

Architecture

residential drawing and design

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INTRODUCTION

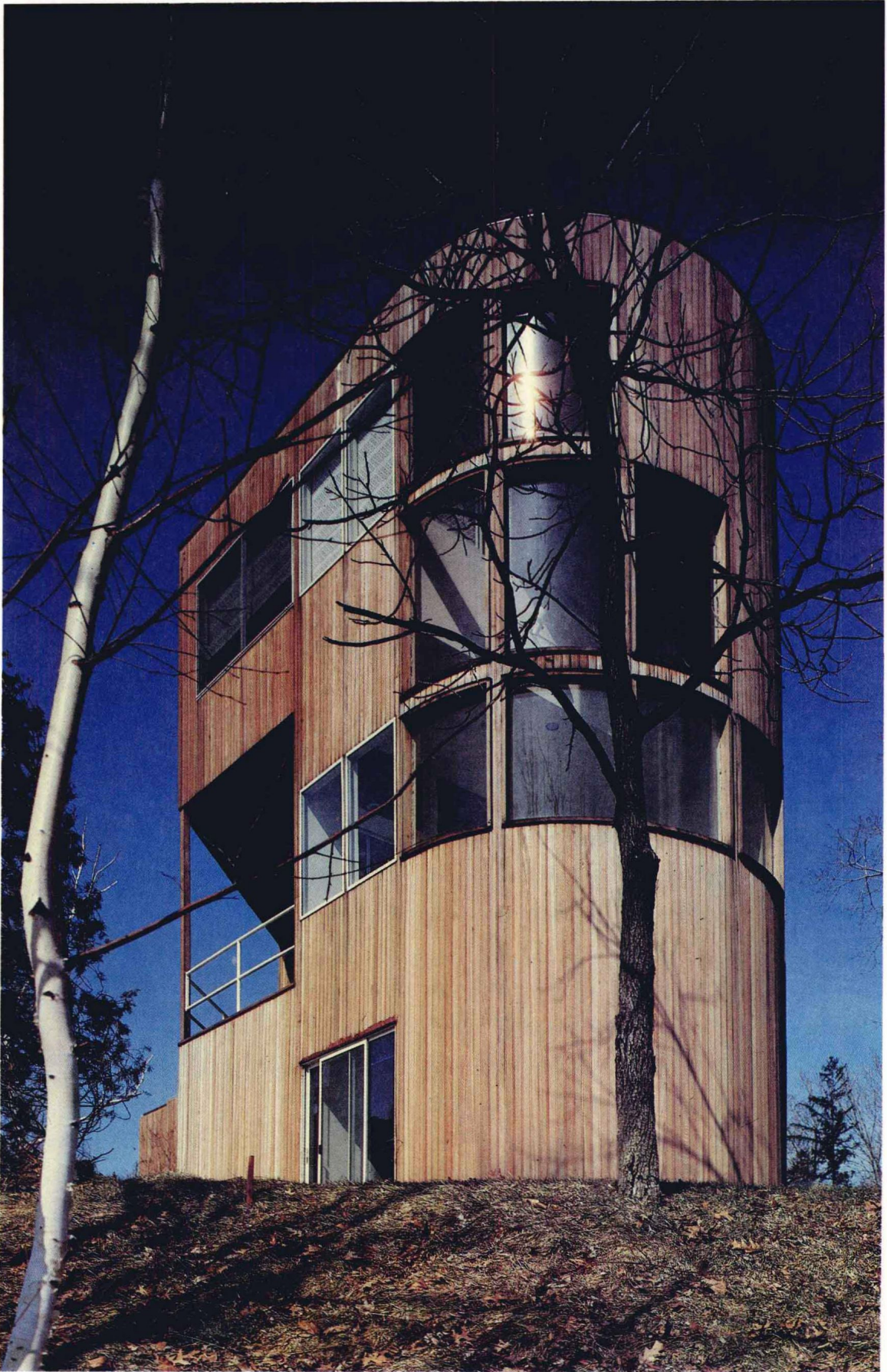
ARCHITECTURE, Residential Drawing and Design provides basic information necessary for planning various types of dwellings and basic instruction in preparing architectural working drawings. Further, the text is designed to serve as a reference for design and construction principles and methods. It is intended to help develop the necessary technical skills to communicate architectural ideas in an understandable, efficient, and accurate manner.

ARCHITECTURE, Residential Drawing and Design is organized so that the content is presented in the logical order of use. The functional organization and layout of the text, the step-by-step procedures, and the easy-to-understand language in which it is written makes it easier for learners to learn and for teachers to teach.

ARCHITECTURE, Residential Drawing and Design is profusely illustrated. Many of the drawings and photographs are enriched by use of color. In addition to providing information on architectural drawing, design, and construction, the text includes excellent coverage of solar energy applications, earth sheltered housing, dome structures, computer applications, industrialized housing, workmanship specifications, career opportunities and an extensive reference section.

This text is intended for architectural drawing and design classes in high schools, vocational and technical schools, community colleges, universities, adult classes, and apprenticeship training. It will also serve as a valuable reference for builders, carpentry classes, skilled tradeworkers, and interior designers.

Clois E. Kicklighter



The sensitive skills of the architect are represented in this contemporary residence. Distinctive features blended with unique materials make this structure outstanding. (California Redwood Association)

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Skilled architects match creative designs with natural settings to meet the needs of a variety of life styles. (American Plywood Association)





Fig. 1-1. This picturesque brick home is a final reward for the experienced architect.
(Ideal Cement Co.)

Chapter 1

THE WORLD OF ARCHITECTURE

The fascinating study of architecture encompasses a sensitivity to design, skill in drawing techniques and a knowledge of the latest construction materials. It is the combination of these abilities that yields the outstanding architects of today's world. These architects design massive high-rise buildings, quaint lakeshore cottages, modern churches, and family homes as required to meet the needs of our society.

