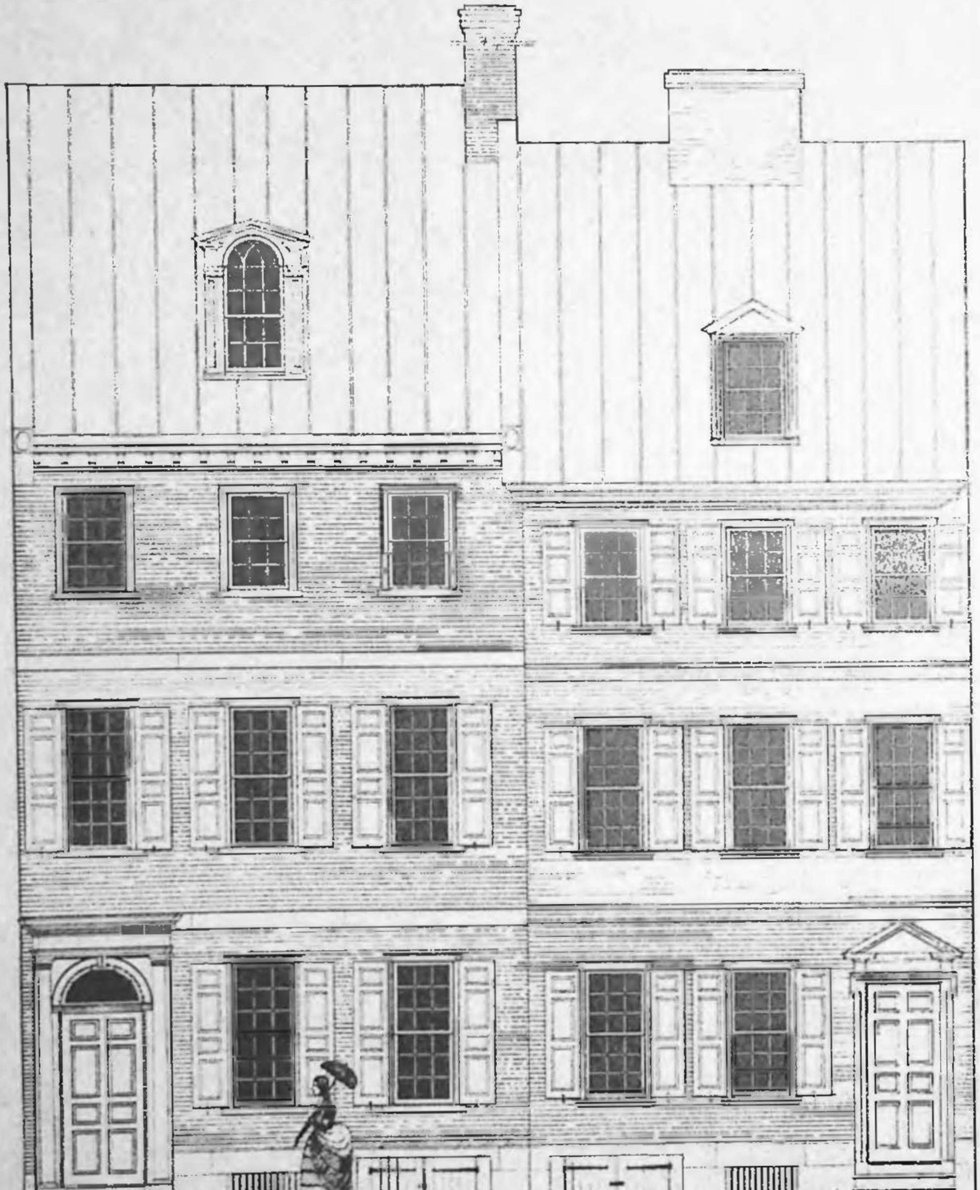
U.S. Department of Housing and Urban Development
with the
U.S. Department of the Interior

Energy Conserving Features Inherent In Older Homes

John A. Burns, AIA



Williams-Hopkinson House, Pennsylvania (1785-91). These Philadelphia row houses illustrate several of the energy conserving design features described in this publication.

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U.S. Department of Housing and Urban Development
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Acknowledgments

This publication is designed to enable the homeowner to understand and utilize existing architectural features in older homes to achieve energy conservation.

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Introduction

Rising energy costs in recent years have forced a re-examination of energy using features in housing. Much research has been focused on energy saving features for *new* construction. However, given current replacement rates for housing, older homes will continue to be used for many years whether or not they are energy efficient. It is imperative that energy saving features inherent in existing housing stock also be considered.

Early homes had many energy conserving features out of necessity because of the inefficiency of heating with fireplaces and the lack of artificial cooling. Interest in these features lessened as technical advances produced a greater ability to control interior temperatures while at the same time reducing the amount of homeowner labor. Ultimately, large mechanical systems were used to completely control the interior environment, thus eliminating the need for energy saving features. Thus, houses built prior to 1920 tend to have more energy conserving features built into their building envelope but do not have sophisticated mechanical systems, unless they have been modernized, while post World War II houses have more sophisticated mechanical systems but have fewer energy conserving features of the types shown in the following pages in their building envelope.

The Department of Housing and Urban Development has previously published information concerned with improving the energy efficiency of houses built between 1940 and the present (*In the Bank . . . or Up the Chimney*) and those built before 1940 (*Conserving Energy in Older Homes*). This publication identifies energy saving features most commonly found in houses built prior to 1920. The reuse of those energy saving features can improve the energy efficiency of a house.

Census figures show that approximately 25% of all extant buildings were built before 1930 and that there are approximately 20 million dwelling units still in use from that period. Probably most of the energy conscious design features in them are as usable today as when they were built. Moreover, these same features can be incorporated into new construction. The only problem with these features is that they may not be recognized as energy conserving because they are not understood. Some may not have been used for years while others may have been removed because of aesthetic or structural changes. As will be shown, older homes are generally more responsive to and take better advantage of the natural environment. Making the best use of the inherent design features of a house is an important step in energy conservation. A bonus in the reuse of these inherent design features is that they are part of the original design of the house and thus their reuse will be in sympathy with the original character of the house. The result is a house with more historic integrity that will probably better retain its value.

The reuse of original energy conserving features in a house is sympathetic rehabilitation. The philosophy of sympathetic rehabilitation is that there are cost effective alternatives to stripping a house to its base structure and installing all new mechanical systems and finishes. Many of the architectural features destroyed or overlooked in such work are more than just decorative. They serve as passive energy saving devices but, because of a lack of understanding of their inherent qualities for energy conservation, they are lost.

The aim of this publication is to identify for the homeowner, contractor, and craftsman the types of energy conscious design features in older houses so that they may be reused rather than negated or destroyed. Sympathetic rehabilitation can provide cost effective energy conservation in older houses without destroying historical integrity.

The Evolution of Energy Conscious Design Features

Before the advent of scientific building research and testing, house design and construction were based on empirical knowledge and traditions going back centuries. Accumulated knowledge tended to evolve into distinct house forms in different parts of the world in relation to the local climate.

Where temperature extremes were outside the narrow range of comfort for human beings, some means had to be found to bring the extremes in buildings within the comfort range. In cold climates this called for the production and retention of heat. In hot climates this called for the removal and exclusion of heat. In addition, natural lighting was welcome in northern areas with low sun angles, less welcome in southern areas where the sun is higher in the sky and consequently brighter.

Even with energy conserving features, providing houses with the appropriate heating, cooling, lighting, and ventilation was difficult, usually expensive, and time consuming for the homeowner until the latter part of the nineteenth century when mechanical systems were introduced. As a consequence, every energy conserving and labor saving device that could be thought of was incorporated in earlier house design and construction.

Early American homes were designed with the empirical knowledge gained from thousands of trials and errors. Energy features were so important that they helped to determine what we call regional styles of houses. The resulting forms are distinct responses to achieving comfort in different climates.

The New England farmhouse of the 18th century possessed features designed to retain heat. A compact plan with low ceilings, massive walls, a few small openings with solid shutters, and a location nestled away from the winds on the southeast slope of a hill all helped make the houses efficient in cold weather. A large central chimney provided for heat from many fireplaces. Both the chimney and fireplaces continued to radiate heat into the rooms long after the fires were damped for the night. The central location of the chimney kept the heat source away from the cold outer walls, avoiding direct radiation of the heat to the exterior.

Southern plantation homes were designed for removal of heat. Raised main floors with high ceilings and walls with large openings with louvered shutters shaded by surrounding porches maximized cross ventilation while keeping out the sun. Chimneys were on outside walls, sometimes with freestanding flues to minimize the heat transmitted to the interior. Kitchens were even placed in separate buildings to reduce the accumulation of heat.

