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HEAT CONSERVATION IN THE ELECTRICALLY-HEATED HOUSE

A Discussion on Reducing Costs of Electric Heating by Control of Heat Loss

By E. R. Ambrose, Head of the Heating and Air-Conditioning Division, American Electric Power Service Corporation

What's the reason for the steady growth of electric space heating? It is automatic and uniform. There is no combustion and, therefore, no smoke or fumes. The equipment is practically maintenance-free. And it takes up very little living space.

But no matter how comfortable and convenient a heating system might be, it will have to be competitive—in both installation and operating cost—with other systems. These costs are competitive and, in many cases, less than those of fuel-burning systems. By installing electric heating in a house, one can realize—in many cases—a significant reduction in total construction cost. Admittedly, the unit cost of electrical energy is comparatively high. But actual operating cost is not proportionately greater since electric heat is 100 per cent efficient. None of the heat is lost up the chimney, and no combustion air is required.

The efficiency of electricity as a heating source is only part of the story. In order to keep the operating cost of electric heating within an acceptable cost range of other systems, structural heat loss must be kept to a reasonable minimum.

This leads, quite logically, to a discussion of heat conservation. Generally speaking, it is not a new subject. Electric heating specialists, as well as builders and contractors, are well aware of the necessity for reducing heat loss in order to correspondingly reduce the amount of electrical energy which will be required. Of course the same point applies, and with equal force, to all types of heating systems. Whether the house is heated by electricity or by fuels, a reduction in heat loss will automatically reduce the amount of heating energy required.

Some may think of heat conservation only in terms of thermal insulation. It is, of course, a major part of the heat conservation concept. But the recent studies on infiltration and transmission through windows and doors show additional possibilities for reducing heat loss. And there are other heat-saving devices which should also be considered.

Total Heat Conservation

In short, thermal design of the electrically-heated house must be based on the concept of total heat conservation. This is a new approach. With the continuing growth of electric heating, it will become an increasingly important one.

A discussion of heat loss and how to control it involves four available possibilities. They are:

1. Full insulation in ceilings, exterior walls, and floors over unheated spaces.
2. Effective use of precision-built, weatherstripped windows and doors, and of insulating glass and storm sash.
3. Self-contained dehumidifier and filter-odor removal units, or comparable devices, to keep the infiltration air requirement to a minimum.
4. Fireplace enclosures and similar heat-saving accessories.

Of these four possibilities, the first two are the most significant. But the other two must be included in any total heat conservation concept.

Minimum Ventilation Rates

Under point three, for example, it should be noted that in an electrically-heated structure, minimum ventilation rates are permissible. The reason for this, of course, is that an electric heating system does not require combustion air. Therefore, the amount of infiltration, or ventilation, air can be sharply reduced.

Infiltration generally accounts for 20 to 30 per cent, or even more, of the heating load. But in the electrically-heated house, the amount of infiltrated air that will be needed is not governed by the oxygen requirements or the carbon dioxide liberated. It depends, instead, on the need to expel moisture and odors.

One remedy is to vent moisture and odor-producing appliances to the outside. However, this is not always practical, since an equal quantity of outside air must be introduced with a corresponding increase in the heating cost. A more satisfactory solution appears to be the use of a dehumidifier-filter-odor removal unit.

Such a unit—a small, self-contained, forced-circulation type—can be located in the vicinity of the moisture and odor producing appliances. Recent field tests indicate that the device is both feasible and practical to maintain the optimum indoor relative humidity level, clean and purify the air and, at the same time, reduce the infiltration of ventilating air to an absolute minimum.

Fireplace Enclosures

Fireplace enclosures are fourth on the list of available heat-saving devices. Some houses—and possibly a larger percentage of multi-family units—may not have a fireplace. But if they do, and if it is frequently in use, it can add substantially to the heating bill by causing warm air to

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be drawn up the flue. One way to stop this costly draft is installation of a tempered glass fireplace enclosure equipped with adjustable draft doors to regulate the amount of combustible air taken from the room. Another device is an inner wall firebox designed to circulate warm air, by gravity, to and from the room. Either the enclosure or the firebox will offset the cold drafts produced by an open fireplace.

Thermal Insulation

Returning to thermal insulation—first on the list of available possibilities for controlling heat loss—the basic point to be made is that the necessity for fully insulating electrically-heated structures is now generally accepted. The reason for this acceptance can again be summed up in a single word—economics.

Compare, for example, the heating requirements of a house with minimum and with recommended amounts of insulation. This comparison, as shown in Figure 1, is based on a typical ranch-type house with an indoor-outdoor design temperature difference of 75°F. The test residence is located in Huntington, West Virginia. It is a modern one-story, brick veneer home with seven rooms (including three bedrooms) and two full bathrooms. With the carport, the house covers a total area of 1,700 square feet. The net heated area is 1,383 square feet. Minimum insulation is defined as insulation with an installed resistance of R-7 in the ceiling, and none in side walls or in the floors over the crawl space. Under such conditions, heat loss for this ranch-type house is calculated at 82,000 Btuh.

Recommended amounts of insulation will depend, to some extent, on the type of structure, the geographic location, and the related electric energy cost. Normally, the Quality Home Requirements of the National Mineral Wool Insulation Association or the NEMA All-Weather Performance Recommendations will be applicable. Both specify R-19 or R-24 in ceilings, R-11 in exterior walls, and R-13 in floors over unheated spaces. The “R” numbers, which represent installed resistance, are finding increasing favor—compared to thickness in inches—as the only dependable measure of insulating value. The R-19, R-11, R-13 formula is recommended by most electric power suppliers, and it is almost certain to be specified by electric heating and insulation contractors.

Assume, now, that recommended amounts of insulation are installed in the ranch-type house being considered in Figure 1. This means the installed resistance in the ceiling is increased from R-7 to R-19. Insulation with a value of R-11 is installed in exterior walls, and R-13 in floors over unheated spaces.

When recommended amounts of insulation are used, heat loss in the house would be reduced from 82,000 to 47,660 Btuh—a reduction of 41 per cent.

In an area with 5,700 degree days and 1.5 cents per kilowatt-hour energy rate, estimated electric heating operating cost for the house with minimum insulation would be a prohibitive $500. By comparison, the same house insulated to the R-19, R-11, R-13 formula would cost only $294 to heat electrically. This represents a decrease in operating cost of $206—a decrease of 41 per cent.

Full thermal insulation also reduces the cost of electric heating equipment. Heat loss for the house with minimum insulation was estimated at 82,000 Btuh. Full insulation cut it to 47,660 Btuh. This reduction of 34,340 Btuh is equivalent to about 10 kw. Figuring the installed increment cost of electric heating equipment at $20 per kw, this will add up to a savings of $200.

Windows and Doors

Control of heat loss from both infiltration and transmission through windows and doors is also a major part of the total heat conservation concept. The emphasis on it in this study of total heat conservation, therefore, represents a new—and more detailed—approach to the subject. It should also make it apparent that we can no longer afford to underestimate the role of windows and doors as they relate to heat loss.

A study conducted at the University of Minnesota concluded that “air infiltration through windows and doors may account for a substantial part of the heat loss from a building.”

Figure 1.

Heat Conservation

continued from page 7
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The report added: “The use of weatherstripping on windows may reduce the infiltration losses to 17 per cent of the total heat loss from a house, with a corresponding saving of approximately 24 per cent in the total fuel cost.”

Figure 2 relates the importance of controlling infiltration in terms of the typical ranch-type house described previously. If the windows are not weatherstripped, it is assumed there would be an average infiltration rate of one air change per hour. Weatherstripping could cut this to one-half or even lower. In calculated heat loss, the reduction is from 15,400 to 7,700 Btuh.

Figure 2 also indicates the economic advantage of reducing infiltration. Based on 5,700 degree days and a power rate of 1.5 cents per kwh, the infiltration heat loss for non-weatherstripped windows would represent $95 of the annual electric heating bill. For the weatherstripped house, the cost would be cut one-half to $47.50.

Transmission Heat Loss

The most practical means of controlling transmission heat loss through windows and doors is use of insulating glass or storm sash, and storm doors. Before discussing this, it may be advisable to define the terms which will be used. Insulating glass consists of two panes of glass, hermetically sealed, with an air space between them. The resulting unit is installed in a prime window sash. Double glazing refers to the prime sash containing a single pane of glass plus either a storm panel attached to the prime sash or a separate storm window, each with an air space of one inch or more. Triple glazing is the prime sash with insulating glass plus either a storm panel or storm window.

The advisability of double or triple glazing will depend on the geographic location and on the local electric energy cost. But with proper evaluation, it will usually be concluded that insulating glass or double glazed windows and doors can easily be justified in most areas, and triple glazed windows will frequently be found practical in many northern sections of the country.

As shown by Figure 3, transmission heat loss through single glazed windows in the ranch-type house is 16,620 Btuh. With modifications of the glass area, substantial reductions are possible. After substitution of insulating glass, the transmission heat loss would be reduced to 8,675 Btuh, double glazing would cut it to 7,325 Btuh and triple glazing to 5,845.

As these comparisons indicate, the possibilities for controlling heat loss through glass areas are well worth considering. The difference between heat loss through single glazed windows (16,620 Btuh), for example, and the corresponding figure for triple glazing (5,845 Btuh) is 10,775 Btuh—a reduction of approximately 65 per cent in total heat loss by transmission through window glass.

Figure 3 also provides operating cost data relative to each type of glazing. In the house used in this example, transmission heat loss through single glazed windows would represent $103 of the annual electric heating operating cost. The comparable costs are: with insulating glass, $54; double glazing, $45; triple glazing, $35.

The additional cost of multiple glazing and storm doors can usually be amortized in a reasonable period of time. In the typical ranch-type house, cost of storm panels or storm sash could be amortized in 4 to 4½ years, and the triple glass combination in 5½ to 6 years.

In a house of proper thermal design there will be less heat loss from infiltration and transmission through windows. Consequently, as in the case of full thermal insulation, there will be an additional saving in electric heating equipment cost. For example, the 7,700 Btuh reduction in heat loss resulting from weatherstripping is equivalent to about 2 kw—which at $20 per kw means a saving of $40 in equipment cost. The 7,945 Btuh reduction attributed to use of insulating glass—instead of single glazing—also means an additional saving of approximately $40 for every year.

Wood and Metal Sash

The transmission heat loss data presented is based upon use of windows which have wood sash. Metal sash, unless it has an efficient thermal barrier, will have a higher heat transmission with a correspondingly higher heat loss.

According to the ASHRAE Guide and Data Book, a given single glazed window with wood sash and 80 per cent glass area has a heat transfer rate of 1.02 Btu (square foot) (F). In comparison, windows with steel and aluminum sash, assuming the same glass area and over-all dimensions without a thermal barrier, have heat transfer rates of 1.13 and 1.24 with a corresponding heat loss increase of 11 per cent and 22 per cent, respectively. Similarly, if insulating glass with ¾-inch spacing between the panes is used, the wood, steel, and aluminum sash have a Btuh heat transfer rate of 0.58, 0.73 and 0.79, respectively. Insulating glass windows with steel or aluminum sash, therefore, transmit 26 per cent and 36 per cent more heat than windows with wood sash and the same percentage glass area.

Such comparisons show a definite relationship between window construction and its performance, in terms of comfort and economy, at the optimum indoor temperature and relative humidity. It is indicated that for satisfactory performance, metal sash should be equipped with a thermal barrier which would prevent metal-to-metal contact between the inside and outside surfaces.

Moisture Condensation

A reduction in the outdoor air infiltration rate causes a corresponding reduction in the heat loss. In turn, as the infiltration rate decreases the indoor humidity level increases because the moisture generated by cooking, bathing, laundering, dishwashing, etc., is not removed as rapidly.

This increase in indoor relative humidity is desirable up to a certain point. It is generally accepted that a
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range of 30 to 50 per cent, with a corresponding indoor dry bulb temperature of 70 to 75 F, is the optimum for comfort and health. When these desirable relative humidities are maintained, however, proper precautions must be taken to prevent the possibility of condensation on the windows.

Visible condensation occurs when the temperature of any inside surface is below the dewpoint of the nearby air. This will, of course, be affected by curtains, draperies, Venetian blinds, and the like, which will lower surface temperatures of the windows. The indoor relative humidity at which visible condensation appears, with a fixed indoor temperature, will vary directly with the outdoor temperature and inversely with the heat transmittance "U." In other words, the higher the transmittance value of the material the lower must be the inside relative humidity to prevent surface condensation.

The relationship between window condensation and outdoor temperature is illustrated by Figure 4, which shows the relative effectiveness of single, double and triple glazing, and insulating glass. It is apparent from the comparisons that with a 30 per cent relative humidity, condensation will form on single glass when exterior temperatures are 25 F or lower. In contrast, with double glazing a relative humidity of 30 per cent can be maintained without condensation at outdoor temperatures down to 30 degrees below zero. With triple glazing relative humidities of 50 per cent, or even higher, could be maintained without fear of condensation at temperatures far below zero.

Condensation on Sash Material

The chief cause of condensation is not always the glass itself. As shown by Figure 5, condensation may form on aluminum or steel sash if the indoor relative humidity is approximately 27 per cent and outside temperature is 20 F or lower. At the same outdoor temperature, condensation will not form on wood sash even if indoor humidities should rise above 65 per cent.

Considering the glass area alone, relative humidity must be 28, 51, 56 and 65 per cent or higher, when outside temperature is 20 F, before visible condensation will form on single glass, insulating glass, double or triple glazing. Consequently, to prevent excessive condensation, the general recommendation of the American Electric Power operating companies is that the rate of heat transmission through the prime window sash and frame be equal to, or lower than that of the glass.

As the points made above indicate, utilizing the concept of total heat conservation in the electrically heated house can have two results. It will contribute to a more healthful and comfortable indoor environment. It will also materially reduce the equipment and operating cost.

As for the economics of the concept—full thermal insulation and precision-built wood windows with complete weatherstripping, storm panels or storm windows, and storm doors for the typical ranch house used in the illustrations, would cost a total of about $850. But this limiting investment, which can be amortized in less than three years against savings in annual operating cost, is certainly very acceptable. It offers a most effective approach toward stimulating and encouraging the growth of electric heating.

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<td>(Based on 1,383-square-foot ranch-type house; R-19, R-13 insulation in ceiling, sidewalls, floors, storm windows and doors)</td>
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<td>Rate in</td>
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<td>days</td>
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<td>Lynchburg</td>
<td>4,153</td>
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<td>San Francisco</td>
<td>2,015</td>
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</tbody>
</table>

(Costs based on applicable electric heat rate for respective area)

Figure 6.

ARCHITECTURAL RECORD HOUSES OF 1964 13
The spectrum of texture:
Red Cedar Shingles & Handsplit Shakes
Ranging from the smooth elegance of shingles to the rugged roughness of handsplit-resawn shakes, this is a versatile material. But, beyond aesthetics, it is also remarkably strong, lightweight, insulative and long-lived. In fact, a cedar roof lasts for decades. And, because it is the real thing, cedar ages gracefully, gaining beauty and character with the years. Always specify Certigrade, Certi-Split and Certigroove labels. If you would like more information about this classic material, write: Red Cedar Shingle & Handsplit Shake Bureau, 5510 White Building, Seattle, Washington 98101; 550 Burrard Street, Vancouver 1, B.C.

Above left: Residence / Greenwich, Connecticut. Architects: George Hickey III Associates. The mansard roof is Certigrade No. 1, 16” Fivex shingles with a 5” exposure.
Below, left: Residence / Scottsdale, Arizona. Architects: Alan Dailey Associates. The roof is Certi-Split 18” x ¾”—1¾” handsplit-resawn shakes with 5½” exposure.
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KITCHEN PLANNING

A leading kitchen designer discusses some basic planning principles

By George T. Warren, Manager, Kitchen-Laundry Design, General Electric Company

Ten years ago, with the advent of color in appliances, a new profession was born—that of the kitchen designer. The kitchen designer has become a specialist in the use and treatment of space which is allotted to the preparation and sometimes the eating of meals.

