conditioned by a three-ton package unit. Ducts are placed in furred space. Kitchen and bath have supplementary exhaust fans. A novel item is a photoelectric cell to turn on entrance bridge light at dusk.



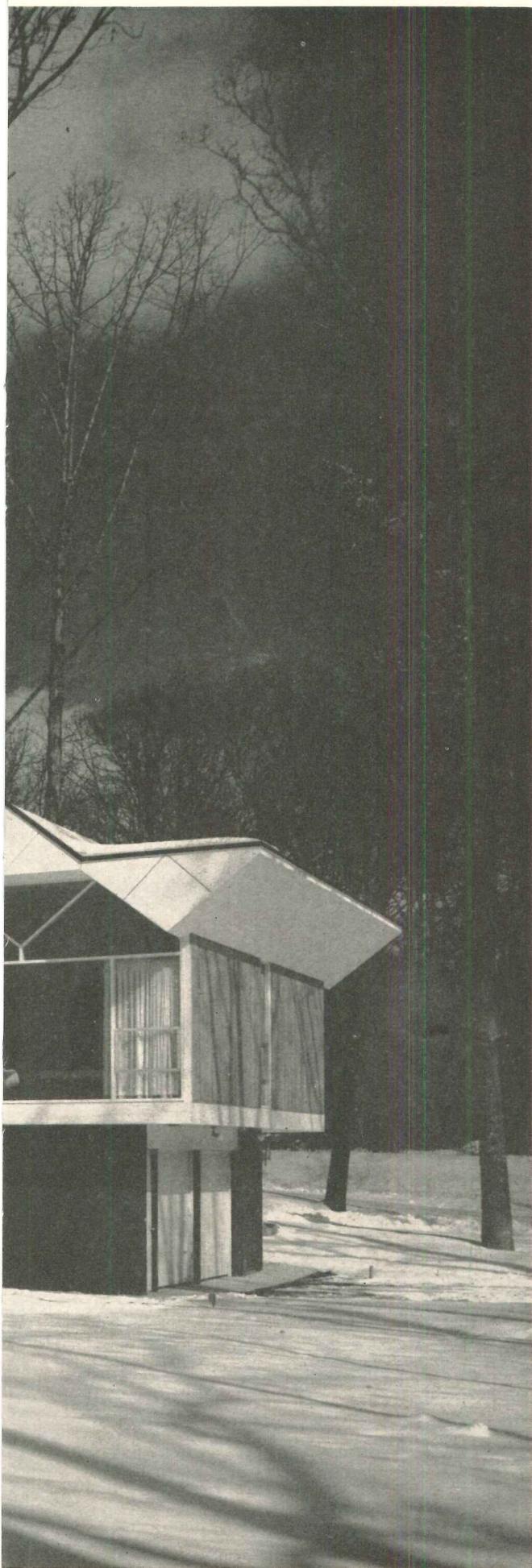


PHOTOS: FRANK LOTZ MILLER



PHOTOS: BALTAZAR KORAB





MEATHE, KESSLER & ASSOCIATES,
ARCHITECTS

*Residence for Mr. & Mrs. Arthur Beckwith
Franklin Hills, Michigan*

R. H. McClurg & Associates, Structural Engineers

J. B. Olivieri & Associates, Mechanical Engineers

Norman McCall & Sons, Contractor

Eichstedt & Johnson, Landscape Architects

DRAMATIC HOUSE FOR FAMILY LIFE

The primary request of the owners of this house was a comfortable dwelling, with formal and informal areas for a family of four children, husband and wife. They also wished to preserve the existing topography and trees of the beautiful country site, located about fourteen miles from the center of Detroit.

The result is a pavilion of rather remarkable vitality and elegance. Careful detailing throughout makes a patterned but restrained motif of the V shapes of the simply constructed, yet dramatic sawtooth roof. Even though the house is fitted to the fall of the land, its almost classic order and unity is preserved by setting back the lower level and treating it as a podium for the upper structure. The roof projects in turn to afford a degree of sun protection. The grounds are developed into small formal planting areas for the growth of specimen plants.

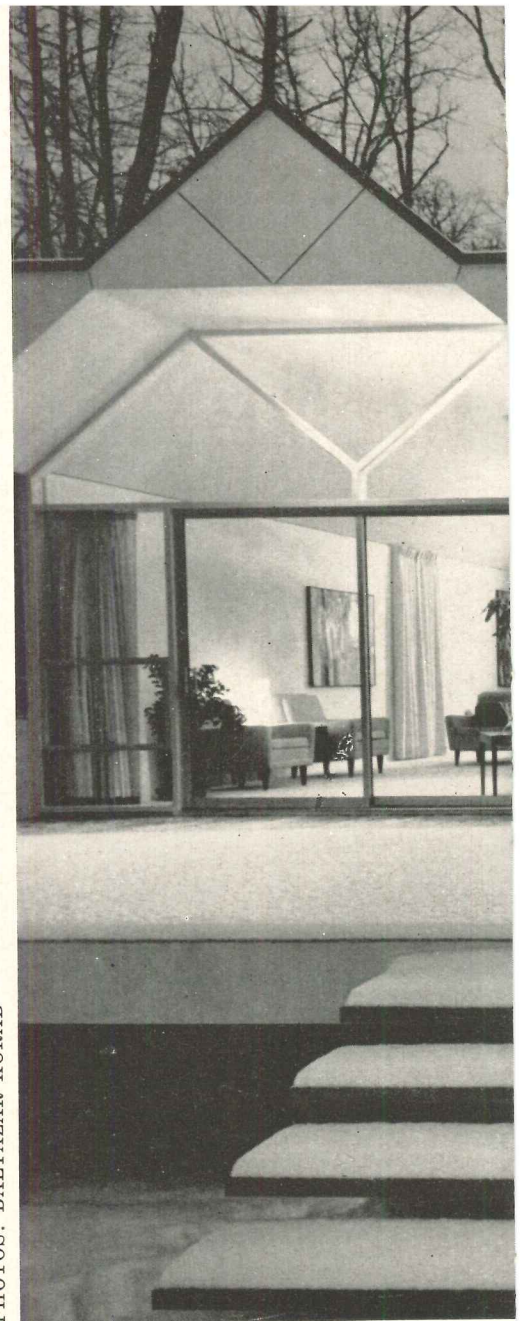
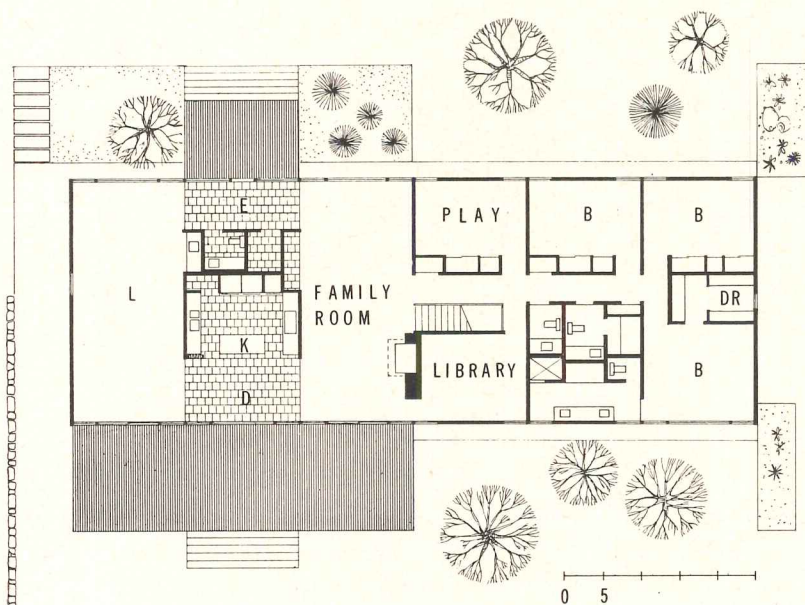
FIFTEEN-FOOT-WIDE STRUCTURAL BAYS HELP DEFINE EACH ROOM IN THE BECKWITH HOUSE

THE PLAN: Major living areas at one end of the house are placed around a central utility core containing kitchen, powder room, storage and bar. All living spaces and the outdoor terrace open together to give a really large space for entertaining. Bedrooms at the opposite end of the house are buffered from the living spaces by the library and the childrens' play room.

The lower level contains garage, mechanical equipment room, photographic dark room, maid's quarters and storage.

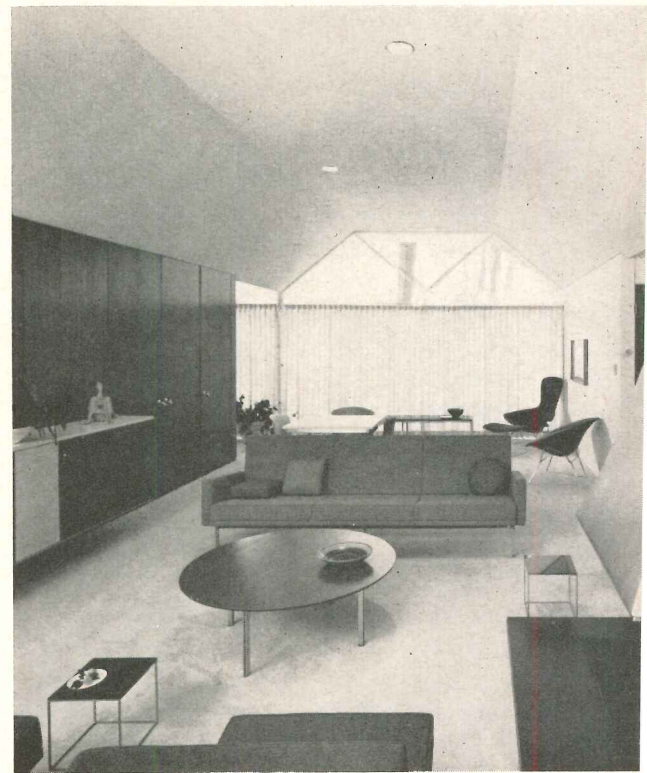
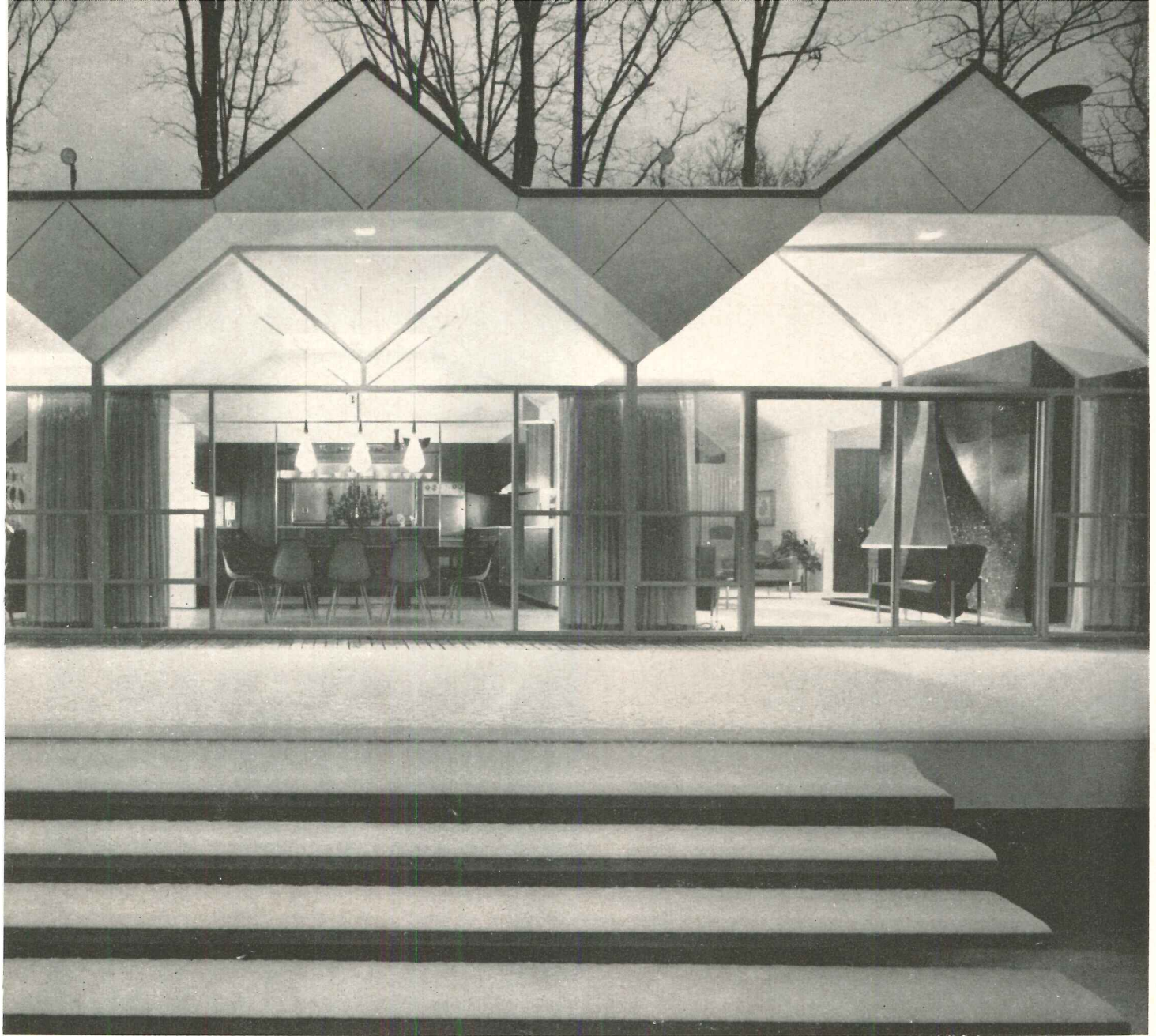
THE STRUCTURE: Foundations are masonry block. The frame is wood. The roof framing is simple 2 by 4 and 2 by 6 construction with "tie collars". The underside of the tie collars are indicated by the flat ceilings between the slope areas. Roofing is five-ply built-up. Exterior walls are painted brick and stucco. Ceilings are plaster, with acoustic plaster in living areas.

THE COST: About \$100,000 excluding lot, landscaping and furnishings.



PHOTOS: BALTAZAR KORAB



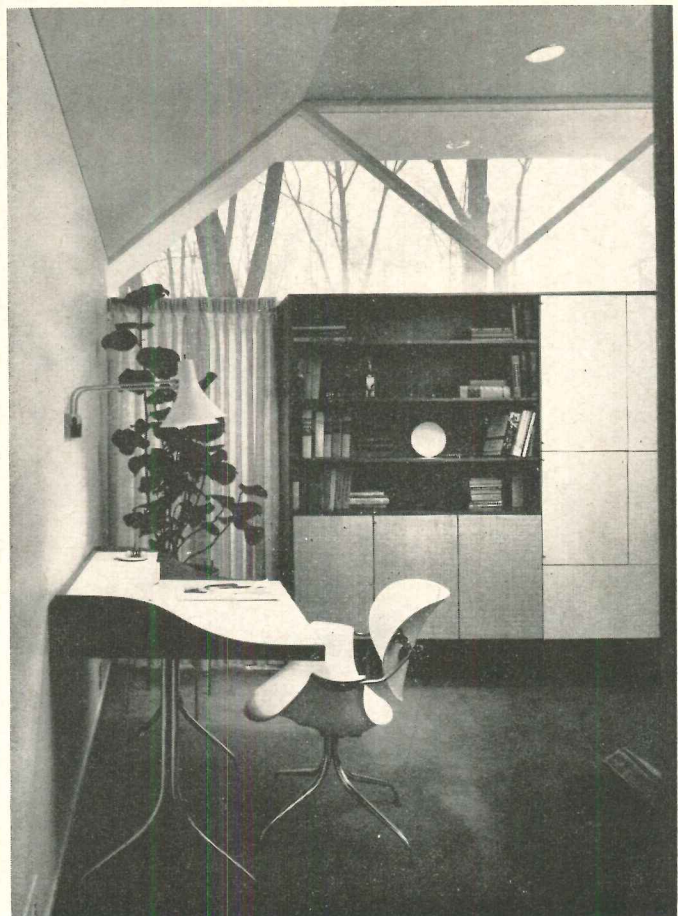


INTERIOR FURNISHINGS REFLECT THE CAREFUL DETAILING OF THE HOUSE

INTERIOR FINISHES: Walls are plaster, plus wood paneling in the kitchen. Floors are plywood and carpet of vinyl, ceramic or asphalt tile. The windows have aluminum sash, aluminum screens. Bright color accents, as can be noted in the photo at right, are mainly in fabrics and carpets. All interior design was done by the architects.

HEATING: The heating system is oil-fired, forced air; it is located in the mechanical room on the lower level.

EQUIPMENT: Baths and kitchen have exhaust fans. Laundry and kitchen equipment is all electric. Design of the kitchen, which opens directly on the dining area, has all appliances trimly built in. There is a garbage disposer and dish washer. Due to its country location, the house also has its own water supply pumps, septic tank and incinerator. Walks and terraces are cement. Flashing is copper; thermal insulation is glass fiber.



PHOTOS: BALTAZAR KORAB



Designers of the Record Houses of 1961

Houses designed by the following firms and individuals appear on pages noted

GUNNAR BIRKERTS AND FRANK A. STRAUB 120

287 East Maple Road
Birmingham, Michigan
Gunnar Birkerts, A.I.A.
Frank A. Straub, A.I.A.



MARCEL BREUER AND ASSOCIATES 70

201 East 57th Street
New York 22, New York
Marcel Breuer, F.A.I.A.



ROBERT B. BROWNE 84

2966 Coral Way
Miami, Florida
Robert B. Browne



BUFF, STRAUB & HENSMAN 96

2614 West Seventh Street
Los Angeles, California
Conrad Buff III, A.I.A.
Calvin C. Straub, A.I.A.
Donald Hensman, A.I.A.



NORMAN F. CARVER, JR. 64

3201 Lorraine Avenue
Kalamazoo, Michigan
Norman F. Carver, Jr.



JOHN L. FIELD 80

40 Gold Street
San Francisco, California
John L. Field, A.I.A.



JULES GREGORY 92

Lambertville, New Jersey
Jules Gregory, A.I.A.



HELLMUTH, OBATA & KASSABAUM, INC. 88

315 North Tenth Street
St. Louis, Missouri
George F. Hellmuth, A.I.A.
Gyo Obata, A.I.A.
George Kassabaum, A.I.A.



ROY SIGVARD JOHNSON 46

69 Neperan Road
Tarrytown, New York
Roy Sigvard Johnson, A.I.A.



KEYES, LETHBRIDGE & CONDON 104

1300 Connecticut Avenue, N. W.
Washington 6, D. C.
Arthur H. Keyes, Jr., A.I.A.
Francis D. Lethbridge, A.I.A.
David H. Condon, A.I.A.



