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JOURNAL

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"Head of the Harbor," an octagon house in the Colonial Revival style, was built in 1895 by architects McKim Mead & White on the north shore of Long Island, overlooking Long Island Sound. Photo by Jonathan Wallen from the book *The Houses of McKim Mead & White*.

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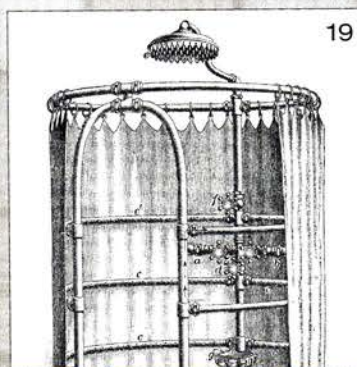
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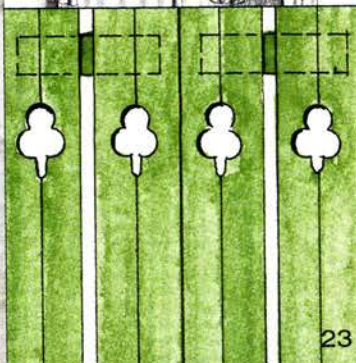
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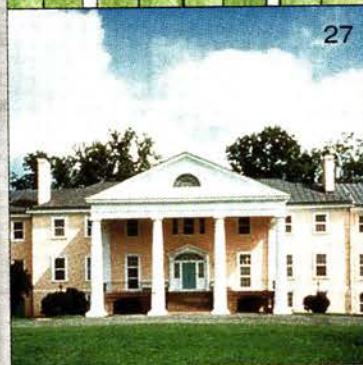
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Chances are you have a passel of old-house projects lined up this spring. If so, then the latest edition of OLD-HOUSE JOURNAL'S *Restoration Directory* is a must-have resource. Loaded with more than 2,000 sources for hard-to-find old-house products and services, OHJ's 360-page annual guide should make your work both easier and better. New this year is a 16-page special editorial section that's chock-full of practical advice for old-house lovers. To order a copy of the Summer 2002 edition, just call 202-339-0744.

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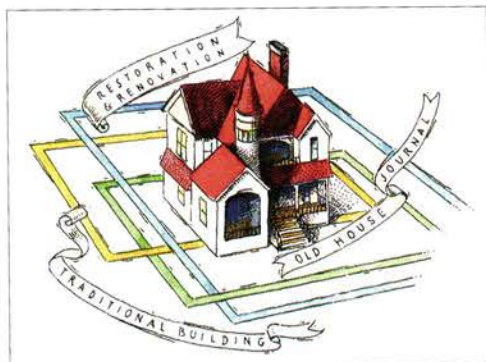
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JAMES NOEL SMITH

Only a handful of issues ago I had the pleasure to announce on this page OLD-HOUSE JOURNAL's move to a new corporate—and corporeal—home in historic Georgetown, Washington, D.C. Now I am equally happy to report our architecturally minded media family is expanding again by welcoming two more magazines under the Restore Media roof.

Many OHJ readers who have attended the Restoration & Renovation Exhibition and Conference already know these fine publications: *Traditional Building*, the professional's resource for public architecture, and its residential counterpart, *Period Homes*. Both these magazines reflect the same commitment to historic buildings and sensitive rehabilitation that are the standard at OHJ and Restoration & Renovation. What folks who know either magazine may not realize is that the relationship extends even further through many ideas, places, and people to a single man. Clem Labine is not only the founder, editor, and publisher of *Traditional Building*, but was also the originator and longtime editor and publisher of OLD-HOUSE JOURNAL.

What brought Clem in 1973 to start an insider-written, no-nonsense newsletter about restoring 19th-century row houses in the urban hinterlands of East Coast cities is a remarkable tale that speaks volumes about how far we've all come since then. In those post-Woodstock days, when "Victorian" was still a dirty word, a few hardy souls were saving and restoring century-old buildings with little more than their own sweat and ingenuity. There was precious little written material to guide them, even fewer period-appropriate building materials and products to help them, and certainly no TV shows with smiling experts to inspire them. Clem was on the front lines restoring his own row house in the Park Slope section of Brooklyn, New York, when he realized the need for a publication that would spread hard-to-find information about vintage buildings while it brought together a far-flung network of people who were passionate about preserving them. The magazine you hold in your hands was born back then in Brooklyn as a 12-page, black-and-white monthly with three-ring-binder holes and has grown apace with the restoration movement ever since.

I feel privileged to have known Clem since the late 1980s, when he struck out into new, nonresidential turf with *Traditional Building*, and colleagues such as Judith Siegel Lief who, at one time or another, have helped make all three magazines possible. In addition to inspiring a clutch of unique publications and helping to nurture a diverse group of restoration-appropriate products into an industry, Clem continues to be a key figure in vanguard organizations such as the Institute of Classical Architecture. We all look forward to working on the same team with you and the rest of the group at *Traditional Building* and *Period Homes*, Clem. Now, about those Dodgers...

Gordon H. Bock

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Circle no. 99

Split-Level Love

I almost went into shock on seeing "Split Decisions" [January/February 2002]. Fresh out of college I restored an 1881 Victorian; later, my wife and I moved into a 1922 English Arts & Crafts house. A few years ago, looking for another home, we specifically told our agent "no split-levels."

Many of us have sought the refuge of old houses to escape the soulless sameness of suburban tract homes, the villain of architectural critics and sprawl opponents alike. Because the split-level was home to the parents of baby boomers, it represented everything my generation detested about tasteless middle-class suburbia. We could, and we would, do better.

My own parents built a split-level in 1960. My mother says she chose a split because she liked the way its different levels separated activities, with informal space (the garage, family room, and utility) on the lowest level and the private space (bedrooms) on the third, just an easy half flight of stairs up from the "public space" (living, dining room, and kitchen). It worked in real life as well as on paper. Noisy kids went downstairs, sleepy kids went upstairs, and adults entertained in between.

And thanks to the gently sloping lot, there were two walkout levels.

The scorn heaped on the split-level today is almost identical to that the modernists felt for those earlier cheaply built, monotonous, and outdated tract-homes—the bungalow and the Victorian.

The split was a style of the people, of the generation who came of age in the Depression and returned from World War II eager to start families and take part in the nation's new prosperity. It became ubiquitous because people liked it and went out of fashion because it became ubiquitous. It should be preserved as the signature style of an era that may have been the

peak of American power and influence, as well as for its comfort and practicality.

My wife and I looked at hundreds of houses and nothing felt just right. We finally found a house that was roomy, with a pretty, gently sloping, one-and three-quarter-acre wooded lot in a neighborhood great for kids, and a floor plan that nicely divides public spaces from private. It even has two walkout levels. We love our split.

Ben Kotowski
Chagrin Falls, Ohio

Canada Splits Not Involving Quebec

Thank you for acknowledging that the split-level house has finally acquired historic status!

The Côte St. Luc area, a mere 20-minute drive from Montréal's busy downtown, was developed from the orchards and farmlands that existed well into



the 1950s. The split-level, in its many styles and proportions, quickly became the style of choice here, through the 1950s and into the '60s. A stroll down the streets of this pretty neighborhood reveals houses that are custom-built and mass-produced, detached and semidetached; and roofs that are tar-and-gravel "flying wings," shingled classic gable, and hipped.

Unlike those you describe, all have full basements, most often finished as a "rec room" with a utility/furnace room alongside, and street-level garages on the other side. Some have yet another level above the bedroom level. Picture the zigzagging that goes on between levels!

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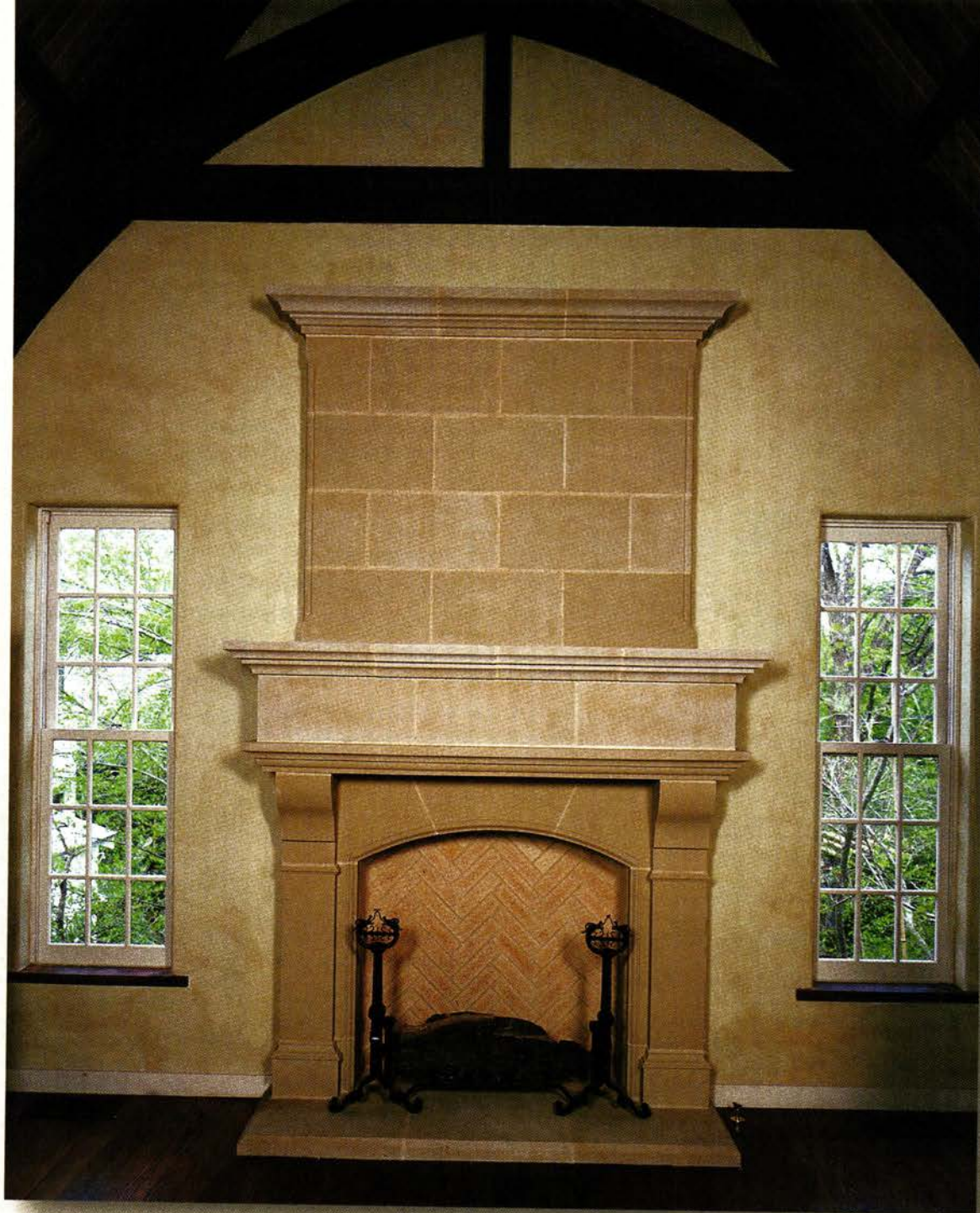
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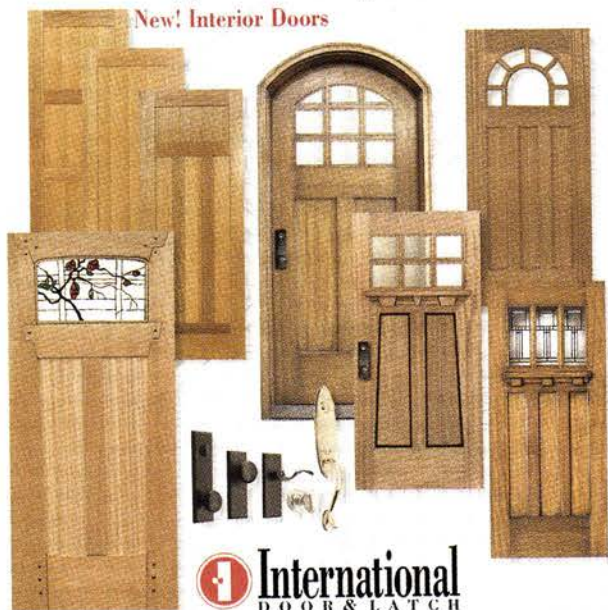
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Circle no. 165

Letters

The large proportions, open main level, and in particular, the view from the bedroom level down to the main level is what sold us on this style of house. For me, the split-level seems to suspend in time the spirit of optimism and renewal that defined the '50s and early '60s.

Daniel Citrome

Montreal, Ontario

Savaged for Salvage

In "Several Sides of Salvage" [March/April 2002], you mention that sometimes architectural salvage has been stolen. However, you don't describe the situation that occurs in my small town and other rural areas where it's still possible to buy a beautiful old home relatively inexpensively. People purchase these houses only to strip them of everything saleable—fireplace surrounds, floors, tiles, "wavy" old window glass, light fixtures, you name it. The owner then moves all the salvage to the "big city" to sell at premium prices. If neighbors are lucky, the buyers actually do clean up the stripped house and sell it. Too often they literally abandon it so the result is a neighborhood riddled with boarded-up houses. There are two such places on my block, true eyesores in a neighborhood of lovingly restored homes. Anonymous by request



Bat Business

We live in a 150-plus-year-old Queen Anne and sympathize with Celine Seidman's distaste for bats ["Wild Nights," March/April 2002]. For many years we knew that bats roosted behind our shutters, but we actually enjoyed watching their nightly forays for insects.

Then one night last July, screeching and thumping in our upstairs office alerted us to a large brown bat that expressed its displeasure at being trapped by repeatedly lunging at us, baring and snapping its teeth.

We called animal control and two days later learned the bat had tested positive for rabies. Health authorities told us that because we had no idea how long the bat had been in the house, we and our two daughters had to get rabies treat-



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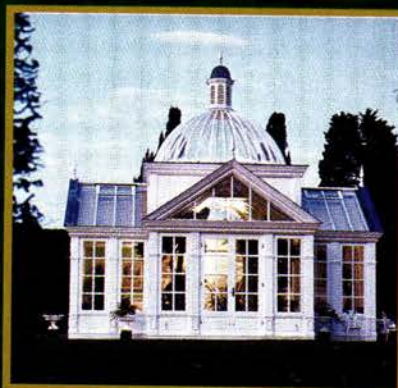


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Letters

ments immediately. Although the bat was in the final "rage" stage of rabies when we found it, it could have been in an earlier "dumb" stage for several days, during which bats can bite or scratch people during sleep without their awareness. In fact, our 3-year-old awakened the morning after the bat incident with a fresh scratch over her eye.