Some features are adaptable to different climates and materials. Masonry walls are particularly versatile. Their high thermal inertia means that they absorb heat slowly and give it off slowly. In cold climates, heat from the sun and that produced inside the house is absorbed during the day and radiated at night, when it is needed. The same phenomenon is useful in hot climates because the absorbed heat lowers the maximum daytime air temperature in the building. After the sun goes down, the absorbed heat is released as the air temperature drops, when it is less noticeable. In a northern climate, such as Pennsylvania, these masonry walls are generally stone or brick. Adobe is a major material in the southwest. Whatever the material of construction, massive masonry walls can be a viable energy conserving feature.

The nineteenth century brought tremendous changes in building technology. These advancements brought about an attitude that any problem could be solved with a powered device. Faith in technology was fueled by wave after wave of breakthroughs and advances, which directly affected the public and increased energy use: central heating, balloon framing, gas lighting and heating, and incandescent lighting. Thermal comfort, once a luxury, became the accepted and expected norm. The cost for this comfort, measured not just in dollars but also in increased comfort and labor savings, was small in absolute terms.

Thermal comfort obviously improved but there were also significant savings in labor. When coal replaced wood as a fuel, the homeowner saved having to gather firewood; coal was delivered. When gas replaced coal, furnaces became fueled automatically and continuously without any labor by the homeowner. As the amount of effort required of the homeowner to heat a house dropped, so did his interest in energy saving. The labor savings were substantial in relation to the increased energy use. Widespread acceptance allowed mass production techniques to even further reduce costs.

As a result of these developments, the earlier energy conscious designs developed over decades of trial and error fell into disrepair and disuse. Changes in window design are a prime example. Originally, shutters acted as operable energy saving features but today they have become only a fixed decoration. Large areas of glass, which replaced earlier small windows, developed huge heat losses and gains, which were overcome by using high capacity, high fuel-using mechanical systems.

Social and cultural pressures also led to changes in house design. Books such as *The American Woman's Home* and *Healthy Homes* represented an increased awareness of house design and a demand for comfort and convenience. This awareness and the resulting improvements to homes in heating, cooling, lighting, and ventilation led to the standards of comfort we now take for granted. Most of these improvements required a higher consumption of energy.

The economics of home building also changed significantly in this period. First costs or construction costs fell but operating costs rose because of increased energy use. The invention of balloon framing and the use of cut, and later wire nails, for example, reduced construction expenses. The railroads reduced the problem of material availability with their extensive transportation network. While these new inventions cut construction costs, they came at the expense of lost thermal properties of heavy construction. Central heating allowed these light frame houses to be kept comfortable, however, at continual expense.

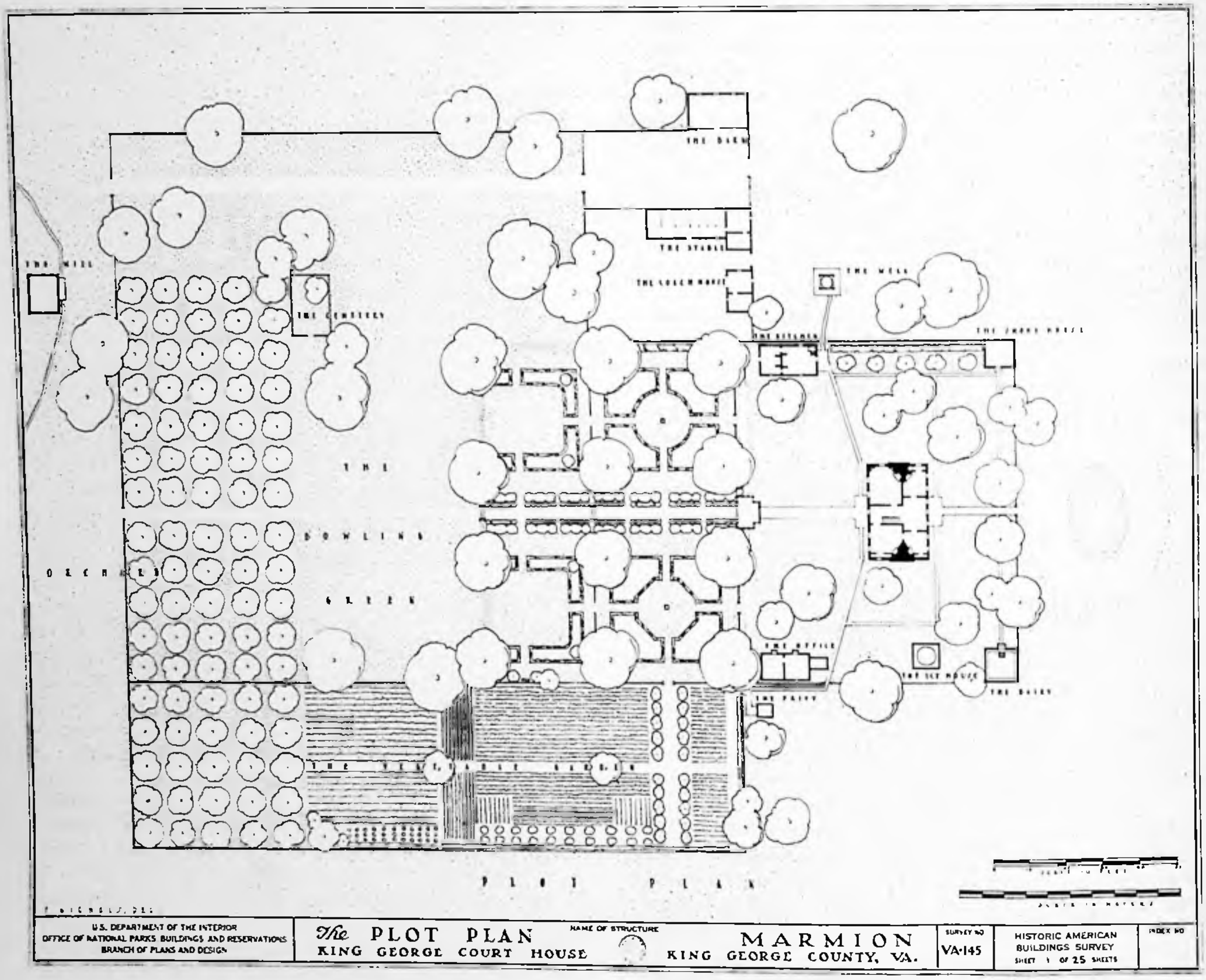
There is a direct relationship between energy costs and energy conscious design in *new* construction. When energy costs were negligible, energy efficiency was not a design concern. Now that energy costs have skyrocketed, the high cost of heating existing homes, built when energy was cheaper, has become a national problem. This shift in emphasis from mechanical systems used only as an adjunct to nature to one where nature is ignored has proved to be costly. The oldest part of our housing stock, that built before 1930, was built when energy costs were relatively high and consequently these houses were designed to be as energy efficient as the technology of the day would allow. Most of those energy conscious design features were unpowered, or passive, thus not requiring energy to function, and are as useful today as they were when built.

Rekindled interest in systems that are passive is an important part of the trend towards energy conservation. Historically, energy has been difficult to obtain, produce, and control and its resulting value demanded that it be used efficiently. Without knowing how to quantify the factors governing comfort and with only low technology available, older homes were nevertheless designed to be energy efficient. Most of these energy conscious features were inherent to the design and thus reusable today. Sympathetic rehabilitation of these can enhance both the thermal performance and historic integrity of a home without introducing disfiguring changes that can only be accomplished at great expense. The benefit of the reuse of these features is their passive, low-technology qualities. They can make significant improvements at little or no cost. The pay back for sympathetic rehabilitation using original energy conscious features can, at least in part, be immediate and lasting. This publication presents many types of energy conscious designs inherent in older houses so that a homeowner can identify and understand them. Such features can be used effectively to reduce energy costs.

Examples of Energy Conscious Design Features

Site Orientation

Although site orientation is a permanent feature of a house, careful landscaping can improve the comfort within a house without any energy costs. Deciduous trees can shade a house from the sun in the summer but allow in the more desirable winter sun after the leaves have fallen. Evergreen trees can form a year round windbreak. Berms can be built up to give additional protection.



Marmion, Virginia (mid 19th century). The site plan shows a formally arranged southern plantation. The kitchen is in its own building in order to keep the heat of cooking away from the main house. The other outbuildings were placed for functional reasons rather than for energy conscious reasons.

Fairbanks House, Massachusetts (1636). The house is nestled against the southeast slope of a hill with a berm and dense shrubbery protecting the north and west walls from the New England winters. Notice how little of the house other than the roof is visible in this view from the northwest.

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Attached Outbuildings

Attached outbuildings are primarily seen in the harsher climates. They reduce the need to be out-of-doors during the cold winter weather and improve heating efficiency by reducing the exterior wall exposure and by reducing the heat loss from the opening and closing of doors. Detached outbuildings, on the other hand, can be placed wherever appropriate in warmer climates. For instance, the heat from the kitchen can be isolated in its own building away from the main house.

Perkins House, Maine (ca. 1850). Attached outbuildings such as these are common in the cold New England climate. The bulkhead to the cellar of the main house and a porch are nestled in a corner, protected from the wind. Clerestory windows, which bring additional light to the interior, are visible just below the eaves of the two middle sections.