PAUL HAYDEN KIRK & ASSOCIATES 74

2000 Fairview North
Seattle 2, Washington
Paul Hayden Kirk, F.A.I.A.



124 GEORGE MATSUMOTO



821 Runnymede Road
Raleigh, North Carolina
George Matsumoto, A.I.A.

134 MEATHE, KESSLER & ASSOCIATES, INC.



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108 MERRILL, SIMMS & ROEHRIG



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Honolulu 14, Hawaii
Kenneth William Roehrig, A.I.A.
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James Clyde Simms, A.I.A.

56 RICHARD J. NEUTRA



2300 Silverlake Boulevard
Los Angeles 39, California
Richard J. Neutra, F.A.I.A.

112 FRANK SCHLESINGER



360 West Court Street
Doylestown, Pennsylvania
Frank Schlesinger, A.I.A.

60 EDWARD J. SEIBERT



231 South Palm Avenue
Sarasota, Florida
Edward J. Seibert, A.I.A.

130 G. ROSS MURRELL, JR. AND SAM B. SHORT, JR.



2987 Government Street
Baton Rouge, Louisiana
G. Ross Murrell, Jr., A.I.A.
Sam B. Short, Jr., A.I.A.

100 JOAN & KENNETH L. WARRINER, JR.
of Wyke & Warriner



1323 Main Street
Sarasota, Florida
Joan Warriner
Kenneth L. Warriner, Jr.

116 THE ARCHITECTS COLLABORATIVE

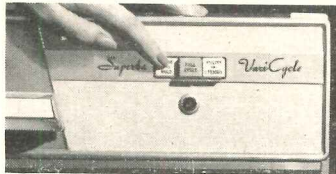


63 Brattle Street
Cambridge 38, Massachusetts
Jean B. Fletcher, A.I.A.
Norman Fletcher, A.I.A.
Walter Gropius, F.A.I.A.
John C. Harkness, A.I.A.
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NEW IMPERIAL King-size capacity for 12; pre-rinse and wash or double wash, triple rinse; adjustable upper rack dividers; wide choice of finishes with Vari-Front Panels. Rinsing Agent Dispenser optional. Available in built-in, dishwasher-sink, convertible-portable and free-standing models.



NEW CUSTOM—Enables KitchenAid quality to be used in economy installations. Variety of finishes. Same KitchenAid wash arm, Dual Filters, and Flo-Thru drying. Capacity for ten. Rinsing Agent Dispenser optional. Available in built-in and free-standing models.



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Other features: porcelain interior; Timer Control Indicator; "cushioned" racks; plate warming; cool, quiet operation; easy installation. KitchenAid, the dishwasher of proven quality.

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The Hobart Manufacturing Co., Troy, Ohio
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Address.....

City..... Zone..... County..... State.....

COST OF RECORD HOUSES NEAR YOU

In using Record Houses our readers have asked "If I build a house like so and so built in _____ city what would it cost here?"

We put this question to Myron L. Matthews, editor of the Dow Building Cost Calculator and Valuation Guide, an F. W. Dodge Corporation service. He did some research and

presented us with the answers for each of the 20 Record Houses as though they were to be duplicated in 14 selected cities located in representative geographic areas of the United States. The figures for each listed city would be applicable within a 25 mile radius of it.

In an effort of this kind it must be

recognized that the estimates in the tabulations following can only be approximate within 5 to 8 percent one way or the other, and maybe more if unusual abnormal conditions prevail in one locale or another. However, over a period of 35 years the Dow Calculator has established a good record and we believe their figures will work out well for the purposes intended.

If you are impressed by certain

RECORD HOUSES 1961 *Comparative Building Cost*

NAME OF HOUSE WHERE BUILT	Schwartz House Birmingham, Mich.	Hooper House Baltimore, Md.	Vereen House Miami, Fla.	Jared House Los Angeles, Calif.	Rogers House Kalamazoo, Mich.	Alter House Los Altos Hills, Calif.	Gregory House Lambertville, N. J.	Wilson House Ladue, Mo.	Erwit House Hastings-on-Hudson, N. Y.
CONSTRUCTION COST*	\$26,000	\$150,000	\$32,000	\$22,000	\$26,000	\$45,000	\$30,000	\$125,000	\$45,000
COST TO BUILD IN†									
BOSTON, MASS.	23,550	152,100	31,300	22,200	24,850	44,700	28,750	117,100	41,250
CHARLOTTE, N. C.	17,000	109,750	22,600	16,000	17,900	32,250	20,750	84,500	29,750
CHICAGO, ILL.	24,700	159,500	32,800	23,300	26,050	46,850	30,200	122,850	43,250
COLUMBUS, O.	24,700	159,500	32,800	23,300	25,050	46,850	30,200	122,850	43,250
DALLAS, TEX.	21,650	139,650	28,700	20,400	22,800	41,000	26,400	107,500	37,850
DENVER, COLO.	22,750	146,850	30,200	21,450	24,000	43,150	27,750	113,100	39,800
JACKSONVILLE, FLA.	21,350	137,850	28,350	20,100	22,500	40,500	26,050	106,150	37,350
KANSAS CITY, MO.	23,850	154,150	31,700	22,500	25,200	45,300	29,150	118,800	41,800
LOS ANGELES, CALIF.	23,350	150,900	31,000	22,000	24,650	44,300	28,550	116,150	40,900
MEMPHIS, TENN.	21,350	137,850	28,350	20,100	22,500	40,500	26,050	106,150	37,350
MINNEAPOLIS, MINN.	24,600	159,000	32,700	23,200	26,000	46,700	30,050	122,400	43,100
NEW YORK, N. Y.	27,650	178,650	36,750	26,100	29,200	52,450	33,800	137,550	48,400
SAN FRANCISCO, CALIF.	23,750	153,250	31,500	22,400	25,050	45,000	29,000	118,000	41,550
WASHINGTON, D. C.	23,850	153,900	31,650	22,500	25,150	45,200	29,100	118,500	41,700

*Land and design fees omitted

†Omit land, landscaping, special foundations due to topography and for soil, and architectural design and supervision fees.

Record Houses look up their local estimated approximate cost for a location nearest to you. If the Dow figure for such a location is attractive, consult an architect to see what he can do for you.

Incidentally, the figures given here do not include land, landscaping, unusual foundation conditions due to topography or soil, furnishings, or the architect's design and supervision fees.

The Dow Building Cost Calculator and Valuation Guide is used widely throughout the United States and Canada. Its objective is to show the replacement costs for more than 650 building types with counterparts almost everywhere. The costs are revised and supplemented at intervals keeping them in balance with changing prices for building materials and wage rates for building trades craftsmen. Dow building costs data is generally recognized by courts as authoritative and is used by real estate tax assessors, fire insurance valuation engineers, real estate appraisers, mortgage loan officers in financial institutions, architects, builders and a broad list of governmental agencies—Federal, State, County and Municipal.

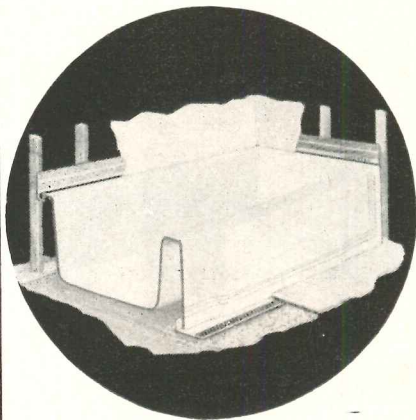
for Selected Cities

Prepared by Dow Building Cost Calculator and Valuation Guide
an F. W. Dodge Corporation service

Hoffberger House Washington, D. C.	House in Seattle, Wash.	Adams House Roanoke Rapids, N. C.	Beckwith House Franklin Hills, Mich.	Rehrig House Honolulu, Hawaii	Shaw House Baton Rouge, La.	Singleton House Los Angeles, Calif.	Schlesinger House Doylestown, Pa.	Mitchell House Sarasota, Fla.	House in Norton, Mass.	Warriner House Sarasota, Fla.
\$70,200	\$20,000	\$80,000	\$100,000	\$60,000	\$22,000	\$90,000	\$35,000	\$35,000	\$27,000	\$14,500
69,400	20,800	110,400	90,600	55,500	23,850	90,600	33,250	37,850	26,650	15,650
50,100	15,000	79,650	65,350	40,050	17,200	65,350	24,000	27,300	19,250	11,300
72,800	21,800	115,800	95,000	58,200	25,000	95,000	34,850	39,700	27,950	16,400
72,800	21,800	115,800	95,000	58,200	25,000	95,000	34,850	39,700	27,950	16,400
63,700	19,100	101,350	83,150	50,900	21,900	83,150	30,500	34,750	24,500	14,350
67,000	20,050	106,600	87,450	53,600	23,000	87,450	32,100	36,550	25,750	15,100
62,900	18,850	100,050	82,100	50,300	21,600	82,100	30,100	34,300	24,150	14,150
70,300	21,050	111,900	91,800	56,250	24,150	91,800	33,700	38,350	27,000	15,850
68,850	20,600	109,500	89,850	55,050	23,650	90,000	32,950	37,550	26,450	15,500
62,900	18,850	100,050	82,100	50,300	21,600	82,100	30,100	34,300	24,150	14,150
72,500	21,700	115,400	94,650	58,000	24,900	94,650	34,750	39,550	27,900	16,350
81,500	24,400	129,650	106,350	65,200	28,000	106,350	39,050	44,450	31,300	18,350
69,900	20,950	111,250	91,250	55,900	24,000	91,250	33,500	38,100	26,850	15,750
70,200	21,050	111,700	91,650	56,200	24,100	91,650	33,650	38,300	27,000	15,800

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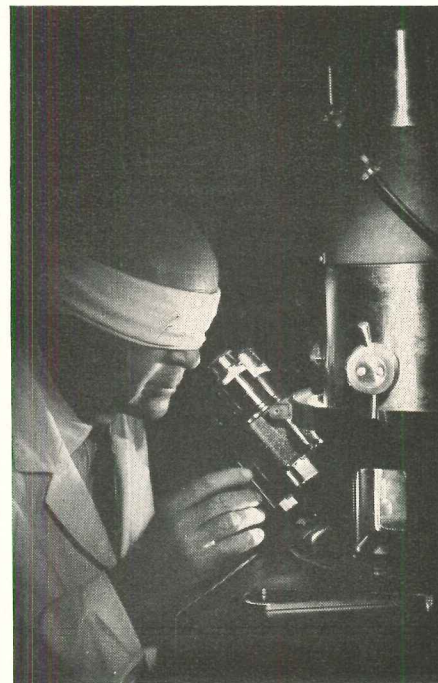
City Zone.....

State

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BILL MARGERIN 118 East 30th Street New York, New York	74
FRANK LOTZ MILLER 1115 Washington Avenue New Orleans, Louisiana	130
JOSEPH W. MOLITOR P. O. Box 549 112 Pine Avenue Ossining, New York	60, 84 100, 116 124
MARC NEUHOF 207 East 43rd Street New York 17, New York	92, 112
BEN SCHNALL 1370 West Boxwood Drive Hewlett Harbor, New York	70
JULIUS SHULMAN P. O. Box 46206 Los Angeles 46, California	56
WILLIAMS PHOTOGRAPHY Pier 11, 700 Fort Street Honolulu, Hawaii	108



Don't blindfold him!

THE MAN in this picture is a cancer research scientist. The device he is using looks like something out of science-fiction—but actually, it's an electron microscope. It shows him the sub-microscopic detail of a cancer cell—magnified 100,000 times. *The cost of one electron microscope is \$35,000.*

Some of the equipment needed for cancer research, and purchased with American Cancer Society funds, is even more expensive.

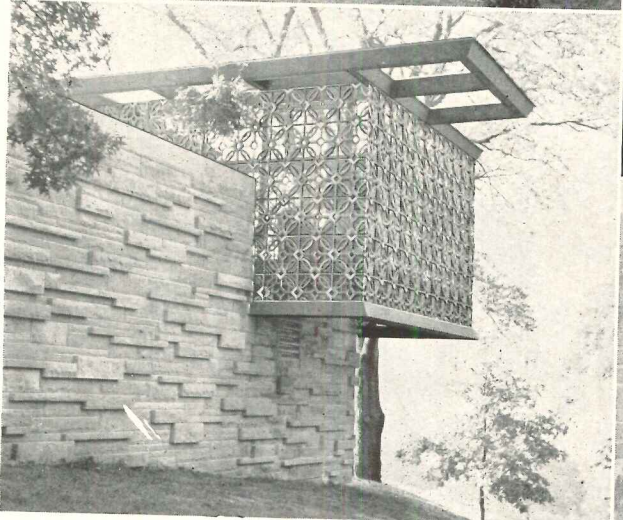
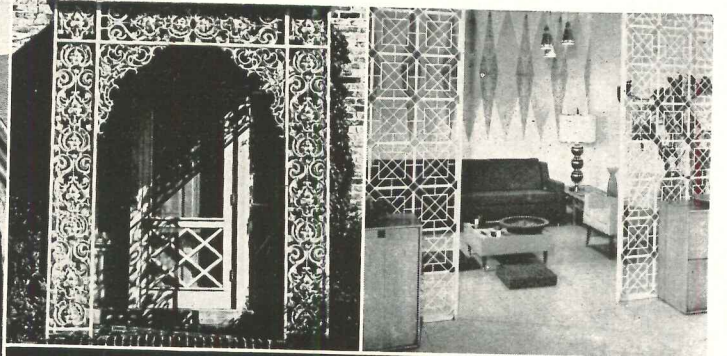
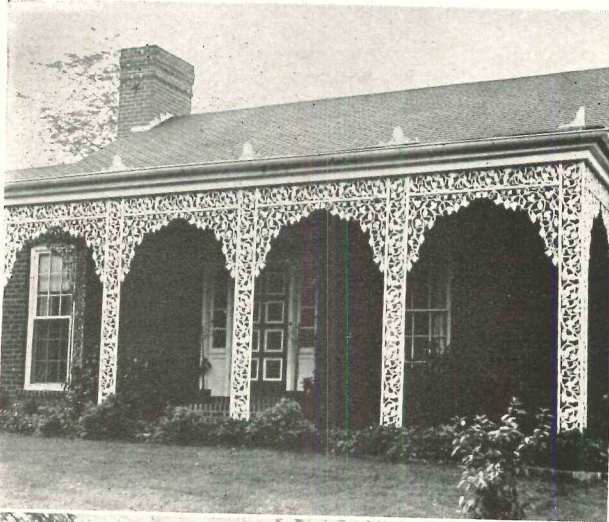
The American Cancer Society grants millions of dollars for research to some 1300 scientists who are at this moment working to find the cause of cancer—and ultimately, ways to prevent cancer.

Your help is needed to enable the American Cancer Society to continue this support.

Don't blindfold cancer research. Give to it. Send your contribution now to CANCER, c/o your local post office.

**AMERICAN
CANCER SOCIETY**

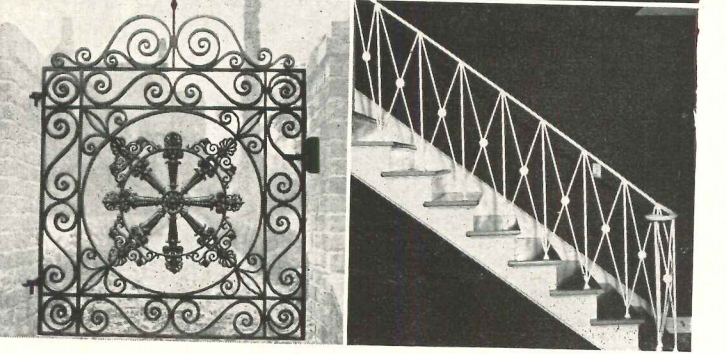




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- IOWA**
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 Creston—Strecker Ornamental Iron Company 782-2324
 Des Moines—Lister Concrete Products & Ornamental Railings CH 4-3149
 Fort Dodge—Lister Concrete Products & Ornamental Iron 4-7661
 Waterloo—Lister Concrete Products & Ornamental Iron AD 2-4727
- MASSACHUSETTS**
 Lawrence—American Iron Works MU 9-9701
 South Hadley Falls—Bob's Ornamental Ironcraft JE 9-9658
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 Bay City—Blumh Ornamental Iron Company TW 4-0691
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 Petoskey—Bob Greenwell & Sons 3346
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- MISSISSIPPI**
 Columbus—Mann Welding Works FA 8-7231
 Jackson—Lee's Welding & Ornamental Service FL 2-8578

- Oxford—Oxford Ornamental Iron 1693
- MISSOURI**
 Gideon—Hudson-Wiseman Company HI 8-3596
 Jefferson City—Capitol Machine Shop 6-4631
 Martinsburg—Renstrom Ornamental Iron HY 2-3266
 St. Louis—Afton Fabricating & Welding Company VE 2-0840
 St. Louis—Le Lu Ornamental Iron LA 7-2654
 Sikeston—Steward Steel Supply Company GR 1-2121
 Springfield—Ornamental Iron and Steel UN 2-7033
- MONTANA**
 Chinook—Sarge's Shop
- NEBRASKA**
 Fairbury—Wagner Welding and Supply 273
- NEW JERSEY**
 Clifton—Keystone Metal Products HU 6-8130
 Linden—Public Iron Products Industrial Weldery EL 6-0383
 Trenton—Modern Iron Works EX 6-2490
- NEW MEXICO**
 Santa Fe—Luther's Ornamental & Welding YU 2-9185
- OHIO**
 Canton—B & G Ornamental Iron GL 5-9706
 Hamilton—Fred L. Meyers Mfg. Company TW 5-7363
- OKLAHOMA**
 Oklahoma City—Atlas Iron Works WI 3-3695
 Oklahoma City—Oklahoma Wire & Iron Works, Inc. VI 2-3366
- OREGON**
 Portland—H. S. Swan Company CA 3-3417

- PENNSYLVANIA**
 Ambler—Camburn's Welding Service MI 6-4059
 Andalusia—J. J. Mathias Ornamental Iron ME 9-5111
 Chalfont—Chalfont Welding & Iron Works VA 2-2862
 Easton—Paul A. Finken BL 3-8481
- Quakertown—Quakertown Ornamental Iron Works KE 6-5983
 Windsor—Smith Ornamental Iron RL 2-2523
- RHODE ISLAND**
 Providence—Columbus Ornamental Iron Works GA 1-5430
- SOUTH CAROLINA**
 No. Charleston—Brailsford Metal Works 4-1819
- TENNESSEE**
 Midtown—C & D Metal Products
- TEXAS**
 Amarillo—Virden Permabilt FL 6-2761
 Austin—Weigl Ornamental Iron Works GR 8-3870
 Bellaire—Bellaire Welding Company MO 4-4271
 Dallas—Nesbit Metal Company FL 2-4600
 Edinburg—Shirey's Ornamental Iron Works DU 3-4742
- FORT WORTH**—Oliver Ornamental Iron Company JE 5-2127
 Midland—The Ornamental Shop MU 2-5583
- New Braunfels—Heimer's Blacksmith & Welding MA 5-3521
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space. The U. S. Forest Service, the Armed Forces and many other Federal, State and local agencies responsible for building construction have listed aldrin for use as a soil poison.