The following ideas and comments are not to be interpreted as a series of hard and fast rules from which there are no deviations, but as a framework which has by trial and error proven as reliable guideposts.

In over 35 years in the architectural profession, the last 20 of which have been in kitchen planning, I have, through working with other designers, listening to and reading from the work of allied fields, naturally been exposed to every kind of kitchen requirement and feel there is definitely a need for professional co-operation in this field.

While it is possible, in terms of function, to separate the actual acts of cooking and eating, in terms of house planning they must be considered as a unified sequence of operations. The problem which faces the person trying to choose between the various cooking-dining combinations is an extremely delicate one. To choose an arrangement which does not express dependence on service is forever to shut the door on this possibility for display. Most upper middle class families, whether they have servants or not, cannot get over the idea that eating in the kitchen is “common.” Nevertheless, the trend is away from complete separation. There are several potent reasons for this shift. The change from a servanted to a servantless society, increased emphasis on child care, gourmandism, high building costs, nostalgia for things past, and a gradual acceptance of the fact that cooking is intermixed with a variety of other functions all force the contemporary family towards new cooking-dining relationships. Because our living patterns are undergoing a gradual evolution, the average house suffers from the lack of a clear attitude on the subject. The old formal relationship is too expensive in first cost, too onerous a work pattern, yet it cannot be easily abandoned because of its Sunday, dress-up feeling. As a result, most current homes exhibit various compromises between the two extremes.

Because the field of kitchen planning has come to play such an important part in the planning of new homes, it is obvious that the kitchen designers must follow where the architect leads.

Since the architect, planning a new home for a client, must know as much as possible about the living habits of the client, it follows that the very first step toward a new kitchen has nothing to do with either plans or equipment. It has to do with the family, what they like and why. To take this step you will have to sort out your ideas honestly, for there are so many good points of view on kitchens today that you must first define types and then stay true to them during the planning. At this point it is not the kitchen you’re considering, but the over-all preferences of the family—those definite likes and dislikes which are now being called the “socio-psychological” factors of kitchen planning.

“Family-centered living,” the new term for an old pattern, is the first idea to be explored. It fits so many families that open kitchens and family rooms are definitely the trend today. However, for many nice, congenial households these are certainly not the answer. If the client prefers to work with no time out for small talk and family affairs, don’t be misled by the pictures of happy fam-

continued on page 27
REDWOOD SIDING

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An open-plan kitchen, fairly generous in size, and keyed to the general decor of the house for informal entertaining: an example of the “epicures” kitchen cited by the author—famly groups lounging in the kitchen—it’s not for them. If the children are not of an age or type to follow around, if the husband feels that the kitchen is not his department, and their friends aren’t given to the informal kaffeeklatsch, why should you waste living space in the kitchen? A comfortable workroom is all they need.

Next consider how they feel about being “in style.” For most of us there is real satisfaction in conforming to fashion and meeting the approval of the “up-to-date,” but to others this is just a bad case of keeping up with the Joneses. If they are style conscious encourage them to admit it and go all out for the latest in equipment and decoration. They won’t regret the loss of familiar features half as much as they would mind showing off a new kitchen that isn’t quite the last word. If, on the other hand, they truly don’t care what the neighbors say, go ahead with the things you know they like—an open sink, rag rugs or a table in the middle of the room.

The use of automatic equipment is usually taken for granted in planning a new kitchen, but it should, nevertheless, be questioned at the start. For most women the answer will be “yes,” for the new appliances really do offer a whole new way of life. But there are otherwise intelligent women who are so baffled by even a foolproof mechanical device that their frustration outweighs all the advantages of automatic controls. If you know your client would rather do things by hand than set the switches of an appliance to do it for her, then pass up the clock controlled ranges, the automatic washers and all the other wonders, and put the money in the things that give you pleasure. But before you turn your back on this new freedom, go and see automatic appliances in action, ask all the questions, and take the time to be sure that your attitude is honest and not just a notion that you like the old way best.

Physical convenience is the next variable to be weighed. Any physical handicap will, of course, put it at the top of the list, but it is also a “must” for many women who just don’t like to bend, stoop, and reach while they are working. If the client is an orderly craftsman-type and keeps every tool in place and close at hand, if she is the kind to set herself a task and then better the time-schedule, your kitchen should be planned primarily for convenience. All the specialized storage devices—cabinets with revolving shelves, sliding trays, racks and bins, a comfortable sit-down work space, pass-through cabinets with sliding doors, excellent lighting, and easily cleaned surfaces are continued on page 35
If you want, KitchenAid will dress up in...

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Of all the various types of buildings, or categories of architecture, the field of residential design is probably the most constantly vital and interesting. With this ninth annual edition of Record Houses, our country-wide search for the 20 most significant houses of the year has proved to us, more than ever, that this area is a sort of "laboratory" for creative design. The impact is not only the obvious one—of all of us having our living patterns affected by our homes—but a much more total one affecting all of our buildings and architecture. For it is most often in houses that the creative ideas of fresh new talent are first seen—and where new patterns of thought are first expressed by those well established in the field.

In ARCHITECTURAL RECORD's selections for its annual Awards of Excellence for House Design, which go to the architects and owners of the houses presented here, we have sought to reflect this range of style and creativity, as well as show a range of size, cost, geography and structure. We trust that these 20 fine houses will, each in its own way, help inspire better designed and planned houses everywhere. The nation's press continues to help us in the effort to promote good architecture, and again we wish to express our sincere appreciation. Record Houses will again be available to the public in a bookstore edition.

The issue will also be distributed again to the nation's 20,000 foremost builders to accelerate the healthy trend toward greater architect-builder collaboration on tract housing. Five of this year's awards go to well-designed development houses, including one at the remarkable price of $5,995.

We have purposely omitted from our selections some houses which, however interesting for the moment, seemed to have little more value than their unique whimsey. A good house should remain good throughout its lifetime. We believe the 20 shown here have this quality.

Herbert L. Smith Jr.
DESIGNERS: CRAIG ELLWOOD ASSOCIATES

Residence for Gerald and Arlene Rosen
West Los Angeles, California

Engineers; Robert Marks Associates
Contractor: Gattman and Mitchell
Landscape Architect: Warren Waltz
This extremely elegant and well-detailed house is a good example of fulfilling both rigid esthetic principles and the owners’ utilitarian needs. The basic concept is that of a raised, lightly-framed and carefully balanced pavilion, surrounding a central court or atrium. Craig Ellwood adds that: "The structure is elevated above grade to gain a better view down the canyon to the sea. The water-worn charcoal rock podium (or base), which surrounds the structure, flows in under the house and through the atrium." This flow of space is equally apparent in the interior living spaces, as can be seen in the photo of the family room (left). In commenting on this handling of space, Ellwood notes that: "Also remarkable is the fact that only two interior partitions touch the exterior wall. The enclosed space therefore 'reads' as a total, and walls 'read' as free-standing planes or volumes within this total." This search for architectural clarity is further emphasized by sharp contrasts in color and texture of the exposed structure and the enclosing wall panels and partitions. The trim steel frame is painted white, exterior walls are charcoal-colored ceramic-faced brick, and interior walls are walnut paneling and white plaster.

Interiors were designed along with the architecture, giving the house unusual unity. Furniture that was not designed by Ellwood was selected from among the familiar and compatible pieces by Mies, Breuer, Eames, Wegner, Saarinen and Laverne.
SERENITY AND SPACIOUSNESS
PERVADE THE ENTIRE HOUSE

The Rosen house acquires an enormous sense of spaciousness by the use of glass walls, in all major living areas, opening both on the central court and on the surrounding grounds. Narrow decks flank the outside of each glass wall to extend the floor plane and emphasize the indoor-outdoor relationship.

As can be noted in the plan (below right), the house is a large one, with five bedrooms and six baths, or partial baths. All the main rooms are quite open, and placed in the center of their respective sides of the house; more private areas are placed in each corner and along one side in such a way that they offer little obstruction to the continuity of space (across-page top). Utilities are banked between living and private areas to help reduce noise transmission.

The window walls are made of gray plate glass, with sliding screen units inside, to assure an unbroken "mirroring" of sky and trees in the dark glass. Similar glass is used as a screen between the entry and the formal dining room.

Whereas the materials used in the house itself are relatively neutral in color, the furnishings are mainly of bright stainless steel, chrome and polished leather, with brilliant accents in fabrics, carpets, paintings and sculpture. As the focal point of the living room (right center), the fireplace wall is also surfaced with stainless steel. Ceilings throughout are of acoustical plaster to reduce sound reverberation from the harder interior surfaces. The lighting fixtures are recessed in the ceilings, and have rimless apertures to make them as inconspicuous as possible. Most of the heating registers and electrical outlets are recessed in the floors.
The structure of the Rosen house is nine equal steel-framed bays, with the center bay forming the open court. Both plan and construction are based on a modular grid of 3 feet 4 inches: each bay is eight modules square (26 feet 8 inches) and the ceiling height is three modules (10 feet). The wide-flange shapes of the steel frame are used to great advantage to form very simple, yet highly ornamental details, as can be seen in the drawings of the section and cornice (across-page bottom) and in the photos of the exterior.

The same care has been given the design and installation of cabinets and equipment. In the kitchen (left center), the lower cabinets are fronted with oiled walnut, the upper ones with gray glass. Counters are plastic laminate. Square, plastic skylights are used to add daylight to all interior utility spaces.

Special equipment provided in the house includes: built-in telephone and television outlets throughout the house; an intercom system to all rooms and to the pool area; dimmers for the lighting; and a built-in hi-fi and radio system. The kitchen equipment is all built-in, including mixer, slicer, blender and food warmer. A sprinkler system is installed for all planted areas around the house. Outdoor terraces and steps are a similar terrazzo to the inside floors.
When Urban Renewal Administration Commissioner William Slayton and his family planned to return to the city after living in a suburban home, a search of the older, built-up neighborhoods of Washington turned up a bypassed, vacant lot in the Cleveland Park area. I. M. Pei's design for the property has produced a handsome, contemporary version of a town house with a walled-in front court. The lot measures 50 by 135 feet, and has a slight slope away from the street. This slope was used to advantage in creating a split-level scheme well suited to family life in the city. Great privacy was achieved, not only by the high wall of the front court, but by almost completely blank walls on the sides—which are quite close to existing houses. Inside, however, the feeling is one of great openness, with front and back walls of glass. The structure is brick bearing wall, topped by a triple, poured concrete vault. The interiors are brick and plaster.
ARCHITECTS: I. M. PEI & ASSOCIATES

Residence for Mr. and Mrs. William M. Slayton

Washington, D. C.

Project Manager: Kellogg Wong

Engineers: Severud-Elsdor-Krueger Associates

Landscape Architect: Ray V. Murphy

JOSEPH W. MOLITOR PHOTOS
FOUR LEVELS, HIGH CEILINGS AND OUTDOOR AREAS ADD SPACIOUSNESS

The Slayton house gains a great sense of space and variety by good zoning and its split-level scheme. At the front, the house appears to be a single, high-ceilinged story. The main living areas and adjoining walled-in garden are on this side. Other rooms, each one bay wide, form a two-story section at the rear (below right). A "service spine" is a buffer between.

The spatial quality of the vaulted rooms is quite impressive. Mr. Slayton comments: "I remember clearly the day —when it was just becoming twilight—that I drove by the house when the forms for the vaulted roof had been removed. I walked through what is now the glass doors into this space, and for the first time realized what I. M. Pei had conceived. It was a tremendously moving and emotional experience; I shall never forget it." The vault over the stair is further dramatized by a skylight (across-page top).
ARCHITECT: STANLEY SALZMAN
OF EDELMAN AND SALZMAN

Private Residence in New York State

Consulting Engineer: Harry M. Sadler Jr.
Consulting Landscape Architect: Ann Leonard
Cabinetwork: Novello Craftsmen

ADAPTABLE HOUSE DRAMATIZES USE OF STEEL
This handsome and comfortably functional house is an extremely interesting study in the use of steel for residential construction. Not only the frame is made of steel, but also roofs, ceilings and most wall surfaces inside and out.

The house was planned for a couple with three sons, aged 7, 12 and 14. Their program called for a one floor scheme which would clearly zone separate areas for the adults and for the children—with a flexible arrangement of space to accommodate large or small scale entertaining. The site is a suburban one of half an acre, relatively barren, with a slight slope to the south and east.

Stanley Salzman developed a plan in three parts: a children’s unit, an adult unit and a service unit. The children’s unit has three bedrooms opening on a large playroom at one side of the house; the maid’s room is located in this unit for supervision. The adult unit includes the master bedroom and dressing room, the living room, a music area and a bar. In the center of the house is a service unit containing dining room and serving area, kitchen and breakfast rooms, the laundry, the service entrance and a stair to a small cellar for the heating plant and storage.

The plan is entirely based on a 2-foot, 8-inch-square module. The living room, the dining-serving area and the playroom are each 20 feet, 8 inches square, and can open completely into each other to make a space 62 feet long. These three rooms are expressed on the exterior by the high folded plate roof. Folding partitions separate the areas when smaller spaces or more privacy are desired. All the utility spaces are banked at the front of the house, along with the carport and walled-in courts for the main entrance and the family or service entry. In contrast to this closed privacy, the back of the house is largely glass walled.
THE THREE ZONES OF THIS HOUSE ARE WELL RELATED TO SERVE ALL TYPES OF FAMILY OCCASIONS

In each of the three major rooms forming the centers of the zones of the house, Salzman has provided a space which is pleasant and well proportioned in itself — yet which form a dramatically big room when opened together. These areas are illustrated on this page: the adult living room (right and top left), the kitchen-breakfast room (left center) and the children’s play room (bottom left).

The structure of the house uses an exposed steel frame, and the architect has paid especial attention to the isolation of interior and exterior sections of the steel to reduce heat loss or transmission through the metal. Plastic washers between members, as can be seen in the detail (across-page), are the main device used for this purpose.

The high roof is made of two double cantilevered trusses, decked with steel. The decking carries through the diagonal chords of the trusses to create the folded plate form. The decking also cantilevers in two directions to provide overhangs over the glass areas of the walls.

All wall panels and doors fit the 2-foot, 8-inch module. Exterior panels are insulated steel frames, generally faced with furniture steel; in a few places the facings are etched and sandblasted aluminum. Interiors also have steel walls, with other finishes glued on in some rooms (such as walnut plywood in the living room). All the steel is painted. The steel decking forming the roof is left exposed as the finished ceiling, except where luminous ceilings are used in the utility areas, and in the master bedroom which has an acoustical ceiling. Floors are terrazzo, ceramic tile or hardwood on steel decking. Heating is by a dual hot water radiant and convector system.
TERRACE

ALUM. GRAVEL STOP
& FLASHING
WOOD BLK'G

12" CHANNELS
NEOPRENE WASHER

CAULKING
INSULATED PANEL
ALUM. EXT. FACE

STEEL DECK
INSULATION

STEEL INT. FACE

SECTION
The developer required a low-cost house which would appeal to a wide variety of buyers including low-income families, young married couples, and people looking for a vacation or retirement home or rental investment. The quality of the design was felt to be important if the house was to hold its market once the low-income group had been satisfied.

Various factors contributed towards the remarkably low cost. The house makes use of prefabricated components, and materials were selected which needed a minimum of on-site finishing, thus considerably reducing labor costs. Pre-planning specified standard extensions and alterations to the basic plan and, with a few exceptions such as floor coverings, materials and finishes are the same for each house. As the architect points out, this means that the building crew can move from one house to the next “without having to look at a plan, or think, or chance an error. This cannot fail to reduce costs.”

