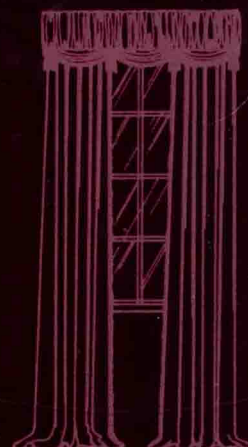
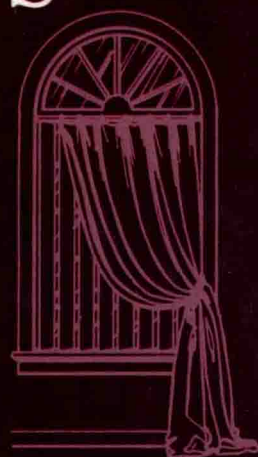
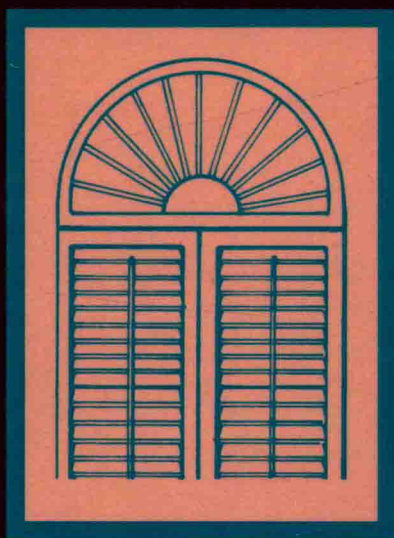
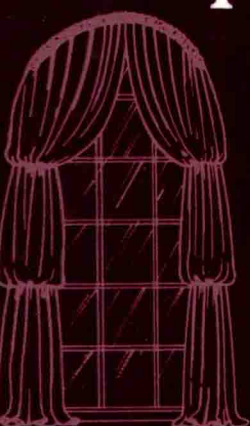
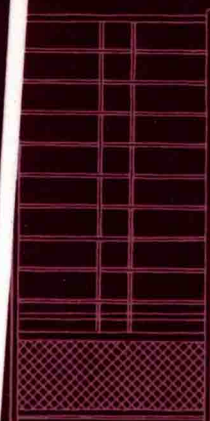
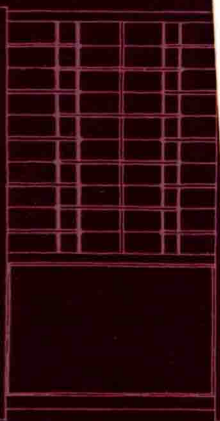


WINDOW

TREATMENTS



KARLA J. NIELSON

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KARLA J. NIELSON



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*To those who struggle with the challenges and
celebrate the successes of planning and treating
windows*

Designed by Keano Design Studio

This book is printed on acid-free paper. ♻

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W I N D O W

T R E A T M E N T S

Foreword

The entity known as the American window-covering industry is relatively new. Only in the last few years has a specific identity evolved from the collective focus of practicing professionals who specialize in manufacturing, distributing, and retailing products to cover and decorate windows. Until now no comprehensive resource existed that encompassed the history, application, and practice that defines this evolving profession. And yet the window-covering industry is one of the few remaining bastions where consumers still rely heavily on the sales consultant, decorator, or designer to guide them to a fashionable, yet functional, solution to their window-covering needs.

This book will benefit all professionals associated with this business. It serves as a useful source of information to veteran decorators that will enhance their credibility as knowledgeable consultants. And novice aspirants will find that it contains literally hundreds of useful facts, ideas, and applications that will save them years of trial and error as well as help guide them in developing a productive career.

This work will help solve many of today's window treatment challenges and will prove to be a very worthwhile investment in the career development of all window treatment professionals.

JOHN A. CLARK
President
Draperies & Window Coverings Magazine

Acknowledgments

The efforts of many go into the making of a book, and I have been fortunate in the writing of this text to be the recipient of the services of a number of fine people.

First and most important I must thank my husband, children, parents, and other family members for their continual encouragement. I also appreciate the support of my colleagues in the Department of Design at Brigham Young University. Their enthusiasm was a great moral booster over the years in which this book was in preparation.