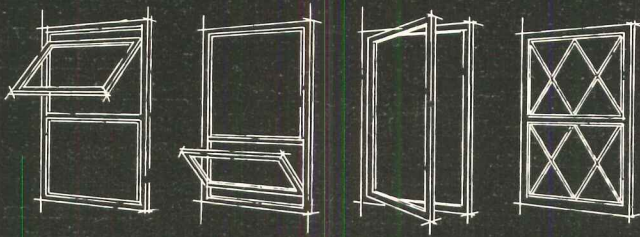
Aldrin is long lasting—proved 100% effective for more than 10 years. Because of this, you can use and specify aldrin chemical termite barriers with complete confidence.

Shell Chemical Company, Agricultural Chemicals Division, 110 West 51st Street, New York 20, N. Y.

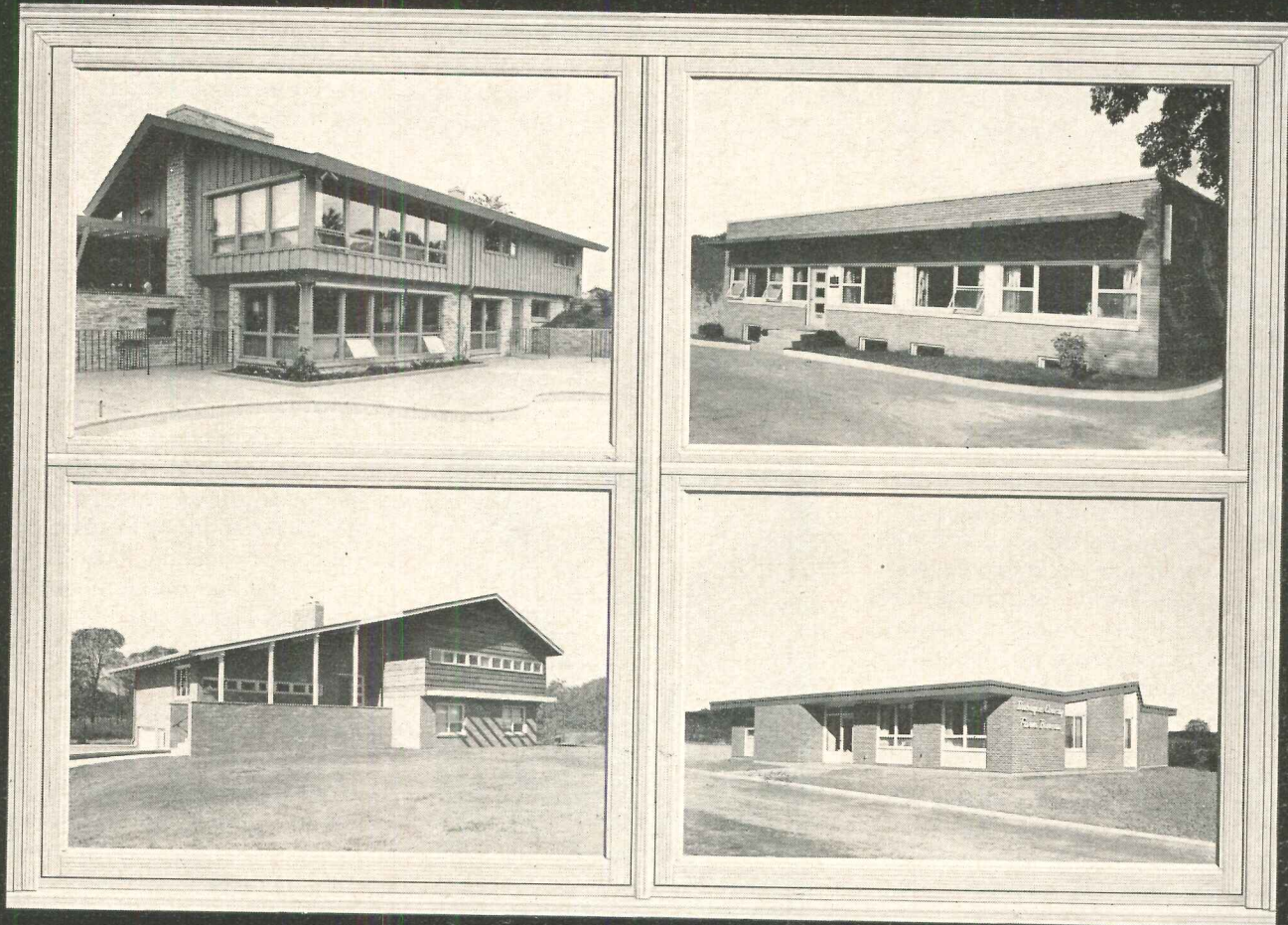
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FARLEY & LOETSCHER MFG. CO. DUBUQUE, IOWA

PRE-BUILT COMPONENTS

continued from page 11

setting up a separate organization for each site, he has one central organization handling the details for all of the different field operations.

Shop Efficiency

One of the most obvious reasons for the shift to components is the greater efficiency of shop operations over field construction. Coupled with this is the growing scarcity of skilled field labor which can be replaced to a large extent by semi-skilled or even unskilled labor in the shop.

Package

For the fabricator, dealer or builder supplying the whole house, the components form the basis of a complete house package. This includes all trim, millwork, equipment, roofing and the myriad other items of which the house is composed. These can be packaged around the components, making for efficient loading and transportation with a minimum number of trips to the site, and all parts of the house packaged for delivery at the right time with the right components. For the dealer-builder this can mean a substantial saving and a chance for a greater return than otherwise possible.

Volume

Components make it possible to achieve a much larger volume of operations with the same overhead organization than is true of field operations.

LIMITATIONS AND PROBLEMS

Investment & Carrying Charges

Investment in and cost of maintaining a shop are both large items, resulting in a significantly higher overhead charge than is true of traditional field construction. Because much of the cost is fixed and the charges keep going on, the shop must be kept on a fairly even and continuous level of production.

Inventory

A corollary of the problem of maintaining a shop on steady production is the need for tight scheduling and close inventory control to avoid over-production or under-production. This is particularly true of smaller operations where large volume is not available to smooth out the production curves.

Transportation

Shop production leads to double transportation costs. Materials and equipment must first be transported to the central shop and then be transported to the site. Furthermore, raw materials can generally be much more completely loaded than finished components. Sufficient packaging must be supplied to avoid damage to highly finished components. Economical shipping distances for components are limited. Figures vary considerably but seldom exceed 300 miles.

Labor

Two labor forces are required, one for the shop and one for the field. If both are unorganized or if both are organized, there may be no problem but it can become acute if the shop, for example, is unorganized



Plastic skylight

and the field is organized. Furthermore, an industrial type of union usually fits shop organization and shop requirements best but field labor is largely organized along craft lines.

Legal Restrictions

Building codes can be a serious problem for components used in a variety of locations, each with its own separate code and inspection requirements. The obvious solution to such a problem is to make the components good enough to comply with the most stringent requirements anywhere, but this, in turn, may lead to excessive costs. Requirements of the Federal Housing Administration must also be met. In-

spection demands may require components to be opened by the local inspector. In other instances, smaller or less finished components may be used than would be possible if local inspection were not demanded.

Dimensional Coordination

Dimensional coordination of all parts of the house is essential and the problem of what kind of module to employ becomes a central one. Closely related with it is the problem of tolerances. Tolerances are in many ways the most vexatious aspect of construction with components.

Materials Limitations

Available materials limit design and fabrication of components because few fabricators are large enough to justify the manufacture of materials to their requirements. The components must perforce be made to conform to available dimensions, even though these may not be most suitable. Manufacturers of materials cannot justify making special runs or setting up special equipment unless the demand generated by component manufacturers is sufficient to defray the costs.

Joints

The joint between components is a major problem. It has not been completely solved. One principal reason for field finishing is to avoid it.

Component construction is a step in the direction of increased fabrication of houses in the shop, thereby minimizing field operations and reducing field time. Where the components are standardized but the house is not, a considerable amount of flexibility is possible without unduly limiting freedom of design, as has been brought out by a number of studies. This can be achieved with a relatively small number of different component sizes, and many combinations of sizes are about equally effective.

Problems exist in adapting components to house construction and many of these are inherent in the structure of the home-building and associated industries. They do not appear to be insurmountable; the advantages appear to outweigh the problems, and with the trend toward the industrialized house, the problems will be overcome.

CONTEMPORARY KITCHENS

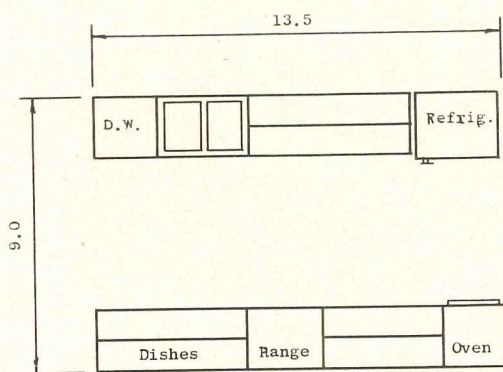
continued from page 29

"contemporary" group of appliances were used and were arranged with the storage units in an L-shape. It is clear that the sink center is the most heavily used of the centers; therefore, it should be centrally located. Further, it seems that the mix center and the surface burners should be located adjacent to the sink. An examination of the trip chart verifies this relationship to be desirable. In the study, the women using the test kitchen did not find much difference in convenience when the mix center was between the sink and the refrigerator or between the sink and the range. However, in the L-shape set-up that was used in the test, the latter arrangement resulted in more travel due to the greater distance between the mix center and the refrigerator.

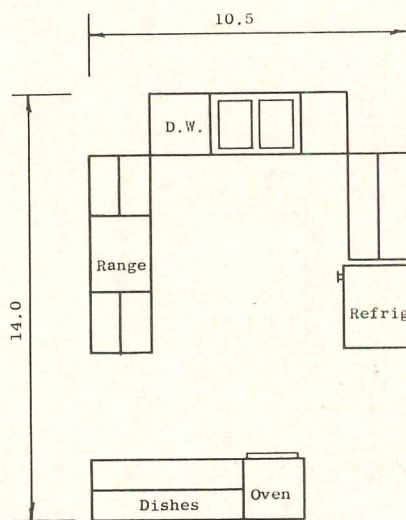
The right to left continuous sequence is obviously the optimum arrangement; L-shape and U-shape assemblies are sometimes used to achieve this result. In any arrangement with corners, however, the space in the corner is lost for storage unless especially designed cabinets are used. Cabinets having rotating shelves are especially suitable. In this respect the corridor-shape assembly generally requires the least space. Other considerations, particularly the problems of room arrangement and circulation, may make it necessary to use variations of these basic shapes. The unequal U-shape and broken U-shape fall into this category.

In assembling the work centers, certain other rules should be followed.

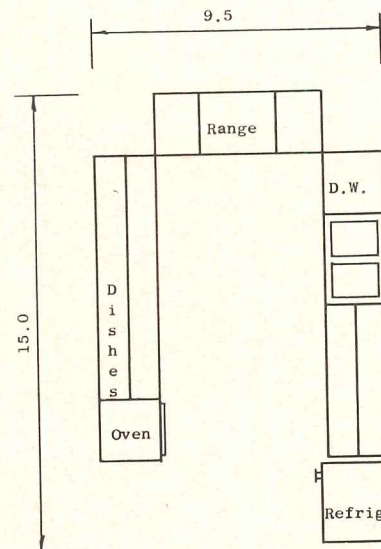
1. Do not place the sink or range



Plan 5



Plan 6



Plan 7

If the mix center is placed between sink and refrigerator, as in the preferred sequence, the corridor arrangement increases in size to 189 sq ft (Plan 5). Extra desk storage is in the kitchen proper. Plan 6 (252 sq ft) and Plan 7 (255 sq ft) require more space, but also result in larger dining areas

surface burners at the corner of a U-shape or L-shape kitchen. Keep these appliances 1.5 ft from the corner.

2. Do not interrupt a continuous counter with a refrigerator or a built-in oven. In most cases, this unit should be located at the end of the assembly.

3. When possible, eliminate all through traffic from the working area. This will generally mean that any outside door should not be located in the working area of the kitchen.

4. Provide the following working clearances: between two opposing sections of cabinets and/or appliances, the clearance should be 5 ft to allow working space for two persons; between a wall and an opposing section of cabinets and/or appliances, the clearance should be 3.5 ft. The same clearance should be provided for passage at the end of a table.

LIGHTING

Most kitchens will have some provision for windows in order to have visibility to the outside. Generally speaking, it is impossible to light every working area adequately by natural light alone and, therefore, good artificial illumination is essential. Fluorescent tube strips on the ceiling above the counter surfaces give nearly shadow-free light; luminous ceilings are excellent.

It is common to place windows

over the kitchen sink; however, this is not essential in a kitchen where dishes are washed by a machine.

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- (2) Elizabeth M. Ranney, *Kitchen Planning Standards*, Circular Series Index Number C5.32, University of Illinois Bulletin, Vol. 47, No. 19; October 1949. Urbana, Illinois
- (3) Helen E. McCullough and Martha S. Schoepel, *Separate Ovens*, Circular Series Index Number C5.33, University of Illinois Bulletin, Vol. 53, No. 36; January 1956. Urbana, Illinois
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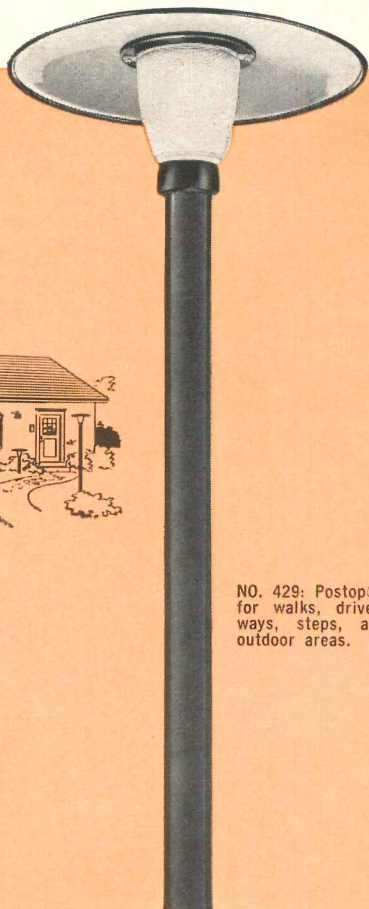
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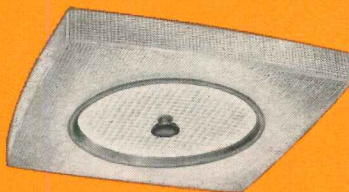
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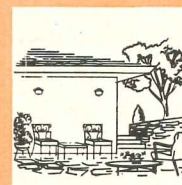
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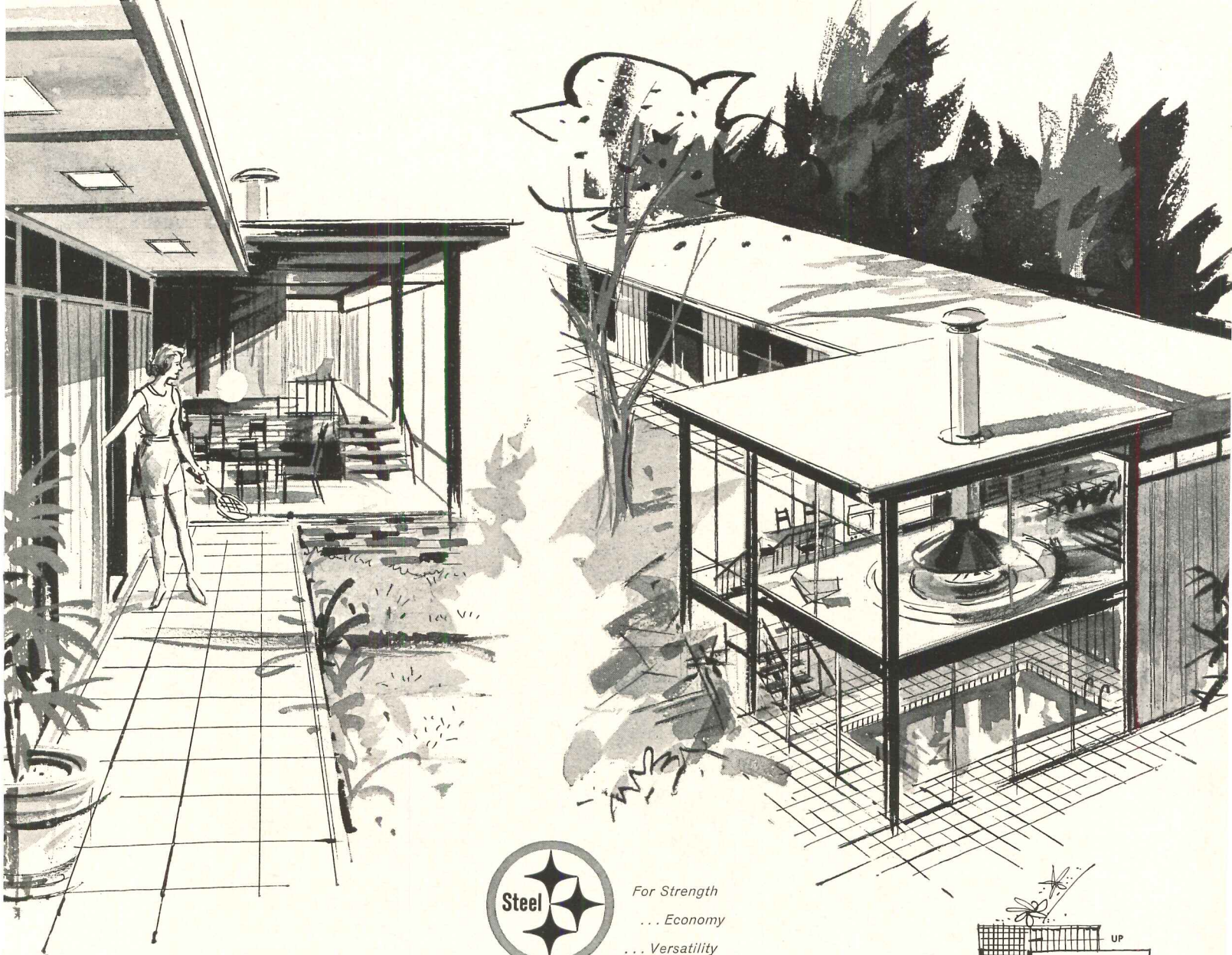
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CURTAIN WALLS OFFER DRAMATIC POSSIBILITIES. When a house is framed with steel, the walls do not carry weight. Exterior walls need be designed only to provide insulation and security. Many types of panel materials can be put in place for less than the cost of conventional wall systems. For instance, huge glass panels and sliding glass doors can be placed between the steel columns to bring the outdoors in. Where opaque wall materials are preferred, you can use anything you like — porcelain-enameled steel, plastics, wood, brick, or stone.