Although the standard house is only 800 square feet, open planning gives a very spacious living area. The roof of tongued and grooved hemlock is left exposed on the inside, giving maximum height to the rooms. Simplicity of design and the glass wall in the living area, planned in relation to an open court beyond, also add to the impression of spaciousness. The basic plan (across-page left) provides a living room with a dining area, kitchen, bathroom, two bedrooms and a multi-purpose utility room. The arrangement of bathroom and hall makes it possible for two bedrooms to be added without structural change. By adding a standard 4-foot panel on each side of the house, the living room, kitchen and utility room can be enlarged to the depth of the overhang. These standard additions and extensions are shown on the plan (across-page right). The house is of post and beam construction on concrete slab. Exterior walls are of prefabricated panels of pre-sealed redwood. Electric cable heating, vinyl working surfaces and aluminum sliding doors are included in the basic cost of $5,995, exclusive of land.
ATTRACTION DEVELOPMENT HOUSE FOR $5,995

ARCHITECT: MARY LUND DAVIS

Development House
for the Ron Mitchell Corporation
Tacoma, Washington
Contractor: Ron Mitchell Corporation
A FORMAL HOUSE PLANNED FOR A RIVER VIEW

This elegant and formally balanced house was designed for a sloping, heavily wooded site overlooking the Potomac River near Washington, D.C. The lot was a "forgotten" one in an area developed in the mid-thirties. To make the most of the location, the house was designed so that all but two rooms face the river view. Use of the hill site permitted the opening of the basement area to a terrace on the river side, and the development of four bedrooms for children and maid on the lower level. The portion that is set into the hillside is devoted to laundry, storage and baths.

The main living rooms are on the upper level, with dining room, living room and study forming a connected suite ranging the deck at the back. The kitchen-breakfast room and the master bedroom flank the entry at the front, and each have a walled-in court with views of the river.

The dining room and study can be shut off from the living room by large floor-to-ceiling pocket doors. As the study connects with the powder room, it can double as a guest room when needed.

The large kitchen doubles as a sort of family room, with the dining end fitted with built-in storage for games, children's art supplies and the like. The common wall between the kitchen and dining room is surfaced in oiled walnut paneling, which conceals three closets for china and serving equipment.

The structure of the house has brick bearing walls, which are left exposed inside and out. The architect states that "its color is best described, as well as its texture, as the outside surface of Camembert cheese." All other interior walls are plaster, as are the ceilings. Major rooms have floors of walnut stained oak; the entry hall floor, as well as exterior paving, is bluestone.

ARCHITECT: HUGH NEWELL JACOBSEN
Residence for Mr. and Mrs. Robert Shorb
Bethesda, Maryland
Engineer: Carl Hansen
Contractor: Fishman Construction Company
Much of the "decoration" in the Shorb house is derived from the contrasting planes of the simply handled surfacing materials. All were chosen for their durability and easy maintenance, as well as for the visual interest. To further continue the simplicity of the over-all effect, all lighting in the house is recessed in the ceilings. The furniture and accessories are kept to a minimum, and form a pleasant blend of traditional and soft-lined contemporary—as can be seen in the photos of the dining room (above) and the living room (across-page).

The three Shorb children use the downstairs hall as a gallery for their art work, which is fastened to the framed acoustical paneling ranging the wall (right). The floors on this level are surfaced with beige asphalt tile. Baths and tub recesses are finished with ceramic tile.

With the exception of the front entry glazing, which is set in wood frames, all sash are sliding aluminum floor-to-ceiling glass doors.

The house is heated by a forced warm air, gas-fired system and centrally air conditioned by electricity. The cost of the house, drive and landscaping, not including fees and land, was $50,000.
ONE-STORY HOUSE HAS BOLD LIVING SPACES AND LIGHT EFFECTS

ARCHITECT: RICHARD MEIER
Residence for
Mr. and Mrs. Jerome Meier
Essex Fells, New Jersey
Structural Consultant: William Atlas
Mechanical Consultants: Wald and Zigas
Contractor: John W. Ogden
Interior Designer: Elaine Lustig-Cohen
Situated on a quiet residential street in Essex Fells, the Meier residence amply fulfills the owners' wish for a house "which would be at once comfortable and exciting to live in."

Describing some of the ways in which this sense of excitement was achieved, the architect says "the progression of spaces, both exterior and interior, force different and surprising vistas. While the roof parapet is itself sharply rectangular, the masonry walls curve or extend past the natural corners of the structure, giving unexpected views as one walks around it." Several courtyards and a roof garden with trees are incorporated in the scheme, and provide an interesting variety of living spaces. Two cylindrical brick turrets, rising to a height of 20 feet give the house an over-all stature comparable with that of large traditional houses in the neighborhood. Not only do these turrets give character to the exterior, but inside the house one of them creates an unusual seating corner, while the other houses an outdoor sculpture, which is visible from the living room (left).

"The ways in which light enters the various spaces and affects them," says Richard Meier, "are a primary source of interest in the house. Clerestories in the living room reveal the tops of tree branches; domed skylights in bathroom and kitchen work space provide overhead illumination varied by the use of color in the rectangular wells opening up to them. The cylindrical seating space in the living room is covered by a graded skylight and is lighted artificially from outside at night." An unusual effect is created by the glimpses through the skylights of the trees and shrubs in the roof garden, which will be developed during the year. The outdoor spiral staircase, shown on the plan, will also be added.
The H-shaped plan was in part determined by the location of a giant oak tree which Mr. and Mrs. Meier were anxious to retain. A partly enclosed court was formed around this tree; this court also makes a pleasant extension of the living area for entertaining. The south wing of the house includes a master bedroom, bath, dressing room, guest lavatory, study and living room. The courtyard and dining area effectively separate this wing from the maid’s and guest bedrooms, kitchen, garage and storage accommodation on the other side of the house.

The kitchen (above) is lined on two sides by metal cabinets and plastic working surfaces. A marble table is a feature of the dining area (right). The arrangement of clerestories, skylights and glass walls can be seen in the cross-section (above).

The structure is a combination of brick or wood-stud walls on concrete block foundation. The wood parapet and joists support the tar and gravel built-up roof, which has wood deck terraces in the seating areas. The approximate cost of the house, which is fully air conditioned, was $68,500.
GIANT OAK TREE BECOMES INTEGRAL PART OF SCHEME
DEVELOPMENT HOUSE EXPRESSES
THE CHARACTER OF CONCRETE
The program specified the extensive use of concrete block and cast concrete bricks in the construction of this three-bedroom house, the cost of which could not exceed $25,000. By his sensitive handling of his materials, Mark Hampton evolved a solution which achieves just the right balance between strength and elegance, giving expression to both the durable and esthetic qualities of concrete as a building material.

The most unusual feature of the structure is the use of inverted, channel-shaped beams which are made of precast, prestressed concrete. These beams span between the concrete block columns and furnish support for the 4-inch-thick, 4-foot-wide concrete roof "planks." They also form convenient utility and duct chases. Inside the house, they create low ceilings in areas of the bedrooms, closets and bathrooms "adding a dimension to the feeling of space in the house. Their lowness by contrast with the high areas accentuates the difference between the two." Exterior walls of stuccoed concrete block or cast brick give a pleasant variation in texture and form an uncluttered background for the sculpture by Ernest Cox. Landscaping around the house takes advantage of existing trees and the lake view; rolling mounds ensure privacy for the terrace areas.

The zoning of the plan combines large living spaces with maximum privacy and quiet in the sleeping areas. The children's bedrooms and the master bedroom are well separated both from each other and from the entertaining areas. The kitchen is placed in a central position to enable the mother to supervise the children's activities from this point.
The sidewalks, terraces and driveways of the house at Tampa are of concrete slab with exposed aggregate. The photo (above) shows how well these outdoor concrete areas relate to the structure of the house.

Spatial variety inside the house can be seen in the photos (across-page). The master bedroom (top left) shows how the low ceiling in the closet area, formed by the inverted channel beam, emphasises the height of the rest of the room. An effective setting for Harrison Covington's painting is provided by the long concrete brick wall in the living room (top right). The family room (right) has been furnished as a library and has a free standing bookcase with aluminum standards. The kitchen features a laminated plastic counter and cabinets and a luminous ceiling, which is also shown in the cross section.

Close co-operation between architect and builder was an important factor in keeping the cost to $23,100.
IMAGINATIVE USE OF SPACE AND GOOD ZONING GIVE VARIETY TO INTERIOR

BLACK-BAKER PHOTOS
EXPANSIVE RANCH HOUSE FORMS ITS OWN OASIS
This big, comfortable house for a rancher is located in the flat plain of the Sacramento Valley, and creates its own views and sheltered gardens in the open country. In addition to the central "living court" about which the entire house revolves, every room in the house looks into its own private walled-in garden. Wide overhangs and trellises provide added shade and seclusion.

The house was planned for a family of five: the parents, a boy aged 16, and two girls aged 14 and 6. Bedrooms are ranged along two sides of the center court. Living areas were designed to accommodate large scale entertaining at home, from dinner parties for 14, to cocktail parties for more than 100. Two large living rooms are provided, in addition to the outdoor areas. The formal entrance to the house (left) is placed near the corner of the house between the living spaces.

A second entrance to the house is placed on the opposite side of the house, by the carport, for direct access to the ranch office. Materials used in this entry were selected for durability and easy maintenance.

The center court (above) with a swimming pool and ample space for lounging and entertaining has proved a favorite feature of the house: Sacramento has very hot summers, cold winters and is always windy.

In keeping with its site, the house has a very quiet and casual design. Major emphasis is given to the black-stained post and beam structure, accented by the peaked roofs providing higher ceilings over the major rooms. Exterior walls — and many of the interior ones — are natural or white-painted adobe. Other interior walls are charcoal-stained mahogany or white-painted gypsum board. Most floors are terrazzo, with carpet or vinyl used in some areas. Ceilings are white-stained wood in major rooms, gypsum board in baths and kitchen. Air conditioning is provided throughout. The total result of the house is one of space, comfort and livability.

ARCHITECTS:
CAMPBELL & WONG & ASSOCIATES
Residence for Mr. and Mrs. Wilmarth
Colusa, California
Mechanical Engineers: Yanow & Bauer
Contractor: Alec Dambacher
Landscape Architects: Eckbo, Dean, Austin & Williams
Interior Designer: Peter Rocchia
The Wilmarth house is well zoned for privacy and quiet, and for simultaneous activities of different age groups. The kitchen is a big one (below left), and located for convenient service to both indoor and outdoor living and dining areas. Laundry facilities are in a separate utility room near the children’s bedrooms and the back entrance.

To contrast with the black-stained Douglas fir and redwood frame of the house, the roofs are surfaced with white asbestos shingles or built-up tar and white gravel. Most of the fenestration is floor-to-ceiling sliding sash, providing direct access to the adjoining courts.

The master bedroom suite provides a large dressing room, and a bath with a sunken tub and a court for sun baths (below). It is flanked by a private terrace well apart from the rest of the house.

The interior furnishings of the house reflect the quietly sophisticated structure. A number of periods and styles are mingled in restrained and comfortable groupings, as can be noted in the photo of the living room (right). Spatial interest is added by ceilings following the lines of the peaked roofs.

The heating-cooling system of the house uses a gas-fired boiler in a mechanical room by the carport. Heated water is sent to three zones within the house to a heat exchanger, where air is passed over heated coils and delivered through ducts to the required areas. A water chiller provides summer cooling through the same system.
ARCHITECT: TASSO KATSELAS
Residence for Mr. and Mrs. Tasso Katselas
Pittsburgh, Pennsylvania
Structural Engineers: R. M. Gensert Associates
Contractor: Thomas J. Plakidas

MARC NEUHOF PHOTOS, courtesy of The American Home
A BOLD EXPRESSION IN BRICK AND CONCRETE

Possibly the most intricately sculptural of the houses for 1964, this design exhibits a very striking interplay of room areas and structural materials. In designing the house for his own family, Tasso Katselas states that he outlined their four major requirements as: "(1) a space worth living in; (2) a space answering diverse human needs, ranging from unrestrained expression to complete privacy; (3) a spatial order bold enough to accept the clutter and confusion of life, yet intimate enough to lend meaning to the smallest personal act; and (4) a space upon a slope, among giant oak trees, able to turn inward from nature's anger, able to pour outward toward nature's joys."

This rather unusual, yet admittedly comprehensive program, seems to have been well fulfilled. The house consistently holds one's interest, inside and out—cantilevers, balconies, domes, vaults, skylights, all combine to offer a considerable variety of spaces, "bold and intimate." And the strong exterior forms seem comfortably at home on the wooded, irregular site.

The plan ramps down with the fall of the land, as can be seen in the photo of the entrance facade (above) and the sketch (across-page top). All living and service areas are contained in the big central block of the house, with bedrooms and garages forming subsidiary wings on three sides. The roofs of each of the smaller wings are developed as sun decks, or, as over the children's bedrooms—an entrance terrace.

The most dramatic of the interior spaces is the two-story room devoted to living area and studio or family room. The living area is essentially a balcony jutting through the big room, and continuing to the outside as a cantilevered deck. Masonry "arms" provide clerestory lighting at each side of the room to balance the daylight from the window wall at the end. One enters the house on the upper level gallery, where one is immediately faced with the vista of this projection of the living area into the tree tops. Family and entertaining spaces form a fairly open plan, with rooms for study, work and sleep, well closed-off for privacy and quiet.
ROOM HEIGHTS VARY WITH THE SLOPE OF THE LAND

MARC NEUHOFF PHOTOS, courtesy of The American Home
The sectional drawing of the Katselas house (left) shows how the ceiling heights of the lower level are increased as the land falls from the garage wing to the tall studio. The brick and concrete structural materials are used as exposed interior finishes; construction is basically a series of solid brick piers, which support a series of poured-in-place arched beam slabs. Thus the concrete floor, ceiling and beam supports are accomplished in one process. One set of forms was used, spanning 9-feet in the short direction, 30-feet in the long direction. Cavity brick walls and glass were used as fill-in material between the piers. The glazing is installed in recesses poured into the concrete frame. The interior photos shown here include different views of the large living area (color photo) and (below center), the dining area (below bottom), and the entrance gallery (directly below). As can be seen on the plan, all these spaces open to each other for an enormous sense of spaciousness. The cost of the house, excluding lot, landscape and furniture was about $90,000. The heating is by a hot water, radiant panel system.
"A one-story scheme with privacy and spatial interest" was evolved by the architects to suit the rather unusual requirements of their client and to take advantage of a restricted, but attractive site in a residential part of Minneapolis. The client, a woman active in social and cultural affairs, wanted a house which would provide her with a creative environment in which to begin a new pattern of life. The long, narrow lot between two existing houses presented certain problems, but also interesting possibilities, in that it sloped steeply downwards to the northern end, with a northeast view over the town. Ten magnificent elm trees, typical of the neighborhood, were to be incorporated in the scheme.

The architects describe the solution as "a series of receding 'garden' walls defining spaces, creating courts and giving privacy from the street." These quiet courtyards, accessible from the various rooms, give the house an air of seclusion which is not easy to achieve on a restricted site of this kind. The gentle curve of the walls has the effect of softening what might otherwise appear to be a rather broken-up design. The timber-framed roof is supported on the brick walls and a concrete slab foundation. In the photo (above) it is interesting to see how the small windows between the beams make the roof appear to rest lightly on the walls. Although essentially contemporary in design and construction, the house fits well into the background of a traditional neighborhood and has itself something of the elegance of a past age.
Mrs. Dalrymple’s requirements are reflected in the careful zoning of the plan (below left). The living area which is large enough to accommodate 40 to 50 people for social or cultural gatherings, is separate from the main bedroom suite, which is again some distance from the garage. The living room opens fully to the northeast to take advantage of the view over the town. Glass doors lead directly from this room onto the lawn (across-page right). Accommodation is provided for a maid and a chauffeur, conveniently placed in relation to their work areas. The gray-flecked brick walls are left exposed inside the house. This is particularly successful in the living area, as it adds warmth and intimacy to the room. A large domed skylight lets sunlight into the room and provides an interesting central focus. The entrance hall (below) was designed in the form of a small art gallery, with one wall of stained white oak stripping making a suitable background for the owner’s pictures. Some period furniture has been incorporated in the scheme and can be seen to full advantage in a contemporary setting in the dining area (left).