Rabies treatment needs to begin 10 days after exposure. Only .5 percent of bats test positive for rabies worldwide, but no one should take a chance on removing any wild animal by themselves.
Lisa Narozniak
Allentown, New Jersey

More on "The Fan"

I was surprised that an architectural historian wrote in to defend the remuddled Richmond, Virginia, house ["Letters," March/April 2002]. Architecture is art. Every home has a character that speaks of the time and place of its creation. Almost invariably, when someone decades later liberally exercises their "imagination" on a house, an aesthetic atrocity results. Houses can be made functional for "today" in ways that don't obliterate their stylistic integrity.

My 1917 Foursquare was converted into a duplex by locking the entryway pocket door, adding a new entry door in the first-floor corridor, and adding a closet to the dining room. I easily reversed these changes and made adaptations for 21st-century living by partially opening up the wall between the kitchen and dining room and converting a small nursery into a walk-in closet. However, I carefully reproduced the existing trim and kept the scale of my changes to a minimum.

If you want smoked-glass storefront windows and a "bright, open floor plan," buy a house built in the '70s. Don't destroy a historic Colonial.

Greg Fuhrman
Pittsburgh, Pennsylvania

Redesign Reaction

What's happening to OHJ? It's such a nice magazine but looks like it has a case of the blahs. I had to search for it at a bookstore—it doesn't stand out. The cover colors are dull and the title blends in with the dark cover. On the inside, why are you trying to hide the author's name at the beginning of the text? If I wrote an article for you, I would want my name to show. Last but not least, to make a colored capital letter of the first letter of each article is pointless. Have you looked at what a colored capital "I" looks like? A drop of ink.

Virginia Porter
Naples, Florida

Refreshing Reality

Quite frankly, we normal people need more articles like "In the Meantime" [January/February 2002]. The profile of bungalow owner Arlene David did an admirable job of acknowledging all of us who are *not* architects/designers or married to the owner of a building company with a bottomless pocketbook.

The very same week that issue of OHJ arrived I found myself shrieking in horror at another renovation-minded magazine, as a "shabby chic" designer extolled the virtues of white paint, gleefully spreading it over a 1940s ceramic tile kitchen backsplash. Yikes!

It's reassuring to realize that, like the return of the familiar font on your cover, OHJ remains focused despite changing formats. Keep being the renovation magazine for the rest of us.

Clifford A. Murphy
Jenkintown, Pennsylvania

Correction: The price given for the Vaughan Ti-Tech Titanium hammer in the March/April Products column was incorrect. The hammer with its interchangeable cap costs \$105.

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Calendar

Nationwide
May 12 through 18
Preservation Week
"Preserving the Spirit of Place" is the theme for this year's Preservation Week. The National Trust created Preservation Week in 1971 to spotlight grassroots preservation efforts around the country. It's grown into an annual celebration observed from small towns to big cities, with events ranging from tours, reenactments, and rallies to black-tie balls and national competitions. Contact your local preservation organization for a list of events in your area.

Boston
May 13, 15 and 16
Historic Preservation Week Lectures
The Society for the Preservation of New England Antiquities (SPNEA) hosts a series of lectures to celebrate National Preservation Week at the Harrison Gray Otis House. Topics will include philosophies of preservation, preserving your historic house, and the conservation of 17th-century painted ceilings. Lunchtime lectures are free, evening lectures \$8 for SPNEA members, \$10 for nonmembers. Phone: (617) 227-3957 ext 270.

Chicago
May 18 and 19
Great Chicago Places and Spaces
Take a bus ride through Chicago's historic bungalow neighborhoods. Between 1910 and 1940, builders erected more than 80,000 bungalows in the city. The one-and-a-half-storey homes with their detailed windows and stonework,

The Piano Man

Michael Stinnett started piano lessons at the age of 6. A few years later, he was playing with their inner workings as well as their keys. In sixth grade, he fixed a neighbor's ancient piano



using Tinkertoys to recobble the hammers. "I wish I had that piano," he says, "but I used what she paid me to buy a Swatch."

At 20 his work on player pianos got him accepted to the fall crafters fair at the Dollywood theme park near his hometown in Tennessee, and he was invited to set up his own shop at the entertainment center. Today, nine years later, some of his restored pianos sell for up to \$20,000.

Dollywood? Well, Tennessee is home, after all. Last winter Stinnett made his first trip to Manhattan, driving in with two pianos he'd restored. He didn't like the Big Apple one bit. The Pigeon Forge, Tennessee, area is also home to restorations of unique items like horse buggies,

and Dollywood attracts 2.5 million visitors a year, some of whom actually do drop several thousands for one of his incredibly ornate 19th-century pianos.

Michael restores or sells about one piano, pump organ, or melodeon per week, with two-thirds of his work being restoration. Restored uprights start at \$3,000.

The Vintage Piano Shop specializes in square grand pianos. Popular in the Victorian era, they have a delicate bell-like sound. Michael says his location gives him access to woodcarvers and blacksmiths who can re-create parts for these almost forgotten instruments. Last winter he got in his oldest ever, dating to 1830.

These are the big-ticket items for his shop, ranging from \$10,000 to \$20,000, although if you're lucky enough to have a square grand already, he can whip it into shape for about \$7,500.

This business isn't all antiques. In addition to

old-fashioned paper player-piano rolls, the Vintage Piano Shop can install computerized CD players in any piano. You can plug the CD system into your home stereo and the piano will play the appropriate piano parts along with the band or orchestra, "with expression, like a real person," says Stinnett. Thus you can have an 1800s rosewood grand piano playing Billie Holliday or even U2.

For more information call (865) 429-8663, or visit www.dollywood.com.



Top: An 1868 Weber Square Grand Piano made of rosewood. Above: A 1910 Wing & Son upright piano of mahogany.

Massey-Maxwell Summer Course

OHJ contributing editors Jim Massey and Shirley Maxwell will offer their popular summer course on the preservation and restoration of historic buildings June 4 to 13 at Drew University's Madison, New Jersey, campus. The intensive course, part of Drew's Historic Preservation Certificate Program, features a hands-on analysis of the construction, materials, and condition of a historic campus building. It culminates in the preparation of a "mini" historic structure report that summarizes the results of the student's work. For information about the course and program contact: Continuing Education, Drew University, 36 Madison Ave., Madison, NJ 07940; (973) 408-3185; depts.drew.edu/cue/certificates.htm.

Calendar

pitched roofs, sheltered entrances, and neat lawns grace both Chicago's North and South sides. Choose a side to visit and learn about this bungalow type within the context of commercial, religious, and recreational spaces. Sponsored by the Green Bungalow Project. For more information call (312) 744-3370.

June 1 and 2

Walton County, Ga.

Spring Ramble

What's in Walton County? Find out when the Georgia Trust visits this historic area just a little over an hour east of Atlanta. Activities include hayrides at the Harris Homestead outside of Monroe, tours of private homes and public buildings, and a sculpture exhibit at the Monroe Art Guild. An elegant dinner will be held on the grounds of the McDaniel-Tichenor House in Monroe, one of the Georgia Trust's three house museums. For more information call Mary Alice Ramsey at (404) 881-9980, ext. 3232.

Madison, Wis.

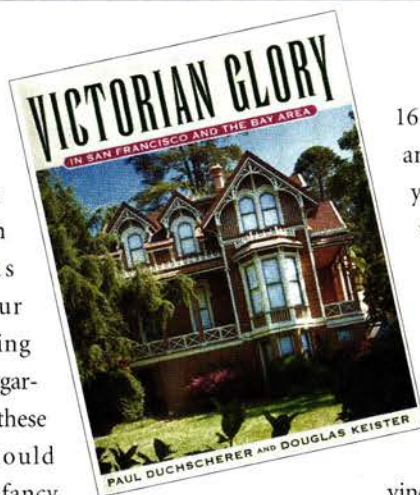
June 8

Wright and Like Road Trip

Take a self-drive tour of six houses designed by Frank Lloyd Wright to celebrate the architect's 135th birthday. The event includes a day of tours through architecturally significant private homes designed in the 1950s. Tickets are \$45 per person. Sponsored by the Wisconsin Heritage Tourism program. For more information call (608) 287-0339, or visit wrightinwisconsin.org.

Whether your summer plans call for an ambitious history tour or hunkering down in the garden, one of these books should strike your fancy.

Author/interior designer Paul Duchscherer and photographer Douglas Keister, who collaborated on three books about bungalows, return to their architectural roots with *Victorian Glory in San Francisco and the Bay Area* (Viking Studio, 200 pages). The first 31 pages are packed with text covering Bay Area history and lore, city-planning influences, and lengthy discussion of some typical house plans. In the next 11 chapters, text is limited to a couple of pages on a particular style—say Italianate or Shingle—while the rest is devoted to sumptuous photographs and detailed captions describing such nuances as bathroom fixtures or fireplace position and construction. The last chapter lists addresses and phone numbers for



Books in Brief

16 house museums that appear in the book and 18 others—useful for planning that trip you'll be ready to schedule by the time you're through with these pages.

JoAnn Gardner, author of numerous OHJ articles, has updated a 1991 book and retitled it *The Heirloom Flower Garden* (Chelsea Green, 335 pages). The heart of this work is the descriptions of 93 ornamental genera—flowers, herbs, shrubs, and vines—that begin on page 60. There are only eight pages of color photographs—the book aims for practical rather than pretty. You can learn how to make cowslip wine, a rail fence called a quiggly, or your own orris root to fix potpourri.

The front section offers gardening tips on soil, seed starting and other types of propagation,

and describes planting patterns and plant choices

appropriate to six historical periods.

"Heirloom gardeners don't grow plants because they are fashionable," Gardener says.

"We grow them because they possess enduring qualities that we want to preserve."



Examining Arts & Crafts in Boston

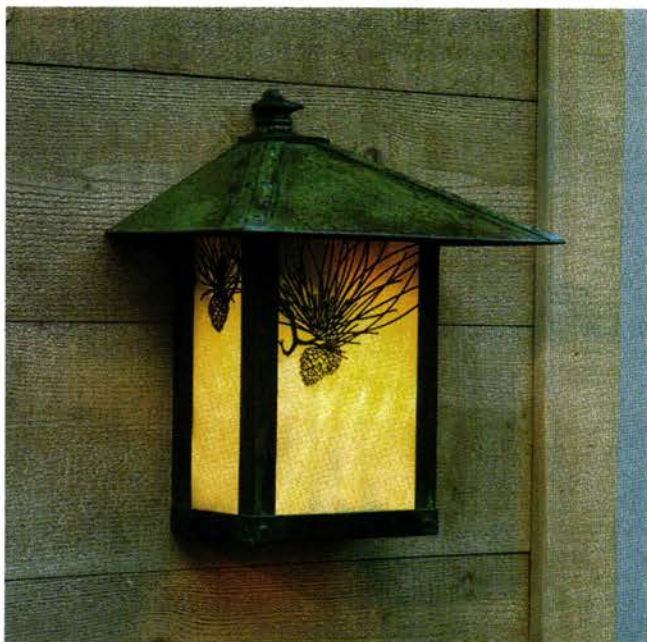
From exhibitions at the Boston Society of Arts & Crafts to the publication of *School Arts* magazine, from the teachings of Arthur Wesley Dow to the architecture of Ralph Adams Cram, much of America's early Arts & Crafts movement evolved from activity in Boston. New York University's fourth Conference on the American Arts and Crafts, June 19 to 23, will pay homage to these roots. Special events include tours of the



A rare scenic tile architectural frieze by Paul Revere Pottery.

Ayers Mansion and Cambridge landmarks. Among more than 20 speakers will be Julie L. Sloan, stained glass consultant and adjunct professor of historic preservation at Columbia University, and Richard Guy Wilson, commonwealth professor of architectural history at the University of Virginia. The cost is \$495. For more information call (212) 998-7130 or send an email to lisa.koenigsberg@nyu.edu.

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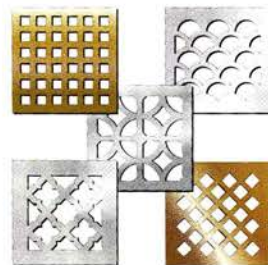
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Messmerizing Design

My wife and I purchased this house about two years ago, and we've been trying to figure out what style it falls under. It was listed as a Tudor by the real estate agent. Is that correct, or is it more eclectic? The four supports in the front of the house shaped like dragons struck us as odd for Tudor style. Built in 1905 by architect Henry Messmer, it contains 17 rooms and 8,000 square feet.

Calvin Greer

Milwaukee, Wisconsin



Henry Messmer was a prominent Milwaukee architect who died in 1899. His firm continued to be known as Henry Messmer and Sons until 1910, when it became Robert Messmer and Brother. It would seem that your house was designed by Robert or his brother, John. The Messmers specialized in religious and institutional buildings, although they also designed houses, such as one for William Gettleman, a Milwaukee brewer.

During the period when your house was built, the Messmers were building mostly Arts & Crafts-influenced houses, according to Jim Draeger, chief of historic

buildings with the Wisconsin Historical Society. Many of them were in the city's fashionable near east side.

Tudor half-timbering and Swiss-style balustrades were not uncommon touches to Arts & Crafts houses. Stucco and cladding other than wooden clapboards occasionally appeared in northern and Midwestern states. The exposed rafters were certainly more common to Arts & Crafts than Tudor, and Tudors were likely to have arched entryways, rather than the heavy-pillared brick porch, which puts your house pretty solidly (no pun intended) in the Arts & Crafts camp.



PHOTOS COURTESY OF CALVIN GREER



Both Tudor and Arts & Crafts show medieval influences, but a number of features, such as the porch and its pillars, mark this Wisconsin house as the latter.

We can't say that dragon carvings were ever common on any style, even the Hollywood Storybook houses that tried to mimic fairytale cottages and castles. Draeger says he knows of no other Messmer house with a creature motif. Congratulations on your unique old gem.

A Penny for your Shower

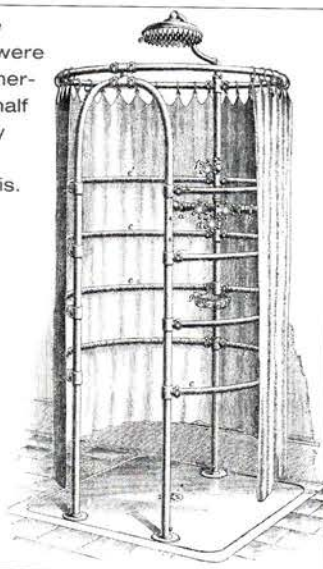
I want to purchase a ribcage shower, but I have no idea where to find one. Can you help?