Thanks to Dr. Steven Walker for the initial editing, and to typists Lorraine Johnson, Jannette Sanford, and Gayle Nielson. Thanks also to architect Stanley R. Covington for his contribution of authentic Japanese shoji screen designs, and Ardy Greening, Paul Kern, and Mark Bayless for contemporary art-glass designs.

Artists who worked on the inkline illustrations include Jim Park, Ken Lindquist, Gordon Smart, Caryn Pulsipher, Curtis Asplund, and Greg Thomas. Diane Headman contributed information on folk painting. The period interiors in chapter 4 were masterfully rendered by architectural artist Patricia "Toi" Clawson, principal of Clawson Associates Architectural Rendering.

Final editing was done by Susan Gies. I am most grateful to all these professionals and to the staff at Van Nostrand Reinhold for turning the vision of this book into reality.

Introduction

For millennia, windows have been a source of light, ventilation, and inspiration to all cultures. Originally mere cutouts in the wall, no more than holes covered with mats, skins, or oiled cloths, they have become a focal point of modern architecture. Clearly technology has been a boon to the contemporary window, offering a wide selection of types, shapes, and colors of glass. Yet nothing can be quite so architecturally charming and worthy of preservation as traditionally styled windows glazed with antique glass.

Natural light, or sunshine, is welcome and warming to us, and we often plan and cover windows so that we may work and live in harmony with the seasons. Further, appropriately selected treatments that are well planned and proportioned give comfort, security, and privacy to the occupants of a home, public space, or work space. These are valuable criteria when making window treatment choices.

Yet perhaps the most important choice of all is that of the most suitable windows and loveliest, most appropriate coverings to produce an aesthetic effect that will be deeply pleasing for years to come. This is the window treatment challenge to the designer or decorator and, when achieved, can produce not only beautiful and practical window treatments but a great deal of satisfaction in a job well done.

Traditionally, interior design students have received little academic training in window treatments and are expected to learn about the subject on their own after they have entered the profession. Wherever the reader's starting point lies, this book forms the basis for a study of window treatments from both a philosophical and a pragmatic viewpoint and encompasses a gamut of interior design considerations. In the first chapter the history and contemporary use of glass is discussed, and window treatment needs are evaluated in terms of aesthetics, solar gain, and energy efficiency. Chapter 2 details the reasons for covering windows and the many factors that the designer must balance when making the right choice for a window covering. Chapter 3 illustrates popular styles of windows often seen by the designer and suggests both appropriate treatments and ways to achieve proper measurements. Chapter 4 takes a romantic look at the history behind the period stylings that are lovingly re-created and adapted for today's lifestyles. Chapter 5 presents guidelines for selecting window treatment fabrics, as well as illustrating the range of styles in draperies, curtains, shades, and other soft treatments. It also presents the process of constructing soft treatments and suggests ways to properly care and clean fabric used at the window. Chapter 6 contains information on figuring costs and yardages and specifying soft window coverings, and chapter 7 covers the wide selection of hard window treatments. Combining hard and soft treatments is the topic of chapter 8, and the final chapter

presents important information about dealing with clients and manufacturers in both residential and nonresidential window treatments.

The names and addresses of hundreds of companies are listed in appendices 1 through 11, which are intended to inform the professional of many of the sources for window treatment components that are on the market today. Appendices 12 and 13 contain technical information on fabric fibers, textures, construction, coloring, and finishing, to supplement the discussion of fabric in chapter 5. In addition, three glossaries define window treatment, fabric, and business-related terminology. Finally, an extensive bibliography refers the interior designer or decorator to sources of specialized information.

Window Treatments is the result of many years of practical experience derived from selling window treatments, researching for a master's degree, teaching a university interior-design textiles course, actively participating in the World of Window Coverings trade show and seminars, and writing several series of articles published in *Draperies and Window Coverings* magazine. The topic has been well worth pursuing because the business of window coverings has risen out of relative obscurity into a multibillion-dollar industry that has a high profile in today's interior design marketplace. New, innovative products are introduced each season, and competitive pricing structures as well as stock window-covering merchandise make window treatments more affordable than ever. Yet the demand for fine custom design and decoration has also risen, and it exacts a price. Quality draperies, curtains, shades, and top treatments, along with the classic hard treatments—blinds, shutters, and screens—are used individually and in combination as a significant part of interior design. Certainly every interior designer and decorator, as well as all those who deal, specify, or select window treatments for residential or nonresidential use, can benefit from an increased understanding of the criteria that contribute to effective window-covering choices. This book, then, is intended to augment the neophyte's or veteran's knowledge of an important, profitable, and, above all fascinating field.