The world of architecture is all around us. It has been one of the major conquests of man to design structures to bring the thrill of lasting beauty to the eye of the beholder. Whether it is a symbolic monument, or a long awaited residence, Fig. 1-1, a rewarding experience belongs to the architect and years of pleasure to those who view the structure. Some structures are designed for commercial and industrial use, Fig. 1-2, while others are planned for organizations and private living. The emphasis of this book is on the design and architectural study of residential structures; however, the relationships of line, form, and material of almost any structure has an impact on home construction.

Fig. 1-2. Many commercial structures, such as this chain store, result from combined architectural design efforts. Note "Moduspan" slope roof with fabric cover. (Unistrut Space-Frame Systems)



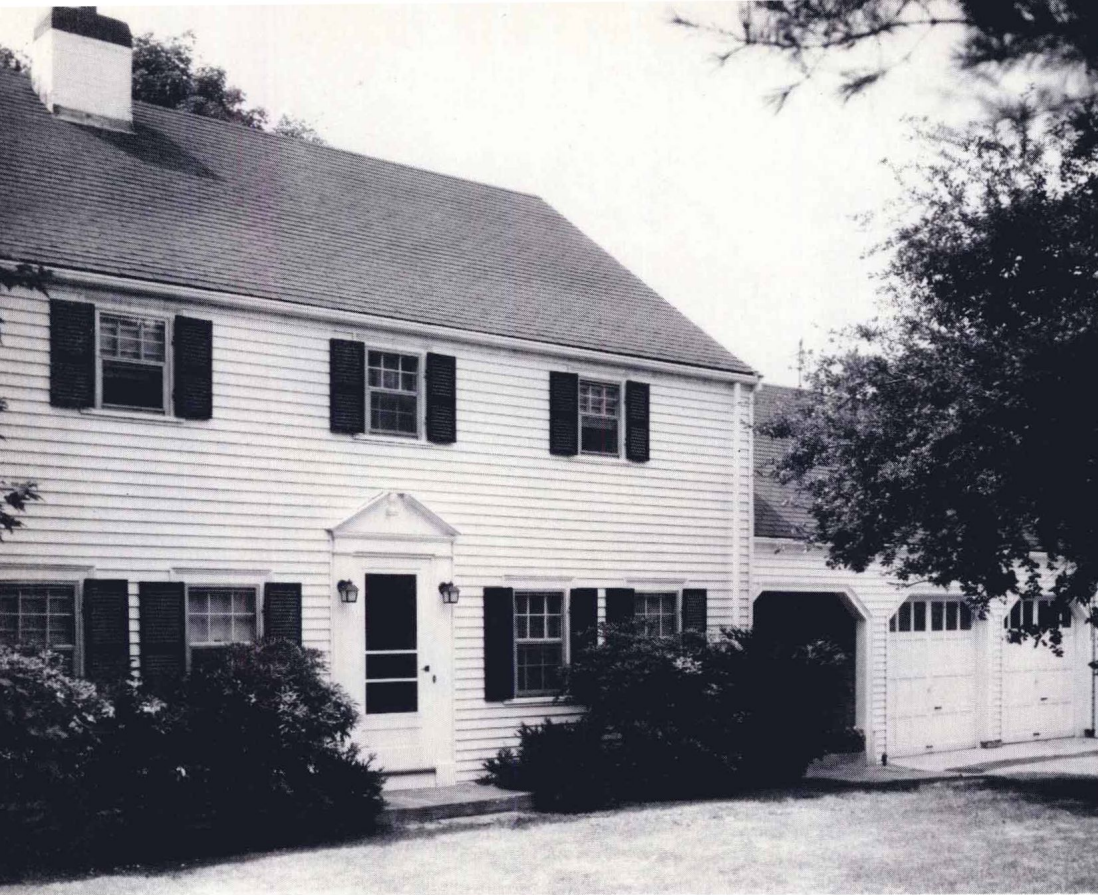


Fig. 1-3. Refined version of the traditional Cape Cod as a two-story home. (Bird and Son, Inc.)

PEOPLE AND THEIR STRUCTURES

Over the years a number of architectural styles for house construction have been developed. Many of these structures were designed to meet climatic conditions and needs of families in various parts of the country. Others were planned

especially for luxurious living. All of these factors provide a historical background that influences the design of today's homes. Some house styles became so popular that they took on names related to their shape, period of time, or area of the country in which they were built. The emphasis here is given to the design qualities that people have used over many years and now imitates or incorporates in modern homes.