Caroline Fecek

Brownsville, Pennsylvania

Like sitz baths and foot tubs, cage or needle showers were high-tech, high-end bathroom fixtures from the 20th century whose appeal has come full circle a century later. More commonly called needle baths, these were large cagelike enclosures that combined an overhead shower with a fine spray from rings of

Needle baths were hydrotherapy a half century before Jacuzzis.



pipes. They were popular then for much the same reason whirlpool tubs and massage showers are today, but fell out of favor in the 1920s when the average bathroom became standardized as a compact trio of lavatory, commode, and combination shower/tub.

The stimulating, therapeutic effect of needle baths was brought about by jets that hit the user in the torso. If you hope to buy a needle bath today, be prepared to get hit in the pocketbook, too. Original, antique units from 1910–1920 are sometimes available through salvage compa-

nies, but even unrestored they can often fetch \$10,000 and more—a mere drop in the bucket compared to new units. From time to time, we see needle baths sold by specialty bathroom fixture retailers. If you think the idea of owning such a shower is not all wet, Waterworks offers a beautiful Thermostat model from France for around \$25,000. For a dealer near you, call Waterworks at (800) 998-2284, or visit www.waterworks.com.

Vitrolite Follow-Up

I'm restoring a 1930s Colonial that has a Vitrolite bathroom upstairs—maroon in the shower area with beige in the main bathroom. The grout needs some spot

repair. Can I come close to matching these grout colors, and do I use glazing compound versus standard ceramic tile grout?
Rick Martini
Belleville, Illinois

Can Vitrolite be installed on top of another surface, such as a ceramic tub surround or a ceramic counter backsplash? If you're not restoring an existing installation, I assume the newer spandrel glass is the most inexpensive option.

Andrew Wall, "The Old Home Expert"
Columbus, Ohio

According to Timothy Dunn, the St. Louis-based Vitrolite expert who wrote about the subject in the March/April OHJ,

cementitious material will probably not stick in the joints of structural glass. Find a pigmented latex caulk in a color you like, or create your own pigmented glazing compound using colorant.

You can install structural glass such as Vitrolite and Carrara over very stable, secure substrates using Palmer adhesive. The structural glass must be installed in a watertight manner so the wall behind it doesn't decay from moisture problems.

For large new installations Dunn recommends Czechoslovakian structural glass, which is a pigmented plate glass with an appearance more like the old structural glass, rather than spandrel, which is a painted-back plate glass. 🏠



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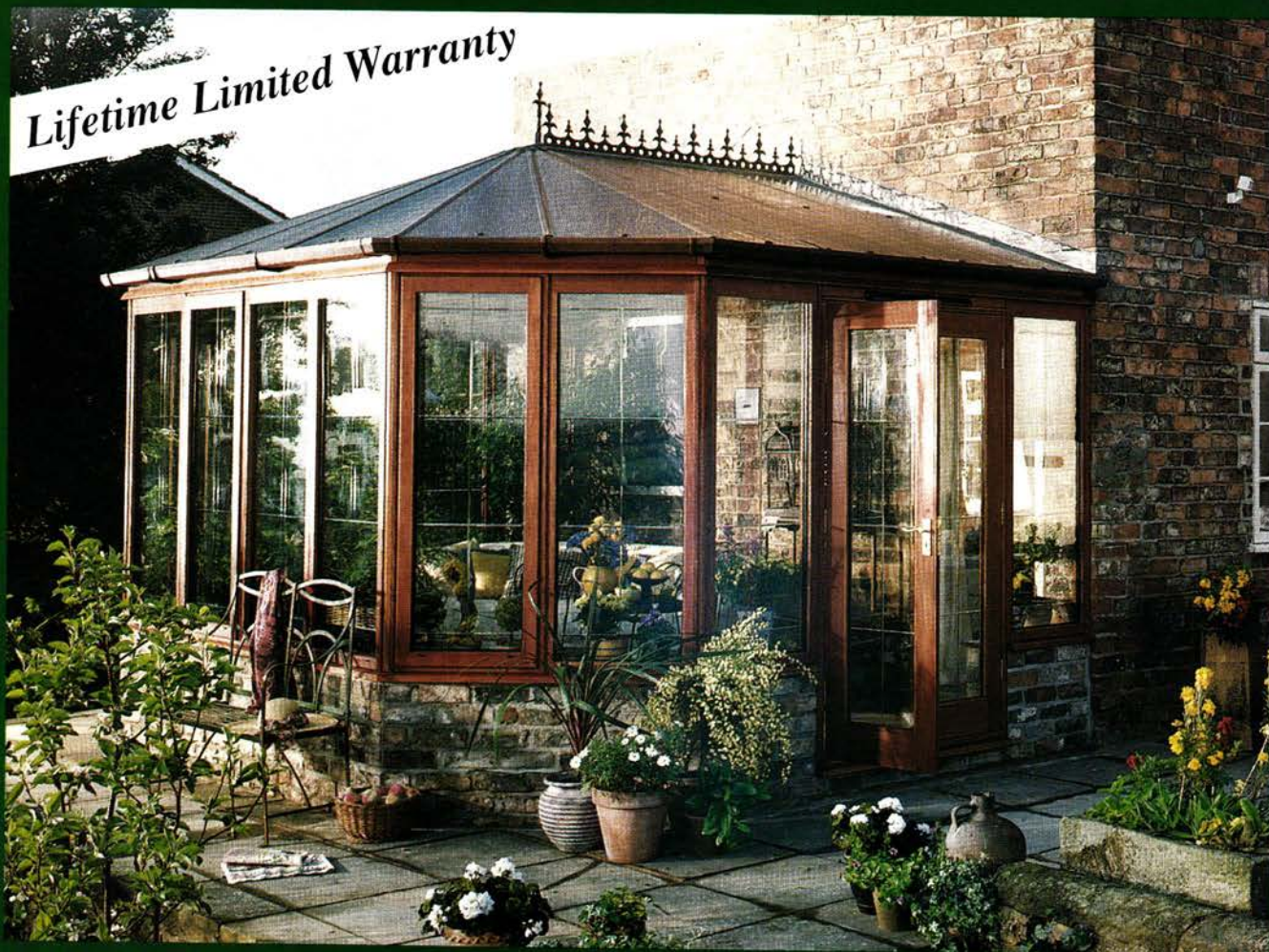
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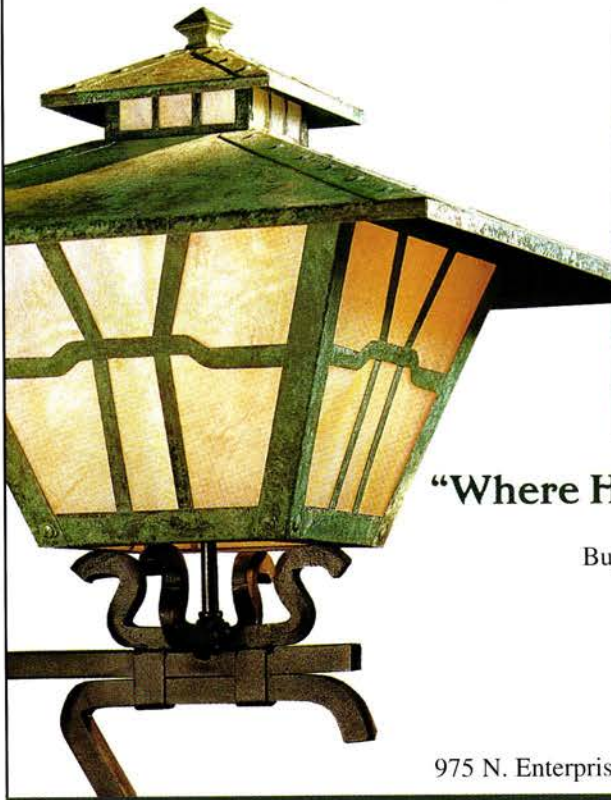
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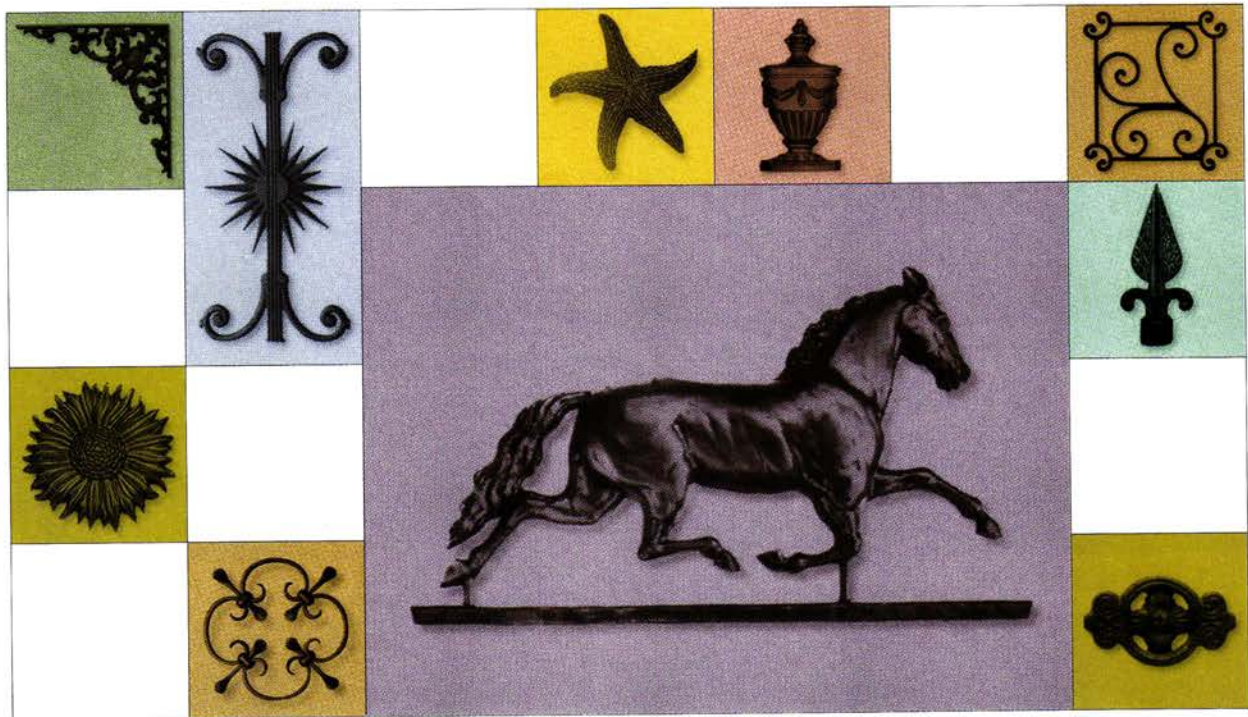
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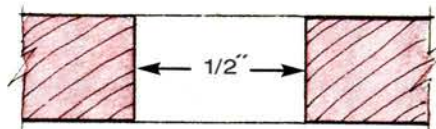
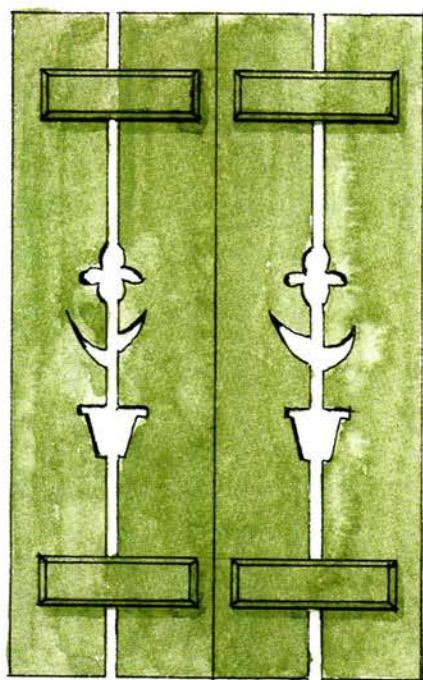
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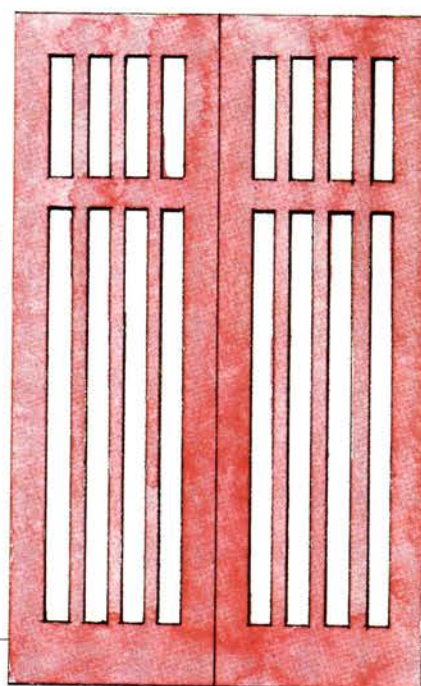
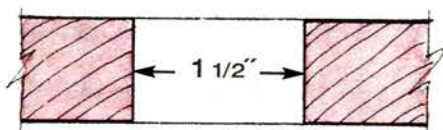
Post-Victorian Shutters

By the early 20th century, the purpose of shutters had shifted from the traditional roles of security and climate control to pure ornament. These patterns from the 1920s and '30s are the kind seen on a wide variety of cottages and romantic houses of the era, from builder-style Colonial and Dutch Revivals to houses of the late bungalow era.

Apart from the decorative cutouts, such as the diamond and clover leaf motifs, much of the design of

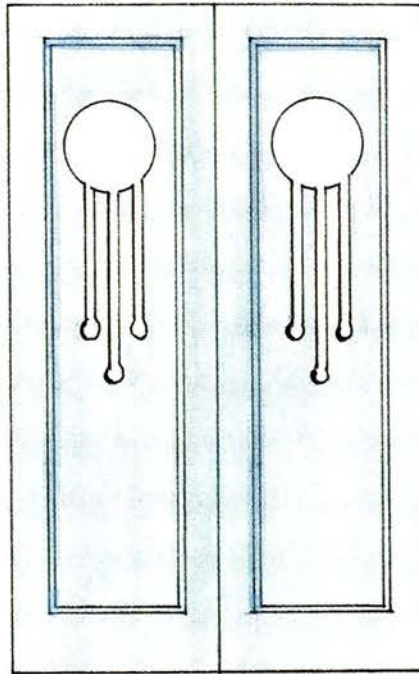


Board-and-batten construction with noticeable spacing (1/2") between boards.