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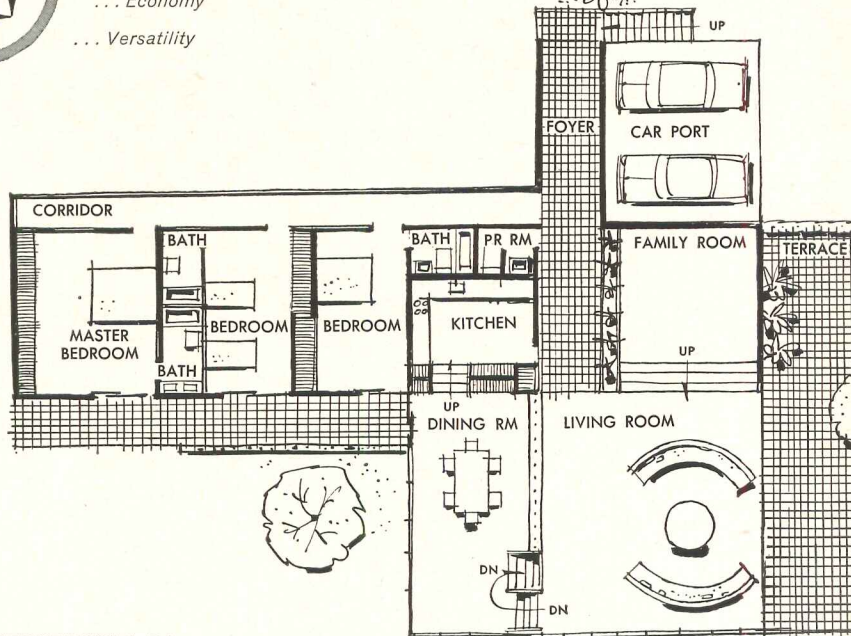
HOW ABOUT THE COST? With “problem” sites, steel commonly *saves* clients money. But even on level lots a steel-framed house need not cost a penny more than any other.



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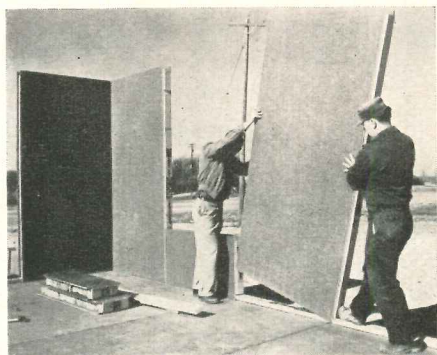
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See Bethlehem's exhibit on three of the "Top Ten Plants of 1960"
at the Industrial Building Exposition and Congress, December 12-15, in the New York Coliseum.

PRODUCTS FOR THE HOUSE

Advances in design, convenience, and utility are reflected each year in a host of new products for the home. A selected cross section of new items is presented here to show manufacturers' versatility at work for home owners. For convenience, products are broadly classified as to whether they are built-in components of the structure, new products for heating and air conditioning, new designs for the kitchen, or other useful items for the home. Building Component items begin on this page.



Factory-Assembled Wall Units

A new Flex-Ponent system of factory-assembled building units by Johns-Manville consists of load-bearing exterior insulated wall panels with associated door and window headers and corner posts, and load and non-load bearing interior wall panels with door headers and associated appurtenances. Use of the system enables the builder to erect in one step an entire pre-insulated wall. Exterior walls may be finished in board and batten style or covered with shingles or masonry. Interior walls, after the joints have been treated, as recommended, are ready to receive paint or wallpaper.

Units are faced with a new manufactured lumber specifically developed for the system. Installation of wiring and plumbing is comparable to that used with conventional construction. *Johns-Manville, 22 East 40th St., New York 16, N. Y.*



Hardboard Fiber Siding

A siding, Masonite X, made of compressed fiber presents a deep shadow line, superior stability, exceptional dent-resistance and weatherability, according to the manufacturer. Other

features are: exposure up to 11 inches, uniform quality, easy paintability, absence of knots and other defects. It won't split, splinter or check. Faces and edges are factory-primed and the backs sealed. Two guidelines at each edge are included for quick alignment. Siding is available in 12- and 16-ft lengths, 12-in. width and $\frac{7}{16}$ -in. nominal thickness. *Masonite Corporation, 111 West Washington St., Chicago 2, Ill.*



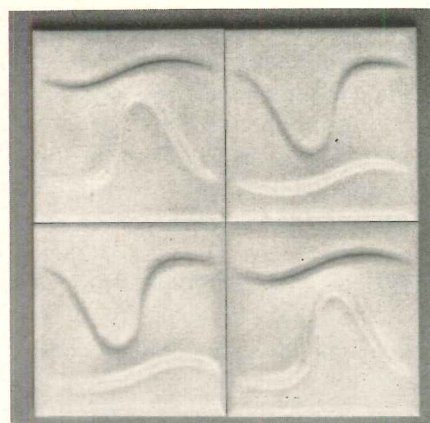
Heavy-Duty Folding Partitions

New dimensions in panel width and thickness combine with natural wood beauty in the new Pella wood folding partition. Available in American walnut, ash, birch, oak, pine and Philippine mahogany veneers, the new partition is designed for installations requiring a substantial closure or divider to meet the demands of hard use and imposing architectural proportions. The $10\frac{3}{8}$ -by $1\frac{1}{16}$ -in. panels are constructed with solid wood cores. Partition rolls on ball bearings so that only one pound of pressure per panel is needed to operate. Available in heights up to 20 ft and in widths to 50 ft per assembly, partitions can be factory finished or ready for finishing on the job. Spring hinges allow partitions to be installed section by section. *Rolscreen Co., Pella, Iowa.*



Pecan Plywood Paneling

A new room, tasteful, beautiful and immune to family wear and tear, can be made in basement or attic with the new pecan hardwood plywood wall panels developed by Georgia-Pacific. They have a polymerized, baked-on, factory finish similar to that of a fine automobile. Pecan is tough as maple and fast becoming as popular as best-seller walnut. *Georgia-Pacific Corp., Equitable Building, Portland 4, Ore.*



Sculptured Ceramic Tile

The Caribbean series of Robertson ceramic tile features sculptured surfaces creating designs in relief. Suitable for both commercial and residential interiors with a choice of six patterns, 46 colors, in bright and semi-matte finishes. *Robertson Mfg. Co., Tile Division, Trenton 5, N. J.*
more products on page 160

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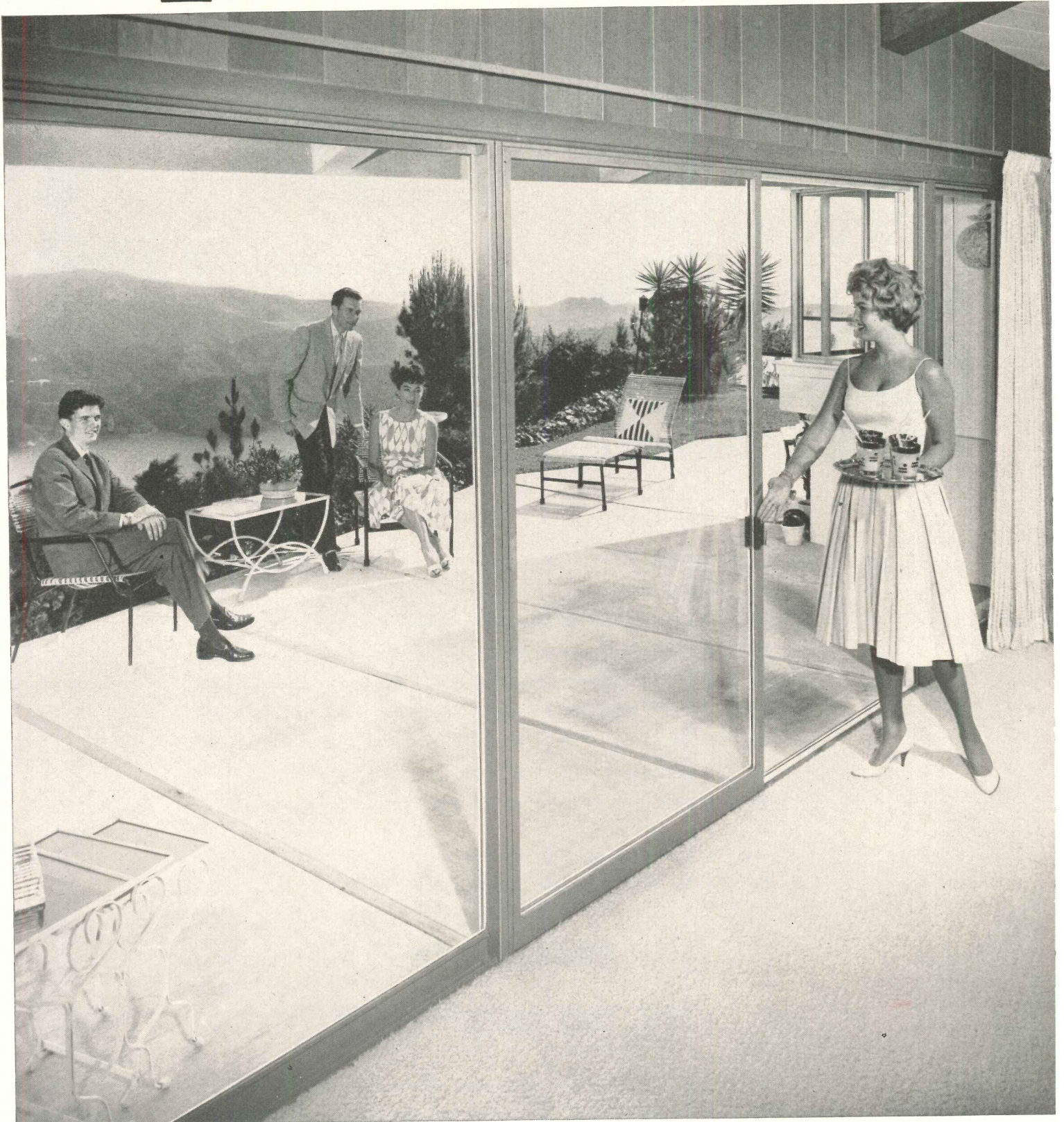
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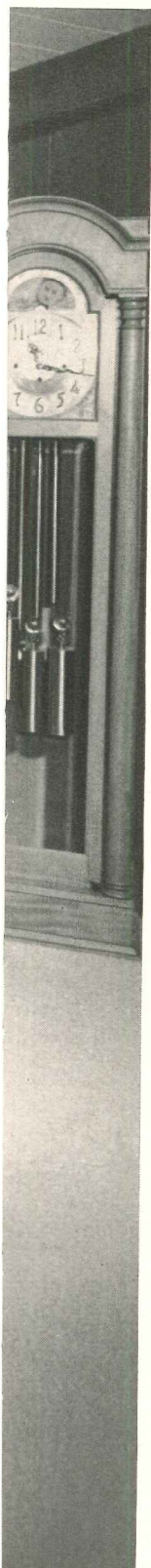
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LEFT: The L·O·F *Parallel-O-Plate* (clear plate glass) used in the residence of Roy G. Beckley, Bel Air, Calif., is twin ground for clearest vision. House was designed by T. K. Almroth.

RIGHT: *Thermopane* insulating glass is used in this house at Cedar Point Cove, on the shores of Lake Erie. *Thermopane* keeps homes cooler in summer, warmer in winter, helps reduce heating and air-conditioning costs. Architect: William J. Gabriel, Shaker Heights, Ohio.

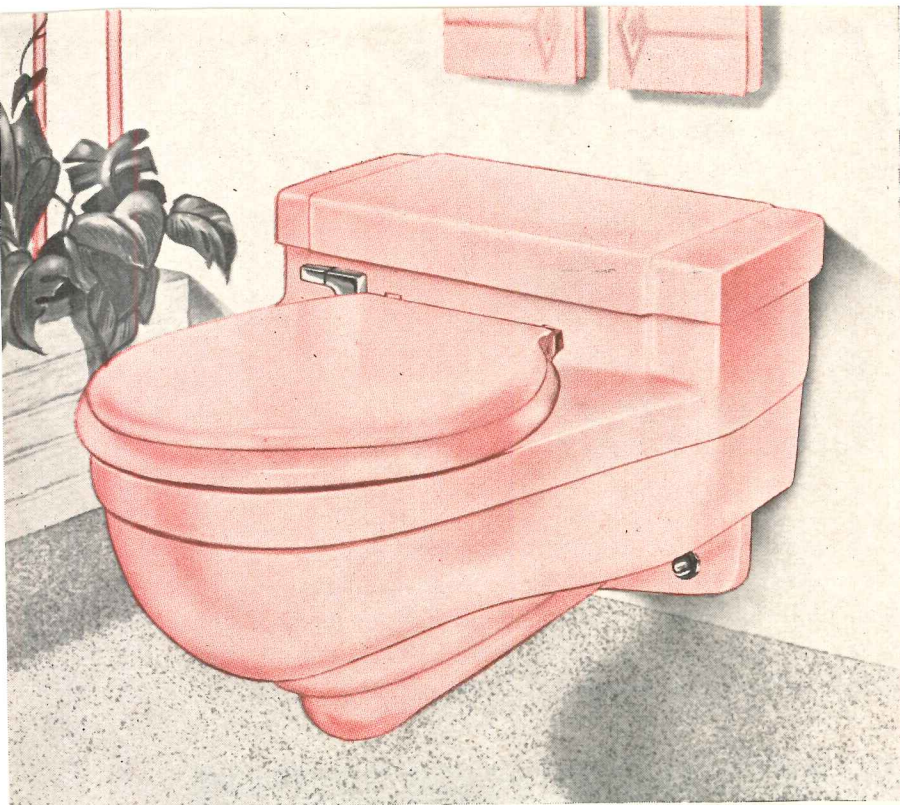


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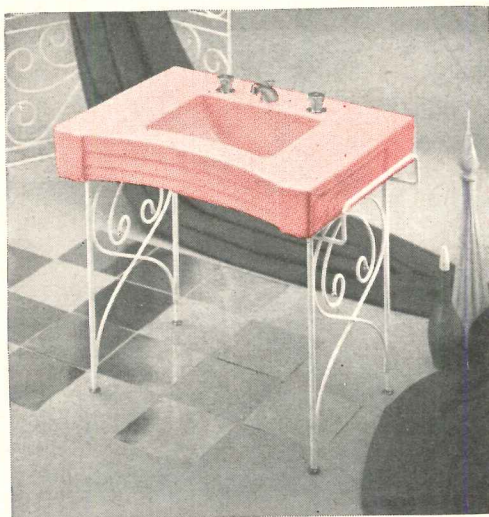
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Products

continued from page 156



Textured Masonry Finish

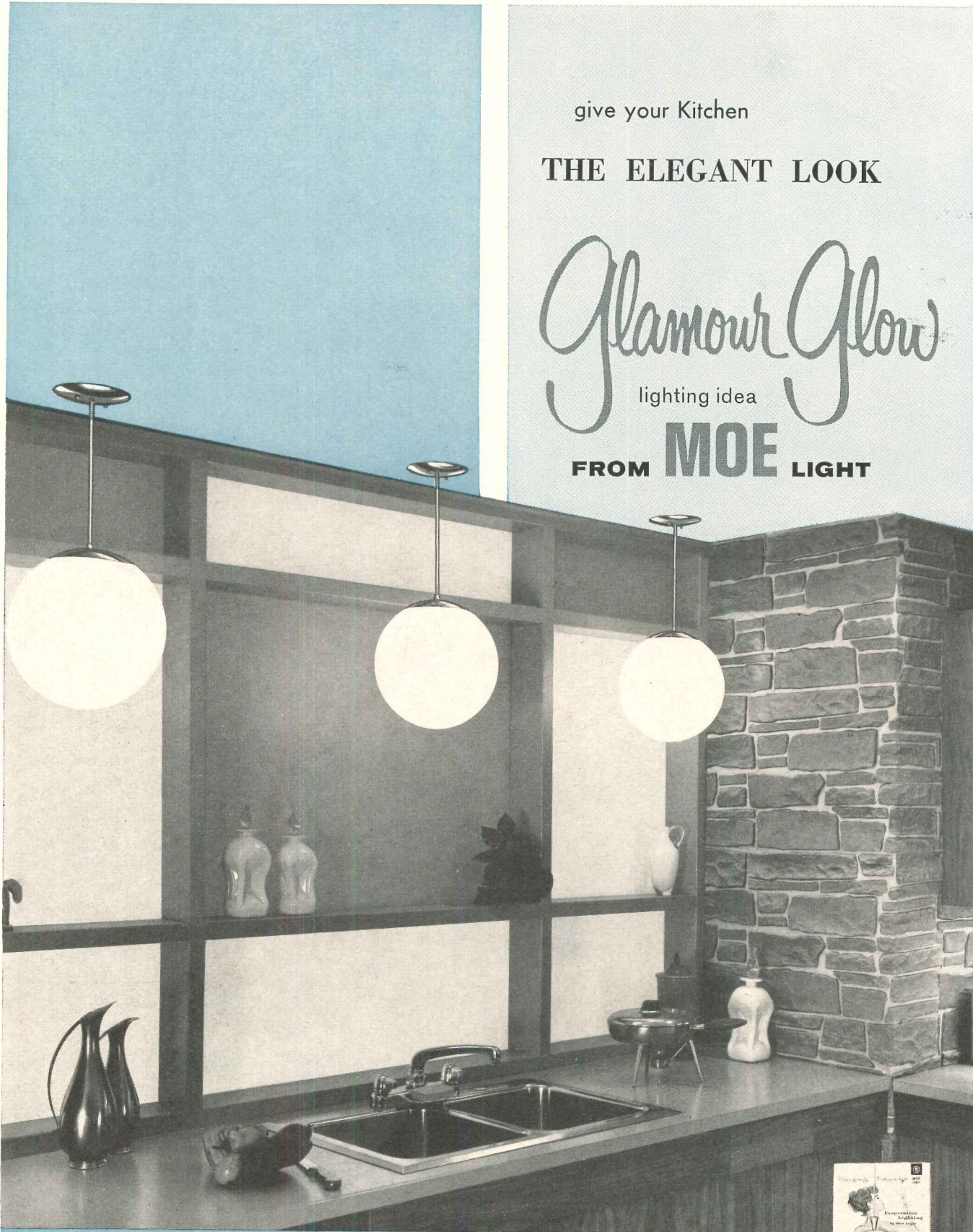
Finishes of polyurethane with suspended aggregates have been made possible by development of equipment to spray simultaneously a two-package, pigmented polyurethane compound with a stream of dry aggregate. Bostik finish can be varied from just a hint of texture, similar to that of fine sandpaper, to that of a rough, pebbly surface. Surface hardness may be controlled over a wide range with relatively minor effect upon impact resistance, flexibility, and other characteristics. Urethanes provide a combination of texture and color with a durability heretofore unobtainable. This is why the Bostik coatings were specified for the John Vereen residence in Coconut Grove, Miami, Fla., one of the RECORD HOUSES in this issue. *BB Chemical Co., 784 Memorial Dr., Cambridge, Mass.*



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Bruce-Coraloc Free-form swimming pools feature corrugated steel side-walls which permit free-form construction at no additional cost. Delivered in kits, pool equipment includes steel wall panels, ladder, diving board, underwater light, filter and all necessary plumbing fixtures. Installation time is five days. *Coraloc Pools Division, E. L. Bruce Co., Memphis 1, Tenn.*

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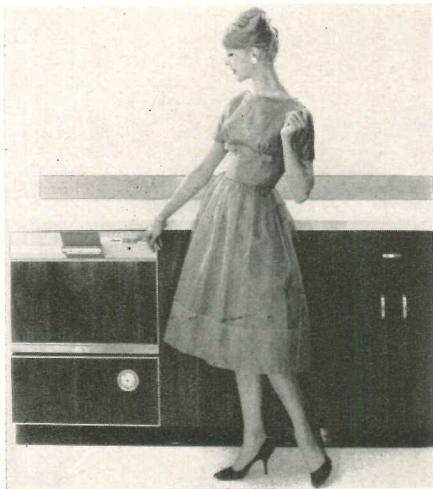
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Products for the Home Kitchen

continued from page 160



Dishwasher with Variable Cycle

Choice of three separate dish washing cycles at the touch of a button combined with new styling and appearance highlight the new Superba Vari-Cycle series of KitchenAid home dishwashers. Other new features include: An automatic rinsing agent dispenser, choice of a power pre-wash, unlimited opportunity for color and interchangeable front styling, increased capacity and loading versatility.