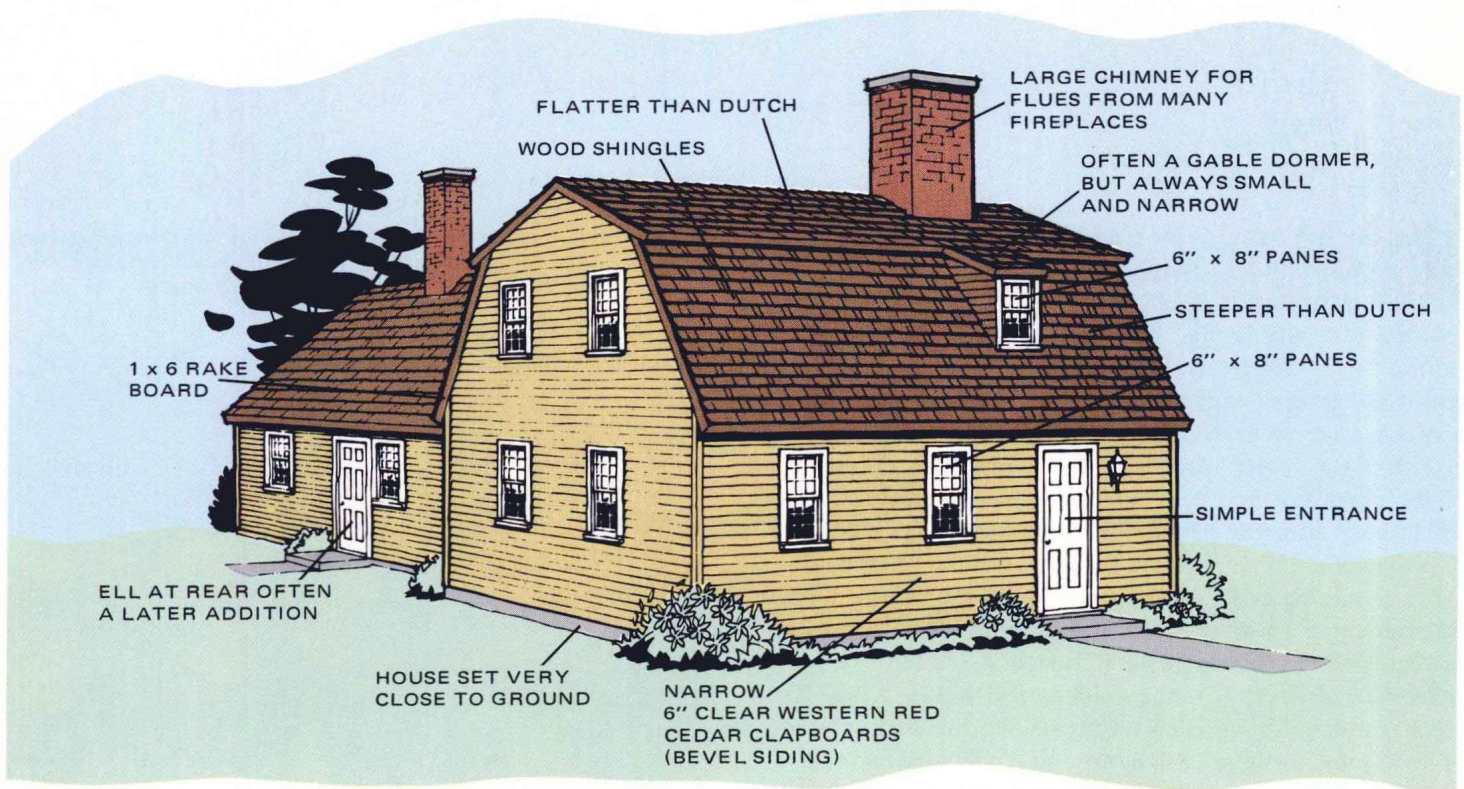


Fig. 1-4. Rendering of the traditional Cape Ann. Many modern homes are distinguished by features taken from this early structure. (Western Wood Products Assoc.)

THE CAPE COLONIAL

Two very popular home styles developed over 200 years ago are the Cape Cod and Cape Ann. These traditional homes have influenced structural design since they were first conceived. People have enjoyed them for their aesthetic appeal. They provide a comfortable and livable atmosphere, and the rooms are large and functional.

Cape Cod are used in today's structures.

Another example of the Colonial style used in modern construction is the Cape Ann, Fig. 1-4. This differs from the Cape Cod in many respects. The chimney is centrally located and is usually larger. The tapering gambrel roof encloses an attic that is often converted into extra rooms. A growing family may take this into consideration when planning their first home. Modern use of the Cape Ann characteristics



Fig. 1-5. Contemporary styling of the typical New England Gambrel house.

The Cape Cod, Fig. 1-3, is one of the earliest and best known of the traditional Colonial styles. It originated as a fairly small house with a steep roof and little overhang. A central chimney accommodated the necessary room fireplaces. These homes were normally built as one or one-and-one-half story buildings, however, the same features have been incorporated in two-story styles. The eave line is always near the top of the windows, ending with a gable roof. Narrow trim lines of the siding, which appealed to New Englanders many years ago, are still used on these homes. Shutters are generally used on all windows, giving emphasis to the white or yellow painted siding which was preferred in earlier times. Many variations of the

provides a house with simple lines, sound construction, and a feel of colonial atmosphere. It makes a particularly attractive house along a tree shaded avenue or in a wooded development.

The New England Gambrel, as shown in Fig. 1-5, is a variation of other colonial styles. It features the gambrel roof where the pitch is abruptly changed between the ridge and eaves. Inherently American, the style is now used in most every section of the country. An advantage of the gambrel roof is the extra headroom and usable space available. The shorter rafter lengths required is an economic measure. Many adaptations of this architectural style provide pleasing and enduring homes for modern families.



Fig. 1-6. The Garrison home in a contemporary setting retains the original straight line features and overhanging second story.

THE GARRISON

An attractive house that includes a number of special features is a modern presentation of the traditional Garrison, Fig. 1-6. A distinguishing feature is the overhanging second story. This construction technique includes a number of advantages. (1) The separate corner posts on each floor make

it possible to use shorter, stronger posts. (2) The short straight lines provide economy in framing materials. (3) Extra space is added at the second level by the overhang at very little extra cost. The steep pitch roof adds attic space. Narrow siding maintains the traditional styling. Fig. 1-7 shows the traditional Garrison from which modern design features have been developed.