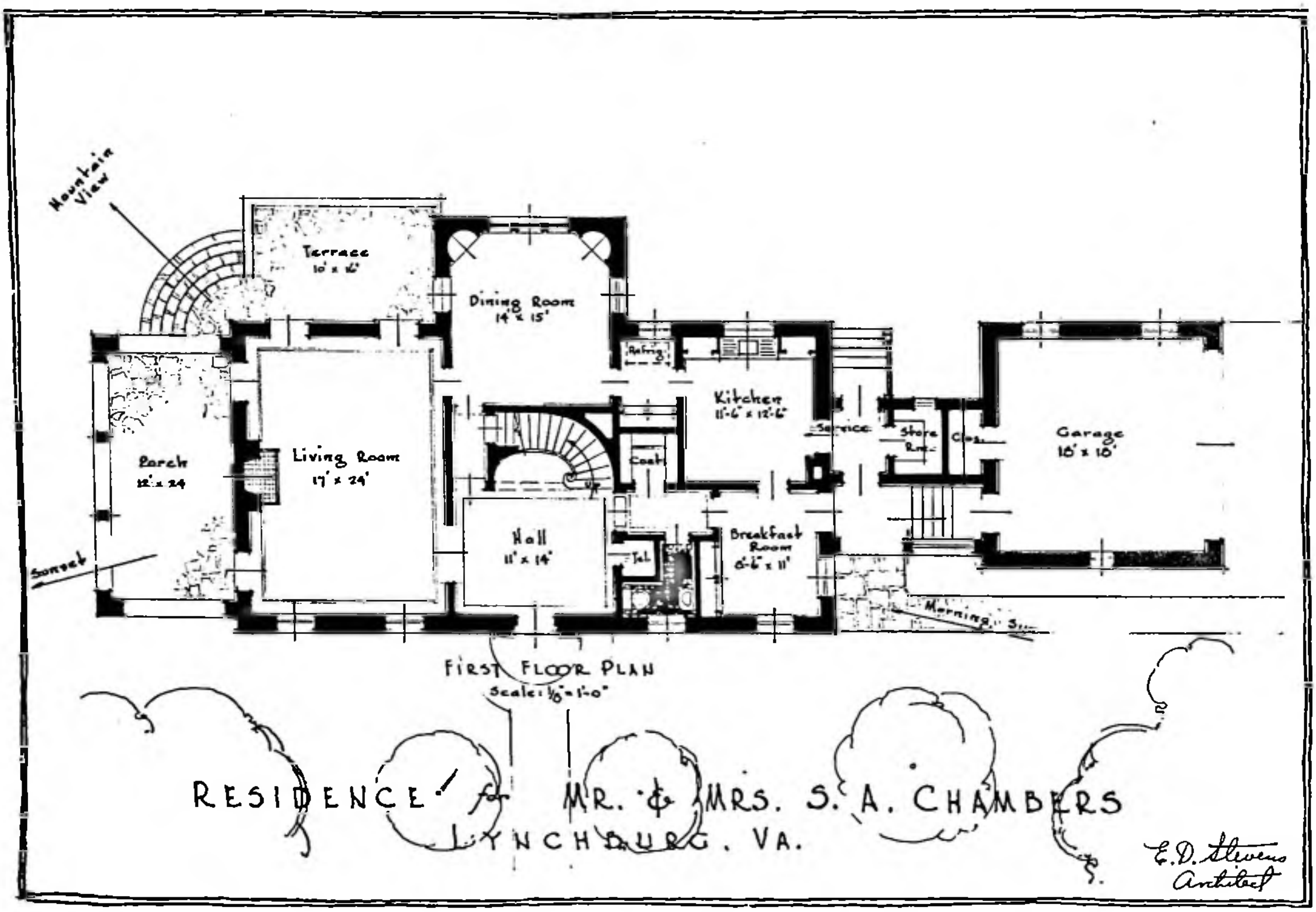
Row Houses

Row houses are great energy savers because of party walls. Generally, the two longest walls of the house are shared with a neighbor and do not have outside exposure, thus cutting heat losses and gains. Openings are concentrated on the two exposed walls. Also, since row houses by their nature have limited exterior exposure, the orientation of the row to the sun can either help or hinder thermal performance.

John H. Smith's Row, Virginia (ca. 1837-8). Row houses and town houses are the dominant house form in the older major cities. Their shared party walls save materials as well as energy. They may be built in groups, as these were, or individually. These particular houses, which face south, take good advantage of the sun.

Plan Arrangement

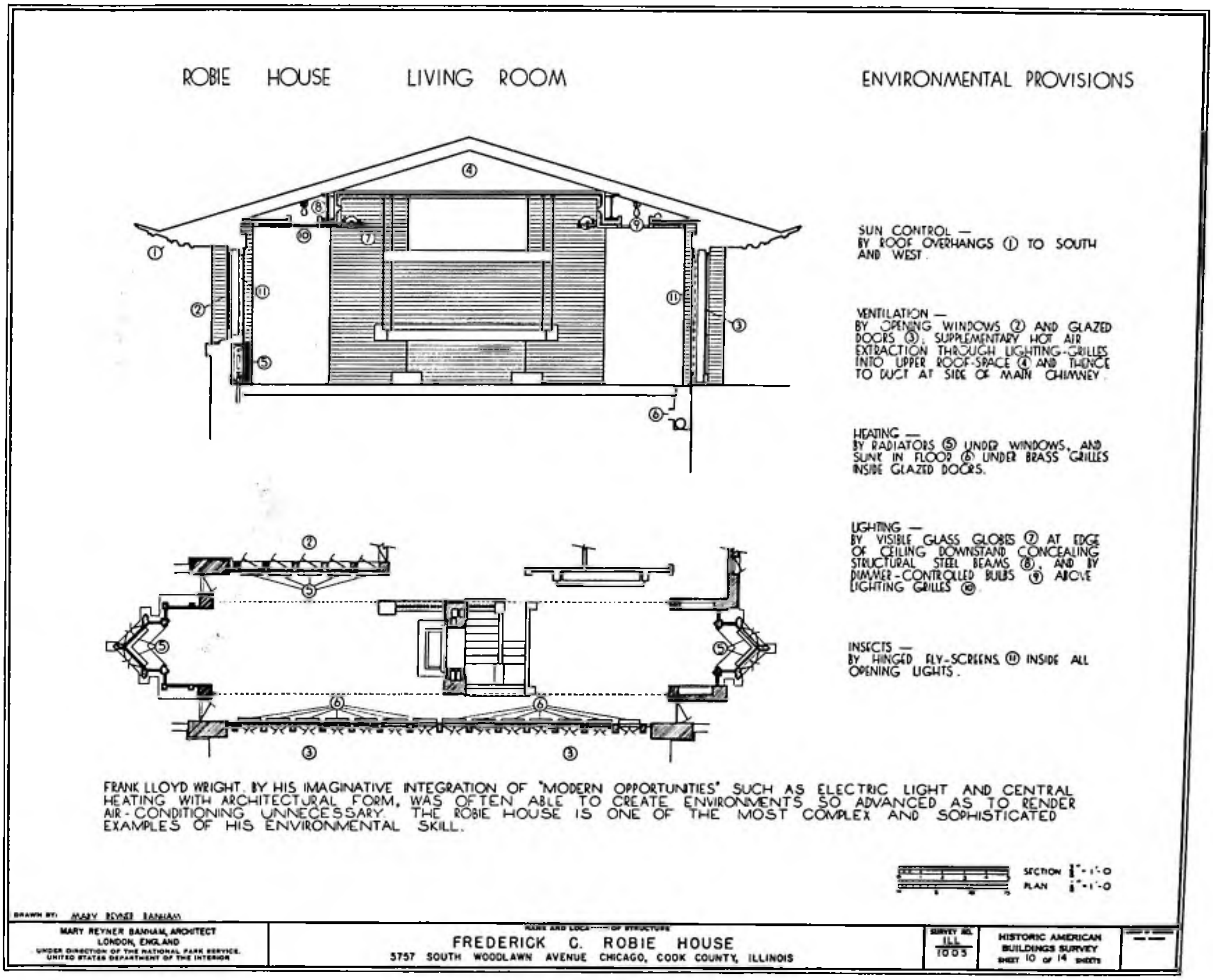
The arrangement of rooms within a house can have an impact on perceived comfort and energy use. Rooms that need relatively little light or can be cooler than the rest of the house can be placed on the north side. The warmest and brightest rooms, conversely, are on the south side.



S. A. Chambers House, Virginia (1931). The breakfast room is oriented to the morning sun while the living room is oriented to the evening sun and a view of the nearby mountains. Both the living and dining rooms have openings for light and ventilation on three walls. Although this is a complex plan, the heated portion of the house is contained in a simple rectangle with one projecting bay for the dining room. This reduces the outside wall exposure, an advantage in the heating season.