Floors in kitchen and bathroom are covered with rubber or ceramic tiles; marble counters are provided in the bathroom and both rooms are equipped with ventilating fans. The house is heated by a gas-fired warm air system. The cost of the house works out to approximately $23.40 per square foot.
CAREFUL ZONING ACHIEVES UNUSUAL VARIETY IN ONE-STORY SCHEME
SOPHISTICATED RUSTICITY FOR COUNTRY HOUSE

Set in the midst of pinewoods, this family house was designed to make the most of its surroundings, and to establish a close relationship between the indoor and outdoor world. Describing how this was achieved, Fritz Woehle says "the floor plan is very formal and symmetrical but the glass walls allow the eye to wander out of the formal plan into a natural woods setting, giving a rustic feeling to the interiors." A number of small courts and patios have been created around the wings of the house giving variety to the view. Floors and walls are mainly white to give a clear crisp effect to the interior and to reflect the sunlight and shadows from outside.

The main approach is through a small court leading directly to the glassed-in pavilion which forms the main living area. The dining room and library look out on wooden verandas.

In spite of the large areas of glass, the use of a solid timber front door and the sturdy redwood construction give the house a feeling of permanence and stability.
Fritz Woehle designed the house in three separate stages to accommodate the needs of his growing family. The result is a delightful, rambling residence, giving ample scope for the individual members of the family. The plan (left) shows the three large living areas grouped around the central courtyard and the careful separation of the bedroom suites of the children, guests and parents.

The house is of redwood post and beam construction with redwood walls and a reinforced concrete foundation. The gabled roof is supported with exposed tie rods to give the maximum clear space in all rooms. A typical gable connection is shown (top left). The photo (above) shows how the house fits in with the surrounding pinewoods.
A wooden deck running along one side of the house extends the living areas and encourages outdoor activities. The photo (top left) shows the play area with a glass wall leading out to the pool beyond. Working surfaces in the kitchen (above left) line the window wall and form an efficient galley type arrangement. Gypsum board interior walls and white pine ceilings form an effective contrast to the structural frame as can be seen in the dining area (above right) and the main bedroom (left). The gallery connecting the main bedroom and play area with the children's bedrooms is lighted by glass in the four gables. The house was built in three stages with the total cost about $70,000, excluding lot, furniture and landscaping.
The idea of using connected units or pavilions to achieve better separation of activities for privacy and quiet has been very successfully applied here for the "pilot house" of a new development. Such a concept also offers some interesting possibilities in varying any repetition of the house to suit individual buyer's needs, and in the development of a neighborhood: one or many units could be arranged in limitless combinations.

In the house as shown here, a dual problem had to be solved. It was to serve as a prototype for one of six villages of a new town development, put on display for a year, then sold. Thus it had to handle the circulation of large numbers of people, as well as be a practical residence for a family with teen-age children. The Western regional magazine, Sunset, wrote the program, and the editors acted as the "clients." The areas of all the units were to be limited to 2,000 square feet.

The architect states that he "adopted a plan zoned into four nearly identical pavilions: living, parents, children and service. These pavilions are connected with glazed galleries affording changing views into the several different gardens. Floor levels following natural grade change within the galleries, create a ceiling height higher in the living area than in the other pavilions. Partitions are kept low in the living pavilion, with the space reaching up to the central skylight typical of each building."

As can be noted in the photographs shown here of the entrance (across-page top right), courtyard (right) and back terrace (above), great stress is placed on outdoor living. The climate of the area is hot in summer, mild in winter. Each pavilion is cooled or heated with its own separately controlled heat pump. Tall windows in all rooms give direct access to the outdoor areas; major windows face north to a pleasant view. For sun control, the skylights topping the hipped roof of each pavilion are fitted with electrically operated shades.

The house has a very comfortable and informal quality and uses familiar, natural-finished and easy-to-keep materials, which give scope for individual tastes in interior decoration.
ARCHITECT: HENRIK BULL
Development House for Eldorado Hills West, Inc.
El Dorado Hills, California
Contractor: Murchison Construction Company
Landscape Architects: Eckbo, Dean and Williams
Interior Designer: Virginia Anawalt
As can be noted in the plan, Henrik Bull has made each pavilion a fairly self-contained living unit. The master bedroom suite includes a sitting area with fireplace suitable for adult entertaining; a folding partition can close off the sleeping area from view. As can be seen in the photograph, the master bath faces out into its own secluded garden. The pavilion for the children includes a play area and a folding partition between the two bedrooms. Opened up, all three areas form a big living space.

The service pavilion includes laundry, workshop and storage area, as well as car storage. As mentioned before, the floor level ramps down in the connecting links of the house, following the natural contours. The ceiling height is lowest in the garage, highest in the living pavilion—reaching 15 feet at the center skylight. Partitions are kept low for spaciousness.

The structure is made up of conventional wood studs and joists. All the units are similar in size and materials, and have symmetrical four-way hipped roofs surfaced with cedar shingles. Exterior walls are finished with resawn redwood plywood, with solid redwood trim and battens. The chimneys are made of sand mold brick.

Interior walls are gypsum board with natural redwood trim and some redwood paneling. Floors are quarry tile. For added quiet, the ceilings are surfaced with sprayed acoustical plaster. The house was built with as much economy as was consistent with the use of the best quality materials. The approximate cost of the pilot house was $60,000, exclusive of lot and landscaping.

94 ARCHITECTURAL RECORD HOUSES OF 1964
NEARLY IDENTICAL PAVILIONS ADAPT EASILY TO FORM SELF-CONTAINED UNITS FOR DIFFERENT LIVING PATTERNS AND USES
SIMPLY DESIGNED HOME MAKES USE OF STANDARD MATERIALS FOR MAXIMUM ECONOMY

Planned within the limits of a strict budget, this house was designed by the architect as a "first home" for himself, his wife and child—with planned expansion space for later additions to the family. As associate building editor of Better Homes and Gardens, Frank Glass needed adequate working space and a pleasant environment for entertaining. The result is a simple, compact two-level dwelling which fits well into the sloping site and uses stock materials to their best advantage.

As the house faces a fairly busy residential street, the front elevation has been left completely closed. Large glass areas on the west and north side of the house provide good light and give a feeling of additional space. The main entrance is separated from the parking area by a wooden bridge (right). Frank Glass says that this was done "in order to make the structure 'hang' among the tree limbs."

Although the total floor area of the house is only 1,500 square feet, clear-cut zoning gives considerable privacy to individual members of the family. Stairs connect the children's bedrooms on the upper level directly to the family room below and the play area outside. The kitchen, stair, bathroom and hall separate the entertaining area from the bedrooms. The well-placed entrance foyer, unusual in a house of this size, frees the living areas of general circulation. The cantilevered screened balcony on the west side of the house is shaded by overhanging trees, making a pleasant extension to the living room.
ARCHITECT: FRANK R. GLASS

Residence for Mr. and Mrs. Frank R. Glass

Des Moines, Iowa

Contractor: Fritz Gookin
GOOD STRUCTURAL DETAILS GIVE WELL-ORDERED INTERIORS AND EXTERIORS
The Des Moines house is of post and beam construction on a concrete block foundation. Basement walls are of concrete block, painted where they are exposed. Plywood or glass panels in standard sizes were used for the rest of the exterior walls. Describing the exterior of the house, Frank Glass says: "The contrast of textures and the planned, rather formal balance of the exterior was achieved with stock materials. These materials, which required little cutting, were applied with careful detailing in pleasing proportions to give the house order." Exposed insulating deck is used for ceilings and floors and provides a base for the tar and gravel built-up roof. The photographs show how, inside the house, the dark posts supporting the ceiling beams form an effective contrast to the light-colored gypsum board wall panels.

The dining area (left) is separated from the living room (right) by a prefabricated fireplace, which rotates on its base to serve either end of the over-all room. A breakfast bar in the kitchen saves space and provides a convenient base for serving food to the dining room. The house is heated by a forced air system. The approximate cost was $23,500.
The design for this handsome house bears an unusually close relationship to its site: a small, wooded and rocky outcropping overlooking Long Island Sound. The plan is divided into a series of levels, with the lower ones fitted into the terrain and designed with heavy masonry walls for a sense of shelter. This area generally contains service areas and guest bedrooms. The upper, and main, level rests lightly above this in a series of "penthouse gardens and levels" to take full advantage of the views.

On the evolution of the design, Ulrich Franzen comments: "The owners initially intended to build a weekend house with easy commuting to New York, and ready access to an anchorage in the Sound. The program called for a single master bedroom, and a couple of small and unobtrusive bedrooms for their grown children when they visit — plus the general requirements of all houses in the country. Somewhere along the line, we all fell more and more in love with the site and proposed designs — and the outcome was a year-round 'weekend house' where nature is to be viewed and enjoyed."

The plan is essentially a compact square, surrounded by a series of retaining walls and terraces, which extend out pinwheel fashion into the landscape. The entrance to the house was planned with a great sense of drama. The approach drive to the building is from a lower level, away from the water, and the view is not apparent. From this angle, the sculptural forms of the house itself are dominant; it is not until one begins climbing an interior ramp to the upper level that the marine view can be seen through the deeply shaded glass walls.

The house has a concrete block frame, surfaced with brick; piers carry up past the glassed-in upper level, to lightly support the roof on steel pins (above left). The roof itself is framed with steel open-web joists, topped with built-up roofing, and finished beneath with hemlock boarding. All interior partitions are painted gypsum board; floors in living areas are carpeted.
A MULTI-LEVEL HOUSE FOR A ROCKY HILLTOP
In addition to the surprise treatment of the view, as noted on the previous page, Ulrich Franzen has handled the interior spaces of the house in a somewhat unorthodox, yet very interesting manner. While the house appears from the front facade (above left) to be a simple two-story structure, the house actually has five levels. A utility level lies a few steps below the entry level which contains the kitchen and dining spaces; above this, guest bedrooms, living areas, and the master bedroom suite are each placed on successively higher levels connected by a ramp. The dining area (above right) is a tall space the full height of the building, which opens on the library and the master bedroom balcony. In the living room, steps up to the master bedroom are extended to form seating to flank the fireplace (right). These differences in heights and levels, together with the extension of spaces outdoors to decks and terraces, combine to give a great deal of variety and spaciousness to a moderate-sized house.

The interiors are finished in a very simple manner, with a minimum of furniture, to increase the air of spaciousness. Ample seating is provided in the living area by a long, curving built-in sofa and the step "seats." Service rooms, below grade areas, kitchen and baths have floors of vinyl tile, quarry tile or ceramic tile. The interior bath and dressing room on the top level are daylighted by plastic, domed skylights. The house has a warm air furnace and air conditioning. The big windows of the upper levels have double glazing for insulation, and all sliding sash is fitted with sliding glass fiber screens.
The strong, individual expression of this house grew out of the desire to give maximum space, and a design focus, to each of the five required living areas—and to minimize service areas. The site is an attractive one, with trees, rocks and edges on an irregular lake shore. The house, as developed, provides a pleasant, yet informal order which seems very suitable to its natural setting.

On the over-all concept, Robert Sobel states: "Spatially, the house builds its volumes out of two interlocking elements—a spine of low space placed across the slope links the high volumes of the pavilions. The spine is always recalled by the horizontal band running continuously around the house, inside and out. All service spaces are fashioned out of the low spine to leave the interiors of the pavilions perfectly clear." In addition to its mental appeal, such a concept has its practical side for the fairly limited budget of the house: interior space could be placed where it was needed most; identical size and detailing for each pavilion simplified construction; and pavilions could be more economically placed with regard to existing rocks and trees. As can be seen from comparing the photo (right) with the sketch of the house (above), a terraced platform with stone retaining walls will be constructed to unify the entire complex of house and decks, as well as provide level outdoor living space.

Norman Jaffe describes the program as a fairly typical one: "The owners, a couple in their early 40's with a young child, wanted a small, informal house with easy access to site, privacy within and a variety of lake views. The pivot of the plan is the family room—the owners wanted some of the spirit of the old-fashioned kitchen and as much openness as possible. As developed, the major circulation of the house is through the center of this room."

With this room as the hub, the plan forms a two-part, bi-nuclear scheme, which can be used in two ways, depending on the needs of the family. For the present, the pavilions to the north are bedrooms, and the family room, living room and den comprise a shared "active" zone. In the future, the living room and den can become the parents' suite, balanced by the family room and bedrooms across the court for the younger member or members of the household. Additional pavilions could also be linked to the original house if the need arises.

The exterior materials used in the house are bleached redwood and cedar, which will be allowed to weather naturally to blend with the site.
FIVE PAVILIONS LINKED BY A SERVICE SPINE

DESIGNER: ROBERT SOBEL
ARCHITECT: NORMAN JAFFE
House for Mr. George Berkowitz
Lake Mahopac, New York
Contractor: Edwin and Allen Page
of Page Brothers
Interior Designer: Nicos Zographos
The Berkowitz house tilts the shed roofs of its five pavilions toward the wooded lake views, as can be readily seen in the photos of the living room (above and right), and of a corner of the study (above left). The front of the house is kept low in scale and enclosed for privacy. Norman Jaffe states: "We made no ceremony of the entrance on the uphill side, which is generally closed except for a few small windows to keep the light even."

A cross section sketch of the family room (across-page top) shows the effect of the interplay of low and high ceilinged spaces. This room combines the functions of kitchen, dining area, study or play room, and circulation hall. The low-ceilinged service areas include all baths, storage spaces and additional hallways.

The structure of the house is wood frame on cement block foundations, with redwood siding as noted and cedar shakes on the roofs. The redwood is finished with two coats of bleaching oil. All doors and decks are painted a dull red-brown to match the hue of the redwood.

Interiors are finished in painted gypsum board, with the exception of ceramic tile used in the baths. Floors which form heavy traffic areas are surfaced with quarry tile; all other floors are oak. All window sash and gutters are aluminum.

The heating system is divided into three zones and uses a hot water, oil-fired plant. The approximate cost of the house, excluding lot, landscape and furnishings was $34,000.
UNUSUAL VARIETY IN INTERIOR SPACES AND OUTSIDE VIEWS IS PROVIDED FOR A SMALL HOUSE

PAT FINELLI
AN ATRIUM EXPANDS BUILDER HOUSE LIVING AREA

The sense of space in the living areas of this attractive development house is greatly increased by the adroit use of a glassed-in, central atrium or court between the living and multi-purpose rooms. As the photo (right) clearly shows, the three areas form one big visual area, though they are functionally separate: the use of draperies could separate them completely if desired. The architect explains that "the plan came out of a desire to have an atrium which would not be used as an entrance, to afford privacy, and to avoid the necessity of a door release across a front court from the entrance." The builder adds, "for the last three years, the atrium plan has been so popular that we would have a hard time selling something which had no atrium."

The house has four bedrooms, with the children's rooms zoned apart from the rest of the house. The approximate cost, excluding lot, landscaping and furnishings was $21,950. Simple details and close cooperation with building crews helped reduce costs.
FUNCTIONAL SIMPLICITY PROVIDES A BETTER AND MORE LIVABLE HOUSE AT MODERATE COST

Claude Oakland, the architect of this development house, states that: "We try to design the costs out, and this becomes possible because we work so closely with the people in the field. It would be costly for another builder to build one of these houses, because he would be unfamiliar with it, but in our case, the field people come up to our office and we talk about details. Sometimes we have two ways of detailing something, and after talking with them we know which will be possible, or expensive—and we choose the one that will do the job as we want it, but in a less costly way. This is particularly true in our detailing of roof framing, doors and glass setting. We have made these as simple as possible, and the simple detail is better looking."

When queried on how to keep prices down, the builder commented: "Well, costs have gone up a lot from the early days of Eichler houses. Land costs more—a lot more; houses are bigger and have more amenities; the cost of doing business is going up. But the radical moves in cutting costs were made long ago... we have continuity in our operation, use the same crews, have the same organization. Organization is the key to cutting operational costs and building costs. Details can be, and are, refined; and this is part of it. But there's a point beyond which this doesn't do a lot... what remains now in that line is to do factory-built houses. But prefabrication never attacks the fundamental factors in a house."