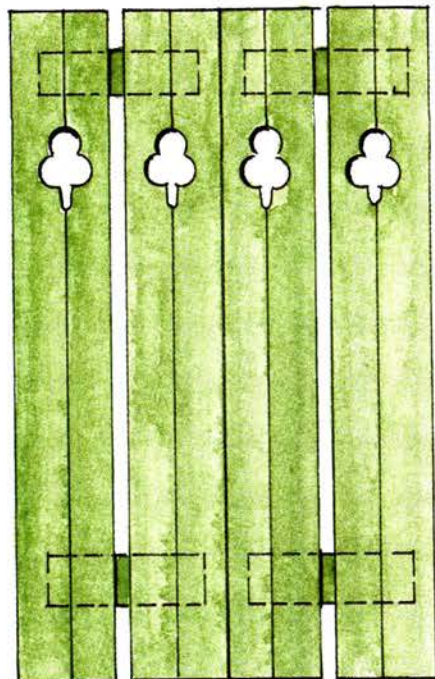
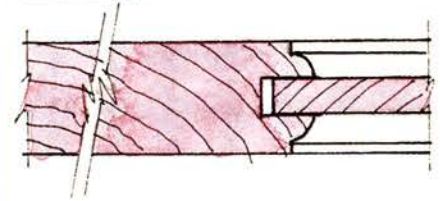


Conspicuous spacing (1 1/2") is the essence of this pattern; construction subject to builder.

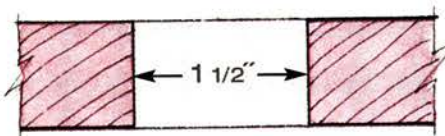
these shutters is in their construction. The section drawings (see details) highlight the particular joinery, which runs from chamfered board-and-batten to tongue-and-groove to frame-and-panel. Actual dimensions are subject to the window size and tastes of the builder. 🏠



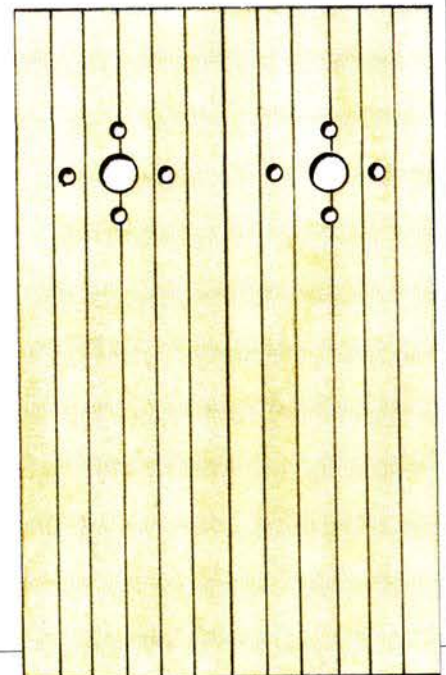
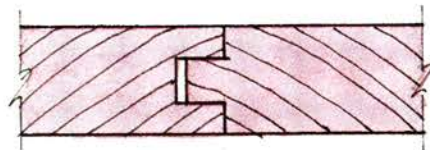
Flat panels, which carry the cut-out designs, are set in a frame with a thumbnail profile.

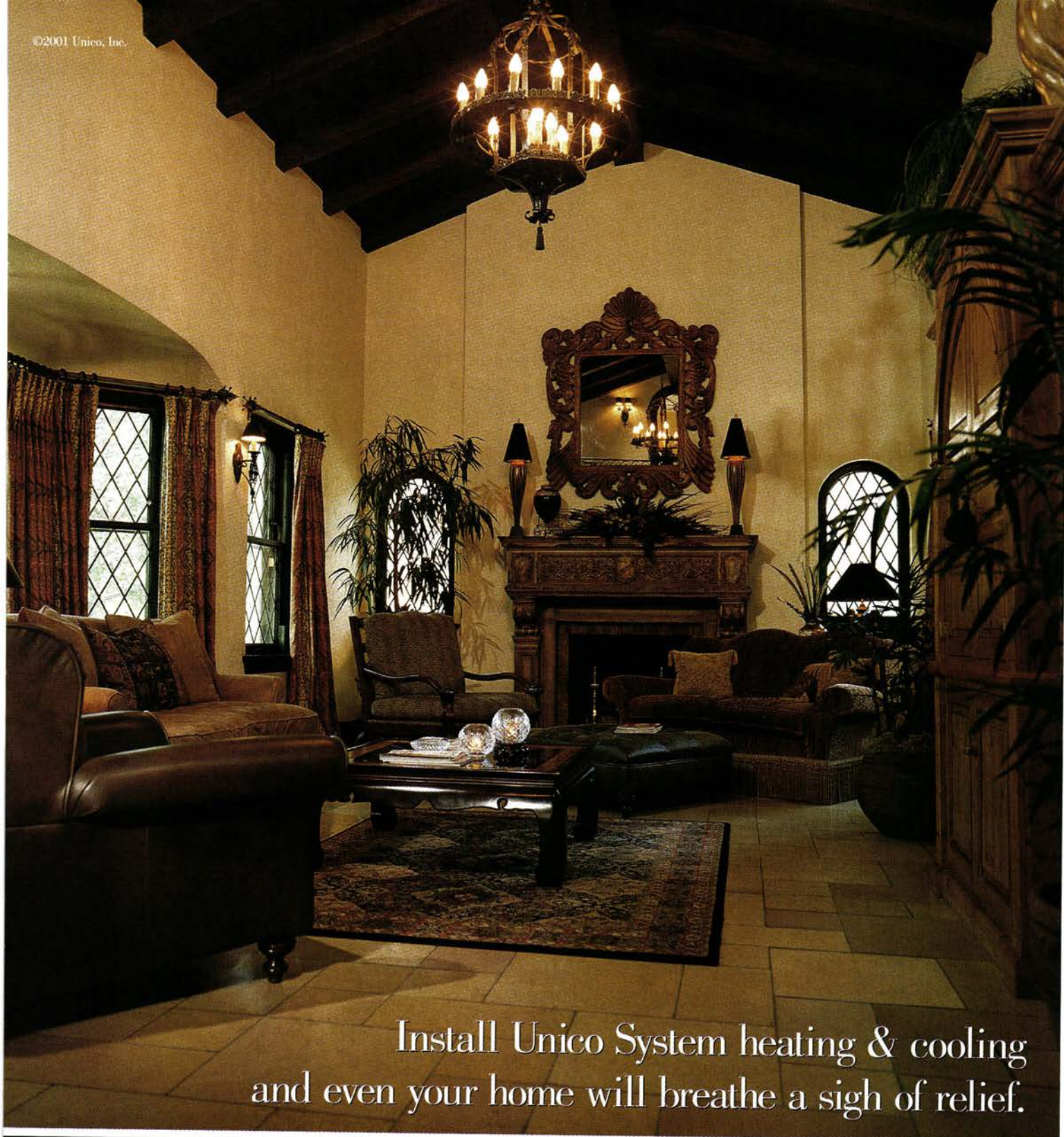


Board-and-batten construction with conspicuous spacing (1 1/2") between board pairs.



Edge-matched boards, typically joined by battens.





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A Date to Restore By

QUESTION: My old house, originally built in 1850, was significantly expanded and remodeled in 1905. What date do I restore to?

—Kevin O'Connor, Andover, Massachusetts

By J. RANDALL COTTON **P**reservationists have debated this question for a long time, and there is still no absolute consensus. In 19th-century England, one school of architects—the “scrapers”—advocated scraping away all vestiges of age and wear in ancient medieval churches and restoring with new, “improved” (but usually ersatz) materials. The “antiscrapers” insisted that all existing elements be retained regardless of condition, age, or architectural purity.

The debate continues. Consider Montpelier, the Virginia home of James Madison owned by the National Trust for Historic Preservation and operated as a house museum. The house today looks considerably different than when the fourth president of the United States lived there in the late 1700s. In 1901 the prominent William du Pont family, who owned Montpelier then, greatly changed the size and appearance of the country home. Moreover, Madison himself had made changes in 1794 and 1809 to the original ca. 1760 house.

To what era should Montpelier be restored? From one perspective, keeping the 1901 additions respects the history of the du Pont family, as well as their architectural and decorative tastes. Others argue that James Madison was the home’s most historically significant resident, so all alterations made subsequent to Madison’s residency should be removed. A third point of view advocates restoring parts of the house to the 1790s and other parts to 1901 so that the visiting public can experience several historic eras. However, this last approach creates an architectural schizophrenia that never actually existed.

So what’s a conscientious old-house owner to do? First, remember that the vast majority of older “historic” homes do not rise to the significance of a national landmark or a house museum. After all, you want to live in a functional house, not a

museum. Up-to-date kitchens, bathrooms, and electrical, heating, and plumbing systems are usually necessary to meet the demands of modern living. Only restoration purists will insist on absolute top-to-bottom authenticity.

Still, there are sensible and practical guidelines to consider when deciding what date (or dates) should guide the restoration of an older home:

Take your time. Don’t rush into restoration or rehabilitation projects based on first impressions or false assumptions. Research your house’s history at local historical societies and libraries and in the building records of your municipality. Your local historical commission is a good place to get historical records and expert advice. You may discover early photographs, drawings, or written records that can contribute to your understanding of the evolutionary changes to your house.

Give yourself time to discover surviving physical clues. Let the house “speak” to you through evidence of past changes, such as the “scars” of now gone walls, porches,



COURTESY OF MONTEPELIER

During Madison’s lifetime, Montpelier was roughly as wide as the distance between the two chimneys nearest to the portico. The du Pont family basically doubled its size by adding wings at either side.

or window and door openings. If you're really serious about authenticating your home's pathology (that is, the study of the history of changes to a building) consider hiring an architectural historian or restoration architect to do the detective work and analysis, resulting in what is known as a Historic Structure Report.

Learn more. First, familiarize yourself with the Secretary of the Interior's Standards for the Treatment of Historic Properties—the "Ten Commandments" of preservation

and common-sense guidelines on making decisions regarding restoration and rehabilitation projects. Most old-house owners will not be engaged in museum-quality restoration, but rather sensitive rehabilitation, which the Standards define as "the process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values."



This Greek Revival cottage in Marlboro, New Hampshire, was later "Gothicized" in the fashion of the day with, among other details, pointed window heads. Since these alterations possess high-quality design and workmanship and are now themselves historic, as well as contributing to the character of the house, few would argue for restoring back to the original building.

Then read some of the many excellent books and resources on historic homes, building technologies, and residential architectural styles.

Be conservative. Unless you have conclusive evidence that your house appeared in ways different than it does today, it's better to do nothing. Don't speculate.

Resist the urge to "early up." Don't alter a house based on some romantic—yet inaccurate—notion about how early houses looked. A prime example is removing plaster ceilings to reveal structural framing in the misguided belief that early houses typically had exposed beams (actually, after the mid-1700s few American houses did). Conversely, don't gild the lily. Don't gussy up what was originally a simple vernacular or contractor-designed house.

Determine a target date. If you have done sufficient research and looked at the physical evidence, you should be able to determine a relative date when the house achieved its fullest architectural or historical significance. Perhaps it was soon after it was built and before it suffered from unsympathetic alterations that distract from your appreciation of the architecture.

Or perhaps it was when a major addition, alteration, or a stylistic change was made. Often these changes have equal—or even greater—significance than the house's earlier appearance. The Secretary of the Interior's Standards state, "changes to a property that have acquired historic significance in their own right will be retained and preserved."

When deciding which subsequent changes should be retained, consider whether or not they: 1) enhance or distract from the overall appreciation of the house, both architecturally and historically; 2) possess good quality in design and craftsmanship; 3) contribute to the livability or functionality of the house.

Differentiate between primary and secondary interior spaces and exterior elevations. Don't feel slavishly bound to restore secondary elements to your target date. A less-than-strident restoration treatment is fine for upstairs bedrooms, secondary halls, bathrooms, or kitchens, especially when there are more pressing concerns of function or safety. However, do treat living and dining rooms, entry halls, main stairways, front porches, doors, and windows with greater historical respect. These are the major "public" spaces in, and views of, a historic house and the features that make the building worth restoring in the first place. 🏠

Further Reading

■ *The Secretary of the Interior's Standards for the Treatment of Historic Properties* (available at www2.cr.nps.gov/tps/secstan1.htm)

■ "Understanding Old Buildings," one of over 40 Preservation Briefs by the National Park Service. (All the Preservation Briefs are free online at www2.cr.nps.gov/tps/briefs/presbhom.htm; also check out briefs #17 and #18.)

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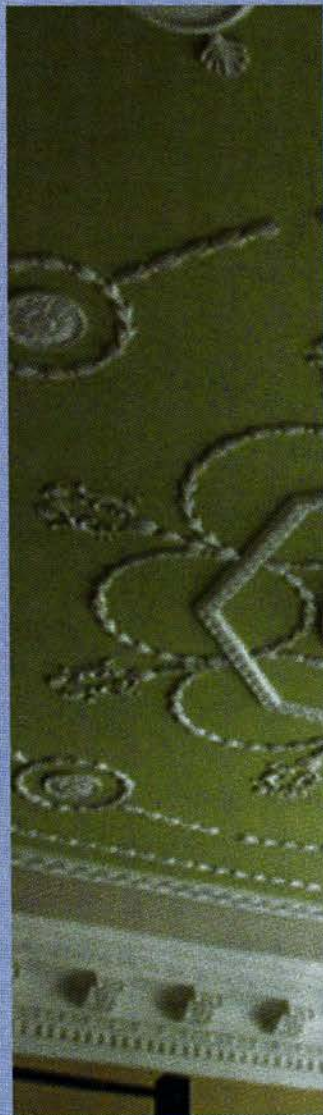
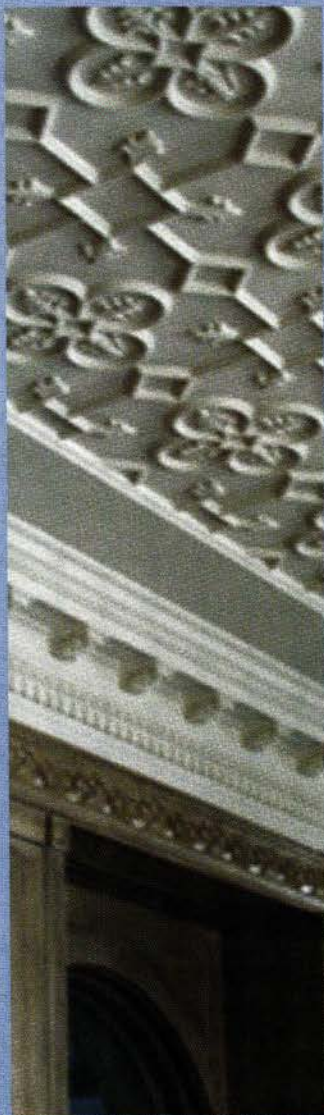
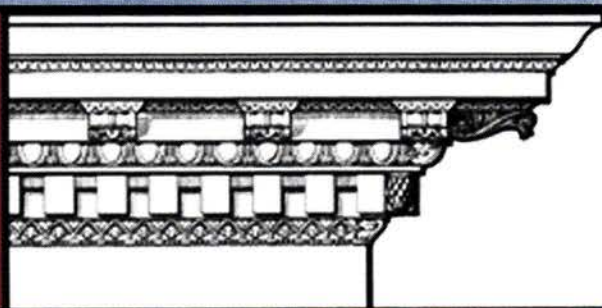


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Wake up your breakfast nook with this reproduction print fabric, appropriately called "Flew the Coop," by Brunswick and Fils. The original document for the pattern was found in an 18th-century farmhouse outside Princeton, New Jersey. The roosters are framed in hedgerows of flowers and fruits—you can find honeysuckle, morning glories, wild roses, and blackberries. The fabric is 100 percent cotton, 57" wide, has a vertical repeat of 42", and a horizontal repeat of 54". The suggested retail price is \$76 a yard.