Roof Overhangs

Roof overhangs are a particularly effective means of controlling solar heat gain. Properly sized overhangs can keep the high summer sun off the walls while allowing in the lower winter sun. Nowhere is this more effectively used than in the Prairie School houses championed by Frank Lloyd Wright and others.



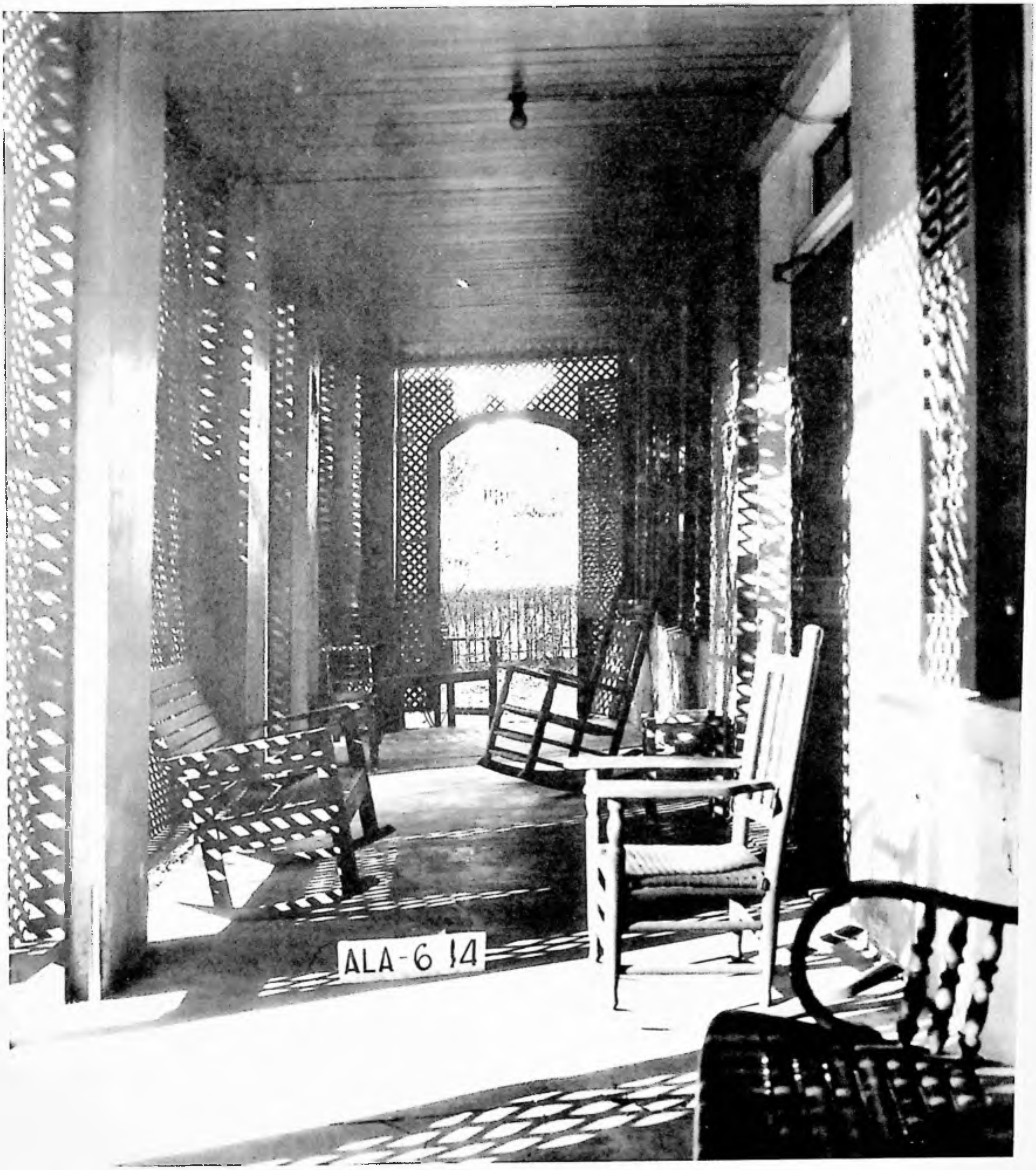
Frederick C. Robie House, Illinois (1908-10). The overhangs are so precisely sized that the midday summer sun just touches the window sills on the south side. The windows and vents are located so that cool air can be drawn up through the house from the basement and exhausted at the ceiling or attic level.

Porches

The primary energy conserving advantage of porches is shading the high summer sun from the walls of a house while allowing the lower winter sun to penetrate to the walls. Their more obvious function is to provide sheltered outdoor living spaces. In the South, second story porches are often screened and used for sleeping. Recessed porches provide even more shelter. They are contained within the total building volume and, if deep enough, can provide additional window area along their sides.

Umbria, Alabama (ca. 1829-30). The two story porch wraps around a courtyard. It not only shades the house but also provides sheltered exterior circulation, appropriate for a warm climate. Shutters with movable louvers and screen doors allow additional control of light and ventilation.

Moffitt House, Alabama (ca. 1855). This southern porch has a permanently attached lattice grill, providing shade with both high and low sun angles. Breezes can still move easily through the lattices. While the porch protects the house from the sun, the lattice protects the porch itself, providing shade and privacy.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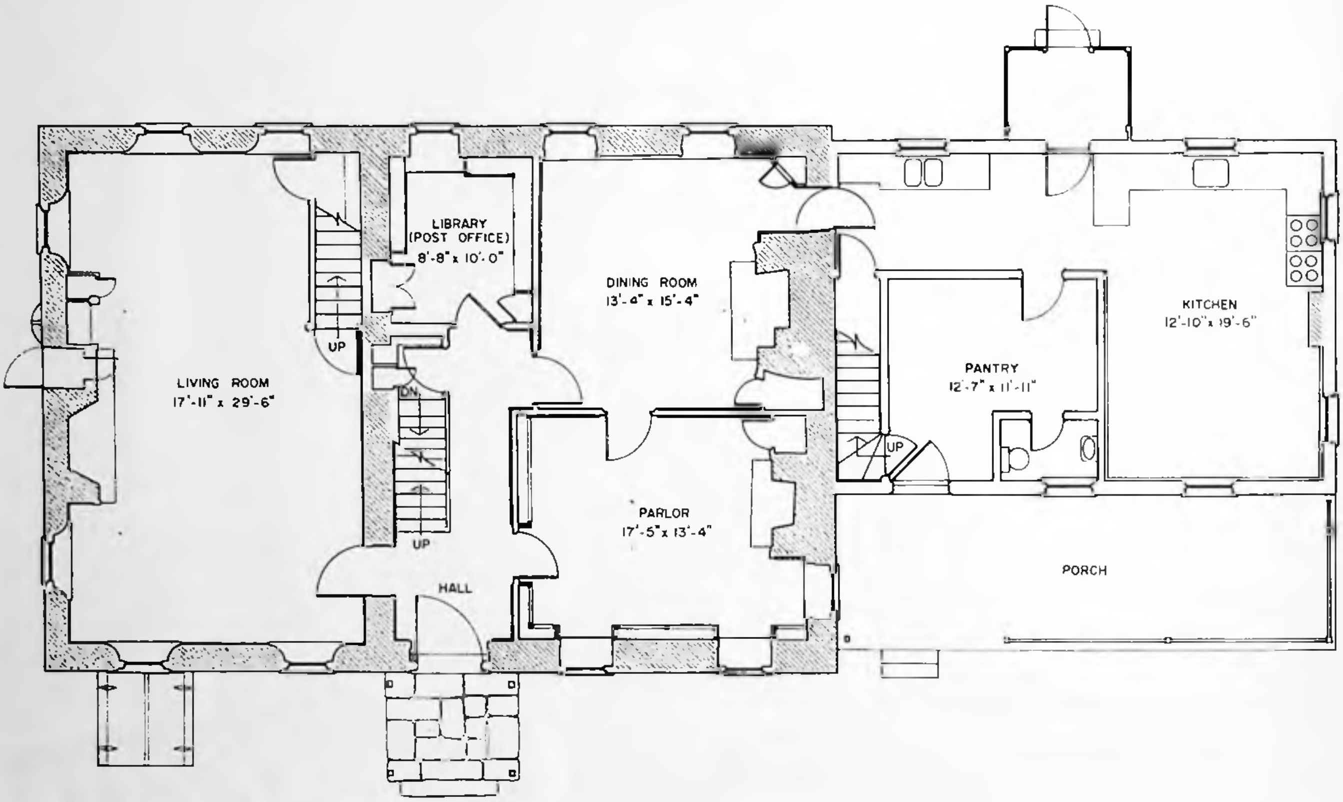
Massive Walls

Massive masonry walls have high thermal inertia, offering moderation of temperature extremes in both hot and cold climates. In cold climates, masonry absorbs heat from the sun and that produced inside the house during the day and releases it during the night, thus moderating the lowest nighttime temperature. In hot climates, masonry absorbs heat from the sun slowly, so the interior masonry stays cooler than the midday air temperature, thus maintaining the lower interior room temperature. The stored heat is released during the relatively cooler evening and night when the air temperature drops.