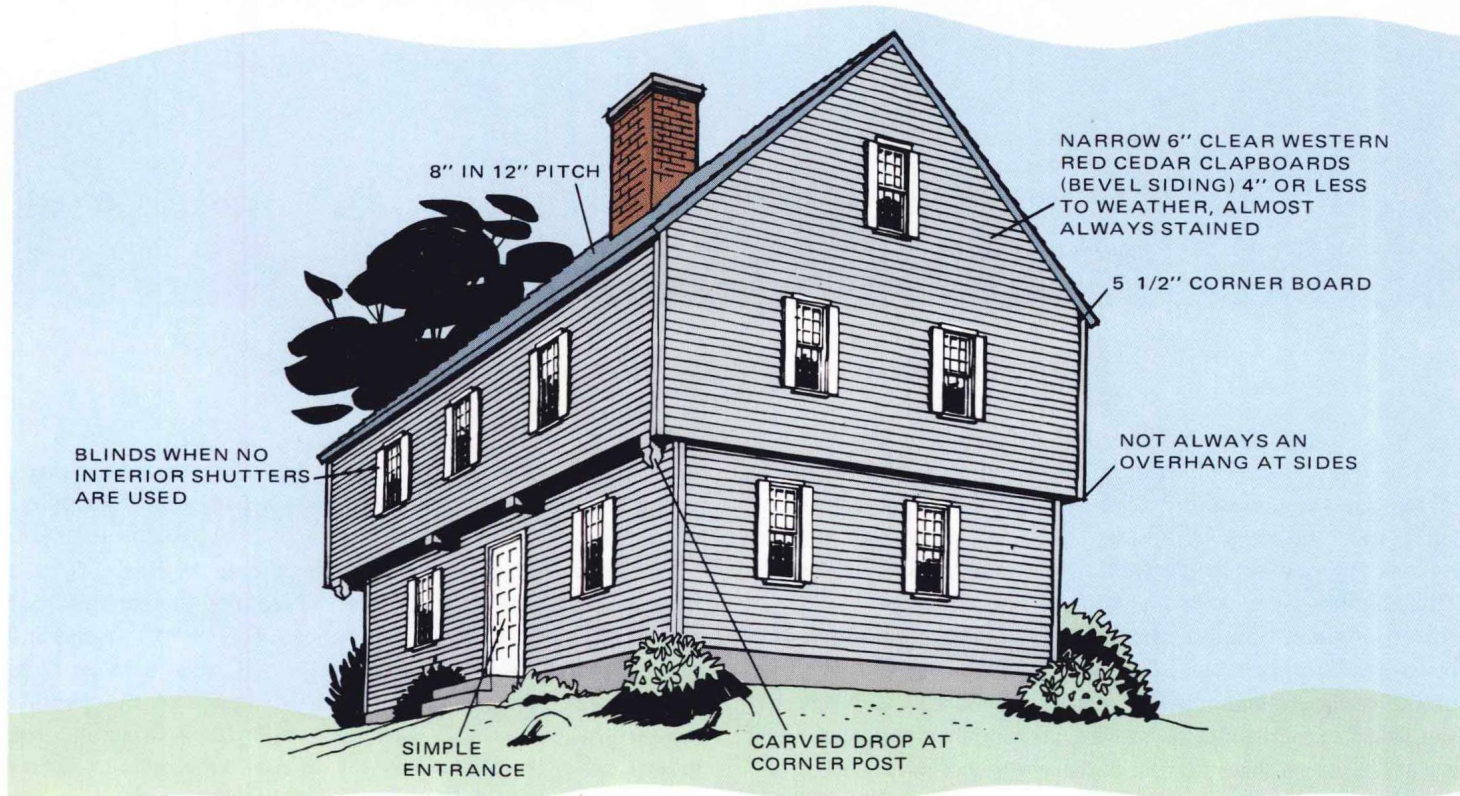


Fig. 1-7. The distinguishing characteristics of the traditional Garrison home. (Western Wood Products Assoc.)



Fig. 1-8. A beautiful reproduction of the early New England Salt Box home.

THE SALT BOX

An interesting and easily recognizable Colonial is the Salt Box, Fig. 1-8. It is a direct offshoot of the basic colonial half house, resulting in a long roofline sloping gently from ridge to eaves. Many of today's beautiful homes have borrowed from this distinctive style, developed by master builders of early American times. The Salt Box house gets its name from the shape of coffee, tea, cracker, and salt boxes found in Colonial

stores. The side elevations of these containers had the same general shape as this fascinating architectural style. Variations of this style are used to enhance many new homes.

The long low roofline at the rear of the house came about by the addition of "lean-to" structures being attached to add more living space. As further developments evolved, the low slanting roof was helpful in combatting the bitter winds common to New England winters. The basic style of the original Salt Box house is shown in Fig. 1-9.