The "fundamental factors" in this example include carefully integrated—and well designed—plan, structure and appearance. All rooms are well related. The three children's bedrooms are close to the main entrance, and to the multi-purpose family room. Bath, dual wash basin, laundry and linen storage range the corridor connecting the three rooms. An adult area is at the back of the house, and includes the master bedroom, living room, den or hobby room, and an outside terrace. The kitchen is placed for convenience to all major rooms and to the garage. A covered area for an extra car flanks the entrance walk, forming a little court when not in use. The post and beam structural frame is Douglas fir and redwood; exteriors are stained plywood; interiors have gypsum board walls, asphalt tile floors and redwood ceilings.
STAGGERED WALLS EXPLOIT SITE IRREGULARITIES

A series of staggered walls, which step down with the contour of the site, was evolved by the architect as a solution to the problems of a thickly wooded, sloping site on the edge of St. Louis. The clients required a roomy, family residence with large, interesting living spaces, giving good views over a nearby lagoon. As many as possible of the existing trees were left undisturbed.

The photo (left) shows how the sturdy, cedar wood house fits naturally into the surrounding woodlands. Careful detailing in a kind of dog-tooth pattern, reminiscent of the details in some of James Stageberg’s brick buildings, relieves the plain wood elevation and creates a horizontal line, which reduces the apparent height of the structure.

The wonderful light and open effect of the interior forms a dramatic contrast to the rather closed-in appearance of the exterior of the house. This effect seems all the more surprising in view of the fact that the narrow glass inset walls, which give the additional light, are barely noticeable from outside.

The plan places the living rooms and garage on the ground floor, with the five bedrooms above all but the living room. This room (right) is on two levels and penetrates the full second floor of the house; at its lower level it has a height of 22 feet. Light colored interior finishes give the rooms an air of uncluttered sophistication, which again forms a contrast to the natural, woodsy exterior.
ARCHITECT: JAMES EDGAR STAGEBERG

Residence for Mr. and Mrs. John Cosby

Chesterfield, Missouri

Structural Engineers: Meyer and Borgman

Contractor: Reinhardt Company
The dining room (bottom right) and the kitchen of the Cosby residence overlook the living area from a higher level. This arrangement of rooms enables the mother to supervise her children's activities while she is working, and also gives an attractive view over the living room to the woods and lagoon beyond. A pleasantly private wood deck (across-page) leading off the living room gives an additional feeling of spaciousness inside the house.

The photo of the entrance hall (right) demonstrates clearly the way in which the glass inset walls seem to open the house to the view. This photo also shows the interesting effect created by the variation in floor level.

The kitchen (below) is compactly arranged with cabinets lining one wall and a plastic topped counter on the other side. The range and appliances are electric; vinyl floor coverings are used. The bathroom floor and surfaces are of ceramic tiles.

Structure of the house is wood frame with stained, rough-sawn cedar walls, and a pitch and gravel roof. Interior walls and ceilings are of plasterboard. Each floor is zoned separately to have its own forced air heating and air-conditioning unit.
PATIOS AND PAVILIONS ARE COMBINED FOR A WALLED-IN CITY HOUSE FOR A LARGE FAMILY

ARCHITECTS: CURTIS AND DAVIS
Residence for Mr. and Mrs. N. C. Curtis Jr.
New Orleans, Louisiana
Mechanical and Electrical Consultants:
Zervigon-Goldstein Associates, Inc.

A separated pavilion plan, elegantly executed with an arched steel frame, is used here to provide ample indoor and outdoor living space on a small city lot for a family of nine. As can be noted on the plot plan (above), the house is divided into three living units, linked by a lower ceilinged corridor. The two pavilions at the front are very open in plan, and work together to provide the facilities used by the family together: living rooms, dining and family rooms, and kitchen. All the main areas in this portion of the house have glass walls opening on adjoining private courts.

The rear unit is on two levels, with the lower level depressed slightly to reduce the apparent height of this wing, and to allow the glass corridor to become the intermediate landing of the stair. This unit contains seven bedrooms and four baths, and was planned to be opposite in feeling to the front pavilion, and provide "snug, introspective" privacy for all the family members.

The lot is in a typical residential neighborhood of New Orleans, and is surrounded by immense live oak trees. Walls surround the house and courts to give an amazing feeling of openness and isolation in a built-up section of town. Butt-jointed glass clerestory windows in major rooms add further to this effect, as does the light structure and the predominant use of white finishes as a background to the lively form and color of the furnishings.
The Curtis house is given great privacy from the street by a white-painted brick wall, relieved by a handsome wrought iron entrance gate (above). Within, each of the major rooms is increased in apparent size by the glass walls opening onto different courts, as can be readily seen in the plans and photos shown here. The living room is planned to work closely with the areas for dining and family rooms for large gatherings; shoji screens close off the dining room when desired.

The structure of the house is steel frame, with exterior (and some interior) walls of white-painted stucco and brick. Interior partitions are plasterboard on wood studs, surfaced with vinyl wall covering. Floors in the front pavilions are white terrazzo, and those in the bedroom wing are vinyl or carpet. The sliding glass doors are set in sliding aluminum sash; solid doors are surfaced with laminated plastic. All of these materials considerably reduce upkeep and maintenance. The entire house has thermostatically-controlled, year-round air conditioning.
BILL HEDRICH, HEIDRICH-BLESSING PHOTOS
This gracious, well-proportioned house on the shores of Lake Michigan was designed to accommodate a family of six, as well as a maid. A three-level scheme was adopted to take advantage of the slope in the site, and to leave as much open space as possible beside the lake.

An existing brick garden-wall on the north property line was used to enclose a play yard and service court, as well as to screen the view from a public street to the north. The east elevation opens totally in glass to the lake. Bedrooms and living areas on the first and second floors lead on to wood-deck verandas to give maximum enjoyment of the magnificent view over the lake.

The most striking feature of the structure is the copper-sheathed folding plate roof. The architect says that this roof, "with its extremities dipping towards the ground, was used to give interest and a sense of shelter to the second floor bedrooms and entry, as well as to decrease the apparent height of the building."

With its high, white gables, and well-landscaped surroundings, including the old garden wall, the house has the unselfconscious charm of a traditional building which has been established on its site for a number of years. In reality it is a highly sophisticated structure in which the advantages of modern materials and contemporary planning methods are fully exploited.

The main floor of the house includes a large central living-dining area, flanked on the north side by the kitchen, family room and maid's bedroom, and on the south by the study and master bedroom suite. There are four bedrooms, bathroom and storage space on the upper floor. The lower level has a large play area opening on to a terrace beneath the wooden veranda of the first floor. Additional storage and utility space is also provided at this level. The stone masonry walls, which enclose the ground floor, are extended to form a carport on the left of the entry court. Good parking and turning space is provided outside the garage.
The main entry court to the Sternberg residence is defined and made private by a wooden screen, which is formed of vertical railroad ties (left). The entrance hall (below left) overlooks this court, in which shrubs have been planted; a small concrete pool flanks one of the granite walls.

The family room (below) and the living room (across-page) are both furnished in contemporary style. The interior of the house is, however, designed to be a suitable background for period as well as modern furniture. The Barcelona chairs in the living room, and the period chairs in the entrance hall look equally at home in their setting.

Interior walls are of exposed granite, drywall or walnut paneling. Walnut is also used for the entrance door and for the kitchen cabinets. Floors in the living areas are blue stone or oak. The main living area is carpeted. Vinyl or ceramic tiles are used for kitchen and bathroom floors. Ceilings are laminated drywall, with the exception of the bathroom, which is cement plaster. The structure of the house consists of load bearing walls and a laminated wood frame on a reinforced concrete foundation. The roof is of rafter construction surfaced with sheet copper and standing seams. Exterior walls are of cement stucco or granite boulder with the split face exposed.

The house is zoned into four separate areas, each of which has its own hot air furnace and electric air-conditioning unit. All ducts are of sheet metal. The approximate cost of the building was $100,000, excluding lot, landscaping and furnishings.
An unusual degree of warmth and comfort are incorporated in the neatly balanced design of this production house. Natural-finished woods, accented by some brick and stone, are used with very nice effect. William Berkes, a graduate of the Harvard School of Design and partner of Deck House, Inc., states that: "Considering the rugged climate in New England, a structure must above all be durable. Wood has traditionally been the basic material of home construction in this area—wood seems to balance perfectly the functional and esthetic appeals. The liberal use of exposed wood construction via 3-inch cedar decking for the floor and roof systems, coupled with post and beam construction, is reminiscent of the 'contemporary' homes built by the early colonists for their time, and which still grace our countryside. Glass areas, so desirable for today's indoor-outdoor living, have also been used liberally, yet related to function as well as design for maximum livability."

Pleasant living space in the house has been, in effect, doubled by the use of a partially raised basement and a gently sloping site. Thus the lower "basement" area provides a family room and a bedroom at the back with full window walls, and a bedroom and a storage room at the front with waist-high windows.

The entrance of the house is at mid-level between the two floors giving quick access to either the children's areas below, or the adult areas on the top level. The house could easily be converted into two separate apartments if desired.
DESIGNER: WILLIAM J. BERKES

Development House for Deck House, Inc.
Wayland, Massachusetts
Contractor: Deck House, Inc.
Interior Designers: Design Research
LARGE LIVING AREAS ARE ON BOTH LEVELS OF THE HOUSE

The plan of this development house works quite well for a typical family, and offers the possibility of allocating some of the spaces for other uses. Thus, if fewer bedrooms were required, the living area could be enlarged to extend across the entire back of the house and the upper front bedroom used as a study. Or, a similar arrangement could be accomplished with the family room and bedroom on the lower floor.

The structure incorporated a number of woods: red cedar for the exterior and roof decking, white fir for the frame, ash for doors and mahogany for some of the millwork. Interior walls are surfaced with plasterboard, finished with paint or grasscloth. Floors are strip oak on the upper level, asphalt tile on the lower one. The wood deck roof is left exposed as finished ceiling on the top floor.

The heating system uses an oil-fired furnace, with circulating forced hot water and baseboard radiation. The cost of the basic model shown was $26,500.
DESIGNERS OF THE RECORD HOUSES OF 1964

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

BINKLEY ASSOCIATES 120
18 East Pearson Street
Chicago 11, Illinois
Roy Binkley, A.I.A.

BLISS & CAMPBELL 84
27 University Street
Salt Lake City, Utah
Anna Campbell Bliss, A.I.A.
Robert Lewis Bliss, A.I.A.

HENRIK BULL 92
515 Pacific Avenue
San Francisco, California
Henrik Bull, A.I.A.

CAMPBELL & WONG & ASSOCIATES 76
737 Beach Street by Aquatic Park
San Francisco 8, California
John Gordon Campbell
Worley K. Wong, F.A.I.A.

CURTIS AND DAVIS 116
2475 Canal Street
New Orleans 60, Louisiana
Nathaniel C. Curtis, A.I.A.
Arthur Q. Davis, A.I.A.

MARY LUND DAVIS 62
3801 Alameda Avenue
Tacoma 66, Washington
Mary Lund Davis

DECK HOUSE INC. 124
P.O. Box 306
Wayland, Massachusetts
William J. Berkes

EDELMAN AND SALZMAN 58
117 West 12th Street
New York 11, New York
Stanley Salzman, A.I.A.

CRAIG ELLWOOD ASSOCIATES 48
8822 Beverly Boulevard
Los Angeles 38, California
Craig Ellwood

ULRICH FRANZEN 100
41 East 57th Street
New York, New York, 10022
Ulrich Franzcn, A.I.A.

96 FRANK R. GLASS
1716 Locust
Des Moines, Iowa
Frank R. Glass, A.I.A.

72 MARK HAMPTON
Stovall Professional Building
Tampa 2, Florida
Mark Hampton, A.I.A.

64 HUGH NEWELL JACOBSEN
2735 P Street Northwest
Washington 7, D.C.
Hugh Newell Jacobson, A.I.A.

80 TASSO KATSELAS
5471 Coral Street
Pittsburgh, Pennsylvania
Tasso Katelas

68 RICHARD MEIER
1141 Park Avenue
New York 28, New York
Richard Meier

108 CLAUDE OAKLAND
112 New Montgomery Street
San Francisco, California
Claude Oakland, A.I.A.

54 I. M. PEI & ASSOCIATES
385 Madison Avenue
New York 17, New York
I.M. Pei, A.I.A.

104 ROBERT SOBEL & NORMAN JAFFE
Robert Sobel
George Nelson and Co. Inc.
25 East 22nd Street, New York, N.Y.
Norman Jaffe, A.I.A.

112 JAMES EDGAR STAGEBERG
1409 Willow Street
Minneapolis, Minnesota
James Edgar Stageberg, A.I.A.

88 FRITZ WOEHLE
324 South 18th Street
Birmingham 5, Alabama
Fritz Woehle, A.I.A.
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 again put this question to Myron L. Matthews, manager-editor of the Dow Building Cost Calculator and Valuation Guide, a service of the F. W. Dodge Company, a division of McGraw-Hill, Inc. He did some research and presented us with the answers for those Record Houses for which cost data was available, as though they were to be duplicated in 14 selected cities located in representative geographic areas of the United States. The figure 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 per cent one way or the other, and maybe more if unusual conditions prevail in one locale or another. However, over a period of 38 years the Dow Calculator has established a good record, and we believe that their figures will work out well for the purposes intended.

RECORD HOUSES 1964 COMPARATIVE BUILDING COSTS* FOR SELECTED CITIES


<table>
<thead>
<tr>
<th>NAME OF HOUSE</th>
<th>WHERE BUILT</th>
<th>PAGE NUMBER</th>
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<tr>
<td>Sunset House</td>
<td>Glencoe, III. (126)</td>
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<td>House in El Dorado Hills, Calif. (92)</td>
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<td>House in Tresoro, Wash. (62)</td>
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<td>Glass House, Des Moines, Iowa</td>
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<td>House in Tempe, Arizona (84)</td>
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<td>Skidmore, Owings &amp; Merrill, Chicago (74)</td>
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<td>Barnstable House, Boston, Mass. (95)</td>
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<td>Kendall-Peters House, Lakewood, N.J. (80)</td>
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<tr>
<td>House in Orange, Calif. (106)</td>
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<td>Venable House, Columbus, Ohio (84)</td>
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<td>House in Portland, Ore.</td>
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<td>Samples House, Washington, D.C. (34)</td>
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<th>CONSTRUCTION COST*</th>
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<td>$100,000</td>
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<td>BALTIMORE, M.D.</td>
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<tr>
<td>$9,500</td>
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<td>$9,200</td>
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<td>$9,400</td>
<td>SEATTLE, WASH.</td>
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</tbody>
</table>

*Omits land, landscaping, special foundations, architectural 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 agencies.
MINIATURE FOUNTAIN FOR THE HOME
Designed for use with indoor and outdoor floral arrangements, the Madeira Fountain is made of copper and has an electric motor pump which is guaranteed for life. The Madeira Company, 8950 Given Rd., Cincinnati, Ohio
CIRCLE 300 ON INQUIRY CARD

LIGHTING IN CAST STONE
Four unconventional designs for lighting equipment in cast stone have been created by Ilse Hofman and Abraham Schenk. The Cathedral model shown in the photo is made up of two white stone shells which form a free standing semi-cylindrical light shield. Sculptural Lighting Inc., 2755 Palisade Ave., Riverdale, N.Y.
CIRCLE 301 ON INQUIRY CARD

CLOCK AND MIRROR COMBINATION
As a result of collaboration with the industrial design firm of Arthur Umanoff Associates, a correlated group of mirrors and clocks has been introduced by this company in its Meridian Accessories Division. The illustration shows a 30-in-high clock in oiled walnut with a mirror of 1/4-in. polished plate glass. Howard Miller Clock Company, Zeeland, Mich.
CIRCLE 302 ON INQUIRY CARD

OVEN THAT CLEANS ITSELF
A self-cleaning oven, the result of many years research, has now been fitted to four of the company’s standard electric ranges. The all electric cleaning process uses a heat of about 800 degrees to burn off grease and food particles. General Electric, Appliance Park, Louisville, Ky.
CIRCLE 303 ON INQUIRY CARD

For more information . . . .
circle the key numbers of the products on which you want more information (see number below each product item) on the Inquiry Card, pages 163-164

ARCHITECTURAL RECORD HOUSES OF 1964 129
A vacation hideaway in the Bahamas uses wood converging beams and rough-sawn ceiling to work wonders in its very livable, triangular living room. Note the complementing wood built-ins designed by The Richard Plumer Company, Miami, for this Frazer Hog Cay cottage.
For envied retreats on secluded sites

use WOOD ... and your imagination

Take a holiday from everyday homes ... with a seasonal house or weekend cottage of wood. The economies of wood allow infinite flexibility in your design, definitive structures for their purpose. Wood beams, siding, flooring, and roofing are on familiar grounds anywhere ... weather every climate beautifully, welcome other materials warmly.