Lundale Farm, Pennsylvania (ca. 1796). The walls of the older sections of this stone farmhouse are about eighteen inches thick with large chimneys set in them. Notice how much thinner the walls are in the 1950 addition and how small the new chimney is. The living room has two other energy saving features, splayed window reveals and a pass-through for firewood next to the chimney.

Ben Hayden House, Pennsylvania (ca. 1822). The heavy stone walls, compact shape, and small openings are all energy saving characteristics. Although the individual stones in this house are large, what is important to energy conservation in massive walls is the thickness of the wall, not the size of the masonry units in it.

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Color

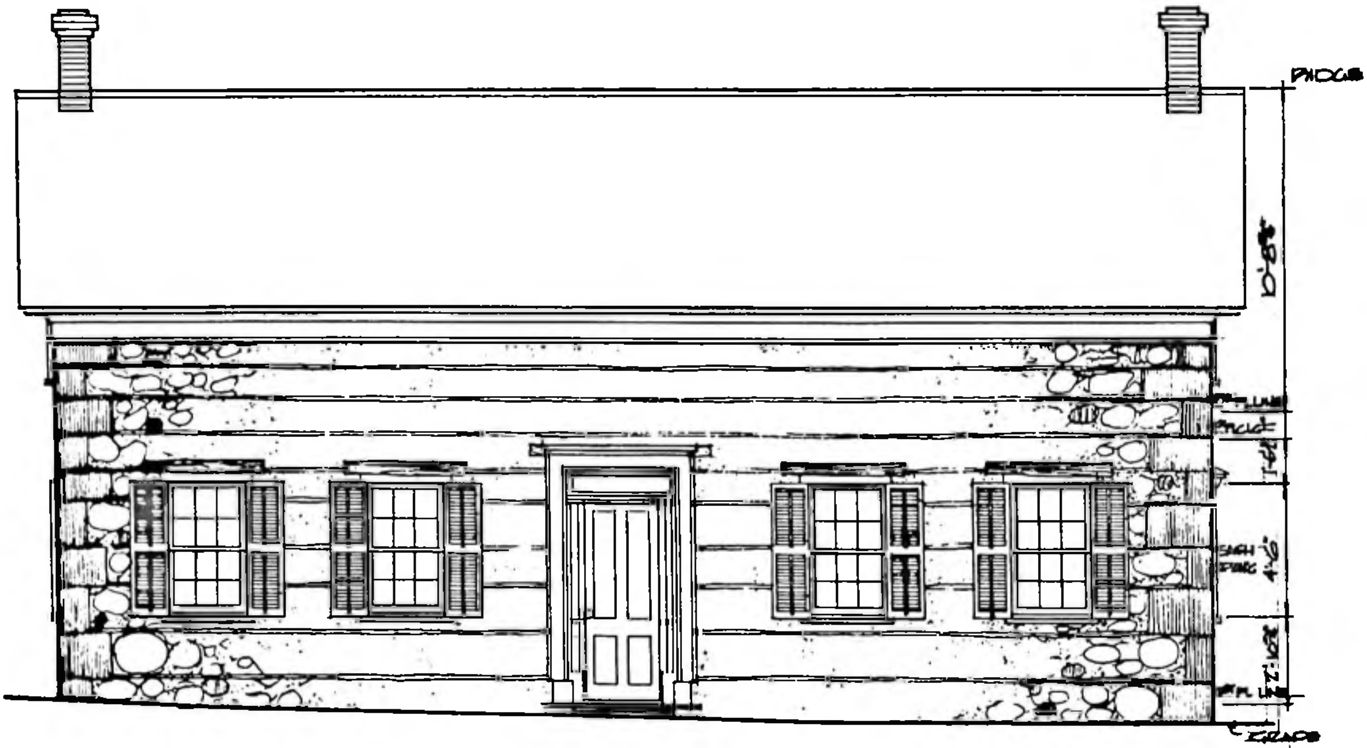
Exterior color on walls and roofs can have a marked effect on heat gain. Dark colors absorb more heat from the sun than do light colors, which tend to reflect it. A New England house may have dark walls and roof in order to absorb as much heat as possible from the sun in the cool climate. A dwelling in the South is often painted white with a light colored roof designed to reduce the heat gain as much as possible.

Zanetta House, California (1815). The whitewashed walls reflect the strong California sun. Shutters with movable louvers control the amount of sun passing through the windows. Another feature not readily apparent is that the walls are adobe under the wood sheathing. Adobe has characteristics similar to masonry, thus helping to moderate interior air temperatures.

House of the Seven Gables, Massachusetts (ca. 1668). The slate roof and the dark stain on the clapboards are used to help absorb heat from the sun. The deciduous trees shade the house from the sun in the summer so the dark color is not a detriment.

Window Size

The use of small windows was and still is a common energy saving device. Even the best modern windows are many times less effective insulators than walls. Windows in northern climates were sized no larger than necessary for adequate light and ventilation. Windows in southern climates, particularly when shaded by porches, were quite large in order to provide maximum ventilation.



FRONT (WEST) ELEVATION

Max E. Peuschel House, Wisconsin (ca. 1850). The small windows, compact shape, and massive walls are all energy conserving features tailored to a cold climate. Climate was not the only factor that determined window size; glass was an expensive commodity.

Blum House, Louisiana (mid to late 19th century). The large windows, sheltered by porches, provide a maximum amount of light and ventilation in a hot and humid climate. Some windows in this type of climate were not glazed.


810

Bel Air (Singley House), Pennsylvania (ca. 1725). The south elevation has three dormer windows, eight large windows with interior shutters, and four basement openings. The doors have transoms that light the center hall on each floor with the middle dormer providing light into the stairwell. Deciduous trees shade the elevation from the summer sun, preventing unwanted heat gain

Location of Openings

The location of openings in older houses was determined by the local climate. Northern homes had few or no openings on the north or northwest side to prevent unwanted heat loss. Openings were concentrated on the south or southeast side to maximize the heat gain from the sun. Just the reverse was true for southern homes where openings on the south side would lead to unwanted heat gains. Openings were also oriented to take best advantage of breezes for ventilation purposes.

Bel Air (Singley House), Pennsylvania (ca. 1725). The north elevation of this house has no windows except for one which lights the stair landing. There are two interior chimneys in the north wall with fireplaces flanked by closets in each room. The coldest wall in the house is thus isolated from the inhabitants. The closets also serve as warm air convection flues to provide additional heat.

Splayed Window Reveals

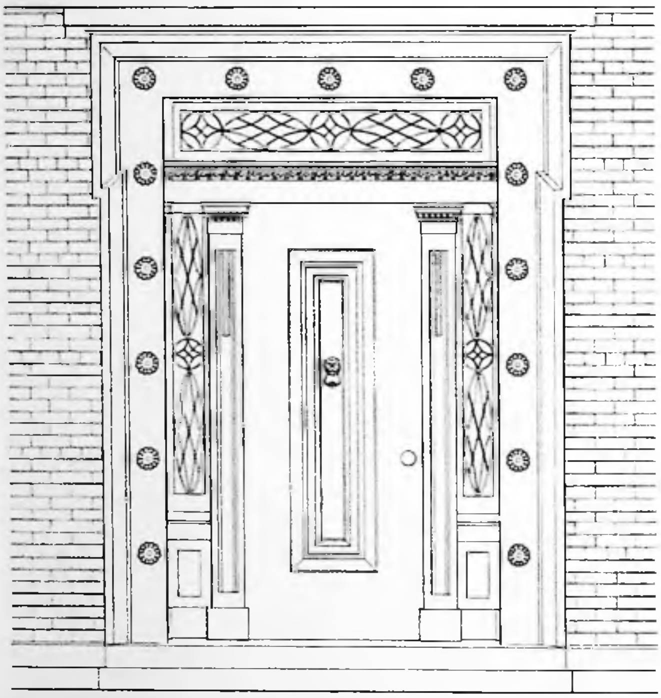
Splayed window reveals are most frequently found in masonry construction because of the thickness of the walls. Splaying the reveals allows a maximum amount of light into a room by enlarging the effective opening as well as reflecting light striking at an angle into the interior. They also enlarge the effective area of a window on the inside without the greater thermal loss of a larger window opening.

Store, California (ca. 1855). This window has the splayed reveal on the outside, shading the window from direct sun, but allowing in as much incident light as possible. Note that the window head is also splayed. The walls are adobe brick, ideal for moderating the effects of the hot California sun.

Stratford Hall, Virginia (ca. 1730). These splayed reveals are actually interior shutters, which fold back into pockets in the window frame. See the illustration in the section on interior shutters for how they work.

Fanlights/Transoms/Side Lights

Windows at the top and/or sides of an exterior door provide light to what would otherwise be a dark vestibule or hallway. Often, they are the only light source to an entrance. Fanlights and transoms or lights in the door itself are common even in modest houses. Side lights are somewhat less common.