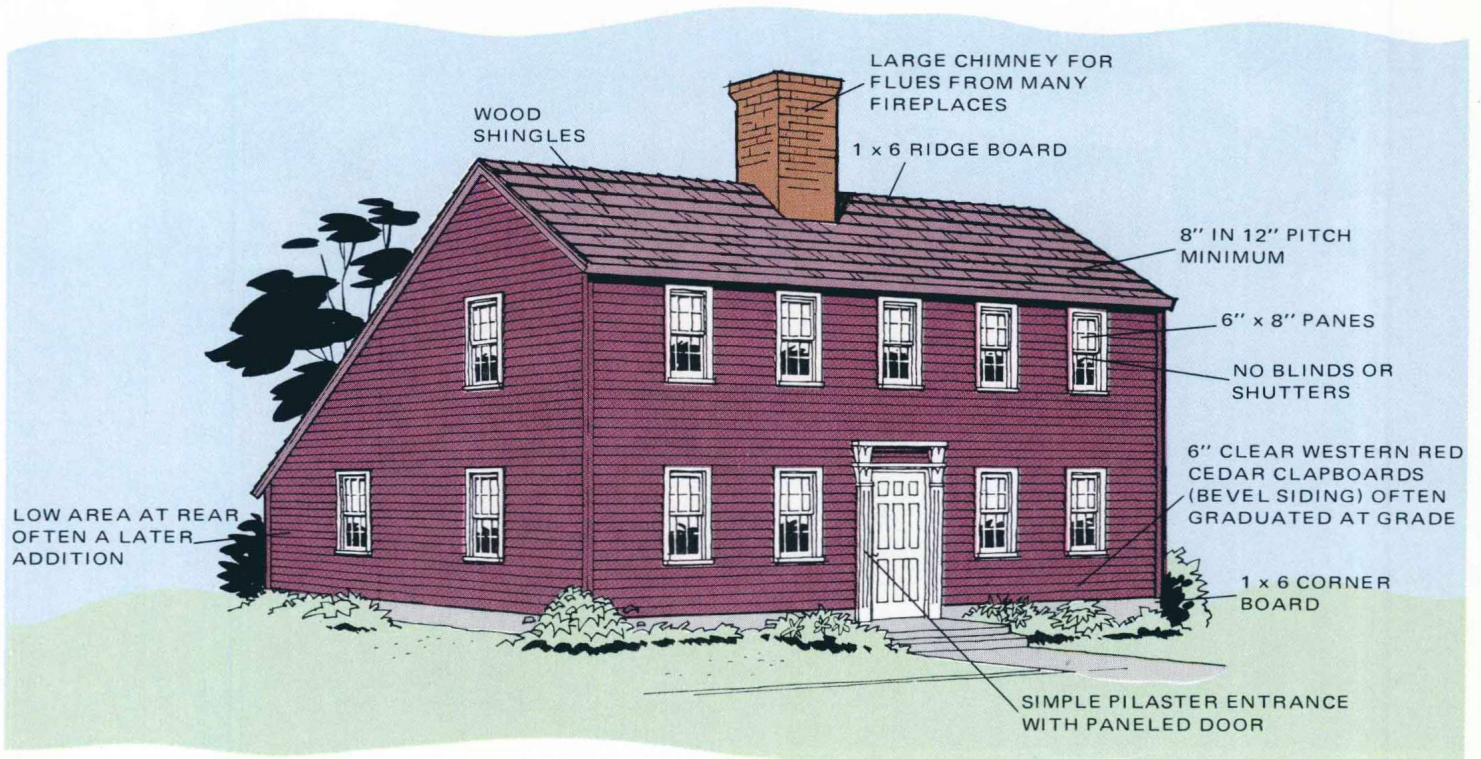


Fig. 1-9. Styling of the original Salt Box home with wood roof shingles, narrow wood siding, and no shutters. (Western Wood Products Assoc.)

SOUTHERN COLONIAL

One of the most gracious of all the Colonials is the traditional Southern Colonial. The style, which reflects the warmth, quaintness, and hospitality of the old south, is shown in Fig. 1-10. This modern example borrows many of the fine details of the Southern Colonial to express a mood of elegance and traditional charm. The outstanding architectural features are the front colonnade and the giant portico. The extended portico sheltered the front entrance from the weather and kept direct sunlight from glaring into the first and second story rooms. These homes were usually massive, with upper and lower balconies, three story chimneys for bedroom fireplaces, ornate woodwork and iron trim, and a roof over the driveway to protect persons using the side entrance. Many of these features of the Southern Colonial may be adapted to the esthetic qualities of modern homes.

It is evident that the influences of the past, both in beauty and function, have had a profound effect on modern home designs. On the other hand, many new materials, appliances, and modes of living have caused the architect to "think out" ways to plan homes for all styles of modern living. The modern American home is a combination of many of these factors.

MODERN STRUCTURES

The style of houses, that is generally called modern, is the result of years of architectural planning, design and evolution. Many are well planned while others lack imagination or design balance. Some inexpensive homes are functionally satisfactory for a family, yet for economical measures, the exterior styling may have to be quite conservative in the use of a variety of

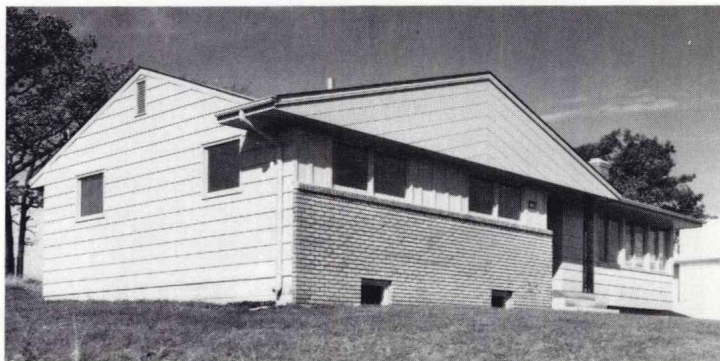


Fig. 1-11. A conservative modern home, using standard materials and a face of brick veneer. (Rodman Industries, Inc.)



Fig. 1-10. The most gracious of all the Colonial homes is this version of the Southern Colonial.