The many grains, tones, and textures of wood create patterns that never tire, always relax. Sound control for rest, insulating ability to help keep temperatures up or down for comfort ... these, too, are wood's inherent virtues. Wood makes perfect resort places that endure for generations of vacations. For more information on designing with wood, write:

NATIONAL LUMBER MANUFACTURERS ASSOCIATION
Wood Information Center, 1619 Massachusetts Ave., N.W., Washington 6, D.C.

find the better way with wood
How Haft-Gaines features kitchens that help close sales

Mr. Gaines, how do you use construction features to make sales?
A. We invite prospects to go through our group of model homes and pick the construction features they like. It makes for excitement and personal involvement.

Why do you install General Electric appliances?
A. Well, in anything we use, we look for something that's really new and different, that will get talked about. G-E products really get the ladies interested.

What's new about the products that G.E. offers?
A. The P-7 oven on the Americana range is the real hot one. Some folks come just to see this oven that cleans itself electrically. I never realized how much a woman hates to clean a dirty oven.

We see the new Americana refrigerator, too.
A. Yes, and it's a beauty. This countertop refrigerator is a real eye-stopper. Gets an awful lot of good comment.

You include the G-E built-in dishwasher?
A. Yes, we believe it's the most advanced dishwasher in the field. But even if it was just second or third best we'd probably still use it, so we could offer G.E. for all appliances.

Why do you like to include all G-E kitchen appliances?
A. Well, our prospects have confidence in G.E. to make top appliances and give good service—and with the one line, they'll have one-source service. And we can be sure of styling and colors that match.

But there's another thing. The G-E line is styled so we can be flexible in our designs. We can build kitchens that are different and attractive, real sales-clinchers. I doubt there's a time when these kitchens don't contribute to sales. And I've seen just one feature—like that P-7 oven—clinch a sale. And, of course, you know G.E. helps by advertising. The lady comes in knowing the name. That helps a lot.

You don't mind being quoted to other builders?
A. No, they're welcome to the same selling help from General Electric that we get—they still can't build better kitchens than we do. Anyway, we'll find an edge somewhere else. We have sales-clinchers everywhere. Let me show you the living room . . .

For more data, circle 26 on Inquiry Card
THE AMERICANA RANGE with the revolutionary P-7 oven that cleans itself electrically, rotisserie, built-in 2-level exhaust, Sensi-Temp® cooktop unit.

BUILT-IN DISHWASHER loads from front, leaves counter free, washes table settings for 15." (All deluxe appliances available in variety of matching colors.)
DOME SKYLIGHTS FOR HOUSING MARKET
A new line of standard geometric skylighting domes has recently been developed for the housing market. In response to a growing demand by architects, the company is now producing custom-designed extruded aluminum and glass domes with standard skylight economies. These self-supporting domes can be specified in two basic one-slope geometric design patterns, and are available in 6- to 30-ft diameters. All domes carry a three year guarantee against defects in design, materials and workmanship, as well as against leakage. Super Sky Products, Inc., Box 113-H, Thiensville, Wis.

NEW DESIGNS IN VINYL FLOORING
Two new designs have been added to the range of sheet vinyl flooring. Caradel Vinyl Cordon, available in white and beige, features a plain background and a scroll inset inlay, simulating brass. Paventi Vinyl Corlon has large scale vinyl aggregates which are designed to give the appearance of Italian carrara marble. Four light colors, with neutral accents can be obtained. Both new lines are manufactured in 6-ft widths and are equipped with moisture resistant backing. Armstrong Cork Company, Lancaster, Pa.

GAME TABLE
This small, square table has a walnut top which can be removed to reveal a chess-board, recessed sufficiently to provide room for the standing pieces when the top is in place. The table is 18 in. square and 15½ in. high. Brown-Saltman, 5657 Wilshire Blvd., Los Angeles 36, Calif.

WOOD FRONTED STEEL CABINETS
Fifteen different wood finishes in a choice of contemporary, traditional or provincial styling are available in the Century line of steel cabinets. Mounted on ultra-durable steel, the wood exteriors are of %4-in. three-ply construction with solid basswood cores to prevent warping or splitting. All finishes are sealed, baked and lacquered before the molding and hardware is applied. Geneva Industries, Inc., Geneva, Ill.
BATHROOM CEILING HEATER
Easily installed on any standard 3¼- or 4-in. ceiling outlet box, this surface-mounted heater features a 1,250-watt armor-shielded element, thermal protection against overheating, and a double-duty fan that cools the unit as it helps diffuse heat throughout the room. The Model 150 heater is 14½ in. in diameter and carries a one year guarantee. Broan Manufacturing Company, Inc., Hartford, Wis.
CIRCLE 308 ON INQUIRY CARD

FOUR TYPES OF VENTILATING HOOD
Designed for against-the-wall, pass-through, peninsula and island installations, these ventilating hoods are finished in either antique copper or pewter and are available in standard lengths of 36, 42 and 48 in. Custom lengths to 96 in. are available to order. The unit is particularly suitable for ventilating indoor barbecues because of the extremely high air discharge developed by dual centrifugal blowers, powered by a ½ hp engine.

CONTROL CENTER FOR REFRIGERATORS
A built-in operational control center is now being offered as standard equipment with the Victory Line commercial refrigerators and freezers. This conveniently placed panel operates five separate control elements; it gives the alert if excessive temperatures are reached, eliminates moisture around exterior door openings, checks the product zone temperature, maintains the power supply and flashes a warning light for failure of the power source. Victory Metal Manufacturing Corp., Plymouth Meeting, Pa.
CIRCLE 310 ON INQUIRY CARD

ILLUMINATED LIGHT SWITCHES
These switches, which light up when in the “off” position making them easy to locate in the dark, are particularly suitable for use in hallways, garages, warehouses and similar buildings. They are available in a range of four colors, ivory, gray, beige and white and in 15- and 20-amp ratings. Sierra Electric Corp., 15100 S. Figueroa St., Box 85, Gardena, Calif.
CIRCLE 311 ON INQUIRY CARD

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sliding-folding tub shower door
America's outstanding tub/shower enclosure

At last here's a product that answers all the objections to old-fashioned tub/shower enclosures. Look at these advantages.

- tub-master is safe. Its Styron® panels are shatter-proof and have high impact resistance.
- tub-master is beautiful. Available in 8 decorator colors plus black and white.
- tub-master is convenient. Rigid by-pass doors are easily unlatched and folded out of the way for bathing or easy cleaning.
- tub-master is easily installed. Entire installation takes only minutes. Unit plumbs itself to uneven tubs or walls.
- For more information write tub-master Dealer/distributor inquiries invited.

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Filuma garage doors blend with all building materials - any architectural design . . . plan a gay, bright garage in your next home with the Frantz Filuma fiberglass/aluminum garage door. Translucent fiberglass panels (white, tan, green or coral) brighten every corner of the garage with natural light . . . adds extra living space. Never needs paint . . . just hose it off to keep it new. Light in weight, too. Special zinc-plated hardware won't rust. Protected under Patent Nos. 194094, 3104699. Available nationally through lumber dealers. Send for color brochure.

FRANTZ MANUFACTURING COMPANY
Department 7 • Sterling, Illinois
The Nation's Foremost Manufacturer of Fiberglass/Aluminum Garage Doors.

for more data, circle 30 on inquiry card

ARCHITECTURAL RECORD HOUSES OF 1964 137
L·O·F makes special kinds of glass to help solve special house-design problems. Your L·O·F Distributor knows glass and how to use it. Try him. Or call your nearest Libbey-Owens-Ford District Office. Both are listed under “Glass” in the Yellow Pages.

(Top photos) To reduce sun glare and heat, ¼" Parallel-O-Grey® plate glass was used in this Houston residence of Architect Harry Turner. It excludes approximately 50% of visible daylight and 40% of solar heat. L·O·F also makes Parallel-O-Bronze® and blue-green Heat Absorbing plate glass for glare and solar heat control. And for homes without this problem, there's clear, twin-ground Parallel-O-Plate® glass.

(Lower left) To assure year-round comfort, Thermopane® insulating glass was used in the Minneapolis residence of Architect Newton Griffith. Thermopane reduces heat loss through windows and window walls about one-half as compared to single glazing—cuts heating and air-conditioning costs. Thermopane can be supplied with tinted glass as the outer pane for glare and solar heat reduction.

(Lower right) To decorate and share light between adjacent areas, use L·O·F Rough Plate Glass. Its shimmering surface adds texture and interest, provides partial privacy yet permits light to pass through freely. Ideal for homes as well as offices. Architects: Skidmore, Owings & Merrill. For safety's sake use sliding patio doors made with Tuf-flex® 200 Safety Plate Glass. This glass is heat-strengthened... is 20% thinner (therefore lighter weight) than regular ¼" plate glass, yet meets all FHA and VA safety standards. Thermopane insulating glass units made from Tuf-flex 200 will fit sliding-door frames formerly restricted to the use of ¼" insulated glazing made from sheet glass.

To make rooms appear larger, use large mirrors and sliding wardrobe mirror doors made with Parallel-O-Plate glass—twin ground and polished for truest reflection.

Libbey-Owens-Ford Glass Company TOLEDO, OHIO

For more data, circle 31 on Inquiry Card.
Living

Glass makes it possible.
L·O·F makes it practical.
Product Reports
continued from page 137

SELF-VENTILATING ELECTRIC OVENS
Complete built-in ventilation of all cooking zones is an important feature of the eight new electric Range-Ovens now on the market. All models are in one piece and can be slid or dropped into standard cabinets. Nu-Tone Inc., Madison and Red Bank Roads, Cincinnati 27, Ohio
CIRCLE 313 ON INQUIRY CARD

MODULAR FURNITURE
This 9-ft room divider is one of more than 60 modular assemblies manufactured by the company for residential or commercial use. The Coordinates range of drawers, doors, shelves and interior fittings are available in 3 and 9 ft widths, and in walnut or Northern maple in natural wood and color finishes. Legs and extrusions are of anodized aluminum. Mutschler Brothers Company, Merchandise Mart, Chicago, Ill.
CIRCLE 314 ON INQUIRY CARD

BUILT-IN PANEL PHONE
Although it can be installed anywhere in the house, the space saving features of this telephone make it especially suitable for kitchens or family rooms. A disappearing cord that unwinds and retracts automatically as the instrument is used is introduced for the first time. The panel is available in anodized aluminum or copper finishes. Bell Telephone System, American Telephone and Telegraph Company, 195 Broadway, New York 7, N.Y.
CIRCLE 312 ON INQUIRY CARD

Quarry Tile of Special Shapes
The unique beauty of Ludowici special shapes shale flooring tile is now practical for your most budget minded client. Because of greatly increased demand, price reductions have been made on all special shape styles. No difference in quality or texture.
You can now afford the world's most beautiful flooring tile.
Provence, Valencia and Renaissance patterns available in brushed or smooth, in red or fire flashed colors.
For complete information and the name of your nearest distributor write:
FLOORING TILE DIVISION—Dept. R. H.
LUDOWICI-CELADON CO. • 75 East Wacker Drive, Chicago 1, Illinois
Manufacturers of quarry tile, the nation's largest producer of roofing tile and NAION Facing Brick

WEST COAST REPRESENTATIVES: International Pipe & Ceramics Corp., Los Angeles
HAWAII REPRESENTATIVES: Lewers & Cooke, Ltd., Honolulu

For more data, circle 32 on Inquiry Card
Universal-Rundle thought so... and they chose Sundberg-Ferar, Inc. (1962 winner of the American Institute of Architects Industrial Design Medal) to design their new Galaxie line, a skillful welding of utilitarian function, beauty of materials and sculptural simplicity. You'll agree that U/R Galaxie engineering is incomparably advanced, too. Consider that their sleek Met-L-Pak faucets are guaranteed never-to-drip for life. And the Uni-Tilt flush valves in Galaxie water closets shut off every time. Eliminates annoying handle jiggling and running water nuisance. You can count on U/R for handsome designs and long-range economy. It'll make good design and business sense to know the facts on U/R vitreous china, enamel cast iron and fiberglass fixtures, and chrome brass fittings before specifying another residential or commercial plumbing job. Full Color Brochure? Write:

1. ULTRA-SILENT! Polaris low tank profile. One piece. Stunning!
2. YEARS AHEAD! Venus appears like one piece—costs far less!
3. SHELL-SHAPED! Apollo lavatory for single or multiple installation with sleek sculptured styling akin to today's architecture.
4. EXCITING FLAIR! Saturn vitreous china counter top lavatory.
5. FLEUR-DE-LIS PATTERNE! Rhea lavatory's overflow concealed at front.
6. SWEEPING LINES! Full width Neptune tub is spacious, yet economical. Apron seat, large reclining area. Built-in soap dish.

All fixtures are available in white and distinctive coordinating pastel colors.

UNIVERSAL-RUNDLE CORPORATION, NEW CASTLE, PA.

We want to see what's new. Please send full color architectural brochure on U/R plumbing fixtures.

NAME
FIRM
ADDRESS
CITY STATE
THE NATION'S LARGEST
SUPPLIER OF PLASTER GROUNDS

CASINGS INCORPORATED
2408 N. Farwell Ave. Milwaukee, Wis. 53211
BR. 1-6310 (414)

CASING BEADS
CORNER BEADS
BASE SCREEDS

No. 60
Modified Square

No. 66
Exp. Square

No. 59X
Exp. Quarter Round

No. 50X
Exp. Modified Square

No. 49
Short Flange

No. 40
Quarter Round

No. 4
Arch Bead
1 1/2" Flange

No. 1
Exp. Corner Bead
2 3/4" Flange

No. 2
Exp. Corner Bead
1 3/4" Flange

WRITE FOR CATALOG OF COMPLETE LINE
IF WE DON'T STOCK IT ... ASK US TO MAKE IT!

CASINGS INCORPORATED
2408 N. Farwell Ave. Milwaukee, Wis. 53211
BR. 1-6310 (414)

BRAND NEW!
No. 230's — Designed especially for the rapidly growing thin wall plastering systems.

No. 230
Available in 1" x 1" for 1/8" coat and 1 1/4" x 1 1/4" for 1/8" coat.

No. 233
The latest in casing for thin wall plastering. Now in 1 1/2" size and 5/8" size for 1/8" coat.