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Chapter 1 USING THE WINDOW TO THE BEST ADVANTAGE

The task of selecting an appropriate window treatment for a particular window in a particular setting can be at once challenging and enjoyable—challenging because of the many factors to be considered (interior window requirements such as light, view, ventilation, safety, wall space, furniture arrangement, solar gain, and energy conservation may play an equal bill to site factors such as climate, orientation, prevailing breezes, architectural style, and setting or location); enjoyable because, when most or all of these factors and requirements are met, the window can truly be used to the best advantage, and the result can produce great satisfaction.

Understanding the client's needs and demands for today's windows is crucial for the interior designer. An understanding of the history and evolution of the window also will give depth and perspective to the way we treat our windows and to what we expect from them.

THE EVOLUTION OF THE WINDOW

The word *window* is derived from the Old Norse word for wind, *vindr*, combined with the word for eye, *auga*, to make *vindauga*. Literally translated this meant an “eye” of the house through which wind entered. And indeed one of the most vital functions of windows is ventilation. For centuries windows were mere cutouts in ceilings or walls that provided ventilation for open fires. Only the occasional window was introduced to permit a little light or a glimpse of the outside world. Historically windows were small in order to increase protection against intruders and inclement weather.

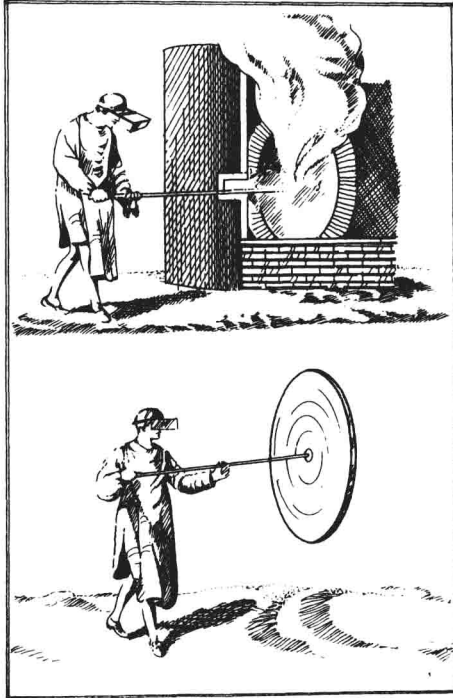
When Angles, Saxons, and Jutes settled in England (c. 425 A.D.) and the Germanic dialects mingled, *vindauga* evolved into the Old English words *wind* and *eage* (eye). In Middle English the term changed further into *windowe*. It then found its way into contemporary American English usage as *window*.

For years the word *window* described only an opening in the wall. The nomenclature for the material used to cover these openings, or *fenestrations*, evolved separately. The word *pane*, used to designate the glass in

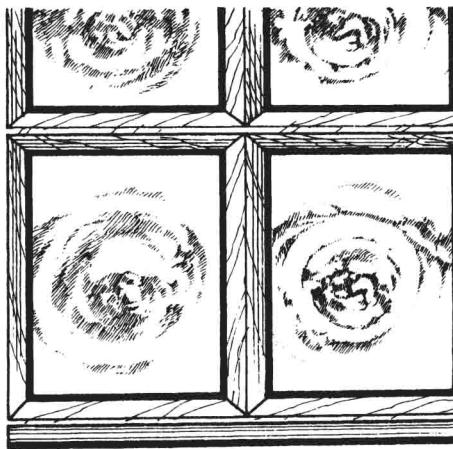
contemporary fenestrations, was derived from the Latin *pannus*, a cloth or rag, and certainly window treatments were of the utmost simplicity. For most of human history, the majority of window openings were draped with animal skins or cloth. The ancient Egyptians, for example, simply hung mats at their windows. Even our Pilgrim and pioneer forebears covered their windows with shutters and oiled cloth, skins, or rags in inclement weather.