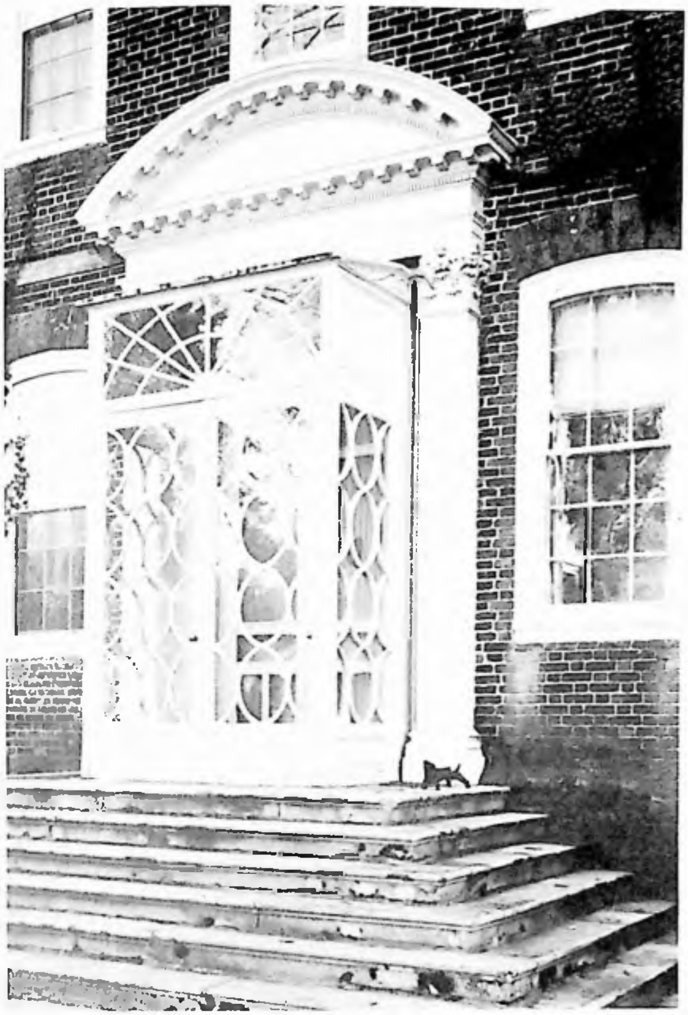


Lindley M. Moore House, New York (ca. 1835). The transom and side lights are filled with leaded glass. They provide the only light into the center hall when the door is closed.

Boykin Hall, Georgia (early 19th century). In addition to providing illumination, the fanlight and side lights are incorporated into an architectural feature that is designed to draw attention to the doorway. Some side lights can be opened for ventilation.

Vestibules

Vestibules can be found in any type of home but are most frequently seen in the double door entrances of town houses. They serve to minimize the air exchange involved in opening and closing exterior doors. Consequently, the greatest savings occur on the most frequently used doors.

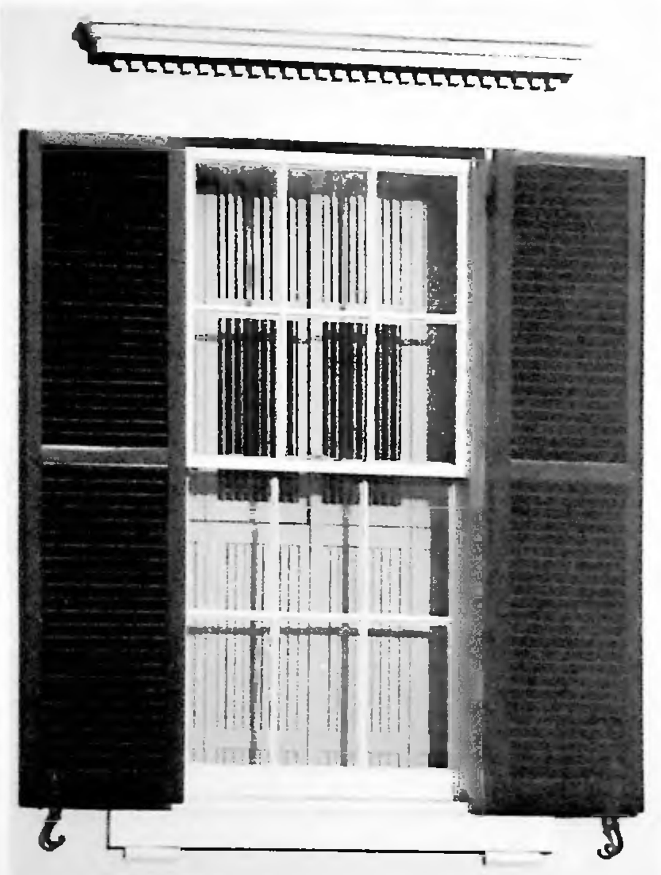


Westover, Virginia (ca. 1730). The vestibule at Westover was an early addition to the house. The double doors can be folded out of the way in the summer. Also notice the removable storm window on the window to the right of the door.

John Bemis House, Massachusetts (ca. 1740). This is an unusually large and elaborate vestibule complete with shuttered windows. Vestibules are generally unheated spaces not requiring this heavy construction.

Exterior Shutters

Shutters, when operable and used by a homeowner, can significantly cut heat losses through windows. Unfortunately, most modern shutters are non-functional decoration permanently fixed in place. While homes with operable shutters are relatively rare, homeowners who use them effectively are even rarer. Exterior blinds built into window heads are similar in function and efficiency to shutters except that they can be closed from the inside without opening the window.

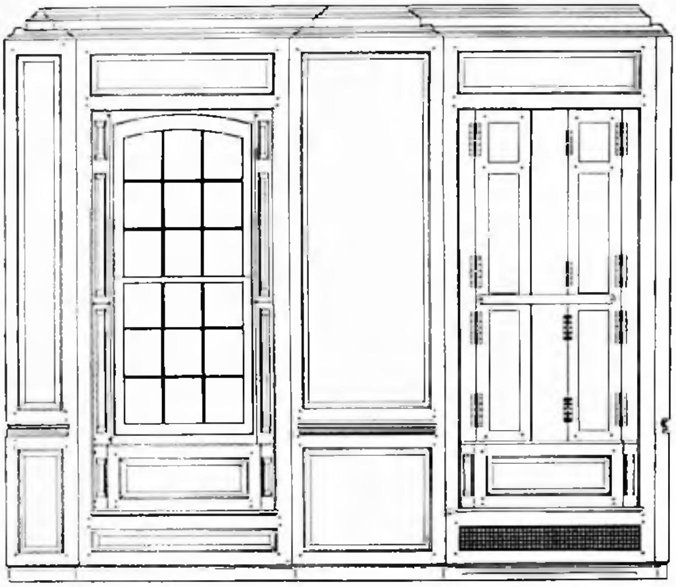


House, District of Columbia (late 19th century). These shutters have fixed louvers, designed more for filtering the sun than for reducing heat loss. Notice the hardware for holding the shutters open so that they do not swing freely. The interior shutters have adjustable vertical slats.

Hancock House, Iowa (ca. 1850). Demountable louvered shutters are used on this entrance and window, where hinged shutters would tend to obliterate the architectural detailing when open. Since they were less convenient to use, they were probably changed seasonally rather than daily.

Interior Shutters

Interior shutters may be used with any type of construction, although the need for relatively thick walls to hide the open shutters means that they are most frequently used in masonry construction. Some interior shutters, rather than being hinged, are mounted in tracks and can be slid out of the way when not in use. They function in much the same manner as exterior shutters except that they can be closed without opening the window.