The Superba VariCycle is offered

as an undercounter built-in and, with a single conversion kit, can be transformed into a free-standing unit with porcelain or solid maple top, or a counter-height model mounted on an 18-in. double-door base cabinet. Special trim kits will accommodate one-quarter inch wood fronts or other material of the homemaker's choosing. *KitchenAid Home Dishwasher Division, The Hobart Mfg. Co., Troy, Ohio*



Oven with Blower System

A new built-in electric oven with an integral exhaust blower system by

Thermador needs only one installation and one wiring hook-up, hence offers lower installation cost, more efficient operation, and a better appearance. The WO18ARH oven fits into a standard 24 in. wide cabinet and has the same interior dimensions as other Thermador built-in-ovens. A hood covers and conceals a filter of stranded aluminum which can be easily removed for cleaning. Air discharge is through the back of the blower housing. A collar is provided for connecting to standard 4-in. diameter conductor pipe. *Thermador Electrical Manufacturing Co., 5119 District Boulevard, Los Angeles 22, Calif.*

Built-in Spice Cabinet

A new built-in spice cabinet is available in five colors including copper and chrome. The cabinet is 14¼ by 5¾ by 2¾ inches, holds nine boxes of condiments. Each box is removable and has a frame for removable label. The cabinet can be recessed into new or existing walls between standard studs. *D'Anco Mfg. Co., 2612 East Colorado St., Pasadena, Calif.*

EARLY AMERICAN SERIES

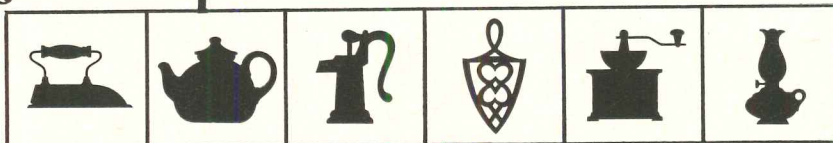
Here's a new fast-moving item that's a real money maker!

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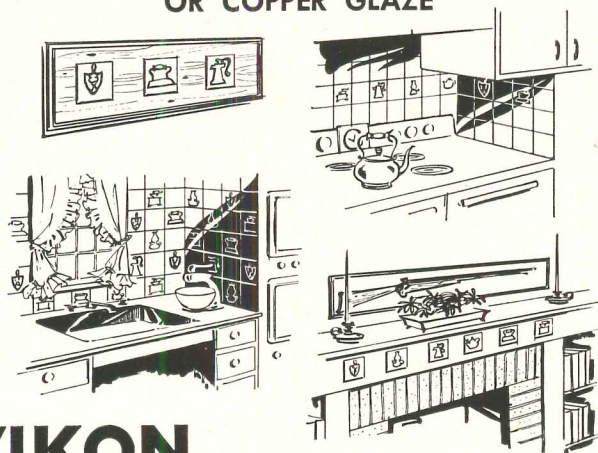
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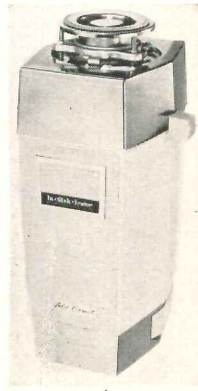
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New Look in Garbage Disposers



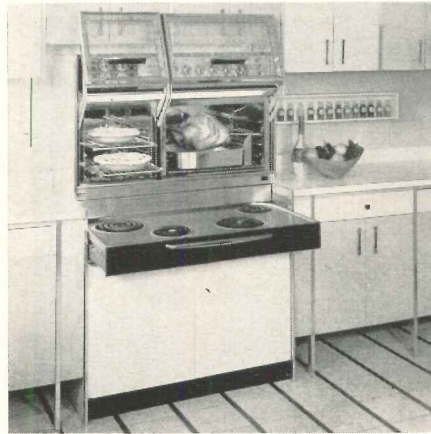
A new look as well as improved operation are embodied in an all-new line of disposers being introduced by In-Sink-Erator. New series consists of four models, all encased in high-impact polystyrene in muted-white with gold and silver trim. Shape is more rectangular with

smoothly-curved lines. Grinding mechanism sound is deadened by an acoustical inner liner of foam-type polystyrene. An engineering improvement makes the disposers jam-free in all ordinary use. Homemakers can easily retrieve accidentally inserted metal object themselves without the expense of a service agency.

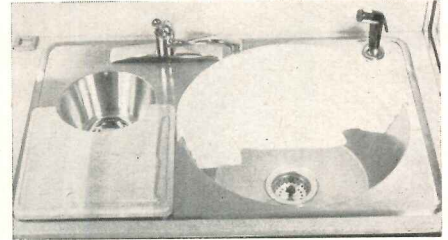
The four new models, called the Gold Comet, Silver Star, Saturn and Mark 2-7, provide various capacities for feeding either continuously or by batch. *In-Sink-Erator Mfg. Co., 1225-14th St., Racine, Wisc.*

Free-Standing Range, Built-in Look

New free-standing electric range design is Frigidaire's Flair 40-in. model which looks like a built-in but slides into place as easily as a conventional unit. Unique oven doors glide up out of the way. Because they do not open out over the cook-



ing surface, there's always headroom for the tallest utensil. These ovens are truly accessible for loading, unloading or cleaning. Cooking surface pulls out like a drawer, at 32-in. work height. *Frigidaire Division, Dayton 1, Ohio.*



Stainless Steel Sinks

A complete cleaning and preparation center in only 32 in. of counter space. An 18½-in. bowl, stainless steel, Swirl-Flo self cleansing sink is unobstructed for washing and rinsing; disposer well is located separately with chopping board adjacent. Peelings and cuttings are simply scraped from board to disposer. In addition the 3½-in. deep hi-density polyethylene colander fitting larger bowl is useful in thawing of foods, cleansing vegetables, an all-around utility item. Sink comes complete with chopping board and colander, is self-rimming for easy installation and safe sealing. *Aeronca Manufacturing Corp., Metal Products Division, Middletown, Ohio.*

more products on page 166

Now PresTeel Spiral Stairways for Houses

INTERIOR AND EXTERIOR TYPES



SAVES SPACE—CUTS COSTS

More and more architects are now specifying Woodbridge PresTeel spiral stairways for houses. They require floor area only the size of an average clothes closet. Optional features of these graceful PresTeel stairs are a choice of wood treads and 7 gaily colored plastic handrails.

A stairway for an average enclosed stair well 4'-0" in diameter by 8'-0" high will cost from \$275 to \$325. Send us your plans or specifications and we'll be happy to send you a quotation by return mail.

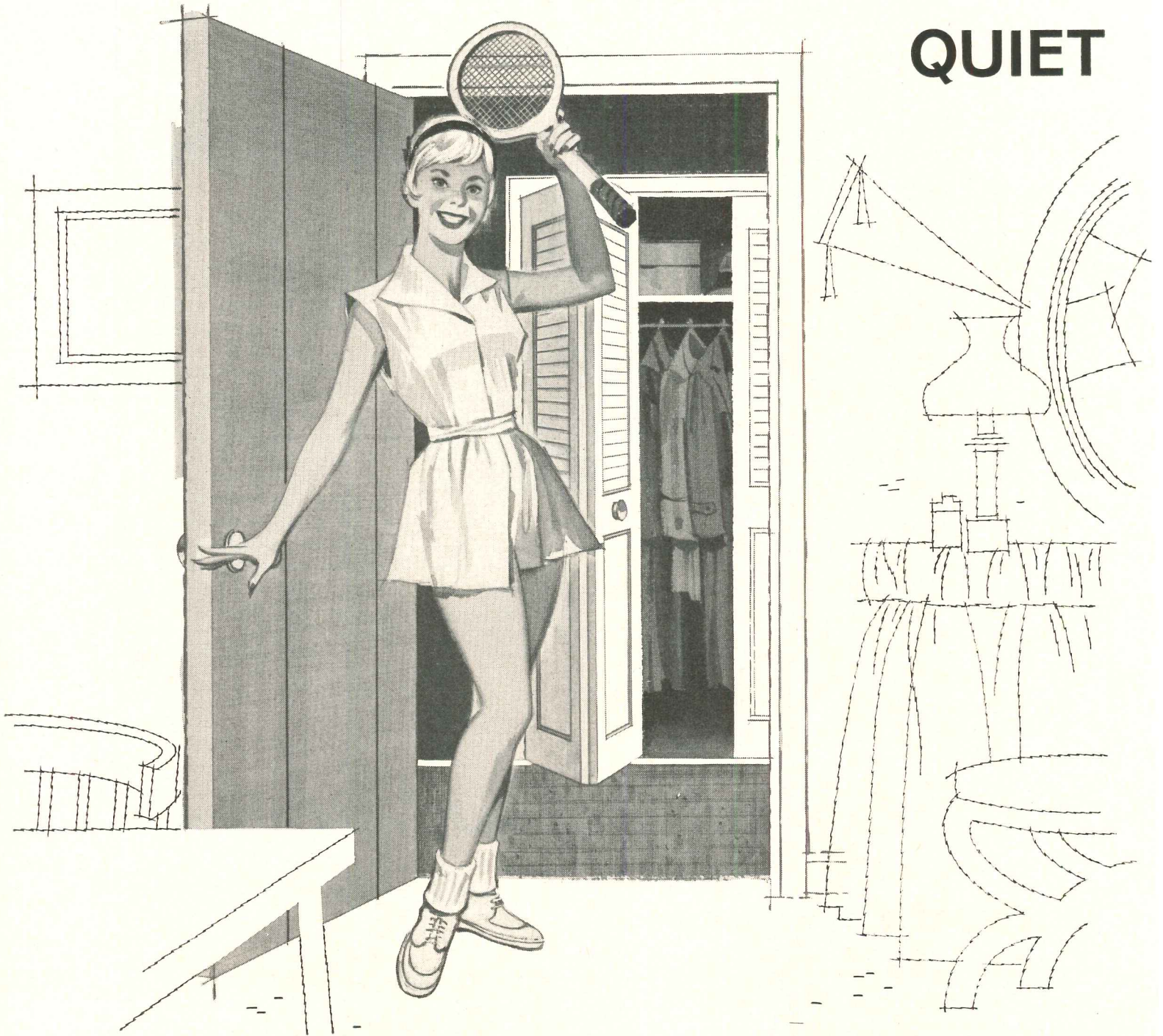


WOODBIDGE ORNAMENTAL IRON CO.
2715 N. Clybourn Ave. Chicago 14, Ill.

What about mentioning Sweet's?

TRUSCON METAL DOORS

QUIET



TRUSCON BIG-VALUE ALUMINUM WINDOWS now available in complete selection of types and sizes. Truscon's major program of engineering excess cost out of window production and distribution is now complete. The best-known brand is a better value than ever. If you are tired of shoddy windows with an unknown name, take a new look at Truscon. There's a new value in the brand. Single- and double-hung styles, awnings and jalousies, sliding and fixed types ready now. Return coupon.



AND WINDOWS OFFER LUXURY AT LOW-COST

Unmistakably, the trend is to greater use of metal doors.

Steel doors, in particular, have a look of luxury and a solid, solid feel. Well-behaved, too, with their knack of opening easily, closing crisply as a proper door should. No sticking as weather and humidity change, because steel can't swell, warp or sag.

Colorful! Truscon Steel Doors are Bonderized and prime coat painted. Decorators finish paint with one coat and need no sandpaper, no sealer, no primer.

Flush fit and modern design add to appearance. Economy extends from low first cost through to fast, easy installation.

Truscon offers a wide choice of styles and sizes, including the luxurious Classic Louver Folding Closet Door. Call your Truscon representative or send coupon below.



REPUBLIC STEEL

REPUBLIC HAS THE FEEL FOR MODERN STEEL



KITCHENS OF CHARACTER, LOW IN COST. Republic Steel Kitchens offer all the functional and installation advantages of steel cabinets; plus stay-new beauty in decorator colors—yellow, turquoise, pink, white. You design kitchens of character using Republic's widest selection of wall and base cabinets, sink centers, cabinets for built-ins, plus special purpose cabinets and drawer arrangements. Full line catalog is your starting point. Send coupon.



This STEELMARK of the American Steel Industry tells you a product is made of Steel. Look for it when you buy. Place it on products you sell.

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DEPT. AR-2159
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

I need more information on:

Truscon Steel Doors Truscon Aluminum Windows Republic Steel Kitchens

Name _____ Title _____

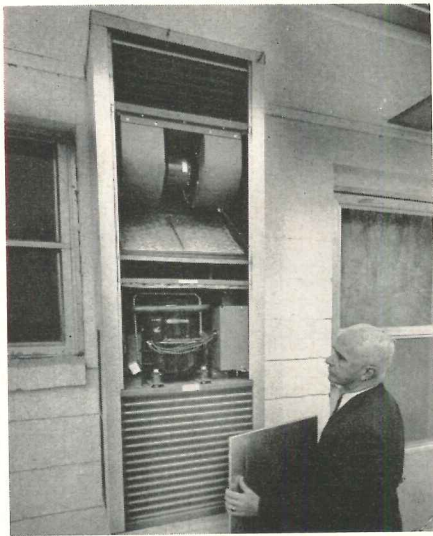
Firm _____

Address _____

City _____ Zone _____ State _____

Products for Heating and Cooling the House

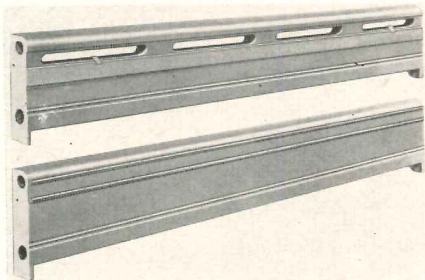
continued from page 163



Through-Wall Heat Pump

A new heat pump by Westinghouse attaches directly to the outside wall of the home, provides central system cooling and mild-weather heating. Rated at 18,000 Btu per hr., it will serve about 1,000 square feet of area. For larger homes, two units may be applied with zoning. Weatherproof cabinet is approximately six feet high, two feet wide and one foot deep. For a home of block construc-

tion, only two blocks need be removed for installation. Air flows into the home through the upper opening with a minimum of ductwork required, and returns to the unit through the lower opening. *Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh 22, Pa.*



Damper Improves Baseboards

Innovation in baseboard heating is the *Base-Ray* damper, which makes it possible to control the heat of each room in the house individually. All *Base-Ray* installations now have the new damper, which can easily be added to existing installations. Assembly consists of damper and damper hinges. It is held closed by its own weight, can be opened or closed by a

flick of the finger. *Burnham Corporation, Heating & Cooling Division, Irvington, N. Y.*

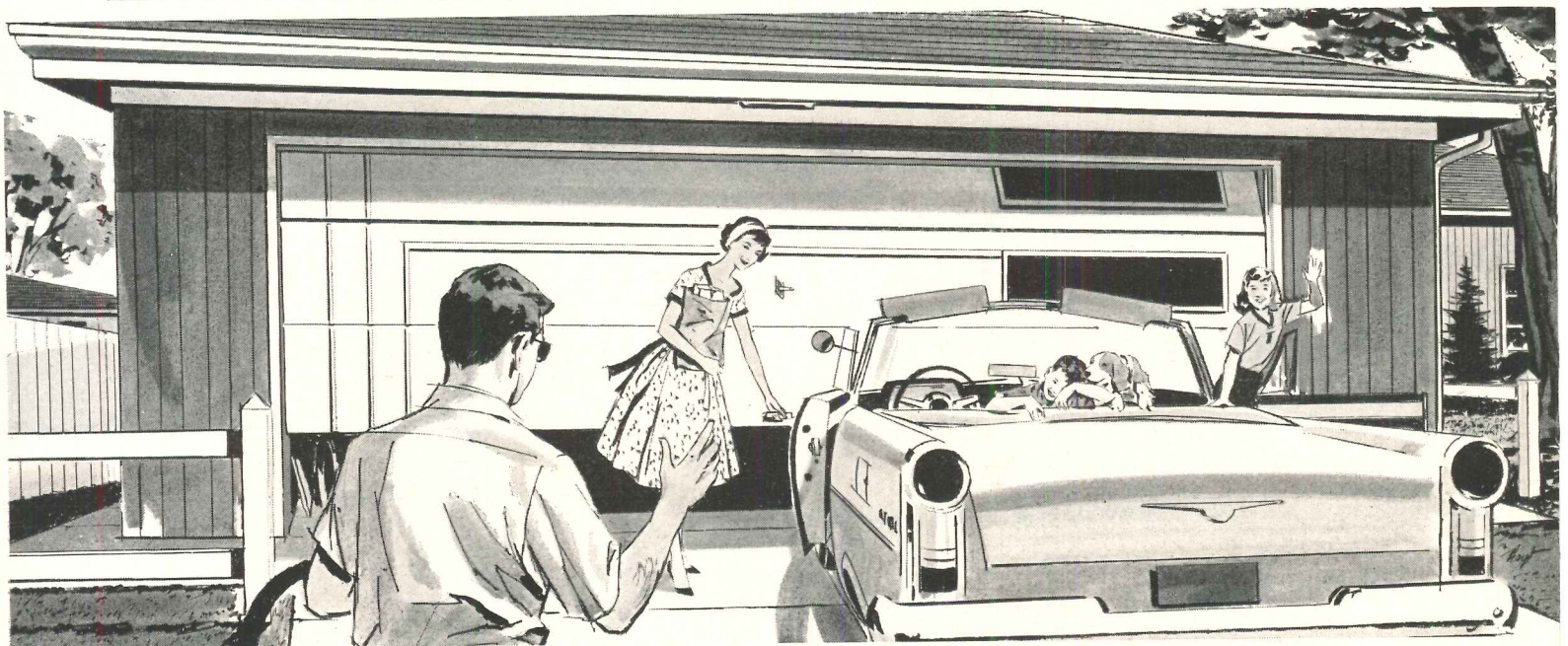
Room Coolers

Chrysler Airtemp has introduced 20 new models of room air conditioners for 1961 in capacities from 6,000 to 28,000 Btu per hr. There are four series; the Imperial, Power King, Titan and Casement. The Imperial series features a reversible gold-colored



front panel, reverse side of which can be finished to match decor. *Chrysler Airtemp, P. O. Box 1037, Dayton 1, Ohio.*

more products on page 168



RAYNOR Garage Doors complete the scene for gracious family living

Your home is a family affair . . . a Raynor Garage Door complements the exterior beauty of the home . . . provides fingertip operation for everyone's convenience and satisfaction . . . assures year-round weathertite protection.