No. 15
Expansion Joint

No. 3
Exp. Base Screed

No. 14
Stucco Divider

No. 77
Flush Base Screed

IMMEDIATE SHIPMENTS — COAST TO COAST WAREHOUSES

For more data, circle 31 on Inquiry Card
DECORATED LAVATORIES
Vitreous china lavatories and one-piece water closets are now available with decorative designs fired into the china under the original glaze. The company claims that these under-glaze designs are as permanent as the glaze itself and will never fade or wear off. Case Manufacturing, 1010 W. Pine St., Robinson, Ill.
CIRCLE 315 ON INQUIRY CARD

KITCHEN CLEANING AID
The Sweeplean unit consists of a frame and a container which is easily installed between 16 in. center floor joists in kitchens and family rooms. It is said to hold two to three weeks sweepings and can be lifted out for periodic emptying. Made of 20 guage steel with a copper tone finish, its dimensions are 12 in. long, 27½ in. wide and 6 in. deep. Ultran, Bloomington, Minn.
CIRCLE 316 ON INQUIRY CARD

STAINLESS STEEL SINK
A round stainless steel sink which can be built into almost any type of working surface has been added to this company’s existing range. The unit is self-rimmed with smooth seamless construction. Heavy under-coating offers maximum sound deadening. Polar Ware Company, Sheboygan, Wis.
CIRCLE 317 ON INQUIRY CARD

GLASS FIBER BATH AND SHOWER UNITS
One-piece shower and bath units made of specially formulated glass fiber reinforced polyester resin can be put into a building at the framing stage. The bath unit combines a 5-ft tub with a 72-in.-high back and sides splash wall. The shower unit is made in three widths: 36 in., 48 in. and 54 in. Features of the new material are a non-skid surface, high resistance to stains and abrasion from household cleaners, and the possibility of repair after installation. Universal-Rundle Corp., Box 960, New Castle, Pa.
CIRCLE 318 ON INQUIRY CARD

35% of the Award-Winning Architects
specified Cabot’s STAINS
35% in 1964 . . . and this is only part of the story. In the past 10 years, Cabot’s Paints or Stains were used on 68 out of 195 “Record Houses,” a remarkable 35% overall. This record speaks for itself.

The following architects specified Cabot’s for 1964 “Record Houses”:

WILLIAM BERKES
Wayland, Mass.

HENRIK BULL
San Francisco, Calif.

CLAUDE OAKLAND
San Francisco, Calif.

CAMPBELL & WONG & ASSOCIATES
San Francisco, Calif.

NORMAN JAFFE
New York, N.Y.

JAMES E. STAGEBERG
Minneapolis, Minn.

Send for color cards and information on Cabot’s Stains.
SAMUEL CABOT INC. 529 S. Terminal Trust Bldg., Boston 10, Mass.
This distinctive oak floor SELLS style-minded buyers

People who know what's smart really go for Bruce Fireside Plank Floors. Use this exciting floor in one room of a model home and listen to the compliments on its dramatic dark finish, random-width planks. Like all Bruce Prefinished Floors, Fireside Plank has the famous Bruce baked-in factory finish that saves you time and money, gives your home buyers long-lasting beauty underfoot. See Sweet's Files or write for catalogs.

E. L. BRUCE CO., MEMPHIS, TENN.—WORLD'S LARGEST IN HARDWOOD FLOORS

Prefinished by modern Bruce methods for beauty, durability, economy
Product Reports
continued from page 144

TOUCH-BUTTON COFFEE BREWER
Planned for home or office installation, this Imperial Coffee Maid machine brews an individual cup of coffee from fresh grounds, pours it into the cup and automatically cleans itself in 18 seconds. Especially suitable as a built-in unit in new homes, the Coffee Maid is also designed as a wall-hung or countertop appliance for existing kitchens. The unit carries a one-year guarantee on all parts. Imperial Coffee Maid Corp., 3425 W. Dempster St., Skokie, III.
CIRCLE 319 ON INQUIRY CARD

PUSH BUTTON WATER SYSTEM
Introduced during the past year in selected markets, the Ultraflo water system automatically distributes variations of water temperature and flows to any fixture in the house at the touch of a button. The pressure or flow can be pre-selected and will remain constant. The system claims a considerable reduction in the amount of water wasted. The Tappan Company, Mansfield, Ohio
CIRCLE 320 ON INQUIRY CARD

For more data, circle 39 on Inquiry Card

For more data, circle 38 on Inquiry Card
New Literature for Home-Planning

Literature about products for the house available from manufacturers through reader inquiry service

TERMITE CONTROL
An eight-page booklet giving information on the habits of termites and precautions which can be taken against them has been issued by the Building Research Council of the University of Illinois. This booklet lists three methods of prevention: termite shields, soil treatment and wood preservatives, and explains how these may be applied. The booklet, index no. F25, can be obtained for 15 cents. Small Homes Council-Building Research Council, Mumford House, University of Illinois, Urbana, Ill.  
CIRCLE 400 ON INQUIRY CARD

BATHROOM PRODUCTS
Child-protective cabinets, which are equipped with latches designed to prevent access by children under six years, have been developed by The Grote Manufacturing Co. These, and a wide range of other products for the bathroom, are fully described in a 24-page catalog. The Grote Manufacturing Company, Madison, Ind.  
CIRCLE 401 ON INQUIRY CARD

WINDOW SHADE HANDBOOK
(A.I.A. 35-P-5) This booklet illustrates the most usual window types, and the shades and methods of installation best suited to them. A chapter is included on the care of window shades after they are hung. 25 cents. Window Shade Manufacturers Association, 311 Madison Avenue, New York 17, N.Y.  
CIRCLE 402 ON INQUIRY CARD

AIR CONDITIONER BULLETIN
A new bulletin, no. 763, gives details of this company’s line of room air-conditioning units now available. The cooling, heating, filtering and dehumidifying operations of the fan-coil Airditions are described. Performance ratings and specifications are included. Modine Manufacturing Company, Racine, Wis.  
CIRCLE 403 ON INQUIRY CARD

PACKAGED SEWAGE TREATMENT
Bulletin 141 gives details of the Rapid Bloc package plant, which provides complete liquid sewage treatment and aerobic digestion of solids, and can treat up to 75,000 gal in single units, and up to 150,000 in multiple units. Chicago Pump Hydrodynamics Division, 622 Diversey Parkway, Chicago 14, Ill.  
CIRCLE 404 ON INQUIRY CARD

For more information circle the key numbers of the literature you want (see number below each literature item) on the Inquiry Card, pages 163-164

ARCHITECTURAL ALUMINUM MANUFACTURERS ASSOCIATION
35 East Wacker Drive, Chicago, Illinois 60601
For more data, circle 46 on Inquiry Card
When you specify air conditioning for a single home—or for an entire tract—you can depend on York for the right equipment. There are versatile York systems for any style of home, contemporary or traditional...systems that may be incorporated with any type of heating.

*Application flexibility.* York whole-house air conditioning systems include remote systems, with condensing unit located on a slab or on the roof, with furnace or duct coils. Single package systems are also available, with flush outdoors or roof-top installation. A complete comfort package may include a York cooling system and a matched Borg-Warner oil or gas-fired furnace.

*Mail the coupon to York* for complete specification data on whole-house air conditioning systems designed to meet a wide variety of application requirements.
Builder Frank Robino offers York Central Air Conditioning in these homes at Heritage Park near Wilmington, Delaware. Both the Holiday House (left) and the Crestwood House (right) were designed by John A. Falini, Architect.

Builder Fred Peek specified York Central Air Conditioning for these fine homes in Richardson, Texas. Architect is David M. Sweeney.

WANT MORE FACTS?
YORK CORPORATION
York, Pennsylvania
Please send specification data on York Central Air Conditioning.

Name: ___________________________
Company Name: ___________________________
Address: ___________________________
City: ___________________________ Zone: __________
State: ___________________________

For more data, circle 47 on Inquiry Card
ILLUSTRATED LIGHTING CATALOG
This pocket-sized catalog, no. 107 1/2 illustrates 678 lighting fixtures, designed for every room in the house, as well as outdoors. Details are given of 71 new items which are being introduced for the first time. Progress Manufacturing Company, Inc., Philadelphia, Pa., 19134.

DOUBLE-HUNG WINDOWS
The Pella wood double-hung window, featuring a pivoting sash which allows the outside of the glass to be cleaned from inside the house, is fully described and illustrated in a new six-page brochure. Rolscreen Company, Pella, Iowa.

DOORS AND ROOM DIVIDERS
A new, fully mirrored K-Door with a bi-folding action, designed primarily for closet openings, is featured in a six-page color catalog. Complete architectural specification data is included for this and other doors and room dividers. Kennatrack Division of Ecko Products Company, 2814 West Peterson Ave., Chicago, Ill.

PORTABLE PLANTERS
The use of isophthalic resins reinforced with chopped glass fiber filaments, for the manufacture of lightweight architectural planters, is demonstrated in this illustrated catalog. Architectural Fiberglass shows an attractive range of planters in various geometric and sculptural shapes, up to 8 feet in diameter. Architectural Pottery, 2020 South Robertson Blvd., Los Angeles, Calif.

STEREO EQUIPMENT

BATHROOM AND KITCHEN VENTILATORS
(A.I.A. 30-D-1) An eight-page catalog showing the complete Trade-Wind line of kitchen and bathroom ventilators, bathroom ceiling heaters and automatic electric can openers is now available. Photos, description and specifications of all items are included. Trade-Wind Division, Robbins & Myers, Inc., 7755 Paramount Place, Pico Rivera, Calif.

COMPREHENSIVE HOME APPLIANCE LINE
Colored leaflets illustrating this company's range of refrigerators, freezers, ranges, dishwashers and automatic dryers have been released. Each leaflet contains photographs and full specifications of the model. Whirlpool Corp., Benton Harbor, Mich.
This year—expect people to ask for Kohler colors

Here’s Sunrise Yellow—one of the clear, beautiful Kohler colors. It’s one of the illustrations in a series of Kohler advertisements appearing in consumer magazines this year. All designed to make people aware of Kohler fixtures in color—their beauty, their versatility, their traditional Kohler quality.

Your prospective clients and customers are learning about the color and the durability of Kohler fixtures and fittings in the magazines they read most for homemaking ideas. And we suggest to them that they discuss Kohler and color with their architect, plumbing contractor and builder.

KOHLER OF KOHLER
Kohler Co., Established 1873, Kohler, Wisconsin
ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS
Kohler for new ideas
and quality that's more than 90 years old!

Kohler color is part of Kohler quality.

Pictured at right: the off-the-floor Cayuga water closet acclaimed by housewives who like easy housekeeping; the cast-iron Dynametric "people shaped" bathtub; and the new, cleanly designed Hampton lavatory. Bathtub and lavatory are enameled cast iron, the Cayuga is vitreous china, yet in all six Kohler colors and white these units will always color match. Kohler quality control extends to Kohler color. Scientific and constant colorimeter testing at Kohler ensures high color fidelity in all Kohler fixtures.

Kohler designs to put luxury in small spaces.

Where bathrooms are designed to economize space, comfort and luxury need not be lacking. New Bradford tub built for recessed installation measures 48 x 42 inches, yet offers large bathing and showering space plus a comfortable seat. Pairing the handsome Champlain closet with the unique Legend lavatory makes the most of limited space—low one-piece water closet provides a handy vanity seat.

For complete details on the full Kohler line write Kohler Co., Kohler, Wisconsin.

KOHLER OF KOHLER
Kohler Co., Established 1873, Kohler, Wisconsin
ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS

The Triton—new beauty in All-Brass fittings.

A tasteful blending of convenience and design that appeals to style-minded homeowners. Adds jewel-like beauty to lavatories, bathtubs and sinks. Lines are elegant, graceful and sweeping—Triton handles are easy to grip—and turn—even with wet or soapy hands.
Millions of reasons why an architect should care about electronic air cleaning

There may be 100 to 500 million reasons in every cubic foot of city air. They're the tiny particles of dust, pollen, smoke, soot, grease and industrial wastes that can make a home dirty, unpleasant—even unhealthy to live in. And, no matter how beautifully it is conceived, the true test of the home you design is the degree of living comfort it ultimately affords your client. Clean air is as important as temperature, humidity, and air motion. It is now a controllable factor, practical in today's modern home. As air pollution becomes a bigger problem, clean air becomes a valuable commodity. Now you can get it for your clients by the houseful when you specify a Honeywell Electronic Air Cleaner. Two-stage electrostatic precipitation, the principal used in both the Honeywell "whole-house" and portable units is today's most suitable method available for high-efficiency, residential air cleaning.

The compact "whole-house" central unit fits in the return air duct of any forced air heating or cooling system, and removes up to 95%* of all airborne dust, pollen and other particles passing through it. It can trap particles as small as .03 microns by actual test. (Tobacco smoke particles fall in this class.) By comparison, ordinary furnace filters, as you may know, are only about 5% to 8% efficient. Generally, they can only catch particles that measure 5 microns or larger. They miss most of the great quantity of particles less than 5 microns that do much of the real soiling damage . . . cause the bulk of the real work.

As you know, your clients care a great deal about the appearance of their home. And, they care about a clean, fresh, comfortable indoor climate. They know that airborne particles, such as soot, smoke, dust, pollen, etc. cause discomfort, dusting, dulled mirrors, dingy curtains, windows and glassware, and "ghosts" behind pictures. They'll notice the difference. They'll breathe air that's purer. Mirrors and windows will stay cleaner, longer. So will walls and furnishings. They'll save on cleaning bills. And they'll thank you for it.

Can be included with the mortgage on a new home for as little as $1.50 per month. Or, in an existing home on a 3 year FHA Title I plan, it costs as little as $14.38 a month, installed.

Look into it. Why not find out more about the benefits of residential use of the same type of air filtering system that has been used for years in hospitals and commercial buildings. Just clip and mail the coupon for our special architect's brochure on electronic air cleaning: A PLAN FOR THE SELF-CLEANING HOME (AIA file no. 30-D-3.) You'll receive complete information and specifications on both the "whole-house" and portable unit. Get all the facts on air cleaning. You'll be better prepared to give your clients advice on this newest crowning touch to their custom home—Honeywell Electronic Air Cleaning.

Honeywell

MAIL TO:
Honeywell, Dept. RH5-81
Minneapolis, Minnesota 55408
Send me your folder, PLAN FOR THE SELF-CLEANING HOME

Name
Address
City State

ARCHITECTURAL RECORD HOUSES OF 1964 167
Specify extra comfort and value—with TWINDOW® Insulating Glass. TWINDOW fills the "holes" left in your insulating pattern by conventional single-glazed windows. When you specify TWINDOW you cut heat loss by up to 50% . . . reduce fogging, frosting and downdrafts . . . cut heating and air conditioning costs—yet still let in all the light and beauty of outdoors. TWINDOW combines prime window and storm sash in one unit. No need to put up storm sash and take it down. And there are only two surfaces to wash instead of four. TWINDOW is available in more than 250 standard sizes. For large window areas, specify Metal Edge TWINDOW. For smaller areas, Glass Edge TWINDOW is the only electrically fused all-glass insulating window pane.

Specify light, beauty—and practicality for bedrooms—GLIDE-A-MIRROR® Wardrobe Doors. Full-length and wide these gliding mirrored by-pass doors make a room seem twice size. They double the light too. Made of PPG HIGH FIDELITY Plate Glass Mirrors in slim, strong aluminum framing, GLIDE MIRROR Wardrobe Doors can be installed after all other work.

PPG makes the glass th
match quality design... makes the difference

 Specify a bright, modern bath — with HIGH FIDELITY® Plate Glass Mirrors. Mirrors made from win-ground Pittsburgh Plate Glass give distortion free reflection and superior clarity. They make a small bath look more spacious, make a large bath truly luxurious. Specify this quality product in your homes.

For complete information about PPG products, call your local PPG Architectural Representative or consult Sweet’s Architectural File. Pittsburgh Plate Glass Company, 632 Fort Duquesne Boulevard, Pittsburgh, Pennsylvania 15222.

Specify beauty and safety—with GATEWAY® II Sliding Glass Doors. Weatherproof, reasonably priced, with features that include an exclusive safety threshold... smart slim stiles... choice of two and three panel units... a reversible frame that makes possible inside slider, outside screen or outside slider, inside screen. The glass can be new HERCULITE® K Tempered Safety Sheet Glass which withstands far greater impact than regular glass, greatly reduces personal danger from breaking or shattering glass. New 3/8” HERCULITE K for single glazing, or HERCULITE K Safety TWINDOW Insulating Glass is a low cost way to assure safety in sliding glass doors.

Floor plan courtesy Westinghouse Electric Corporation.

For more data, circle 52 on Inquiry Card
HOT WATER HEAT WITHOUT PLUMBING

Miraculous heating industry break-through maintains water at exact temperature needed to compensate for outdoor temperature changes.

New Concept in Electric Heat Disclosed!