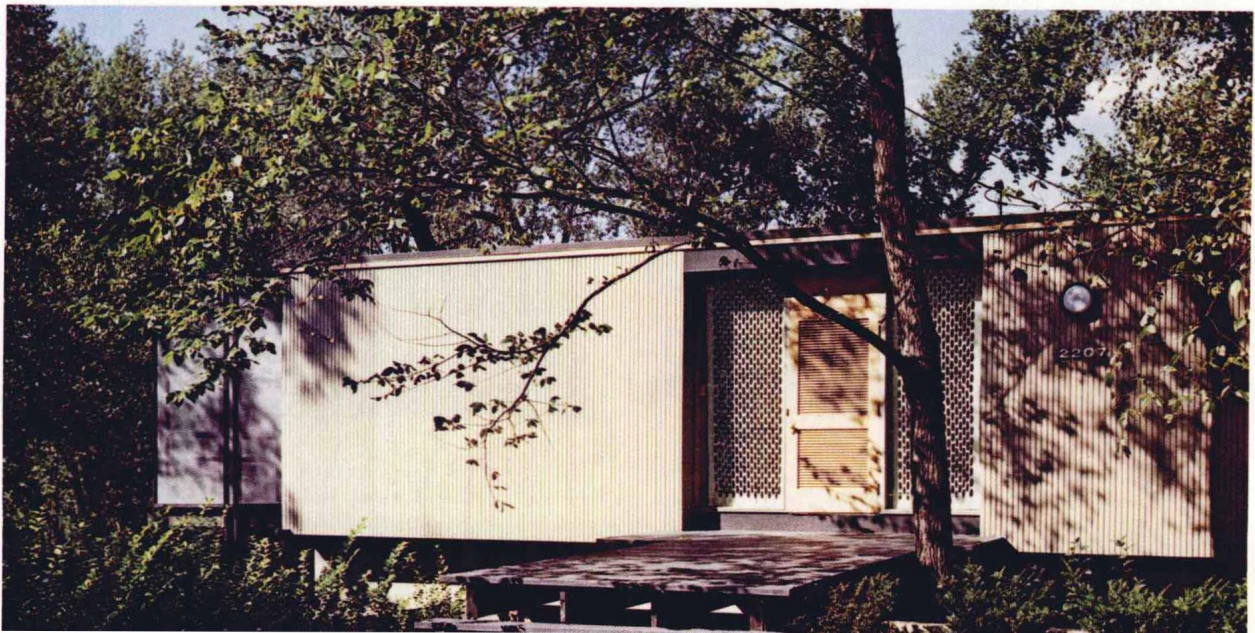


Fig. 1-12. Multimaterials and coordinated curves with straight lines give an architectural flair to this Spanish style home.
(Brown and Kauffman, Inc.)



Fig. 1-13. A modern home with traditional characteristics including the overhanging gable, split shake roof, and grilled windows.

Fig. 1-14. Unique styling is featured in this residence. Note the vertical plywood siding, flat roof, and heavy planked porch.
(American Plywood Assoc.)



materials. See Fig. 1-11. The ability of the architect and the needs or finances of the family are two factors which generally dictate the modern styles being planned. Fig. 1-12 shows the use of various materials and expensive detailing in a modern home.

The term modern or contemporary does not denote any one particular architectural style. Most modern homes borrow some distinctive features from more traditional structures, Fig. 1-13. Others appear almost independent of past designs, Fig. 1-14. It makes little difference in our society just what constitutes modern styling. The most important job for the architect is to design homes that satisfy the customers. Homes they may live in with pride and joy. In today's society, individual tastes vary to the extent that many people desire a house that is distinctly different from other houses. The owner

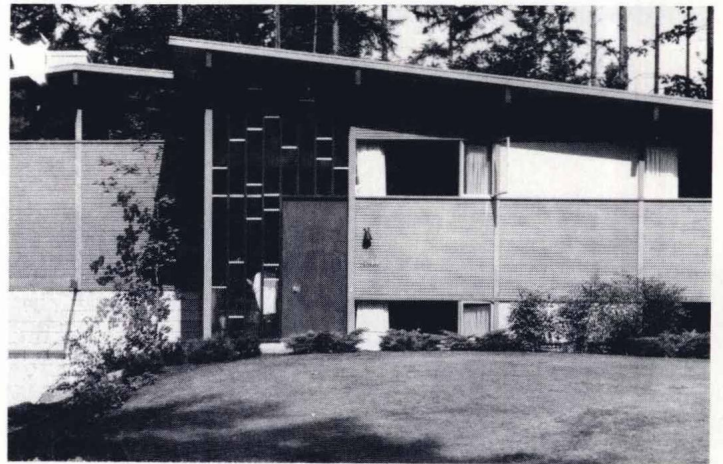


Fig. 1-15. Individuality is emphasized in this home, with heavy beams supporting the overhanging roof, horizontal plywood siding, and vertical glass panels surrounding the entrance.



Fig. 1-16. The extensive use of wood for stained vertical siding and the split shake roof provide an attractive exterior for this home. (Marvin Windows)



Fig. 1-18. A brick home in a contemporary setting gives an unusual slant to architectural design. (Ideal Cement Co.)