Glass windows as an architectural commonplace are a recent development. Indeed, only in the past few centuries has glass been used for glazing windows. *Glazing* is derived from the Middle English word for glass, *glasen*, and it was during the Middle Ages that glass began to be set in place (hence the origin of *glazier*, one who cuts glass and sets it in windows). During the Dark Ages, or medieval era, clear and colored, or stained, glass was used in cathedrals and public buildings in complex and astonishingly beautiful patterns. This inspired the titled nobility of Europe to begin using glass in their castles. Yet even as late as the sixteenth century, glass was such a precious commodity that when a king, duke, or lord moved his residence, the glass was removed and reglazed into the new castle. When the nobleman died the glass went not with the castle but to the executors of the will, for the castle was considered perfect without glass.

It was not until the late nineteenth century that factories succeeded in supplying domestic glass in ample quantities to the American homebuilder. In the past hundred years, glass technology has advanced at a phenomenal pace. It is easy now to take for granted the variety of laminated, bronzed, reflective, filtering, or multilayered insulated glass readily available to those who wish to incorporate transparency and beauty in their homes and places of work.



a



b

1-1 Crown glass.

- a The making of clear, brilliant crown glass in the eighteenth century.
- b The crown, bullion, or bull's-eye of crown glass set in small panes. The bull's-eye is translucent because it was connected to the pontil, or blowing rod.

THE SPECTRUM OF GLASS

When the designer works on an older building, the glass may not be completely clear and flawless. Today's float glass is the result of centuries of research by trial and error to produce the perfect sheet of glass. It may very well be necessary, in commercial or residential restoration work, in adaptive reuse, or in remodeling work, that "old" glass be retained because of the character, interest, or authenticity it brings to both the exterior and the interior. The designer may even be called on to have historic glass reproduced to match existing pieces or replace broken ones.

There are basically five types of glass that the designer should know: crown glass, broad glass or cylinder glass, plate glass, sheet glass, and float glass.

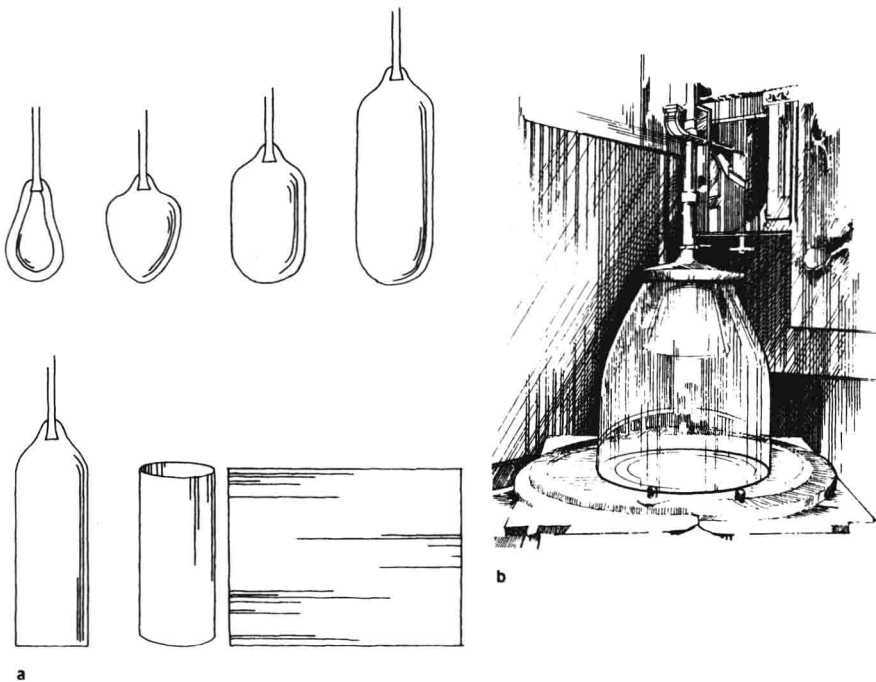
Crown Glass

Crown glass (fig. 1-1) is a type of clear, brilliant glass that used to be made by dipping the end of a *pontil rod*, or blowing stick, in molten glass, blowing a large bubble, then spinning the rod in the opening of an oven; the centrifugal force caused the bubble to "flash" open in a way similar to the sudden opening of a wet umbrella. The glass was then a flat disc, roughly a meter in diameter. Surfaces were never parallel; the glass was thinner at the edges than in the center of the disc, called the crown, bullion, or bull's-eye. Bull's-eye segments, often of slightly greenish tint, are seen in many historic settings. The small pieces that could be cut from the disc were fire polished and brilliant and are preferred even today for art glass.