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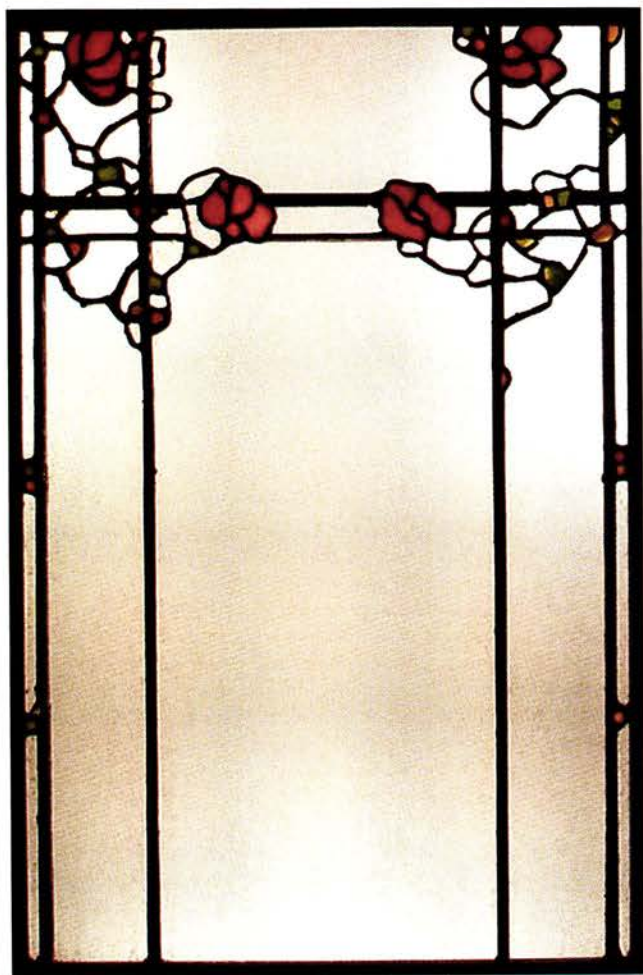


Clean Lines

You probably wouldn't want to scrub your hands or rinse out lingerie over its pine surface, but this three-drawer Shaker washstand would make a good bedside piece for a Colonial home or farmhouse. Illinois craftsman Marty Travis, who's been specializing in Shaker recreations since 1989, copied this piece from an original he found in New Lebanon, New York, complete with dovetailed



drawers and backsplash. Finished in an ochre wash before shellacking, it measures 39" high, 27" wide, and 18" deep, and sells for \$1,050. In addition to his furniture line (he harvests only dead or fallen trees from a family woodlot dating to 1830), Travis also sells framed Shaker labels, oval wooden storage boxes, seed boxes, and tins. Call (800) 588-5255 or visit www.traviswood.com. Circle 3 on resource card.



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Rubbed the Right Way For instant age in a Colonial bathroom, consider oil-rubbed bronze, which has some of the old-penny glow of time-worn copper and doesn’t present the care concerns of brass. Shown here is an 8” wide-spread with pop-up drain control from Price-Pfister’s new Georgetown Collection. It sells for \$375.50. Also available are 4” centersets, Roman tub faucets, tub and shower kits, and accessories. Visit www.pricepfister.com’s “Pfeaturer Pproducts” to find a dealer near you. Circle 6 on resource card.

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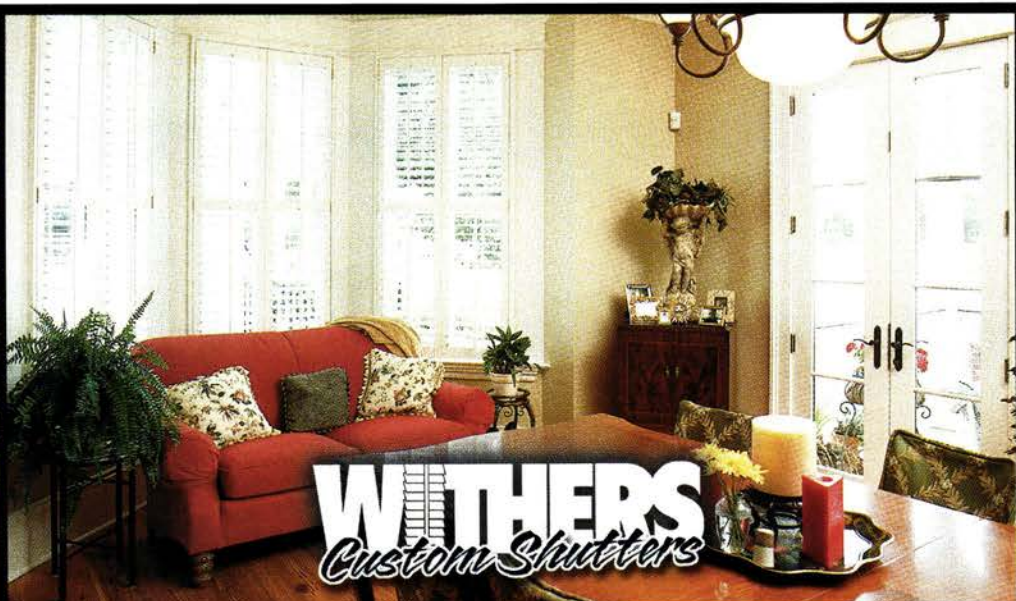
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The Lure of Greenhouses

BY TOVAH MARTIN **O**ther people find themselves seduced by chocolates or antique silverware. For me, it's greenhouses. There's something irresistibly compelling about foggy panes barely obscuring the tracery of a captive tropical jungle, growing lush inside a house constructed solely for its health and welfare.

Every greenhouse has its own elixir of smells, sights, and sounds, a road map of drafts, drips, creaks, and groans. Even the newest plastic version has a certain persona it shares with no similar structure, despite having been cloned in a factory and shipped to one of thousands of eager gardeners across the land. Old greenhouses though—the ones with glass walls and frames that sway in strong winds—have complex characters that require years of intimacy before you learn their quirks and qualities. Even stark naked, they have a strength of character, like old houses. But they take things further. Within their sweaty confines, they tend to harbor a compelling combination of gnarled trunks, competing root systems, and interweaving vines.

Granted, it doesn't take long for a greenhouse to develop its own personal perfume of sun-baked soil and damp clay. But it requires generations to build up the intermingled aroma of mature and blossom-laden jasmine, citrus, monstera vine, and passionflower aromas that floats on the breath of an old greenhouse. Cushion the prevailing floral

redolence in a subtle hint of algae and stale humidity and you have a signature scent found only under glass. Combine that with the sounds: the steady drip from the heating pipe, the tapping of mature tropical trees moving to wind whistling through a slipped pane, the steady whirl of fans, all punctuated by someone sloshing through standing water below a leaky hose.

On quiet days you can just partake of the perfumes, feasting your eyes on a tangle of plants each native to a different corner of the globe. Brush past the satiny foliage of trees adapted to the jungle and steer clear of thorny succulents, clad in

armor to protect them in treacherous deserts. You can commune with the motley flora and enjoy the sun kissing your forehead. Yet there's an underlying sense of danger in a house of glass, a feeling that one wicked west wind could send this entire sheltered system crashing to its doom in a pile of splintered crystal. That's also part of the intrigue.

Ever a slave to the elements, glasshouses totter in a precarious place between fire and ice. On a summer's day, the sun is magnified. When there's a heat wave, the air is stifling. In winter, the ice and snow burden the glass and obliterate the sun. The wind finds its way in, the heat finds its way out. At any point, the furnace could fail, an air lock could stymie the flow, a pipe might burst, or a thunderstorm might shut down the cooling fans.

Then there are glasshouse people, as quirky as the structures they nurture. On a daily basis, they perform untold acts of heroism for their botanical collections. They think nothing of climbing up in a hurricane to nail the ventilators shut. Like sailors, they go about protecting the rigging and shutting up tight when a sudden thunderstorm whips in. When the mercury nudges the top of the thermometer, they stand at potting benches to root



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cuttings and water thirsty containers. If they worry for their own health or safety, it's not apparent.

They love to tell stories—about the time high winds picked up the structure and deposited it down the street in the neighbor's field, about the episode when the snow was so heavy it bent the sash bars to the ground. They'll tell of balancing on ladders to shovel three feet of snow from the top of the glass only to find the panes broken beneath—and how they shoveled it back on to act as insulation. Display the slightest interest and you'll get a tour of the alcove that froze last winter, complete with details of which plants survived the torment. They'll show you where the night-blooming cereus always escapes in summer to stubbornly blossom by moonlight. They'll tell you when and how the citrus tree and the Chilean jasmine came into the collection. Old greenhouses tend to attract a host of ancient plants that have outgrown former homes and need a place to stretch their limbs, and these caretakers tend to welcome plants no longer suitable for a windowsill. So the plants settle in, eventually pushing up against the glass, adding their voice to the prevailing chorus. Pretty soon they're part of the family, adding their silhouette to the scenery, contributing their scent.

Every old greenhouse (like every old house) is a treasury of scars from storms it withstood and winds that wreaked havoc. It might be a simple straight walkway from end to end, softened by groping stems and tangled leaves, or a labyrinth of little side paths dead ending in a giant Australian tea tree or massive mandevilla vine. There are no two old greenhouses alike save in one respect: Whenever you push open their doors you'll find an adventure inside. 🏠

Tovah Martin spent many years in Loge's Greenhouses in Danielson, Connecticut, as a curator and photographer.

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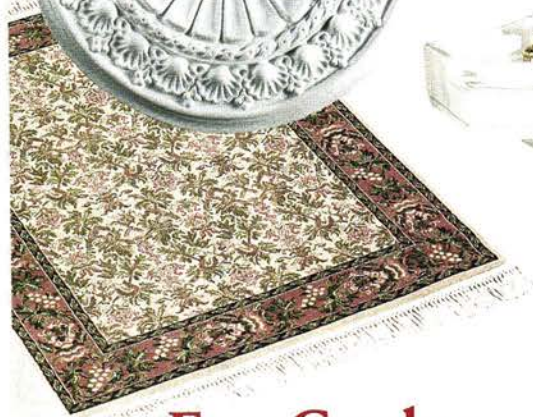


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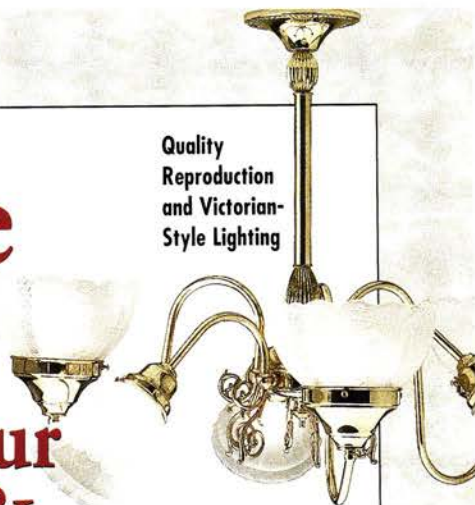
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Slate Roof Weathering

By JEFFREY S. LEVINE **S**late is among the most enduring of all roofing materials. Eventually, however, even this dense stone succumbs to the elements and deteriorates. Knowing something about how the environment affects slate and what the signs of deterioration are can help you form a general picture of the condition of a slate roof, and with it an idea of what to expect for a remaining serviceable life.

Slate, Molecularly Speaking

Slate is a natural material—a fine-grained, crystalline rock that is the metamorphic product of clay and silt sediment deposited on ancient sea bottoms. The particular minerals that compose slate, and their orientation, are quite stable. They contribute to slate's durability and its ability to be cleaved into thin roofing shingles. All slates also contain mineral impurities. These impurities are the source of changes that lead to weathering of slate, a slow process that results in the scaling of slate along its cleavage planes. As slate weathers, paper-thin laminations flake off its surface and the slate becomes soft and spongy as its inner layers start to delaminate.

Surprisingly, the forces that start the weathering process are not mechanical, but chemical. Slate roofing shingles deteriorate primarily as a result of chemical reactions over a long period of time. In general terms, the chemical changes start when free pyrite (FeS_2), an impurity in slate, reacts with oxygen and water in the air to form iron oxides ($\text{FeO}/\text{Fe}_2\text{O}_3$) and sulfuric acid (H_2SO_4). The latter reacts with calcite (CaCO_3), another impurity in slate, to form gypsum (CaSO_4), carbon dioxide, and water.

The only catalysts necessary for the second reaction to occur are cycles of wet/dry and hot/cold conditions, neither of which is in short supply on a roof. Ultimately, slate deteriorates because gypsum molecules take up more volume than calcite molecules. As gypsum molecules pass out of solution and crystallize, they literally push the slate laminate apart. As a result, the slate suffers from increased absorption, decreased strength, and delamination.

Slate density and porosity exert a big influence on the rate at which the chemical reactions occur. The lower the slate's density and the higher its porosity, the faster the reactions, all other things being equal. The reverse would also be true. Of course, all



PHOTOGRAPHS BY JEFFREY S. LEVINE

The formation of gypsum in slate roofing shingles—called “chalking out”—is most apparent to the naked eye in Pennsylvania Black roofing slate. The roof here is between 30 to 35 years old.

other things are never equal. The impurity levels in slate vary by quarry region—and even within the same quarry. Roof slope, orientation, and exposure influence the intensity of wet/dry and hot/cold cycling. For example, since water runs more rapidly off a steep slope, it's easy to see why slates on steep church spires and the near vertical pitches of mansard roofs often last far longer than slate on roofs with lower pitches. Thermal expansion and contraction, as well as freeze/thaw cycling, also influence the deterioration once delamination has occurred.