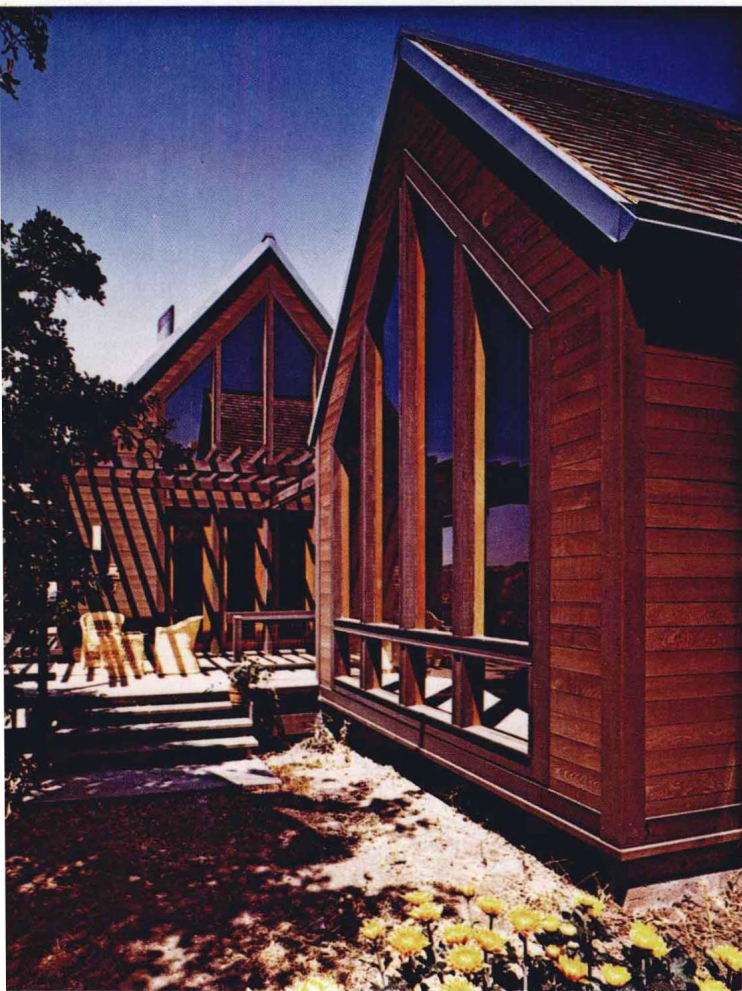


Fig. 1-17. This attractive home makes use of heavy wood beams and wood siding combined with large areas of glass. (Georgia-Pacific Corp.)

The rapid development of new construction materials and methods of fabrication has made it possible to design homes that require a minimum of maintenance, Fig. 1-19, make extensive use of glass, Fig. 1-20, or place the emphasis on exposed structural members, Fig. 1-21.

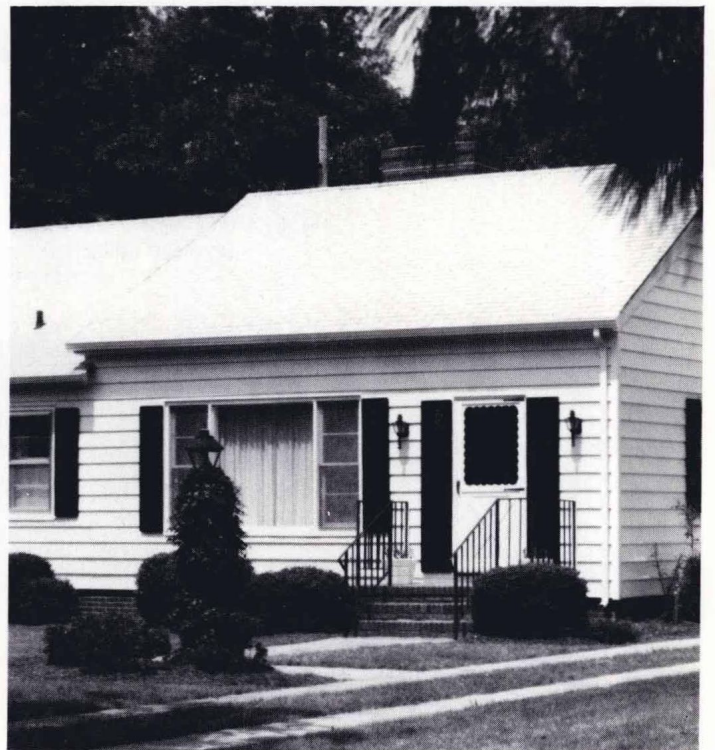


Fig. 1-19. This home requires a minimum of maintenance through the use of solid vinyl siding, gutters, downspouts, ornamental shutters, fascia and soffits.