Contact your nearest Raynor Dealer or write for Raynor Complete Line Brochure and Garage-Aire Screen Door literature.

RAYNOR MFG. CO.
Dixon, Illinois Hammonton, New Jersey



Raynor Garage-Aire Screen Doors transform the garage into a summer FAMILY ROOM.



A ROOF IS A ROOF IS A ROOF . . .

○ FORM ▽ COLOR □ FUNCTION

Or less fancifully, "the cover of any building" in Webster's routine definition of this somewhat commonplace word. And for the great bulk of residential construction in recent years, roofs have been just that—reasonably protective, wholly commonplace. But architects are of course aware that they can be much more, as is notably the case when Follansbee Terne is specified. For this time-tested metal permits the roof area itself to become a major design component, permits both form and color to unite with functional integrity in a lasting guarantee of client satisfaction. Whether architect or prospective builder, we should be very happy to send you detailed substantiation.



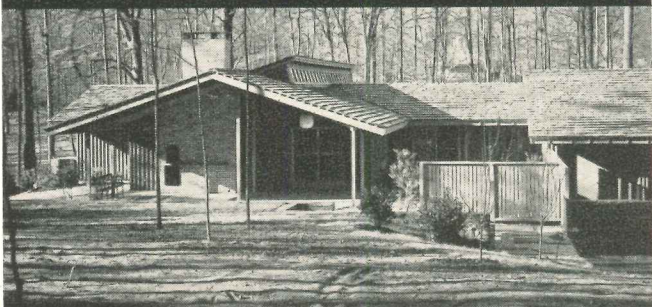
RESIDENCE OF ARCHITECT DAVID WM. CECIL, AIA, SPARTANBURG, S. C.,
ROOFING CONTRACTOR,
R. O. PICKENS, ROOFING &
SHEET METAL WORKS,
SPARTANBURG, S. C.



FOLLANSBEE STEEL CORPORATION
Follansbee, West Virginia

Follansbee is the world's pioneer producer of seamless terne roofing

A look at the "RECORD"



House of Wood, Bethesda, Md.
Cabots Stains on siding

Architect: Keyes, Lethbridge & Condon,
Washington, D.C.

Cabot's STAINS

specified for
6 out of 20
1961 "Record Houses"

Over a seven-year span, the products of Samuel Cabot, Inc. have been specified for 47 out of 135 "Record Houses" . . . an astonishing 35%. This clearly shows where Cabot's Paints and Stains stand with the country's leading architects.

Cabot's Stains were specified by the following architects for 1961 "Record Houses":

- | | |
|--|---------------------|
| ARCHITECTS COLLABORATIVE, | Cambridge, Mass. |
| ROBERT B. BROWNE, | Miami, Florida |
| HELLMUTH, OBATA & KASSENBAUM, INC., | St. Louis, Mo. |
| JOHN L. FIELD AND WALTER H. COSTA, | San Francisco, Cal. |
| SAM B. SHORT & MURRELL, | Baton Rouge, La. |
| KEYES, LETHBRIDGE & CONDON, | Washington, D.C. |



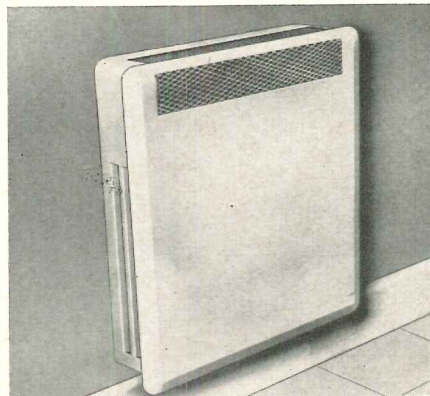
For best results, the best in Stains . . .
Cabot's Oil-base or Creosote Stains.

SAMUEL CABOT, INC.

529 South Terminal Trust Bldg., Boston 10, Mass.
Please send color card on Cabot's Stains.

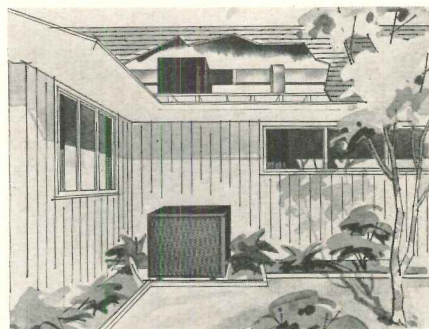
Products

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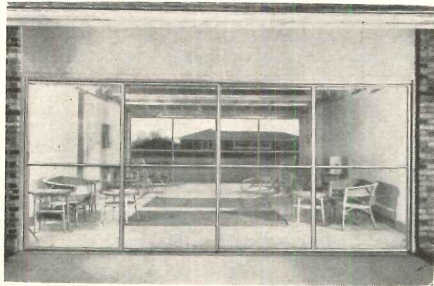
Spot Heater for Cold Corners

For rooms that never seem quite warm enough, Iron Fireman has developed a room heater that can work off a domestic hot water tank or a water-heating boiler. Heater can be recessed in a wall or mounted on a free-standing frame. Hot water supply and return lines must be connected. A fractional horsepower motor drives both fan and circulating pump. Pump is magnetically driven with no seals that can leak. Permanent urathane foam filter is washable. Front enclosure measures 19¼ by 20¾ in. and projects 4½ in. *Iron Fireman Mfg. Co., 3299 W. 106th St., Cleveland 11, Ohio.*



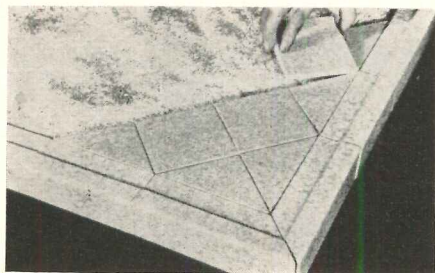
New Heat Pump

An all-electric Trane Climate Changer heat pump takes heat from the outdoor air in winter and transfers it to the indoor air. To cool, it reverses its cycle automatically. The new heat pumps are composed of two compact units. One, containing all moving parts except air distribution fan, is installed outside; the other, about 30 by 25 by 20 in., is installed in the basement, attic, crawlspace, or other out-of-the-way places. Air is distributed by duct work. *The Trane Co., LaCrosse, Wis.*



Screens Make Garage Summer Room

The Raynor *Garage-Aire* screen door was designed to enable the home owner to use his garage for summer living as well as car storage. Addition of a second garage door on the rear or side wall of the garage also can create a covered breezeway. The *By-Passing Garage-Aire* screen door can be installed without hindering the use of present garage doors. It is available in sizes to fit both one and two car openings, is made of rolled aluminum frames covered with weather-proof fiberglass screening. No alterations need be made to the present garage door opening. *Garage-Aire* doors installed on two sides or front and back of a garage create space for outdoor summer living. *Raynor Mfg. Co., Dixon, Ill.*



Ceramic Counter Edge

V-Cap, a rounded no-drip molded one-piece ceramic tile for kitchen counters is now being marketed in three colors. The edge-piece measures six in. long; its lip extends on to the top of the counter two in. and a raised rim keeps liquids on counters. Colors available are cream, salt and pepper, and fawn. Counter-tops made with ceramic tile will not scorch, cut, fade, stain, fray or rot, nor suffer damage from food acids or water. A home color planning chart 21 in. by 32½ in., showing a wide variety of floor and wall tile combinations used with the three *V-Cap* colors is available for ten cents folded or one dollar flat for mounting. *Stylon Corp., Milford, Mass.*

more products on page 170

please

don't make me
a
garbage
collector!

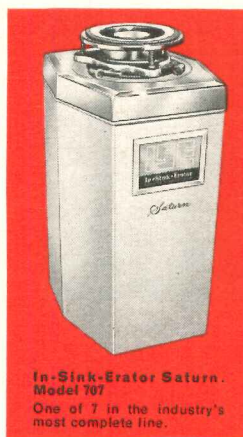


If you must handle soggy garbage even dream kitchens can turn into nightmares!

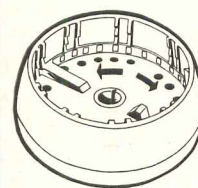
For my new home, I insist on a new, beautiful In-Sink-Erator disposer.* Unlike others, In-Sink-Erator prevents jams thanks to exclusive, patented, automatic reversing feature. It swishes garbage down the drain never to be seen, smelled, or touched again . . . a good reason to specify, even with septic systems.

Write for full information, or a personal demonstration by an In-Sink-Erator representative. Address Dept. 61-RH, In-Sink-Erator Manufacturing Company, 1225 14th St., Racine, Wis.

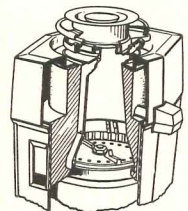
* An overwhelming majority of delegates to the *Women's Conference on Housing* voted the garbage disposer the most wanted appliance of all.



In-Sink-Erator Saturn, Model 707
One of 7 in the industry's most complete line.



Unlike other disposers, In-Sink-Erator prevents jams thanks to exclusive, patented automatic reversing feature. Doubles shredder life. Self-cleaning.



In-Sink-Erator's exclusive sound-absorbent liner permanently blankets interior of unit . . . smother's sounds! That's why it's quieter than any other.

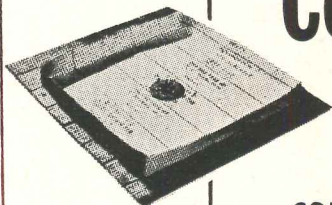
In • Sink • Erator® ISE

The originator and perfecter of Garbage Disposers • In-Sink-Erator Manufacturing Co., Racine, Wisconsin

**SHOWER STALL INSTALLATION
CAN BE MORE PROFITABLE WITH**

... CROSSLINE®

**Compotite®
Shower Pans**



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FREE ESTIMATES

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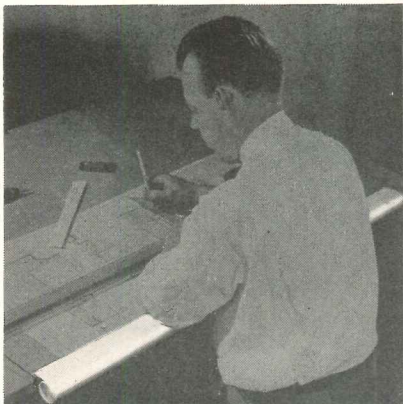
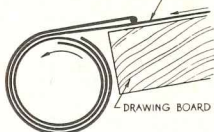


OUT OF DRAFTING

**DRAFTING
IS EASIER**

**DRAWINGS
PROTECTED**

DRAWING MAY BE
MOVED IN OR OUT
AS REQUIRED



Catalogue Number	#42	#48	#54	#60
Actual Lengths	40½"	46½"	52½"	58½"

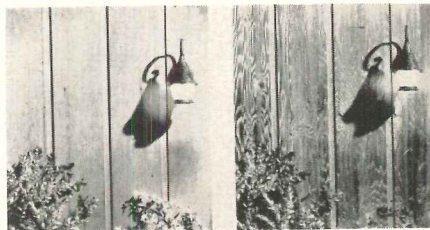
Order from your Blueprinter or

Spiroll Products Company

Concord Road Sudbury, Mass.

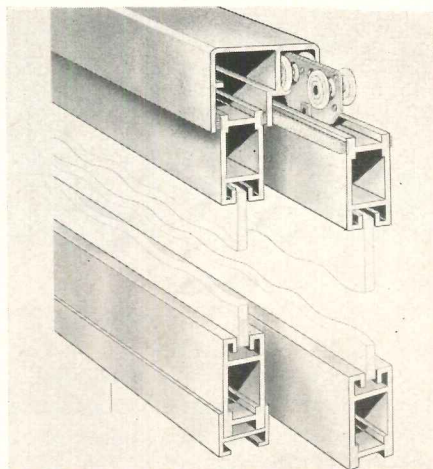
Products

continued from page 169



Red Cedar Siding

A new red cedar plywood siding panel featuring 1½-in. by ¼-in. vertical grooves on 12-in. centers along the face achieves a vertical plank, or board and batten, effect while providing the strength, rigidity and labor saving characteristics of plywood panel siding. Called Weldwood Early American, available in 4 ft by 8 ft, 9 ft or 10 ft panels, the new siding is five-ply, 5/8 in. thick with a rough textured or abraded surface. The abraded surface sharply accentuates the pronounced grain pattern of Western red cedar, while the rough, unsanded panels duplicate more exactly traditional plank construction. *U. S. Plywood Corp., 55 West 44th St., New York 36, N. Y.*



Sliding Glass Partition Wall

A sliding glass partition wall with no threshold or floor tracks is top hung, accommodates panels of clear glass, obscure or patterned glass, plastic, or wood to match any interior decor. Units are available in fixed and sliding types, multiple slide and wall pocket. Also offered are sliding glass patio doors and *MirroGlide* mirrored wardrobe doors. *Miller Sliding Glass Door Co., Inc., 3216 Valhalla Drive, P.O. Box 3115, Burbank, Calif.*



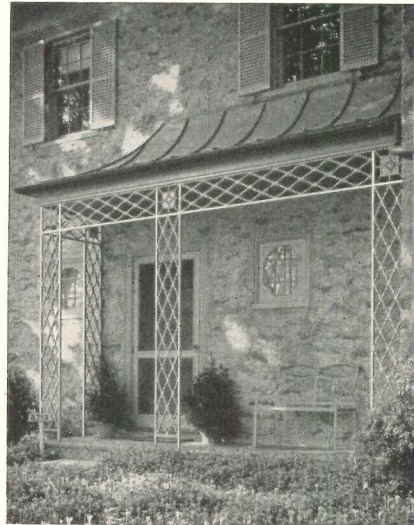
Vinyl Wallcloth Matches Drapes

Fabrique, vinyl-impregnated non-woven wallcloth offers 48 new designs including raised printing, flocking embossed effects and matching fabrics color-keyed to home and commercial uses. The new line is color-coordinated with nationally-known home products such as kitchen appliances, wall and floor tiles, carpeting, draperies, and many other interior furnishings. Lipstick, crayon, pencil marks, ink, scuff-marks from chairs and shoe heels, smudges, and even grease can be removed simply by washing. The wallcovering has equal tensile strength in all directions, is easily butted and does not shrink away from seams, baseboards or wainscoatings. *The Birge Company, Inc., 390 Niagara St., Buffalo 5, N. Y.*



Patterned Cellular Panels

Translucent Tropical panels made from rugged reinforced plastic sheets are gaining popularity for both functional and decorative uses in interior design. Panels in honeycomb, woodcurl, mosaic, circle and colorwheel patterns can be used for room dividers, skylights and window areas. *U. S. Rubber, Naugatuck Chemicals Division, Naugatuck, Conn.*



*J. Lined Conarroe, Architect
Chestnut Hill, Pa.*

For Enduring Charm

... Specify

Architectural METAL WORK

by Fiske

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Stainless Steel and Iron

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For over 100 years, Architects have relied upon Fiske for the widest choice of artistic designs, materials, craftsmanship and dependability. Now, more than ever, Architectural Metal Work by Fiske . . . in Aluminum, Bronze, Stainless Steel and Iron . . . represents the finest obtainable.

Write for our catalog of designs or send blueprints for quotations.

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Living

NEW TALK-A-PHONE
ALL TRANSISTOR
HOME INTERCOM-RADIO SYSTEM

Everyone in the family will enjoy the comfort, convenience, and peace of mind this system provides. From any room in the house you can . . .

- Listen-in on baby, children, or sick room.
- Answer outside doors without opening door to strangers.
- Talk to anyone—upstairs and downstairs, inside and out.
- Enjoy radio in every room with the simple flick-of-a-switch.

Distinctively styled. Beautifully finished in richly blended gold, polished and satin silver tones. Easily installed in any home. Built-in and surface-mounted models available. Write for complete information.

 World Honored for Style, Quality, and Dependability.

TALK-A-PHONE CO. A.I.A. File No. 31-i-51

Dept. AR-5, 5013 N. Kedzie Ave., Chicago 25, Illinois

Reference Reading

From the wealth of material published by manufacturers describing product developments over the year in the home building field, selections are reviewed.