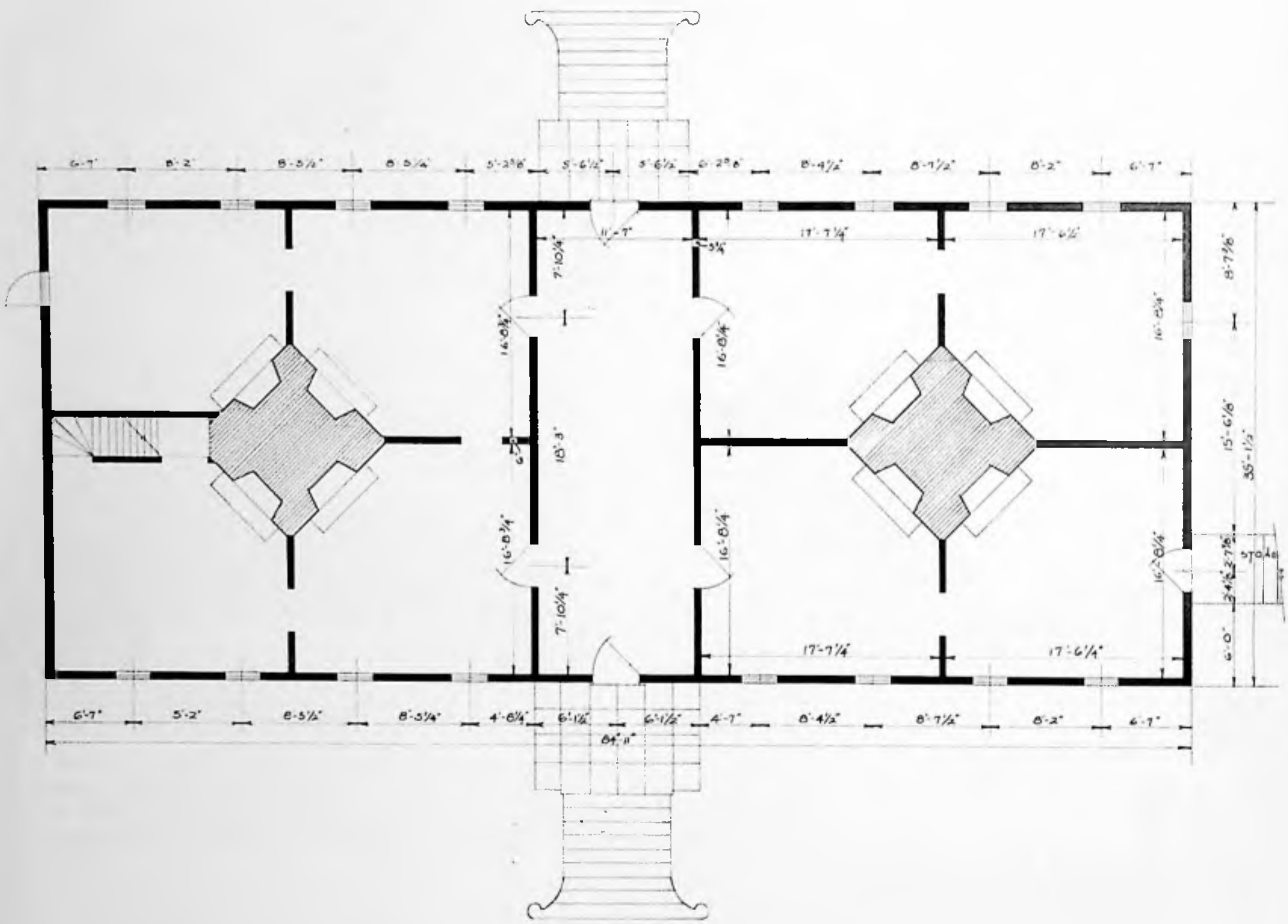


Westover, Virginia (ca. 1730). The drawing shows one window with the shutters open, one with the shutters closed. Notice the elaborate panelling of the open shutters and the rather utilitarian appearance when closed.

Stratford Hall, Virginia (ca. 1730). Interior shutters, as opposed to exterior shutters, are designed to be invisible when open. Unfortunately, they are frequently stuck in the open position by accumulated layers of paint. This same window is illustrated with the shutters open in the section on splayed window reveals.

Chimneys

Chimney size and placement varies depending on the amount of heat desired in a given climate. Heat from combustion, whether from a fireplace, stove, or furnace, warms the masonry in a chimney over its full height. Chimney size and placement determine how stored heat can be used to best advantage. Central chimneys are often found in the North. Some of the oldest are huge masonry masses with multiple fireplaces on each floor. The heat retained in the chimney mass continues to radiate into the house even after the fires are damped for the night. In the southern house, exterior chimneys, some with freestanding flues, radiate heat to the exterior. This avoids unwanted excess heat but at the expense of heating efficiency in the relatively mild winters.



RESTORED FLOOR PLAN

Scotchtown, Virginia (ca. 1735). These central chimneys were huge masonry masses about ten feet square. They dominate the floor plan. Note that the central hall does not have its own heat source.

Towles House, Virginia (early 18th century). The chimney placement minimizes the transfer of heat to the interior of the house by reducing the contact area of the chimney mass with the house. The flue is freestanding, reducing not only the heat gain, but the fire hazard as well. The house is no longer standing.

Warm Air Flues

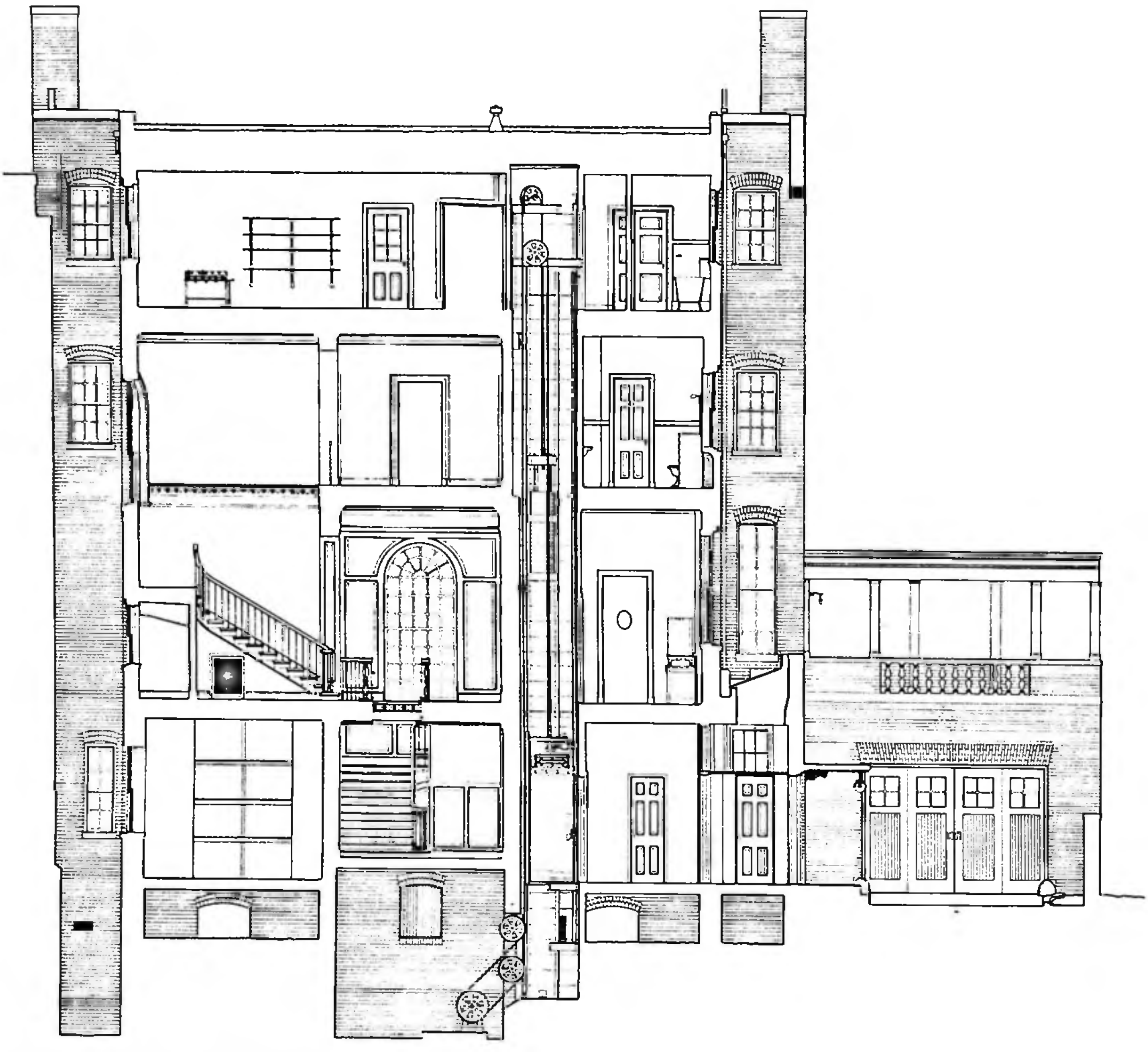
Interesting heating devices, often covered during rehabilition work or converted to duct space, are convection flues. They are located alongside chimney flues with a cool air inlet near floor level and a warm air exhaust near the celing of the room or near floor level of the room above. The air in the flue is warmed by the heated masonry of the adjacent chimney flue and rises by convection, pulling cool air in below. Convection flues are very simple, low maintenance, low technology devices.

William Miller House (Avondale), Pennsylvania (1730). The closets flanking this fireplace are warmed by the heat from the chimney even though this particular fireplace has been sealed. The warmed air rises, exhausts from the grills over the doors, and is replaced with cool air drawn in the gap under the doors. The grills also provide light to the upper portion of each closet.

High Ceilings

Row houses frequently have higher than normal ceilings and windows to compensate for the lack of windows along the party walls. High ceilings are a blessing in hot weather because they allow hot air to rise above the inhabitants. While this effect is a detriment in the heating season, it can be overcome by using ceiling fans, which can aid comfort in all seasons. Lower building volumes achieved by lowering ceiling heights is an efficient means of saving energy in new construction. Lowering ceilings in existing buildings is not as efficient because the void above a dropped ceiling is still within the heated building envelope. Also, lowered ceilings make substantive changes to the architectural character and aesthetics of a space.