Unit itself consists of a copper tube in which an electrical heating element warms a special permanently sealed-in water and anti-freeze solution. When water is heated, it automatically circulates through the copper tube. At exact moment desired room temperature is reached, automatic thermostat cuts off the current—but hot water circulating through length of unit continues to release heat without cost, while maintaining comfortable warmth.

Each unit is a complete self-contained permanently sealed-heating system in itself...no extra value to add, or remove ever. Baseboard models designed in slender casings only 3 ¼” deep x 9 ½” high, in lengths up to 9 ft. for every heating requirement. Recessed into floor models for down to floor windows and sliding doors. 240, 208 or 110 volt as required. Heater required simply slips on brackets beneath the window in each room, where heat is needed and is connected to electrical circuit with a thermostat on the wall.

There is a softness about the warmth that International Hot Water Electric Heat gives. It has a luxurious, natural feel which you sense immediately upon entering a room. It can’t use up the room’s oxygen and cause dryness. CLEANEAST, HEALTHIEST, SAFEST...Provides safe low hot water temperatures that cannot burn particles of lint and dust in the air which dirty furnishing and clothing plus in with irritation to nose, throat and lungs membranes.

MOST COMFORTABLE, AND ECONOMICAL. Does away with up and down over heating and chilling by maintaining water at all times at perfectly the temperature needed to balance heat loss to changing outdoor weather conditions for nearest floor to ceiling temperature uniformity. Savings up to 30% on heating costs of homes, apartments, etc. Costs of 6c to 15c per sq. ft. per year depending upon local rates and climatic conditions. Over 100,000 installations—past 12 years throughout nation. Alaska, Can- ada. Send today for free brochure.

ALUMINUM GUTTERING

A new line of heavy-duty aluminum rain carrying equipment is featured in this four-page leaflet. Available in stock lengths of 10, 16 and 20 in., the new Hastings gutter has a white baked vinyl enamel finish, and the inside is coated with a form of resin which is said to be highly resistant to moisture and corrosive elements. Hastings Aluminum Products, Inc., Hastings, Mich.

WALL DESK

The Wall Secretary, which can be built in to any room in the house, is described and illustrated in a two-page leaflet. Modern-Aire Ventilating Inc., 1973 Lankershim Blvd., North Hollywood, Calif.

For more data, circle 53 on Inquiry Card

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For more data, circle 64 on Inquiry Card

ARCHITECTURAL RECORD HOUSES OF 1964
NEW COMPLETE GUIDE FOR MASONRY REINFORCING AND TIES

This 1964 catalog entitled "Masonry Reinforcing Bond and Ties For All Masonry Walls" features the entire AA Wire flush welded products line, including the new AA-LOK, and clear, simple diagrams of application.

In addition, catalog features flexible anchorage, adjustable and nail-on ties for masonry veneer, with complete information on sizes, finishes and packaging for all products. Send for your free copy.

EXCLUSIVE AA WIRE PRODUCTS FOR CREATIVE OPPORTUNITIES

AA-LOK®
A brand new product from AA Wire Products Company, AA-LOK has been developed to meet the increased structural requirements of modern masonry construction. It features X brace ties, flush-welded at center and spaced 24 inches on center, thus substantially increasing resistance to shear. Three parallel reinforcing wires control shrinkage and cracking and provide bond and reinforcement against external and internal loads and pressures.

CAVITY-LOK® REINFORCING TIES
Designed for maximum strength in all types of masonry construction, Cavity-Lok is used extensively in areas where moisture penetration and/or strong winds are prevalent. The four parallel reinforcing wires control shrinkage cracking as well as provide 4-way reinforcing against external and internal loads and pressures.

ECONO-LOK® REINFORCING TIES
The B.O.C.A. (Building Officials Conference of America) Approved Wire Reinforcing Bond System for Faced Masonry Walls, Masonry Curtain Walls, and Veneer Masonry Walls . . . Eliminates Masonry Header; Provides Continuous Bond; Saves on Labor; Saves on Material; Reinforces Backup; Assures Proper Installation.

BLOK-LOK® and THIN-JOINT WALL REINFORCEMENT
Thin-Joint for 3/4" mortar joint.
Standard Blok-Lok for 5/8" mortar joint.
Heavy Duty Blok-Lok for Heavy mortar joint.

Blok-Lok cross ties are spaced 16" O.C. to leave core of hollow masonry open to electrical conduit and mechanical pipe trades. Four sided knurling and flush weld assures maximum strength and bond. Controls cracks.

REG. U.S. PAT. OFF. ©1964 AA Wire Products Co.
You would assume the quality of this "RECORD HOUSE" starts right at the door...
WHY is it you see Barcol Overdoors on so many
trend-setting, award-winning homes? It's obvious. Barcol makes the
tightest-sealing, finest-quality, best-looking garage door to appeal to
discriminating architects, builders and homeowners, alike.

Manual or pushbutton controlled, Barcol Overdoors are designed
to perform functions far beyond opening and closing . . . such as
sealing out dust, dirt, wind and weather elements . . . reducing
heating and air conditioning bills . . . maintaining quiet, rattle-free
operation . . . providing efficient, long-term service.

And Barcol has the facts and figures to prove it! These Overdoors
are backed by documented performance standards that assure
positive proof of superiority in quality and performance. That's why
you can specify Barcol with complete confidence; and homeowners
appreciate its many benefits year after year.

Your Barcol dealer is a door specialist who will work with you
from the preliminary planning stage through installation and
complete customer satisfaction. Contact him.

COMPLETE "QUALITY-HOME" MERCHANDISING PROGRAM
Consisting of signs, displays, literature and personalized
product stickers, this Barcol plan starts selling right at
the door. It combines all major components of the
home under ONE dramatic QUALITY theme.

BARCOL OVERDOORS FEATURE
EXCLUSIVE "CAM-ACTION"
Cam-Action makes Barcol the tightest-sealing
overhead-type door on the market. Proven to
seal 20 times tighter than conventional doors.
Rooms above and adjacent to the garage are
easier to heat and keep clean.

Automatic DOOR OPERATION
FOR REAL HOMEOWNER APPEAL
New in screw-thread drive design, compact
size, quiet, safe operation, trouble free perfor­
mance, the Barcol Model F Operator is also
new in low, low price.

See Barcol Insert,
Sweet's Architectural File
The only cost that matters is cost installed

FRIGIDAIRE GOES TO THE FAIR! See glamorous Frigidaire appliances at the New York World's Fair... in the General Motors Futurama Building and in the Formica World's Fair House!

BUILD IN SATISFACTION.
That's why this stunning Frigidaire Compact 30 Drop-In Range puts you a jump ahead of competition!

You bet it's a beautiful range—with a spacious, 6-pie oven in just 30" of counter space! But "instant installation" is what makes the Compact 30 a standout to the builder. It's what lets you offer your customers the Frigidaire product performance and beauty they know and want... at such low cost!

The Compact 30 Range is shipped as a complete, self-contained unit, with 48" metallic electrical supply cable attached. No panels, no control switches to put on or take off. After counter opening has been made just make electrical connection, drop in place, tighten four thumb screws, and installation is complete... in minutes! Adjustable end caps, wide side trim, and 7/16" overlap at top hide "cutouts" that may be slightly out of line.

Installation speed is a quality feature of all Frigidaire Built-Ins... a feature that'll pay off for you and your customers! Frigidaire Division, General Motors Corporation, Dayton, Ohio.

The Compact 30 is available in 4 rich colors, white, and brushed chrome.
Builders: this is one of the few products you won't

Everything else—from foundation to chimney—is just an arm's length away the minute you need it. Take flooring, for example. Twenty-five different flooring manufacturers keep their catalogs right at your fingertips... in Sweet's. Door manufacturers: 23. Windows: 17. Heating systems: 18. And that's only a sample.

All together, your Sweet's Light Construction Catalog File contains catalogs—all conveniently bound, indexed and up-to-date—in 203 product categories. Purpose: to make your job easier and save you time.
find in your Sweet's Light Construction Catalog File.

—whether you're comparing products, or reviewing details with a prospective home buyer. We call this "instant availability." Your colleagues call it a builder's best friend.

Conclusion: the next time you need information about home building products, reach for Sweet's.

SWEET'S CATALOG SERVICE. E. W. DODGE COMPANY, 330 WEST 42ND STREET, NEW YORK, NEW YORK 10036
DIVISION OF McGRAW-HILL COMPANY
Prevent Bathtub SAGGING with LUCKE BATHTUB HANGERS

Essential—but often overlooked

Make certain that every bathtub installed in your projects is insured against settling and subsequent water seepage. Lucke tub hangers distribute the weight of the tub evenly on all joists and a special flange insures a perfect water seal when bonded with Lucke Leak Proof Filler. This mastic compound is guaranteed to maintain its elasticity during extreme temperatures.

Used in quality houses, motels, hospitals and institutions for over 20 years.

WILLIAM B. LUCKE, INC.
514 Popular Drive, Wilmette, Illinois

Please send me without obligation, a folder illustrating and describing how Lucke Leak-proof Bathtub Hangers may be used with various type and size bathtubs.

NAME  

[ ] Engineer  [ ] Architect
[ ] Plumber  [ ] Builder

Street  

City  

State  

Zone  

For more data, circle 57 on Inquiry Card

PHOTOGRAPHERS OF RECORD HOUSES OF 1964

Photographs of the houses by the following photographers appear in articles on pages noted

MORLEY BAER 48
7 Greenwood Common
Berkeley 8, California

BLACK-BAKER 72
Dupont Plaza Hotel
Miami, Florida

ERNEST BRAUN 92
Box 127
San Anselmo, California

PAT FINELLI 104
194 Third Avenue
New York, New York

ALEXANDRE GEORGES 88
94 South Mountain Road
New City, New York

HEDRICH-BLESSING 96, 120
450 East Ohio Street
Chicago 11, Illinois

BOB JACOBSON 84
3340 Rhode Island Avenue South
Minneapolis, Minnesota

ROBERT C. LAUTMAN 64
2118 Massachusetts Avenue
Washington 8, D.C.

LELAND Y. LEE 108
2904 North Corson Avenue
Los Angeles 46, California

LISANTI, INC. 124
232 West 56th Street
New York, New York

FRANK LOTZ MILLER 116
115 Washington Avenue
New Orleans, Louisiana

MAC MIZUKI 112
7318 Murdoch
St. Louis 19, Missouri

JOSEPH W. MOLITOR 54, 68
Post Office Box 540
112 Pine Avenue
Ossining, New York

MARC NEUHOF 80
207 East 43rd Street
New York 17, New York

CHARLES R. PEARSON 62
5024 Ivanhoe Place N.E.
Seattle 5, Washington

WARREN REYNOLDS 84
614 East Grant Street
Minneapolis 4, Minnesota

KARL RIEK 70
45 Ecker Street
San Francisco, California

EZRA STOLLER ASSOCIATES 58, 100
Kirby Lane North
Rye, New York

RICHARD WATHERWAX 104
29 Cornelia Street
New York, New York

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how to sweeten a furnace

Your furnace shows a shocking lack of discrimination. It heats anything you give it through the return air ducts. Many smart furnace and air conditioner users slip an inexpensive activated charcoal filter into the system behind the dust filter. It adsorbs all odors as sweet as you please.

how to smell no evil

Some people wear gas masks (containing activated charcoal). Others breathe air freshened with activated charcoal air purifiers. They (the people) work better, more safely. You save money by recirculating warmed or cooled air instead of blowing it away. Suggest you ask your plant or consulting engineers about it.

how to save the day

Evil days befall when contaminated air robs your employees of efficiency or your neighbors of neighborliness. This has a way of turning balance sheet ink from black to red. Whether you save your air and dump the contaminant—or dump your air and save the contaminant, an activated charcoal system will save the day. It's doing it now in many plants.

activated charcoal

Activated charcoal acts as a molecular sponge, purifies air, gases, liquids—recovers solvents—removes odors and impurities. Write for Literature Group 63-2L Barnebey-Cheney, Columbus, Ohio 43219

Barnebey Cheney

For more data, circle 38 on Inquiry Card
DISHMASTER GOES HAWAIIAN

FITS ANY SINK

Dishmaster is easy to install, washes dishes faster and cleaner, and does not require cabinet space. Features like these help make Dishmaster the world's most popular dishwasher!

There's a Dishmaster featured in each of the luxurious 587 units of the Queen Emma Apartments in Honolulu, and with good reason! . . . Dishmaster makes each apartment a more desirable rental property.

QUEEN EMMA APARTMENTS DESIGNED BY MINORU YAMASAKI FEATURe THE NEW DISHMASTER IMPERIAL

Dishmaster and the Queen Emma Apartments go together! Practical, economical and beautiful, the new Dishmaster Imperial is a convenient, always appreciated appliance. Find out how the Dishmaster Imperial will help sell your houses, apartments or townhouses. Write to either address. Your inquiry will receive immediate attention.

DISHMASTER CORPORATION

2605 Woodward Avenue, Bloomfield Hills, Michigan—FE 4-3587, LI 2-5558
2208 S. Grand, Los Angeles, California—RI 7-7486

For more data, circle 59 on Inquiry Card

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a brand new kind of comfort conditioning from Chromalox®

All-electric Season-Aire is the complete comfort conditioning package. It’s the first and only year-round system with room-by-room comfort control. And it’s maintenance-free! Read on to see why this system belongs in homes you design:

1. Season-Aire Central Unit mounts quickly and easily with only four lag bolts in basement, crawl space or utility room. This fully-accessible unit provides continuous low-velocity air circulation. Air is tempered and humidified, dehumidified and cooled, deodorized and electrostatically filtered. (Germicidal lamp is optional.) All fittings, hangers and isolators are part of the package. No unusual ductwork is necessary. It’s a fully pre-wired component that you can install in minutes.

2. Season-Aire Water Chiller installs outdoors. This air-cooled unit features an integral pump which circulates chilling solution to the Central Unit through insulated plastic pipe or copper tubing—eliminating expensive refrigerant tubing and field charging. Contains overheat, temperature and pressure switches—and no solenoids. It’s fully winter-ized. Vertical air discharge assures low sound level.

3. Season-Aire Baseboard or floor drop-in units distribute conditioned, draft-free air that’s controlled room-by-room for perfect comfort summer and winter in nursery, bedrooms, family room—every room! Season-Aire provides the special advantages of a perimeter system. Only the outside wall is heated or cooled...conditioned even-tempered air moves gently throughout the entire room.

Add up the reasons why you can profit with Season-Aire. It costs little to operate (even more economical than an electric furnace). It’s quick and easy to install. It’s virtually maintenance-free. Find out all you need to know. Call your nearest Chromalox representative or write today for the useful Bulletin R20101.

For more data, circle 61 on Inquiry Card
NEW! Adjustable Sliding Door HARDWARE

Easier to Install! Easier to sell!

OT-400 The same OT-400 hangers may be used on either ¾” or 1¼” doors just by reversing their positions. Simplifies ordering for you! Be sure to sell customers on new, easy adjustment feature! All M-D Sliding Door Hardware comes packaged in complete sets.

OT-200 New, faster adjustment feature is only one of many that gets customer’s attention and approval! Extra sturdy aluminum track provides positive protection against wheels jumping the track! Hangers are heavy gauge, cadmium-plated steel. Lifetime plastic wheels have built-in lubrication.

Aluma-Slide SLIDING DOOR TRACK

Your customers can use Aluma-Slide on any size cabinet . . . with any panel material. Comes in decorative Alacrome, Anodized Albras, Anodized Albright or Anodized Satin. Sets available for ¾”, ½”, ⅜”, ⅝” or ¾” sliding panels of glass, plywood, hardboard, etc. Packaged sets ready to use.

FOLDING DOOR HARDWARE

Show customers how easily doors open and close! For closets, wardrobes, dens, bars, room dividers, etc. Ideal for 2 or 4 panel full or half-size interior doors of any thickness. Gives full access to closets, yet saves floor and wall space. Installs quickly! Completely packaged sets for all standard openings.

MACKLANBURG-DUNCAN CO.

BUILDERS: M-D products are sold nationally by leading Hardware, Lumber and Building Supply Dealers.

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