Reaction Deductions

Don't worry if you don't remember all the chemistry. It's useful just to understand that the formation of gypsum is one of the agents of slate deterioration. Moreover, it's not hard to identify the manifestations of the chemical reactions and thereby gain an understanding of a slate roof's condition and its remaining service life. Distinct U-shaped, white bands on the surface of some slates, for example, are a clear indication of the presence of gypsum and the early stages of deterioration. Another way to assess the condition and possible weathering of a slate is by its sound. If you hold a slate shingle up by your fingertips and strike it with your knuckles or a slate hammer, high-grade slate will emit a clear, solid "ring." In contrast, slate that is severely

delaminated will only give off a dull thud when tapped.

The degree of surface scaling is another indicator. Minor scaling suggests the early stages of deterioration and a relatively long service life. Severe surface scaling suggests



This Pennsylvania Hard-Vein slate has reached the end of its serviceable life. Note the numerous cracks, indicating loss of strength, and the severe delamination that allows the slate to absorb moisture.

that the slates are holding moisture and that the time for replacement is close at hand. As a general rule of thumb, if you determine that about 20 percent or more of a slate roof is already suffering from severe surface scaling and delamination, it will probably be more practical to reroof with new slate rather than recycle or repair the existing slate (which will delaminate before too long or break during repairs.) Weathering is prominent on the underside of the roof as well, due to the leaching and subsequent concentration of gypsum in this area. In most cases this means that you cannot simply turn over deteriorated roofing slates and re-use them.

Nobody can control the forces of nature, of course, or the weathering of slate. What you can control, however, is the type of slate you use in your reroofing project. Select types with relatively low levels of impurities, low porosity, and high density. These slates will have the longest expected serviceable lives. For example, time has shown that Vermont and New York slates will last about 125 years, Buckingham Virginia slate 175 years, and Pennsylvania Soft-Vein slate in excess of 60 years. 🏠

Jeffrey S. Levine is a principal at 1:1:6 Technologies in Ardmore, Pennsylvania, (610-658-0200) and the author of the National Park Service preservation brief on The Repair, Replacement, and Maintenance of Historic Slate Roofs (brief #29).

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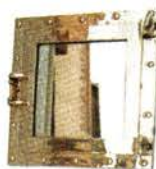
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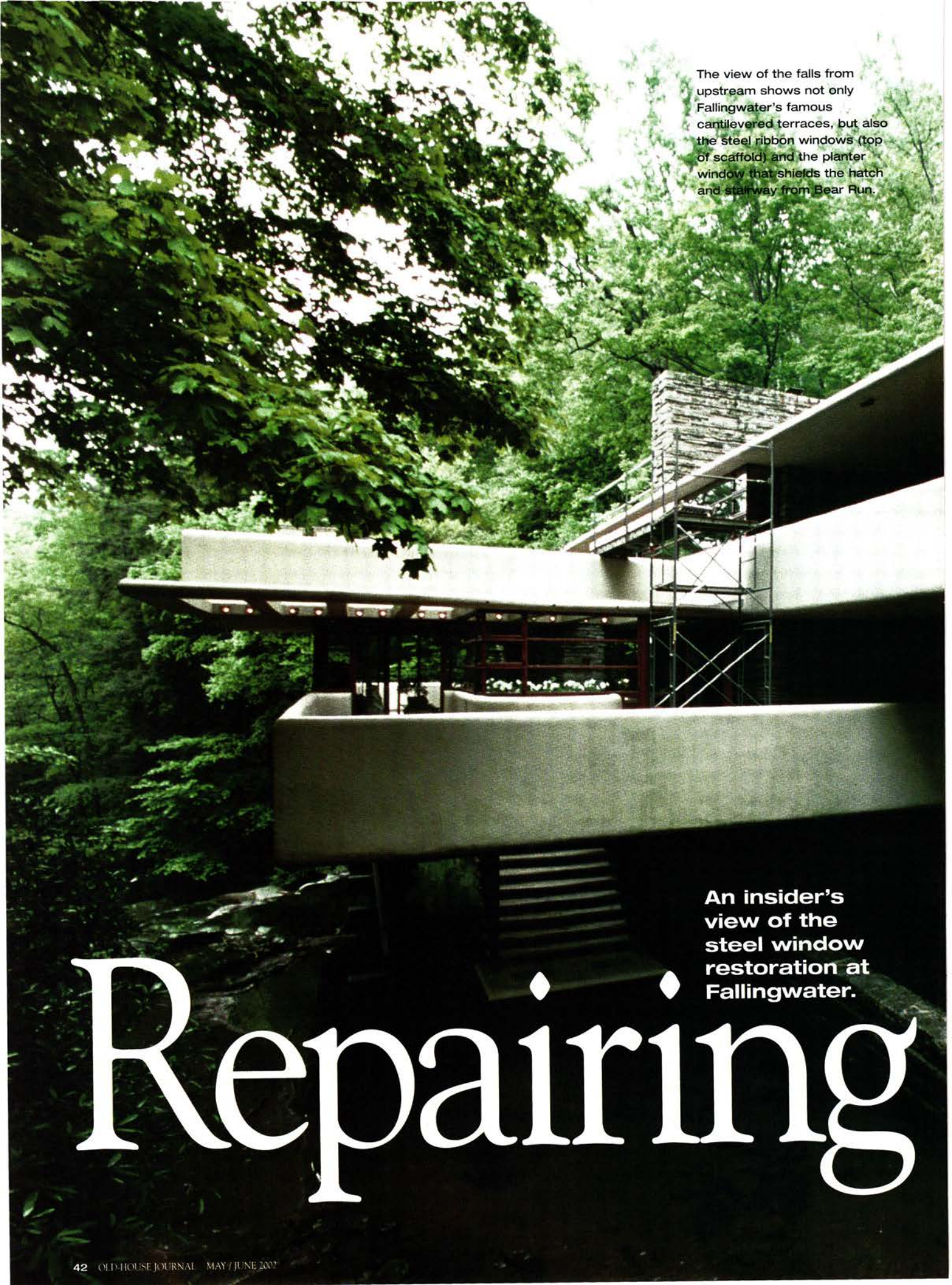
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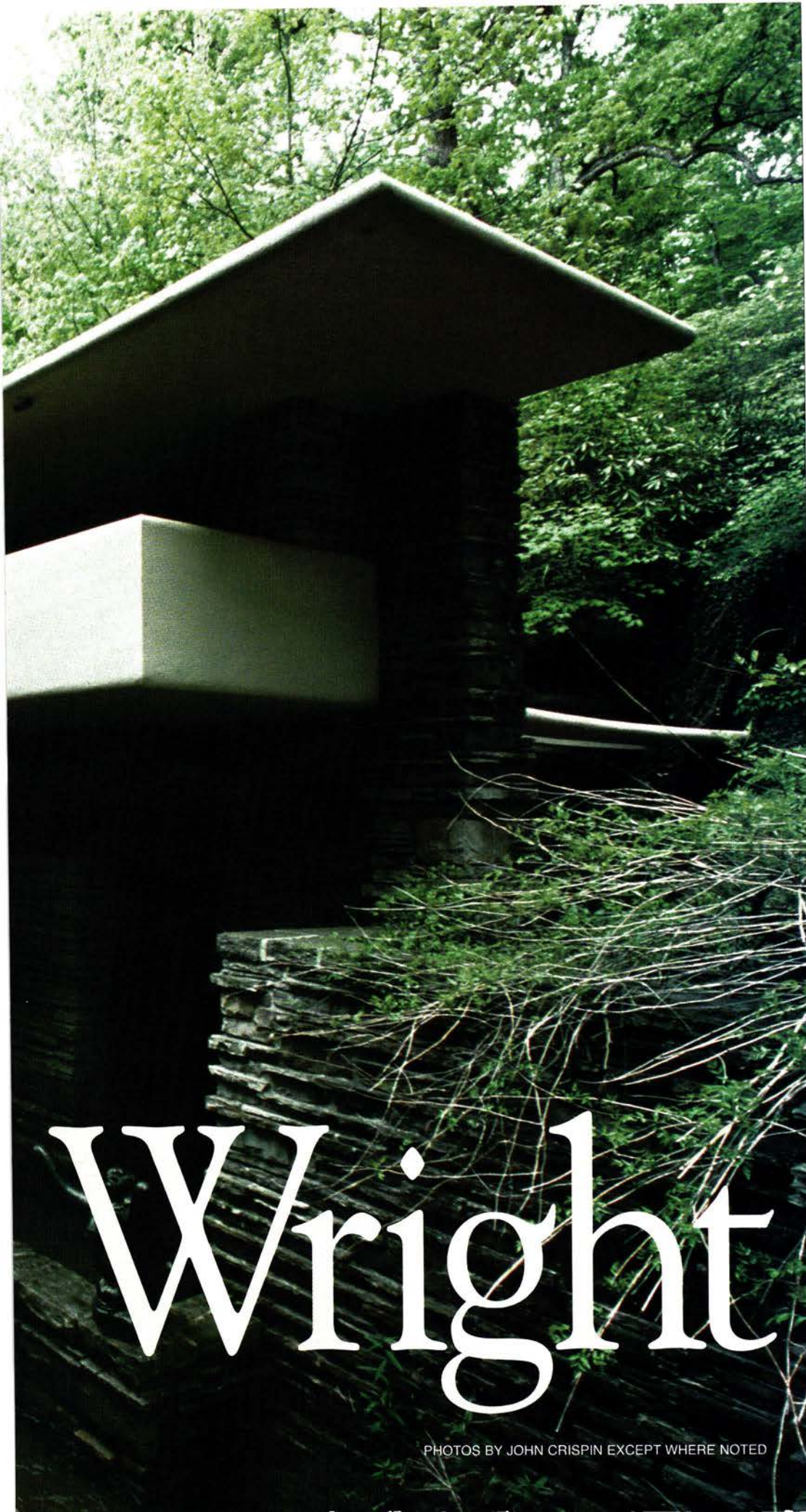
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The view of the falls from upstream shows not only Fallingwater's famous cantilevered terraces, but also the steel ribbon windows (top of scaffold) and the planter window that shields the hatch and stairway from Bear Run.

An insider's
view of the
steel window
restoration at
Fallingwater.

Repairing



BY GORDON BOCK **P**icture a lush green forest hillside and a cascading creek straddled by a one-of-a-kind Modern house—all jutting, winglike terraces separated by swaths of sheer glass—and you have Fallingwater, an icon of 20th-century architecture and possibly the most well-known residence in America. Now over 60 years old, Fallingwater is the center of new attention as Frank Lloyd Wright's innovative design undergoes a carefully planned rehabilitation. The famous cantilevered terraces, which defied gravity and Wright naysayers alike for two generations, are receiving a structural facelift through the addition of specially designed cables.

Less sensational, but even more dramatic in its results, is the restoration of the steel windows that wrap the main house, guest house, and service wings. When the Western Pennsylvania Conservancy's restoration architect Pam Jerome of Wank, Adams, Slavin and Associates called in Seekircher Steel Window Repair in the summer of 2001, OLD-HOUSE JOURNAL was fortunate enough to have these experts invite us along to see their work. The visit that started out as a lesson in conserving an early modern building material—one that appears in thousands of old houses—soon expanded to include a remarkable, behind-the-scenes view of how a legendary architect incorporated common window parts into a building of groundbreaking design and enduring beauty.

Wright

PHOTOS BY JOHN CRISPIN EXCEPT WHERE NOTED

What Befell Fallingwater

When John and Bob Seekircher and their crew arrived at Fallingwater, they found conditions that looked worse than they actually were. There was a lot of surface rust on the steel sash and frames—not surprising with Bear Run cascading in close proximity to the building. This water source, coupled with the steep hillside, creates an ever-present humid microclimate around the main house, guest house, and servants' quarters. Completed in 1939 as a weekend retreat for Pittsburgh retailer Edgar Kaufmann Sr. and his family, today Fallingwater is an internationally popular museum entertaining 135,000 visitors a year.

Another contributing factor was the history of the windows themselves. Fallingwater was built during the Depression in a rural pocket of western Pennsylvania—far from the city and its ready supply of sophisticated construction tradespeople. The windows were custom-manufactured for the building but delivered to the job site in a primed and unglazed condition. Once the building was effectively closed in, the windows were installed by local semiprofessional workers. Then, in all probability, Pittsburgh Plate Glass came to set the glass. After decades of private ownership and maintenance, the windows were retrofitted with 1/4" laminated UV-filtered glass in 1987—25 years after the house became a museum. The upshot is that the windows and doors at Fallingwater had probably never been completely painted in one phase, so the conservancy's specs called for a complete restoration of all metal windows and doors.

Clean and Easy

The Seekircher approach to restoring steel windows begins with taking off every piece of hardware (excluding hinges) for cleaning, followed by stripping all steel frames and sash down to bare metal. Before doing any work on the Fallingwater windows, subcontractors Ralph Whitehead of R&D Painting and Chris Kelly of Patriot Restorations mask off each of the lights to

protect the edges of the glass from tools and machines—first with a layer of blue masking tape, then another covering of heavier duct tape. For paint stripping, John and his contractor colleagues make much use of needle guns—industrial air tools that prick the surface with scores of small rods. The needle guns are efficient, and the Seekirchers find they create a nice key in the metal for subsequent paint coats. However, they also turn to disc sanders, hand scrapers, wire brushes, and sandpaper to remove paint. John and his colleagues don't like to sandblast windows or doors because they find the blasting medium can collect under or around the frame in hidden areas, where it holds moisture and starts rust or other problems. For example, John found that one of the reasons the hatch in the Fallingwater living room refused to close (see photo at right) was a buildup of "sand" in the bearings from an earlier repair.

At the same time they're stripping paint, the Seekirchers are coaxing and lubricating all movable parts of the windows back into operating condition—often for the first time in decades. John prefers common motor oil for lubing steel window hardware, as he's found that grease attracts dust. He recommends putting a couple drops of oil on "everything that moves," including the slide-arm assemblies that hold windows open, every three to five years.