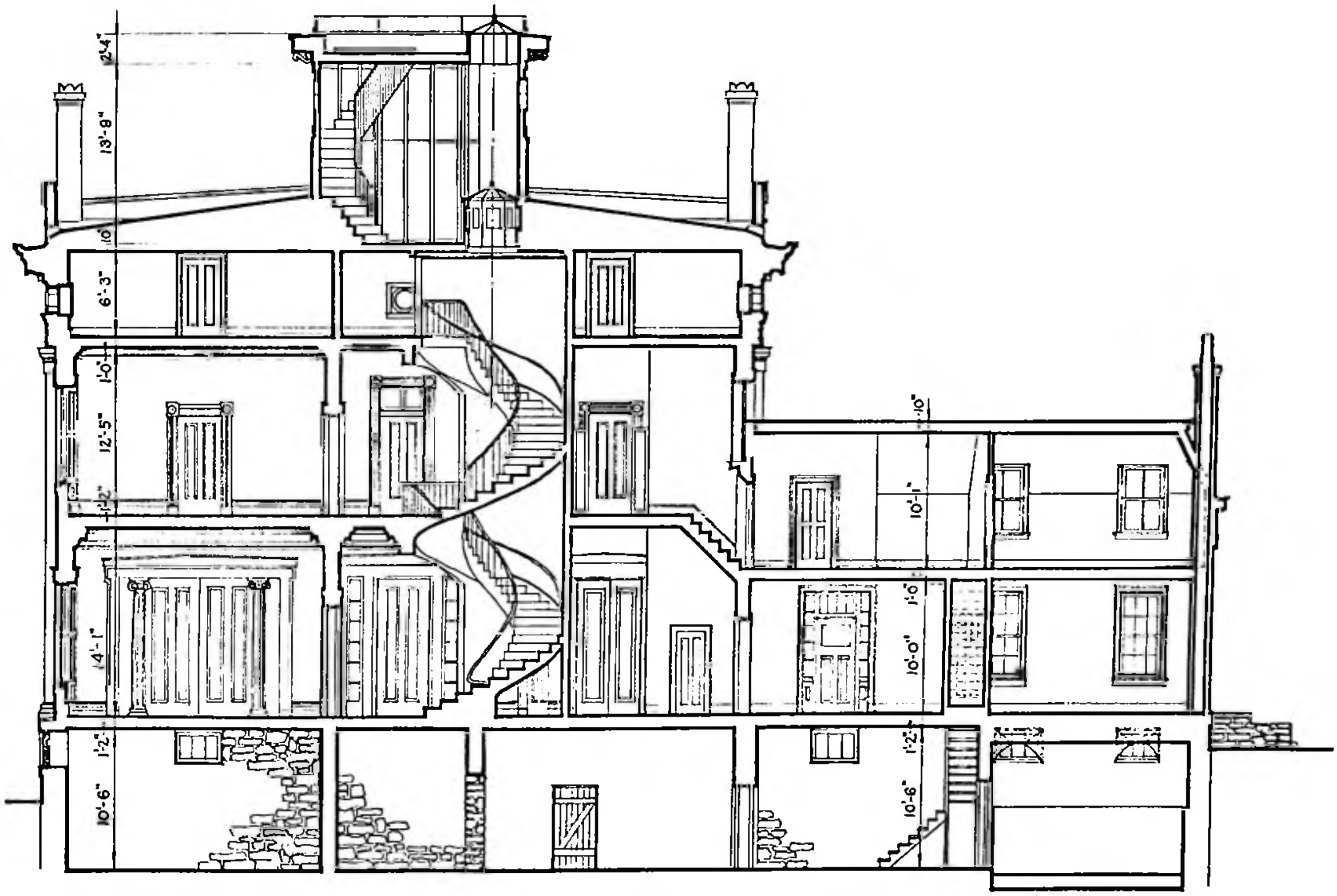
Montauk (Gov. William Larrabee House), Iowa (1874). High ceilings are most common in large houses because of the need to keep the room height in proportion to the larger rooms. This house is an early example of central heating in Iowa but with connections for stoves in most rooms in case the new system failed.



Woodrow Wilson House, District of Columbia (1915). The architect placed two exterior lightwells along the party walls of this house. They provide light to spaces that need light but not necessarily a view, such as stairwells, a pantry, a closet, bathrooms, and hallways. What appears to be a large arched window near the center of the drawing is actually a borrow light illuminating the stair landing between the first and second floors.

Light Wells

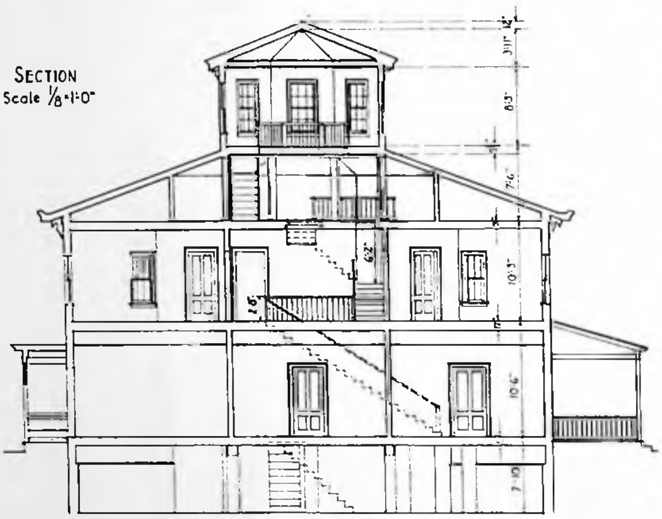
Houses more than two rooms deep frequently have light wells to provide both light and ventilation to the interior spaces.. Properly designed, light wells can serve as thermal chimneys, drawing air through the house. Painting them white will increase the amount of light reaching the bottom of the shaft. Light wells are most commonly found in row houses.



James F. D. Lanier House, Indiana (1840-44). The stairwell serves as an interior lightwell, providing light down through the center of the house. It is lit by a small skylight in the cupola.

Skylights/Clerestories

Skylights are used to light stairwells and top floor interior spaces that would ordinarily not have windows such as bathrooms and hallways. The use of skylights reduces the need for artificial light during the daylight hours although at continual expense during the winter because of the heat loss. In the summer, a skylight that can be opened can also serve as a whole house vent. Clerestories provide light near the ceiling of a room and, if designed to be opened, can exhaust hot air.



Bebb House, District of Columbia (1865). The cupola served as a large skylight for the upper stories of this octagonal house.

Pope-Leighy House, Virginia (1940-41). These highly decorative clerestory lights provide soft, indirect light year-round since they are protected from direct sun by the roof overhang.

Interior Transoms/Borrow Lights

Transoms, windows over doorways which are often painted over and painted shut, serve a variety of energy conserving purposes, including ventilation and lighting. Interior halls were often lit by transoms from outside rooms, reducing the need for artificial light. Transoms that can be opened provide cross ventilation to a room when the door is closed. Borrow lights are simply windows in interior walls to allow one interior space to "borrow" light from another.

Robert Ralston House, Pennsylvania (early 19th century). These open transoms allow the passage of both light and air even with the doors closed.

Convent of the Visitation, Alabama (ca. 1864). The door on the right has a glazed, fixed transom lighting the hallway beyond. The grilled but unglazed opening on the left provides both light and cross ventilation.

Use Patterns

Bundling may seem like a quaint bit of our past but it points out that homes were less comfortable by today's standards. People simply dressed more warmly in the winter. High backed, overstuffed chairs in front of a fire helped ward off winter chills just as the porch swing was a cool spot in the summer's heat. Heavy draperies and rugs were either taken up or replaced with lighter weight material in the summer. Awnings kept the summer sun off windows while operable shutters kept out the winter cold. In other words, homeowners can have a large impact on the energy efficiency of their homes by the way in which they live in and use them. Not everyone will want to modify his lifestyle in order to save energy, but it is a factor that should not be dismissed lightly.

Jerry Cowles House, Georgia (ca. 1830). Awnings can be easily raised or lowered to control the sun. Shutters can be opened and closed to accomplish the same purpose. Although not automated like most of our modern climate controls, shutters and awnings require little effort and can make a substantial difference in interior comfort.

Conclusion

Most older homes were designed to be as energy efficient as the state of the art would allow. Sophisticated low technology features making the best use of natural elements were quite common in all types of residential construction. The introduction of mechanical systems for climate control allowed fundamental changes in house design by reducing the need for energy conscious features.

For the most part, the energy-conscious design features inherent in older homes are easily used even today. The effectiveness of these features is unchanged because they are not dependent on changing technology. They are also in character with the historic period of their construction. Reusing these features can enhance both the historic character and energy efficiency of a home.

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List of Illustrations

All of the illustrations, except where noted, are from the Historic American Buildings Survey collection and can be ordered from the Prints and Photographs Division, Library of Congress, Washington, D.C. 20540.

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Bel Air (Singley House) (PA-1124)
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HABS Photographs by Ian McLaughlin, 1936

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