Aluminum Awnings

An 8-page brochure describes and illustrates in full color what *Flexalum* aluminum awnings can do for the home. *Bridgeport Brass Company, Hunter Douglas Division, 30 Grand Street, Bridgeport 2, Conn.*

All About Plywood

Three brochures show techniques of installation and various uses of plywood: (1) A 16-page brochure, titled *Tomorrows Home Today*, gives a complete case history of a research house built to explore the uses of fir plywood in home building. (2) A 12-page booklet describes the Sturdi-wall system for residential buildings combining siding and sheathing in the form of plywood panels. (3) Construction of plywood floors is described in a 10-page brochure, supplemented by a 4-page bulletin describing Insta-floor system of pre-framed floor construction. *Douglas Fir Plywood Association, 1119 A Street, Tacoma 2, Wash.*

Bathroom Cabinets

A complete line of medicine cabinets, lavatory mirrors, bathroom accessories including a new slide-door cabinet with winged vanity mirrors and separate overhead light fixture is described in a 24-page catalog. *F. H. Lawson Co., Cincinnati 4, Ohio*

Remote Condensing Unit

A 6-page brochure in full color describes the Mueller Climatrol 938, waterless remote condensing unit for residential air conditioning. *Mueller Climatrol Division, Worthington Corp., 2005 West Oklahoma Ave., Milwaukee 1, Wisc.*

Selecting Wood Components

A series of illustrated brochures offers tips for home owners on how to select built-ins, doors, windows and other wood parts of the home. Other guides cover flooring, siding, paneling, framing and sheathing. Each booklet is written by experts in layman's language. *Wood Information Center, National Lumber Manufacturers Association, 1319 18th Street, N. W., Washington 6, D. C.*

Ideas for the Home

A 24-page booklet offers ideas for planning and improving homes with Stanley tools and Stanley hardware products including hinges, cabinet hardware and accessories with instructions for building bookcases, closets, storage walls for the home. *Stanley Hardware Division, Dept. PD, The Stanley Works, New Britain, Conn.*

Windows and Doors

A 32-page booklet in color describes and illustrates the Woodco line of prime windows and doors including jalousies, storm windows and screens, interior and exterior doors. Features, specifications and arrangements are included. *Woodco Corp., Box 32, North Bergen, N. J.*

Book of Fireplaces

The Donley book of successful fireplaces and how to build them, 17th edition, 100 pages, describes and illustrates a parade of fireplaces in various styles and materials; masonry and metal, built-in and free standing. There are hints on tending, furnishings for fuel storage and cleaning. Details of construction and hints for do-it-yourself are included. The book is offered at one dollar. *The Donley Bros. Co., Cleveland 5, Ohio.*

Plastic Finished Panels

A complete line of Marlite plastic-surfaced wall and ceiling paneling is described in a catalog showing applications and full-color product information on Maralite hi-gloss panels, plank and block. *Marsh Wall Products, Inc., Dover, Ohio.*

Termite Control

How to Build Out Termites is the title of an 8-page illustrated booklet in non-technical language. It covers proper procedures for control of termites in wood and slab type construction and brief discussions of wood fungi, the carpenter ant, beetles and other enemies of wood in the home. *Terminix Division, E. L. Bruce Co., Box 397, Memphis 1, Tenn.*

Design of Wood Structures

A 16-page publication covers design of wood structures for permanence with sections on control of decay, termites, principles of good construction, drainage, sanitation, wood treatment and maintenance. The brochure is illustrated with detailed drawings. *National Lumber Manufacturers Association, 1319 18th St., N.W., Washington 6, D. C.*

Construction Manual

A 24-page booklet, revised edition of the Masonite Construction Manual, gives illustrated application data on 57 types and thicknesses of hardboard. *Service Bureau, Masonite Corp., Suite 2037, 111 West Washington St., Chicago 2, Ill.*

Lighting Guide

A 60-page full color illustrated guide and catalog, *Inspiration Lighting by Moe Light*, is offered at 50 cents a copy. Full color illustrations of lighting suggestions for various rooms are accompanied by catalog material on available lighting fixtures. *Thomas Industries, Inc., Moe Light Division, 207 East Broadway, Louisville 2, Kentucky.*

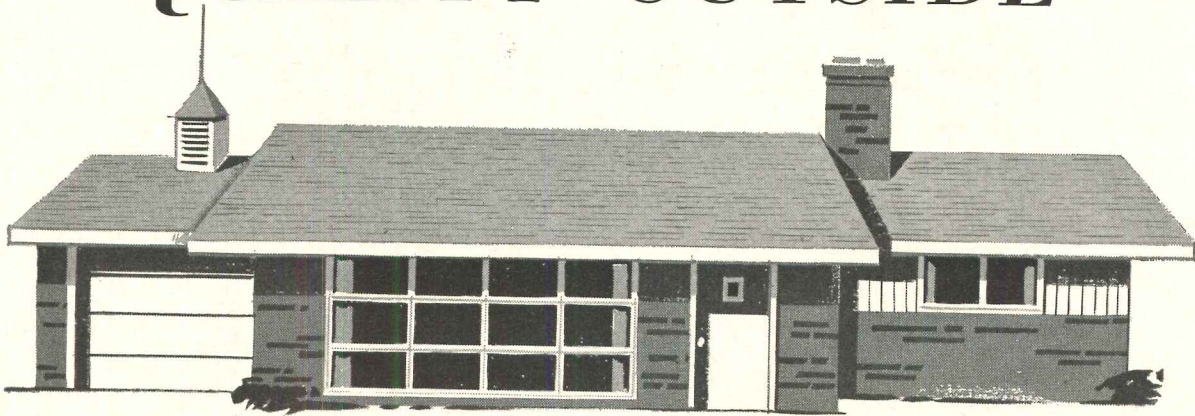
Wallpapers for Decorators

A new style index of 23 wallpaper styles including many designs by Philipp Yost is offered for commercial and residential interior decorators. Papers are finished for easy maintenance. Patterns represent four basic design styles: Classic, provincial, eastern and contemporary. *Murals, Inc., 134-12 Atlantic Avenue, Richmond Hill 19, N. Y.*

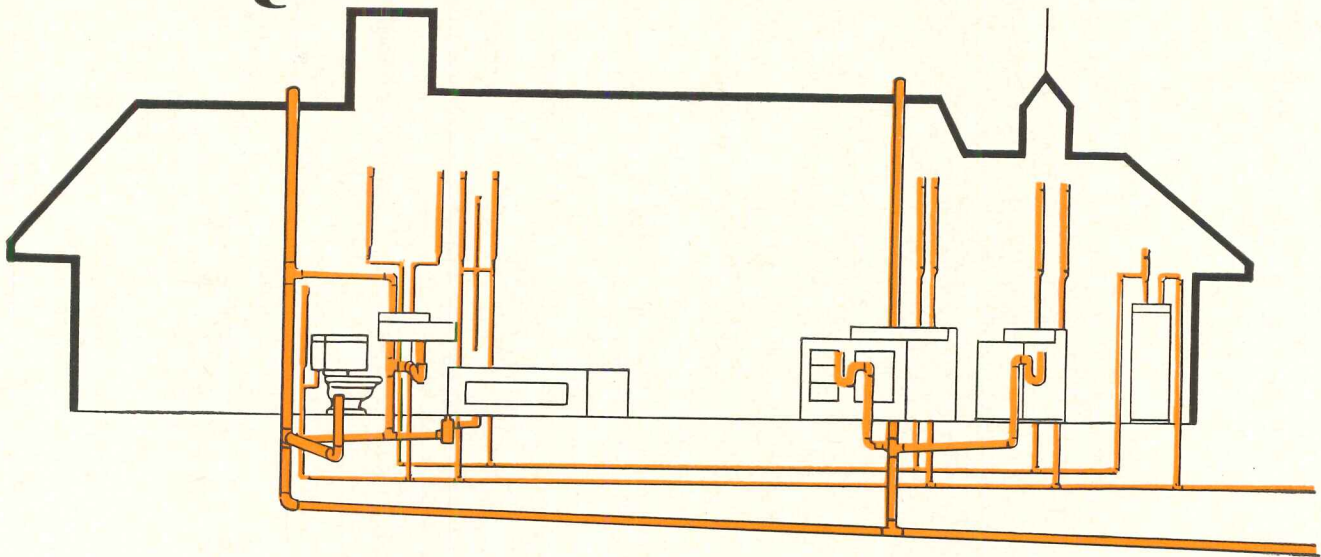
Ceiling and Wall Partitions

A collection of full color bulletins describes the Simpson line of building products including Lifeclad pre-finished plywood and matching flush doors, industrial plywoods, a variety of doors, Lifecoat redwood siding and paneling, insulating board, roof deck, acoustical ceiling, etc. Bulletins are in full color with specifications and installation instructions. *Simpson Timber Co., Seattle, Washington.*
more literature on page 177

QUALITY OUTSIDE



QUALITY INSIDE



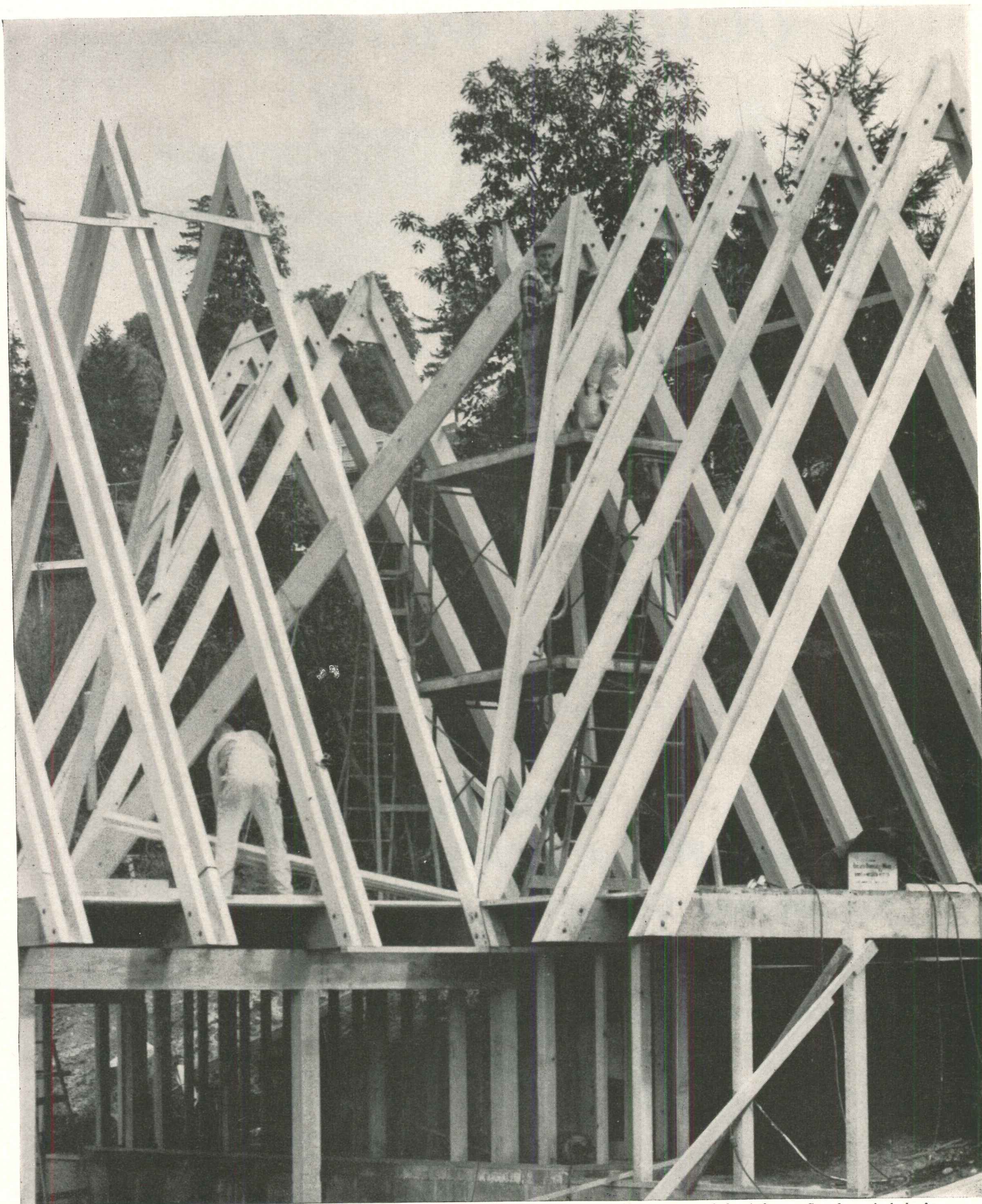
Streamline[®] COPPER TUBE AND FITTINGS FOR A MODERN PLUMBING SYSTEM...

A modern plumbing system, fabricated from Streamline copper tube and fittings, is the mark of quality in any home. Such a system costs no more than one made of rustable materials yet has many outstanding advantages. Plumbers like copper's ease of handling and installing. Builders like the space-saving feature of copper drainage (standard 3" stack fits within a 2" x 4" partition . . . "furring out" is eliminated). Everyone likes the durability of Streamline supply and drainage systems. Copper quality costs no more, so why not specify and install Streamline tube and fittings?



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From the ground up, this triangular skeleton tells the story of the A-frame. Sturdy, twin-bolted A-frame beams brace each other to successfully resist the strongest winds, attest to the traditional integrity of wood for minimum maintenance year after year. Dick A. Hill, designer.

For unique versatility, A-frame simplicity

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Tent-shaped A-frame vacation houses are equally at home on a coastline or in a woodland. Wood's easy portability adds to its economies. Architect: Richard Whiteman of Jyring & Whiteman.

Wood brings out the best in every design, as exemplified in the increasingly popular A-frame. Because it makes the usual stud supports unnecessary, this design cuts corners for economy's sake. Yet, built of wood, the A-frame becomes a sound structure of distinctive quality and natural beauty.

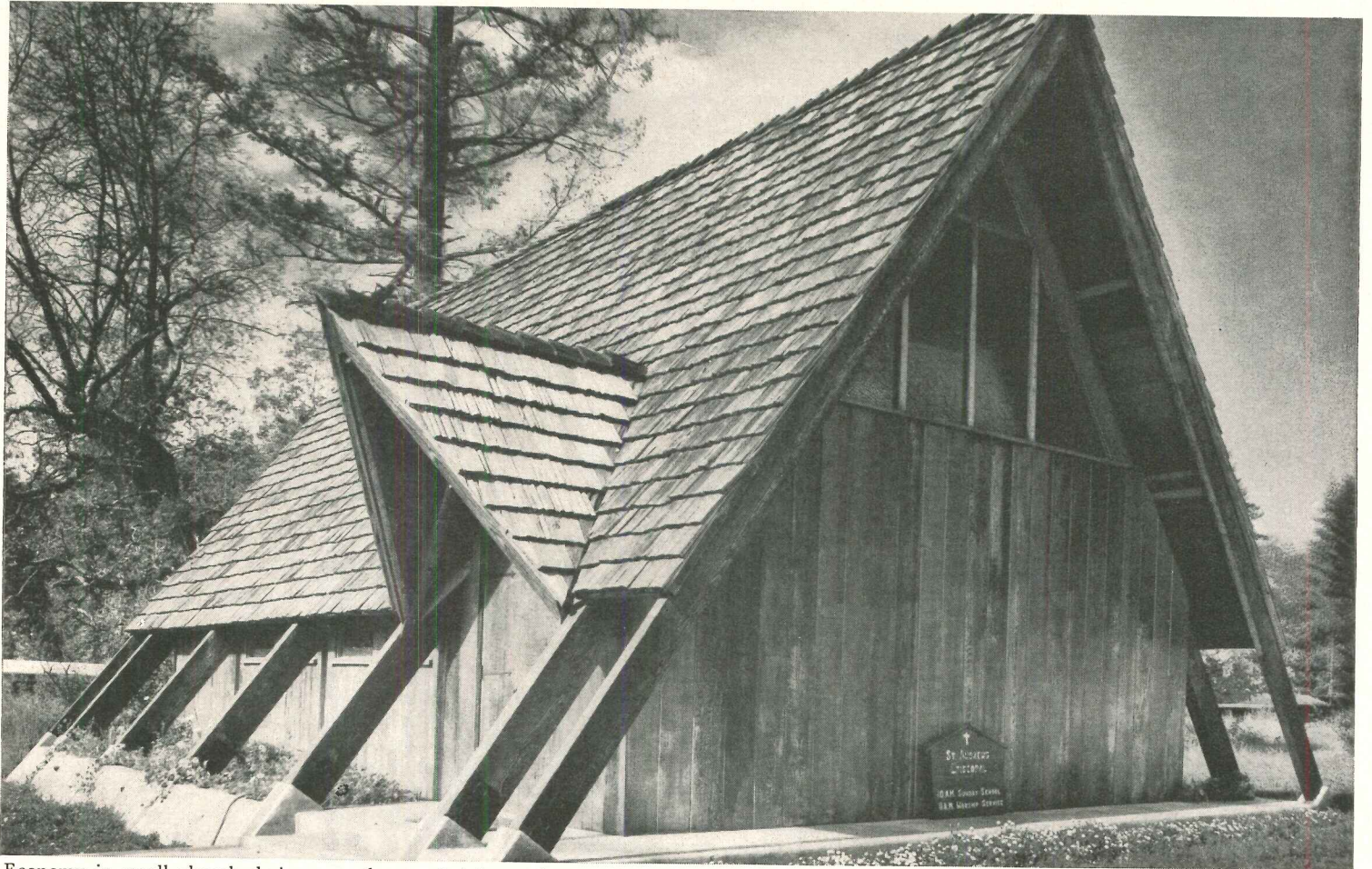
Workability is the key to wood's infinite uses. Sawed, planed, carved, sanded, turned, or drilled . . . wood takes the shape you want with ease, provides the familiarity to please any situation on any site. Its many diverse and rich grains bring warmth to stone, glass, or concrete. Its remarkable durability, strength-to-weight ratio, and inherent elasticity endow your designs with permanence. For more information on designing with wood, write:

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Wood Information Center, 1319 18th St., N.W., Washington 6, D. C.

nlma

for freedom of design, look to **wood**



Economy in small church design uses the wood A-frame for maximum space inside. Outside, the naturally weathered shingled roof, heavy A-frame supporting members, and board siding create a welcome site for worship. Gerald Matson, architect.