After the crew has all the movable parts operating freely and all metal stripped, the next step is to realign the operable windows. Many steel windows go out of alignment over years of receiving only intermittent maintenance. Moisture and condensation get under the sill, sometimes warping the frame. More pernicious, however, is user pressure on stiff or frozen windows. When homeowners try to pry open windows with uncooperative hinges or close windows that bind on mating surfaces due to overloaded paint, they tend to exert excessive force, racking the frames out of alignment and subtly warping the windows. Not only does this result in gaps between the mating members that lead to air leaks (and

Part door, part window, the telescoping hatch from the living room to Bear Run hadn't worked in decades until John disassembled and cleaned it in the 1990s. Rust, grease, and sand had seized the bearings.



COURTESY OF SEEKIRCHER STEEL WINDOW REPAIR





The History behind Steel Windows

Most common in American houses built between 1890 and 1945, steel windows are one of many man-made products that appeared in the era as alternatives to traditional, natural building materials. Stronger and more fireproof than wood, they enjoyed a major promotional boost after devastating fires tore through cities such as Boston, Baltimore, Philadelphia, and San Francisco around 1900. Already popular in England, steel windows were soon being imported as well as domestically made. By the 1920s, at least two British manufacturers had set up American plants to service the Tudor house boom along with the market for factory buildings.

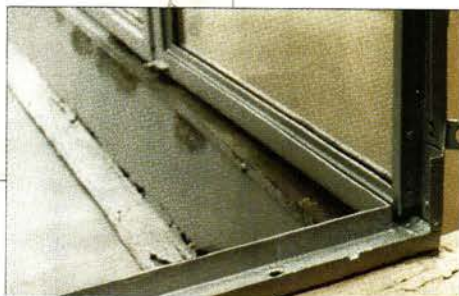
Why are steel windows worth restoring? Besides their aesthetic and historic value, John Seekircher suspects that original windows

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are made of more durable materials—a familiar tale in the old-house world. The steel in early windows was typically virgin metal—not recycled as is common today—making it harder with greater tensile strength and more resistance to rust.



Left: The first step in restoring the corner windows was removing 60 years of paint down to bare metal with power tools and hand scrapers. Double masking protects the glass perimeters. Inset: This detail of the primed corner windows shows how the angled extrusions of sash and frame lap for a seal at two points. A hasp (tab with hole) and padlock latches the window to its mate for security.



Above: Scaffolding shrouds the multistorey tower windows on the falls side of Fallingwater. Wright chose steel windows as ideal for a Modern house, affording the greatest view of the surroundings.



COURTESY OF SEEKIRCHER

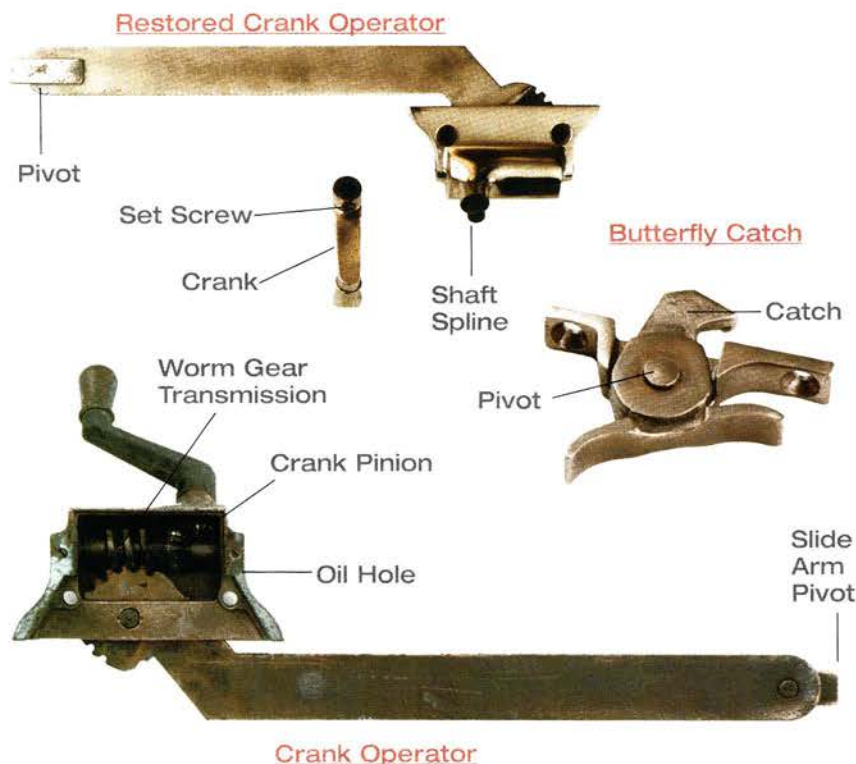


Left: Fine wire wheels polish hardware clean of scale and overpaint. Above: As in most houses, most surface rust at Fallingwater appeared at sills and window bottoms, where water collects.

The Hidden Side Of Hardware

A closer look at the stock mechanics used at Fallingwater and in thousands of other steel windows.

ANDY OLENICK
HARDWARE COURTESY OF SEEKIRCHER STEEL WINDOW REPAIR



more ill maintenance, such as caulking), it can also crack the glass. Freeing up hinges and removing paint takes this stress off the moving parts and helps prevent future damage.

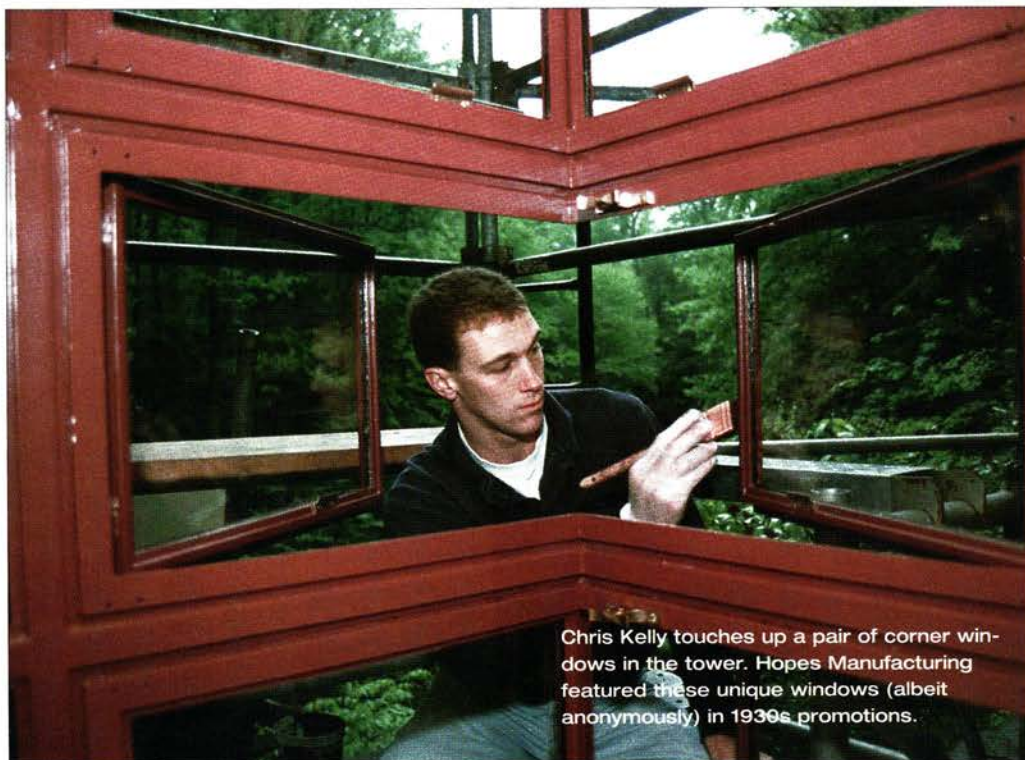
When properly aligned, a steel window should meet its frame on all four edges at the same time. In fact, most steel windows are designed so that the same extrusions—typically Z bars—make up both the operable vent (the movable window) and its frame. This construction allows the sash to lap into the frame in a two-point seal that, while not intended to be watertight, is a very effective air barrier. “It’s really a pretty simple design,” says John.

A Handle on Hardware

Usually a house has uniform sizes of steel windows and the same hardware throughout the building, but not so at Fallingwater. While the hardware appears to be all standard issue, Wright clearly used these mechanics in creative, nonstandard

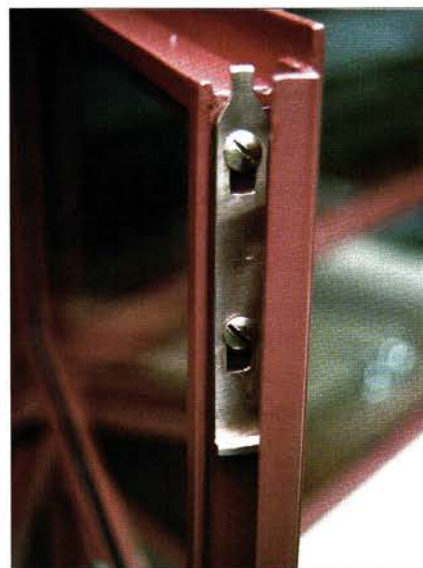
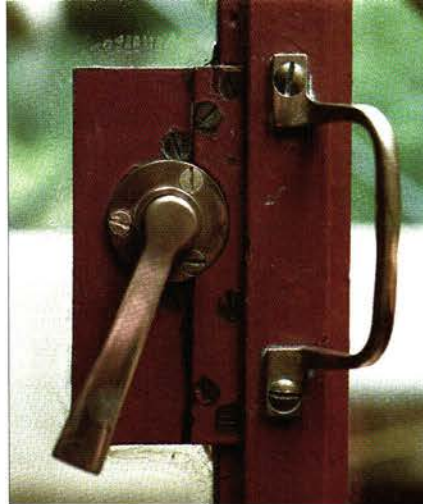
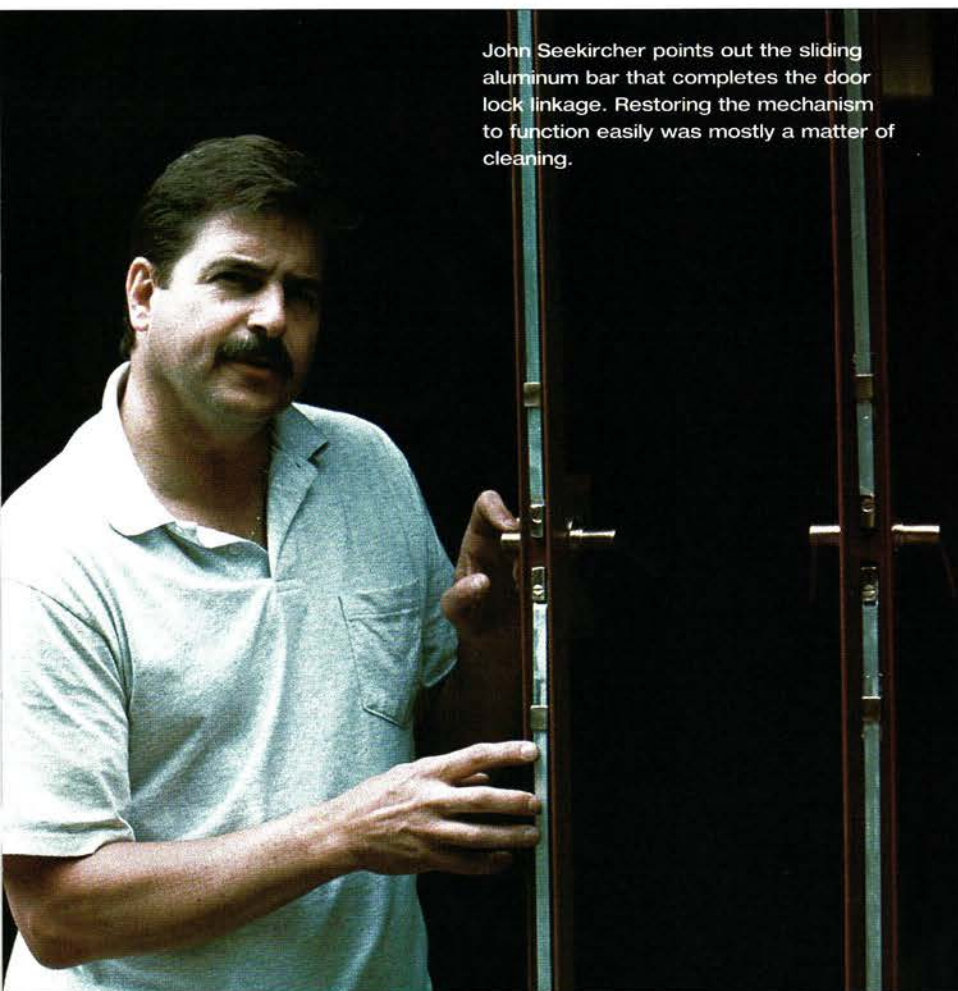
Seeing Red

One of the objectives of the recent restoration program has been to return some of the original decorative features of Fallingwater, including the color of the metal windows. Since it became a museum in the 1960s, visitors have known the windows as an orange-red. However, a paint analysis in 1990 by specialist Frank Welsh (under the direction of Ilene Tyler of Quinn Evans Architects) indicated that the original color specified by Wright was a Cherokee red. Fitting for the self-styled greatest architect in the world, the color comes with a story. According to legend, one day while Wright was visiting Fallingwater during its construction, Lilliane Kaufmann made a remark about the color of the architect’s car, which was custom-painted in a bold Cherokee red. To this the architect replied, “That’s going to be the color of your windows.”



Chris Kelly touches up a pair of corner windows in the tower. Hopes Manufacturing featured these unique windows (albeit anonymously) in 1930s promotions.

John Seekircher points out the sliding aluminum bar that completes the door lock linkage. Restoring the mechanism to function easily was mostly a matter of cleaning.



ways. For example, there are two types of window operators—a fairly ornamental version in the main house and a heavy-duty model in the guest house, where there are larger sashes. The butterfly locks and handles are mounted horizontally rather than vertically (the more customary installation) and on the outside, rather than the inside of the window. Equally interesting are the oversized window hinges. Their bolts are so overspec'd for the load of even a large window that Wright must have selected them for their protruding, outsized appearance. This effect becomes quite dramatic when a large number of these knuckles line up perfectly, as in the tower windows.

As with many installations, the hardware at Fallingwater is either solid brass or red bronze—nonferrous metals that stand up to years of exposure with minimum protection. In most instances, John merely has to clean operators, hinges, and locks of over-

paint, surface scale, and excessive tarnish with a fine wire wheel. Sometimes his crew coats the hardware with a layer of spray lacquer from a can, if the client desires to maintain a bright appearance (often attractive against a black-painted sash) but just as often they leave the metal bare to patinate naturally. Occasionally they encounter a mechanism that is seized closed or open. In these cases they flush out the gears, then free the works with penetrating oil. Some operators, in fact, have tiny holes meant for periodic lubrication. Unfortunately, these are often painted over after decades and forgotten. "It's amazing what a little bit of oil can do," John says. Ultimately, the Seekirchers have to replace only three or four operators.