Broad Glass

Broad glass was made by blowing a long, tubular bubble, then extending it by swinging the rod above the head. The cylinder was heated in a furnace until the end blew out from pressure, or both ends were cut off to create a "muff." One side was slit open, and the glass was laid on a smooth slab and reheated. As it softened it opened out and flattened from its own weight and then was ironed with a wooden hoe (fig 1-2a). This glass can be easily identified because it is curiously wavy, as if seen through rippled water. It is not as clear or as brilliant as crown glass because it was worked as it cooled.

A refinement of broad glass, called *cylinder glass* (fig. 1-2b), was reheated in a *lear* (flattening oven). This glass was used extensively during the Victorian era. In fact nearly a million square feet of cylinder glass were produced for the Crystal Palace in England in 1851.



1-2 Cylinder glass.

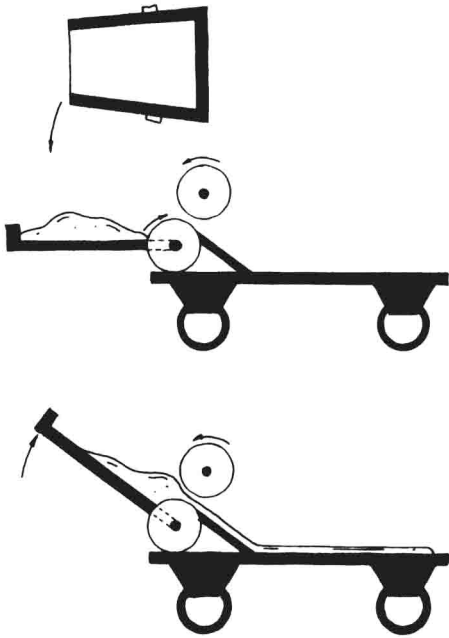
- a The stages of broad, or blown cylinder, glass. The glassmaker blew a long bubble, shaped it into a cylinder, sliced it into a muff, and then cut it open and reheated the glass, ironing it on a slab until it was flat. This glass was wavy and translucent.
- b Drawn (vertically extruded) cylinder glass was a mechanically produced version of broad glass in use until 1903. Drawn cylinder glass was wavy or wrinkled because the inside area was smaller than the outside. This glass is seen in many older buildings.

Plate Glass

Plate glass (fig. 1-3) was made by pouring molten glass onto a *casting table* (as a result, this material later became known as *cast glass*) and rolling it out with a heavy iron roller before it annealed. (A crude glass made this way, dating up to 79 A.D., was found in the buildings of Pompeii when the city was excavated in 1754, much to the surprise of the Western world.) Annealing is the slow cooling of flat glass, which strengthens and tempers it and prevents brittleness. This glass found extensive favor in Europe and was used to glaze the famous Hall of Mirrors at Versailles near Paris, France. Plate glass was costly and duller than crown glass, but it was available in large sizes.

Sheet Glass

Sheet glass has been produced by a variety of methods, including drawing, or guiding the molten glass through different rollers. The rollers, which guide the viscose glass as it is extruded upward, leave characteristic "draw



1-3 One method of making plate, or cast, glass. The molten glass was poured and then fed or guided through rollers onto the casting table, and ground and polished to achieve transparency.

lines,” or “music lines.” These lines will help the designer identify sheet glass in buildings dating from 1900 through the 1970s, when float glass came onto the market. Sheet glass also is made by casting and grinding or polishing glass. Drawn sheet glass invariably has parallel marks from the rollers or slightly wider thickness at one end of the sheet caused by gravity pulling down the glass as it anneals.

Float Glass

Float glass is the process by which most of modern glass is made. A continuous ribbon of molten glass moves out of the melting furnace along the surface of completely flat molten metal, causing the glass to be flat, too (fig. 1-4). Because the glass does not touch any hard surface, the natural forces of surface tension and gravity bring it to a perfectly uniform thickness. Today’s float glass is brilliant, transparent, and nearly free of flaws and distortions. The electrofloat process passes an electric current through the metal and displaces ions that are exchanged with those of the glass to leave a layer of copper or other “reflecting” metal on the surface. Float glass can be produced in virtually any thickness and can be made to be low-E, or low emission, screening out harmful ultraviolet rays. Glass of the future promises to be stronger, more insulative of temperature and sound, and offered in an even wider variety of colors and surface textures than we know today.