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Electrical Heating Equipment

(A.I.A. 30-C-44) An architectural engineering file describing Markel electric heating equipment for residential, commercial and industrial uses covers electric baseboards, radiant heaters, ceiling units, fan coils with sizes, dimensions and capacities. 28 pages, spiral bound. *Markel Electric Products Inc., 129-149 Seneca Street, Buffalo 3, N. Y.*

Decorators Color Guide

A 32-page booklet, *Color for Harmonious Living*, offers the principles of color harmony and contrast and gives examples of decorating techniques. Booklet is supplemented by brochures describing Pratt & Lambert's paints and stains including tonetic wood stain, *Vitra-tile*, a new finish for walls of masonry concrete or other materials, and *Lyt-all* fire retardant paints in decorative colors. *Pratt & Lambert, 75 Towanda St., Buffalo, N. Y.*

Home Appliances

A 24-page brochure describes the current line of Whirlpool home appliances for gas and electric kitchens. Line includes dishwashers, refrigerators, ranges, washer-dryers, freezers, vacuum cleaners in a variety of models and sizes. Also offered by Whirlpool is a series of 4 to 6 page brochures on special items such as the modular electric oven, remote control air conditioners, built-in cooking equipment and many others. *Whirlpool Corp., St. Joseph, Mich.*

Plywood Surface Protection

A 4-page bulletin describes Weldwood *Permagard* as "A major breakthrough in chemistry and wood technology." Weldwood *Permagard* is a non-porous protective surfacing factory laminated on hardwood plywood and hardwood faced doors. A chart compares properties of *Permagard* treated plywood with other surfaces in their resistance to wear, stain, temperature, moisture and agent. In addition to the *Permagard* bulletin, the company offers a series of full color brochures; plywood sidings, doors, etc. and a 20-page booklet for ideas for more beautiful homes with Weldwood real wood panels. *U. S. Plywood Corp., 55 West 44 St., New York 36, N. Y.*

WILL YOUR BUILDINGS BE ADEQUATE WHEN WATER RATES SKYROCKET?



Read these plain facts about the coming water shortage—and how you can prepare your buildings for it right now.

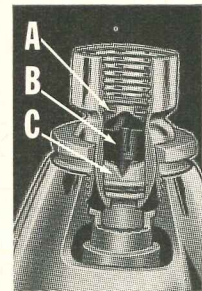
By 1970, water consumption in the U.S. will increase 25%. Yet available water will increase only 10%. One sure consequence of this shortage-to-be: boosted water rates.

Will your buildings be ready for these increased water rates? Not if they're still pouring water wastefully through uncontrolled showers and fixtures! For the only way to keep operating costs down when water rates go up is to use less water.

There is a way to specify less water in showers and fixtures . . . and still assure a completely satisfying flow!

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	water p.s.i.	average shower time	gallons used per minute	gallons used per shower	gallons used annually	gallons saved annually with Autoflo
conventional shower	50	5 min.	8	40	14,600	6,387.5
Speakman shower with Autoflo	50	5 min.	4.5	22.5	8,212.5	

And remember, this is just one shower used once daily! The savings are far greater with multiple installations and/or more frequent use. Best of all, Autoflo savings don't stop with shower water alone. Autoflo also lowers fuel costs, stretches hot water supplies, and reduces overload on waste disposal systems and septic fields at the same time!

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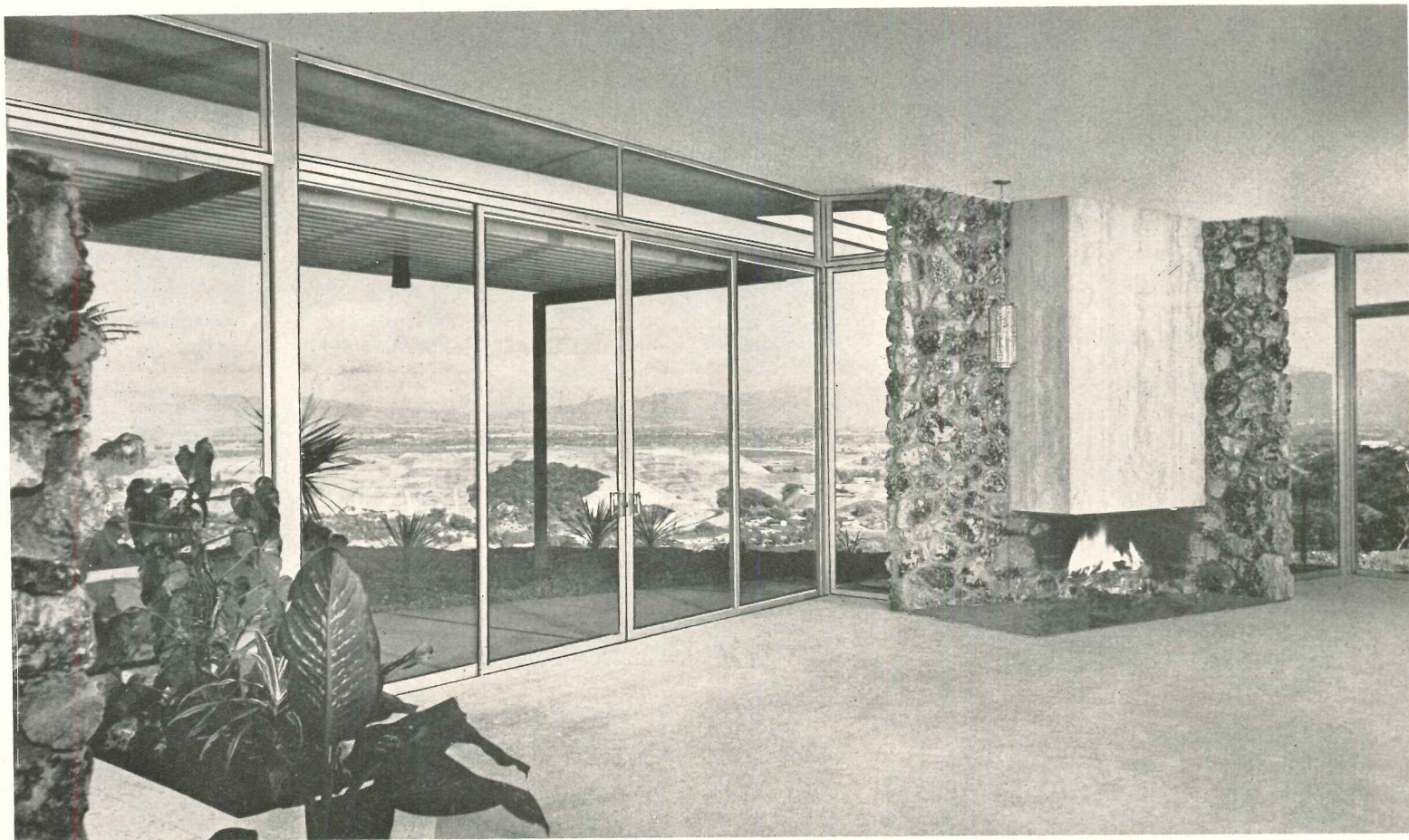
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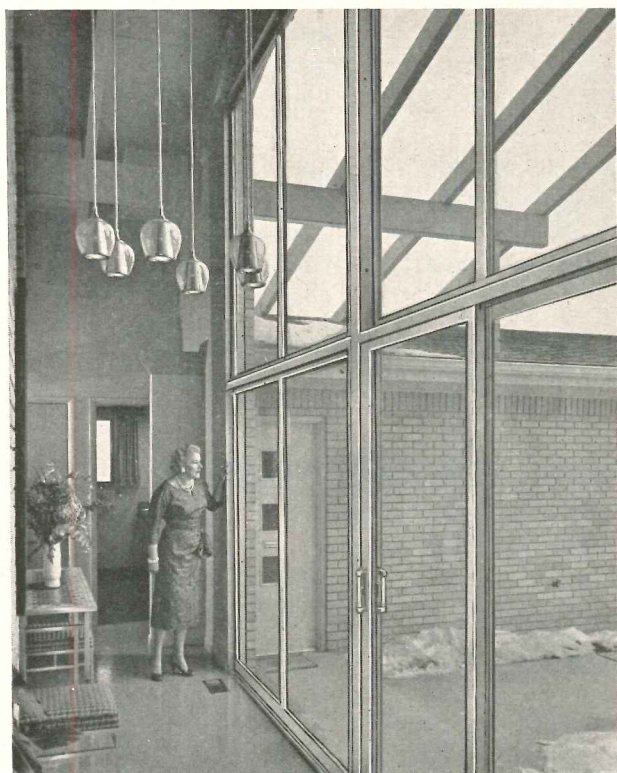
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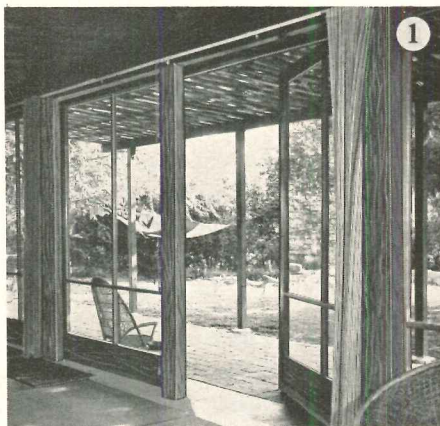
GO HIGHER, WIDER and HANDSOMER with



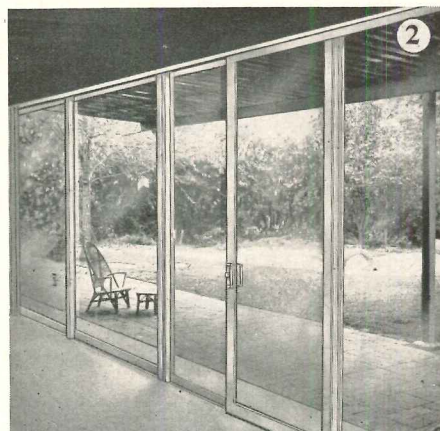
Architect: Benton and Park AIA



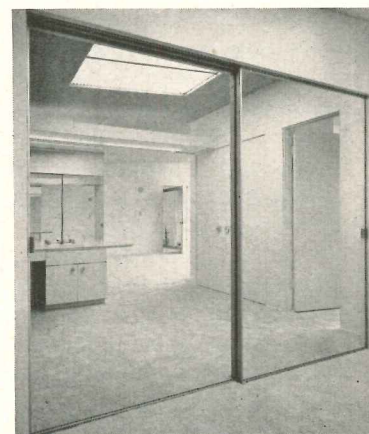
Ray Ponkey, designer



① Note heavy posts and heavy wood swinging doors and fixed frames in this installation.



② Miller load bearing frame eliminates heavy wood posts permitting floor to ceiling, inside and out, wide screen living.



Architect: Benton and Park AIA

MILLER MIRRO-GLIDE

These handsome mirror doors "open up" and enhance the charm of any room in the house. MirroGlide Doors add a new and exciting feeling of spaciousness to any home, new or old.

Architects who reach for the sky find the construction of Miller extra height rigidity and special transom design, a practical and attractive solution.

Miller LOAD BEARING FRAMES

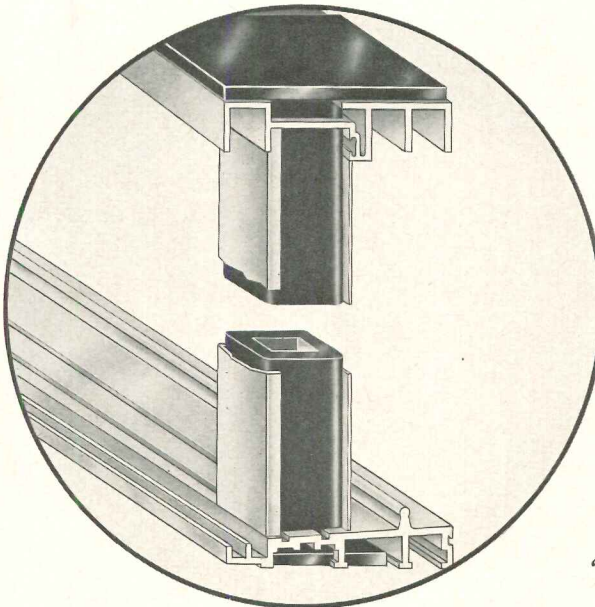
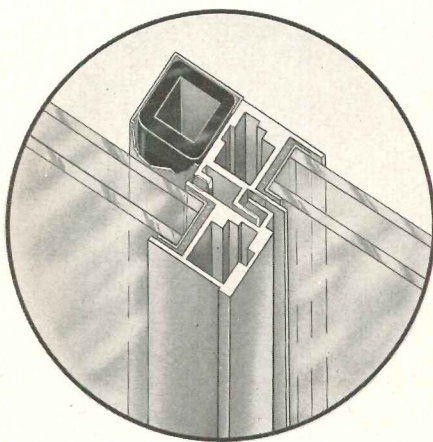
FOR SLIDING GLASS DOOR DESIGN FREEDOM PUT THE LOAD ON MILLER

Here are sliding glass doors to free your thinking: Miller Doors with 1½" square x ¼" wall heavy steel tubes (encased in aluminum) incorporated at muntin bar, interlockers and meeting jambs. These columns are completely confined within the width of the sill and head section and eliminate 4" x 4" posts set on inside or outside of frames. Miller load

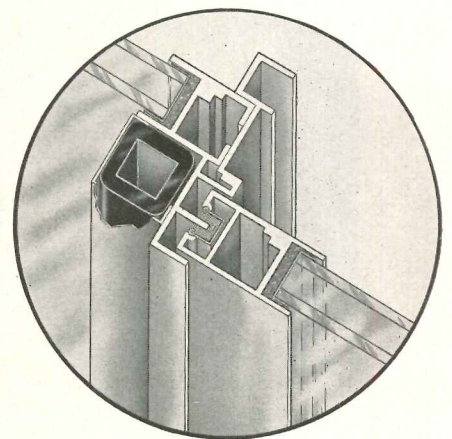
bearing columns enable the architect to maintain sight lines on extra wide openings where normal framing headers could not be used without changing roof pitch or door heights. Each load bearing column has an allowable compression load of 7,500 lbs. at 6' 10" high. With these columns you can literally PUT THE LOAD ON MILLER.

Note how 1½" square x ¼" wall steel tube extends thru head and sill and is attached to heavy steel plates top and bottom to carry load.

Detail at interlockers.



Detail at meeting jamb.



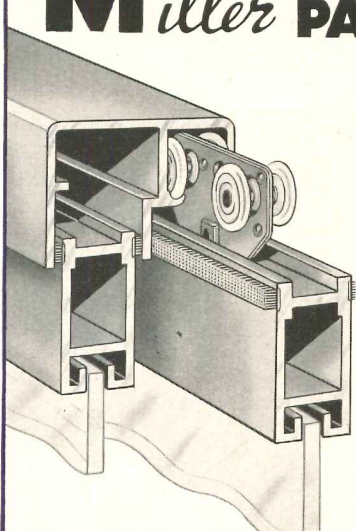
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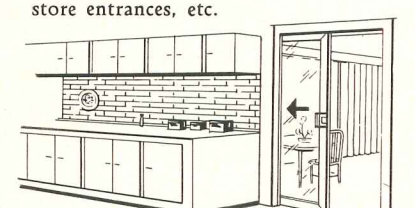


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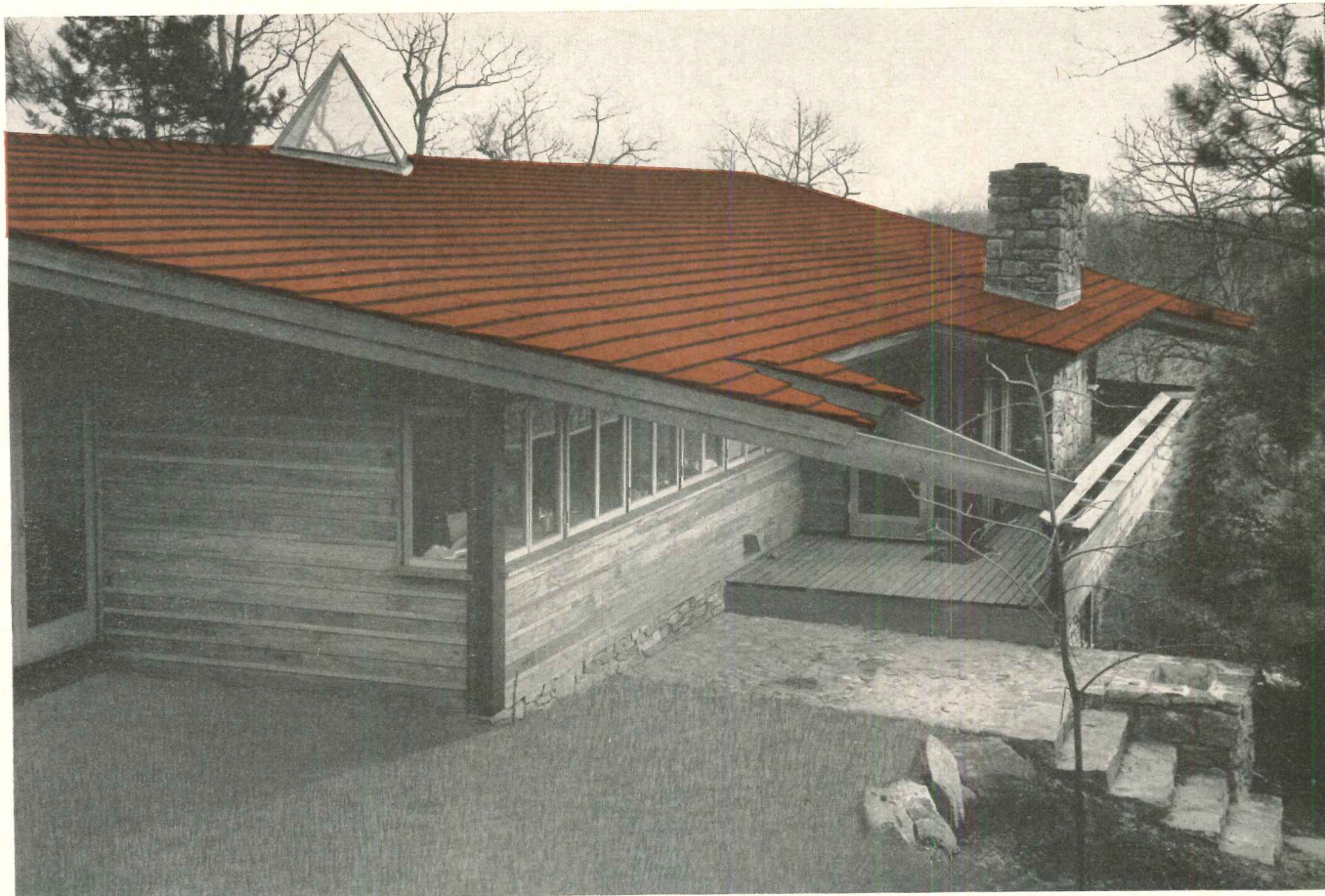
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