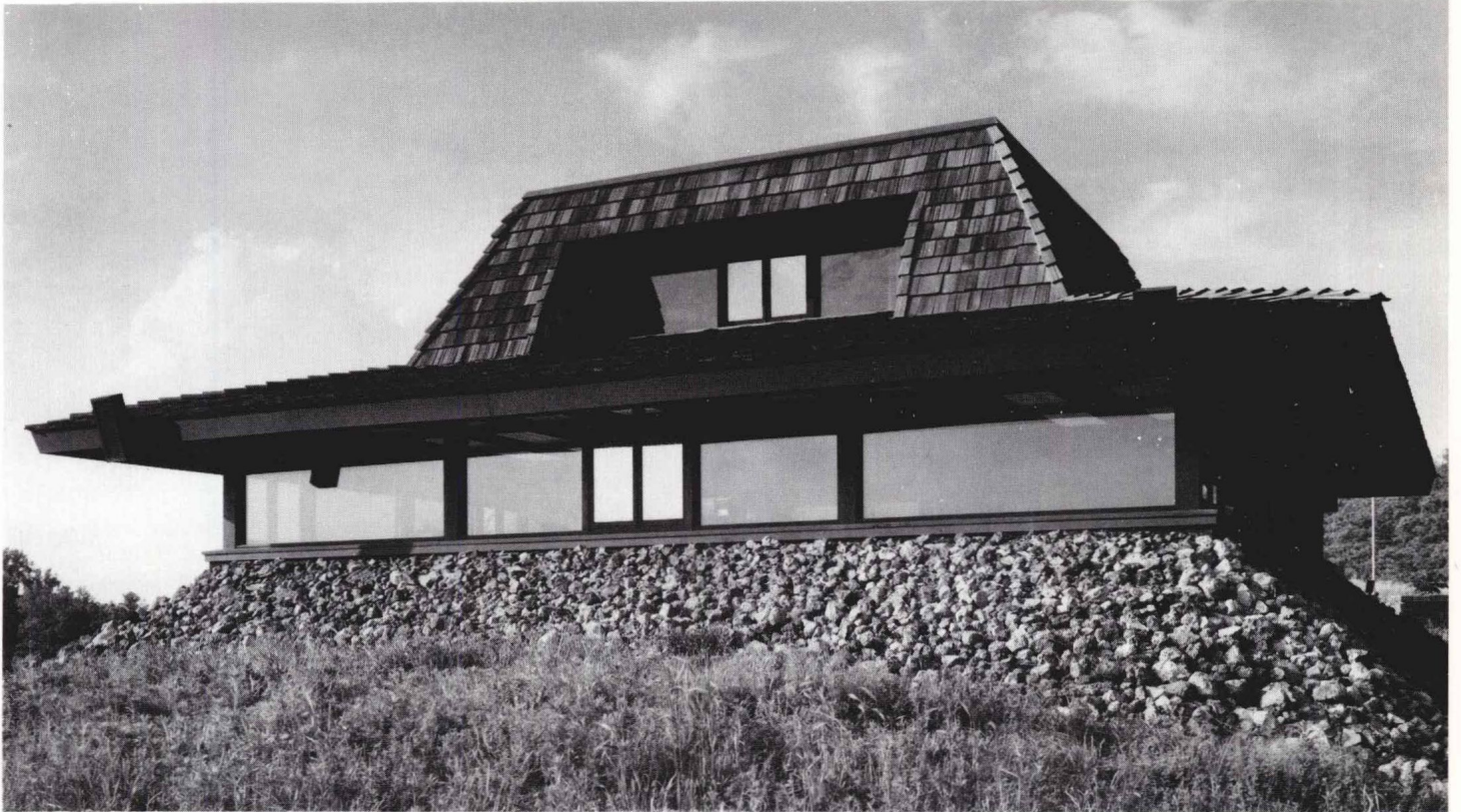


Fig. 1-20. Large exposed areas of glass are being used extensively in contemporary homes.
(Red Cedar Shingle and Handsplit Shake Bureau)



Fig. 1-21. Visible roof support is illustrated by the structural columns at the entranceway. (Marvin Windows)

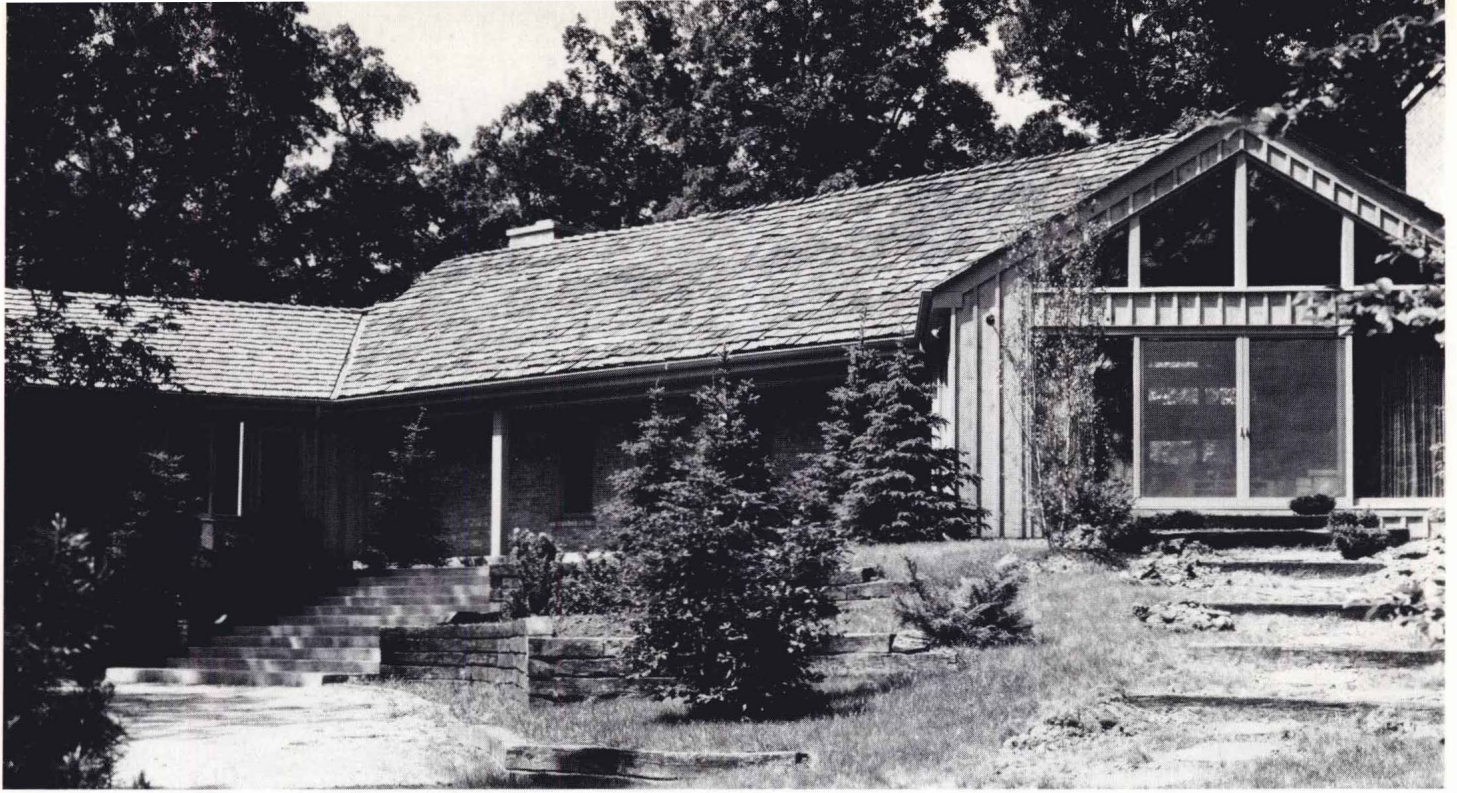


Fig. 1-22. A typical ranch design with modern materials and styling.

Fig. 1-23. Unusual and attractive architectural design for a ranch home. Note the variety of materials used. (Western Wood Products Assoc.)