Other Types of Glass

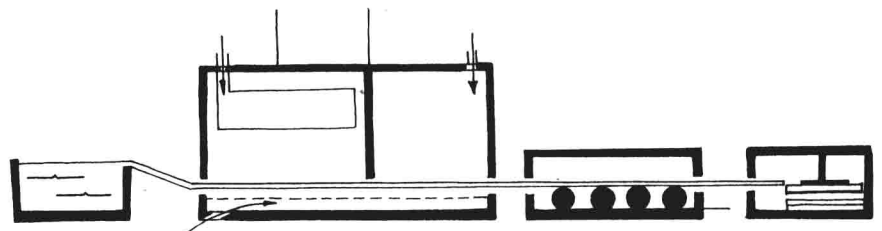
Also frequently used are glass block and art glass. Art glass includes such a vast spectrum of colored “stained” glass that an examination of the types is beyond the scope of this book. Beveled glass is hand-ground or molded to have mitered or angled (beveled) edges, and textured glass is formed by casting or drawing. Glass also is available with wire reinforcement. Popular too is Plexiglas, which is not glass but a clear, hard, strong plastic that is less vulnerable to breakage, although it scratches and mars more easily than glass.

Glass Today

Glass is made of about 70 percent silica sand, 13 percent lime, 12 percent soda, plus small amounts of other materials, such as metal. This mixture is heated to a high point, where it melts together into a transformed viscose liquid; as it cools it becomes hard. Glass is inherently a rigid liquid, not a solid material, which explains why cracks spread. There are no internal bonds in plain glass to stop the crack or to prevent glass from shattering. This makes it susceptible to stress.

Tempered glass is much stronger than plain glass. It will not crack, shatter, or break easily, and it is required by code for low-set or low-angled

1-4 The float glass process. Molten metal holds the glass solution perfectly flat until it cools and hardens. The result is uniform and flawless. The molten metal chambers also may exchange ions to coat the glass with a bronzed or reflective surface. The glass proceeds directly to the annealing (slowly cooling) oven, and then is cut into sheets.



windows where safety is a concern. Tempered or strengthened glass is produced by the following methods:

- Adding other materials to the molten glass.
- Laminating (titanizing) the glass with a reinforcing skin of another material.
- Thermal toughening, or heating the glass above its transformation point and then quickly cooling it. (This process can be conducted chemically, using ion exchanges for similar results. The interior contracts so that it is permanently compressed, preventing a crack from spreading.)

The impact strength of toughened glass is four to ten times greater than untempered glass.

Laminated glass consists of two or more glass panes with a layer of tough transparent vinyl sandwiched between. The three layers are subjected to heat and pressure, which bond them into a single construction.

Any type of glass listed above can be mounted in two layers (double glazing) or three layers (triple glazing) to create insulative “thermal pane” windows.

THE IMPORTANCE OF WINDOWS

Today's window provides four vital functions: light, air (ventilation), protection, and visual expanse/beauty. Windows contribute to many of the comforts of the contemporary interior because they let in what users want in and keep out what they want out. For example, windows can help heat the interior in winter, magnifying the diminished rays of the low-set sun. Opened in springtime windows invite fresh air and fragrance into homes and work spaces. Closed in late summer, windows keep us dry and secure from thunderstorms; they protect us from cold and snow in winter, and from wind any time it blows.

It is true that ventilation and light admission may be effectively handled through electrical devices, and today many high-rise buildings are “sealed environments” (with fixed, nonoperable glass) or “windowless interiors,” so that temperature, light, and air quality may be perfectly controlled. However, there is debate as to the potential health hazards of sealed environments, since fresh air and full-spectrum light (sunshine) are essential to the health and well-being of humans. Fresh air and sunshine are two reasons why windows are desirable in contemporary architecture. One aspect that cannot be duplicated in windowless environments is the beauty, interest, and even drama of nature, which one can enjoy without being directly exposed to the discomforts of seasonal change and inclement weather. Large picture windows or glass walls make the exterior a visual extension of the interior. Even small windows in work areas are considered preferable to windowless offices.

WHICH WINDOWS AND WHERE

Several factors are carefully evaluated before an architect decides not only *which* windows to install in a new home or building but also *where* they are to be used. Designers and knowledgeable clients can influence or even specify the type and placement of windows in new construction. In re-