Behind the Steel Doors

Over the years, rust behind the two door frames had expanded the metal, creating huge gaps between the frame and the



Top: Surface rust on the door frame is typical for most of the building. Middle: Finger catches on the corner windows have one moving part. Above: The oversized barrel hinges pivot on large bolts, which were removed and cleaned to free up several windows. Nuts and washers are adjusted for just enough friction to hold the window open in a breeze.

masonry opening. The bridge door in particular has suffered from 30 years of repeated caulking. Though the stewards of Fallingwater feared that both these doors would have to be replaced, John and his crew are able to save almost all of the original materials by first cutting out the worst areas back to good metal, truing the frame, then patching in new metal in sections of 12" here, 6" there. Using shims, they pull and twist the frame back into line; once the frame is square and straight, the door and catches come right back into line. "When you get your hands on everything, then clean and repair it, there's a lot of life left in the materials," says John.

When metal replacement or repairs are called for—often the case when windows have been altered to insert air conditioners—welding comes into play. John and Bob sometimes use wide-fed MIG welding equipment, but they usually rely on brazing with MAPP gas torches, a method that is more versatile and produces fewer sparks. All told, they replace a minimal amount of steel.

And Those Windows

The windows at Fallingwater are custom designs built by Hopes Manufacturing of Jamestown, New York. Once again, although the steel bar extrusions are standard, the actual fenestration of the windows at Fallingwater are "a pretty big mix," according to the Seekirchers. The ribbon windows—long stretches of large windows running corner to corner without breaks—are part of the signature horizontal emphasis of the building. Some of the corner windows, in fact, are something John and his crew have never seen elsewhere in over 25 years of business. These operable vents are hinged in opposite directions so the open windows channel air into the building.

Why steel windows at Fallingwater? It is clear that Wright was drawn to steel's creative possibilities, as well as its visual impact. John Seekircher concurs. "A steel window provides the most light per square foot of any window made; plus, without wood,

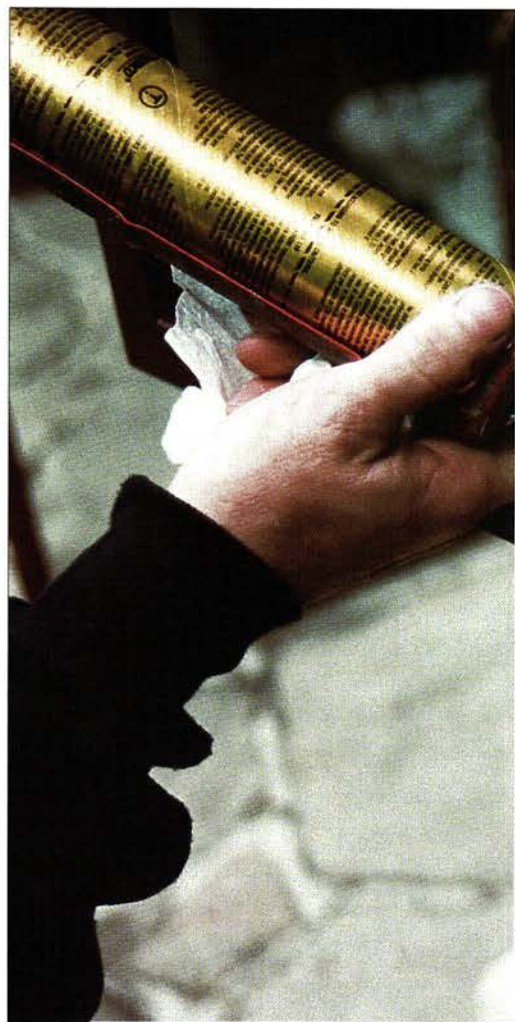
they are fireproof and strong," he says. Casement windows, which open on hinges like a door, were particularly favorite incarnations of steel for the Prairie School architects. Casements also allowed the manufacturer to offer completely different windows with the same extrusions and hardware. Dividing the window into rectangular lights produced a Tudor-style window; using a single pane of glass produced an Art Deco or avant garde-style window as at Fallingwater; switching to leaded diamond panes produced a picturesque look.

Once the Seekirchers and their colleagues have all the steel frames and hardware back in working condition, it is time to protect them with paint and sealant. John likes to use oil-based paint on metal sash, especially for primer. In some projects he also uses two-part epoxy for the topcoat. At Fallingwater, however, one of the goals is to return the windows to the original Cherokee red (see "Seeing Red" page 46) so Ralph and Chris apply a specially spec'd paint. All coats from prime to finish are hand-applied. The last stage in the process is adding a thin bead of sealant to the glass to supplant the Neoprene tape used in the 1980s retrofit.

All in all, the conditions at Fallingwater are really not that different from what the Seekirchers find at an average house. While they are regularly hired to reconstruct steel windows that have been butchered in the past, here the Seekirchers were fortunate enough to work to retain all of the original frames and sash—good news for a house museum. It's now possible to view the ongoing restoration of this landmark building through windows and doors that look and work as they did in the 1930s, when Edgar Kaufmann Sr. and Frank Lloyd Wright surveyed a newly completed country retreat at Bear Run. 🏡

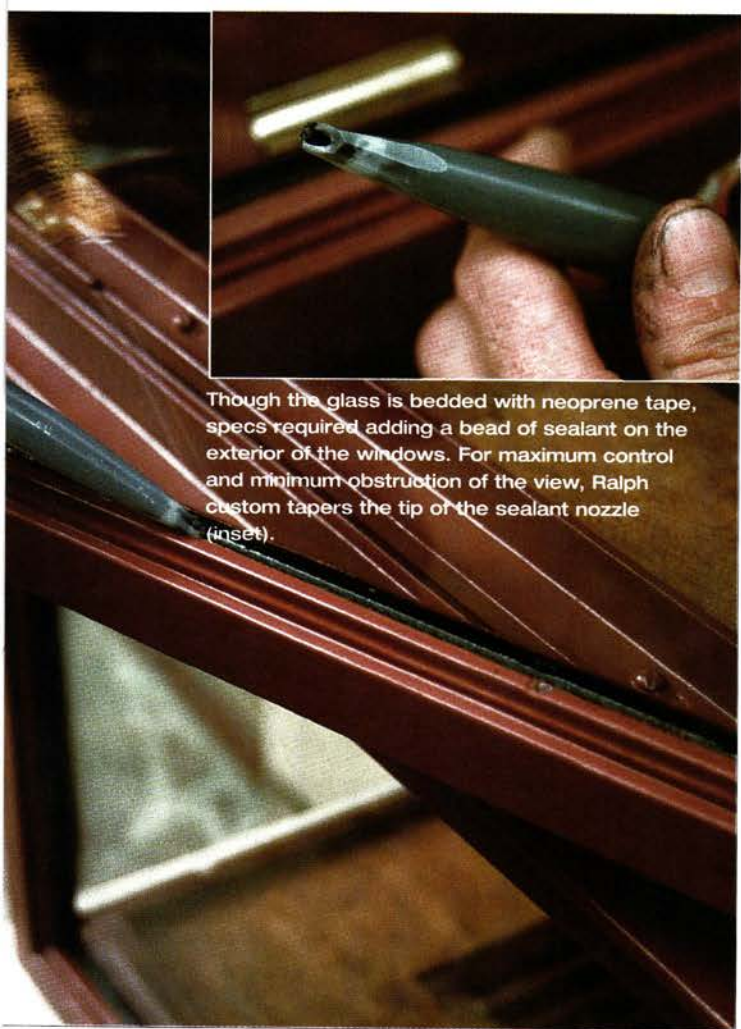
Thanks to the Western Pennsylvania Conservancy (209 Fourth Ave., Pittsburgh, PA 15222). Contact the conservancy for Fallingwater tour information at (724) 329-8501; www.paconserv.org.

Ralph Whitehead applies the final coat of Cherokee red to the corner windows. The 1980s glass retrofit added ornamental glazing bars to the inside, just visible in the open windows (left in photo).

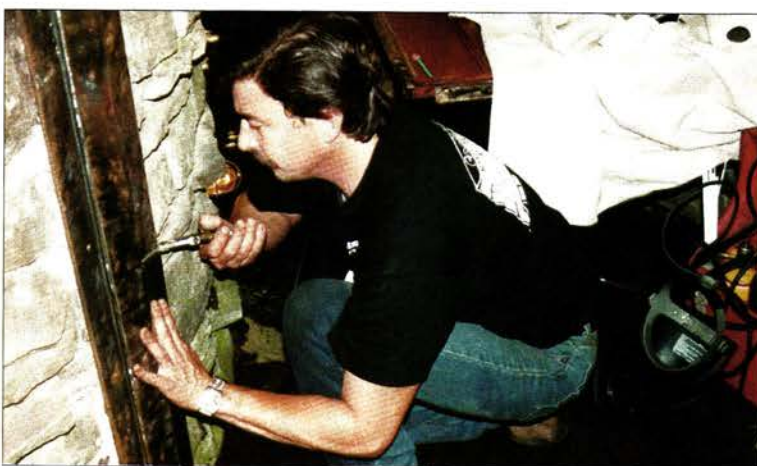




Left: The Conservancy feared that the bridge entrance (in effect, a large steel window) would have to be replaced, but patching allowed the crew to retain nearly all the original parts. Below: Bob Seekircher brazes replacement steel into the door frame.



Though the glass is bedded with neoprene tape, specs required adding a bead of sealant on the exterior of the windows. For maximum control and minimum obstruction of the view, Ralph custom tapers the tip of the sealant nozzle (inset).



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A photograph of the interior of Stonehurst, a Victorian house in Waltham, Massachusetts, designed by Henry Hobson Richardson. The image shows a large, open-plan living space with a high ceiling featuring exposed wooden beams. The walls are covered in dark wood paneling. A large, patterned rug covers the floor. In the background, there is a staircase with a wooden railing and a large window with multiple panes. The lighting is warm and focused on the architectural details.

Henry Hobson Richardson, the Victorian architect whose concepts touched the modern era, pioneered the open plan with broad spaces like the living hall of Stonehurst (1883) in Waltham, Massachusetts, which flows unobstructed to adjacent rooms.

Interior spaces and the development of the open plan.

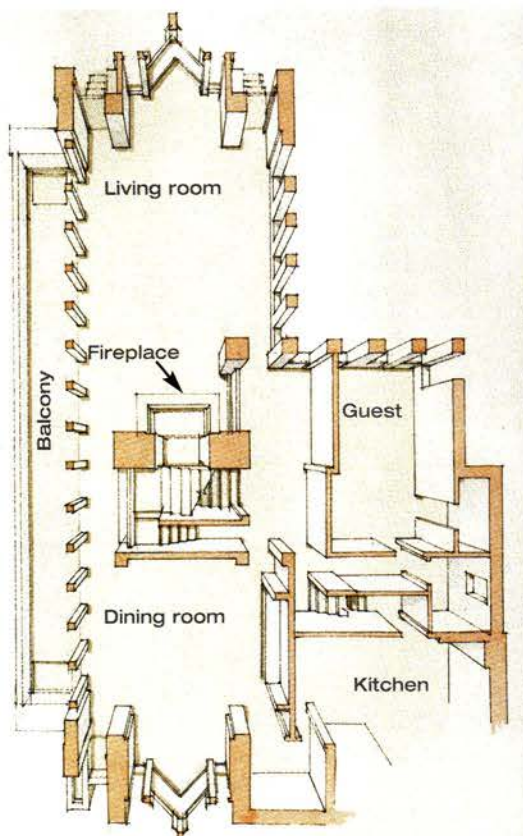
Breaking Down Walls

BY LYNN ELLIOTT **N**ever as obvious as the periodic costume-change of exterior house styles, the form of interior spaces has been in constant evolution since the first houses appeared on this continent. For over three centuries, the need for highly functional space has dictated how floor plans are organized, leading up to what is often referred to as the “open plan.” As the name suggests, an open-plan house flows from space to space with minimal barriers between the living areas—or no barriers at all. It is a concept we are familiar with today, but one that was quite radical when it first appeared little more than a century ago.

The earliest houses from the 17th century mainly consisted of one or two multipurpose rooms, often with a central hearth. From cooking to sleeping, colonists conducted all tasks within these spaces. By the late 19th century, however, America had become industrialized and prosperous, so houses were not only larger, but more sophisticated and specialized. Accordingly, Victorians assigned the spaces within these houses particular functions: front parlor, back parlor, kitchen, bed chambers, and so on. The increased social interaction of the day meant that public and private spaces in houses were divided up and closed off with doors and halls into what could be a veritable warren of rooms. During this same time period, a few forward-looking architects were experimenting with a new type of interior scheme that consisted of designated living areas undivided by walls—the open plan.

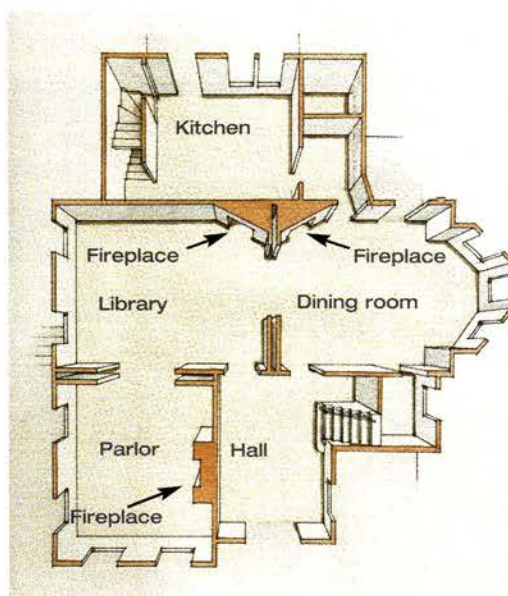
An Interior Breakthrough

What caused architects to rethink interior spaces and how these areas functioned within the home? There were a number of reasons why designers and the public alike began to embrace the open



ILLUSTRATIONS BY ROB LEANNA

Left: When he designed his own living room, Ernest Coxhead, a contemporary of Bernard Maybeck in San Francisco, avoided formal walls, but used a fireplace as the focus.



BRET MORGAN

Right: The sketch shows an 1886 Queen Anne with a typical Victorian floor plan: cubelike rooms, each with its own fireplace, defined by walls. Top right: Contrast the Queen Anne's cellular layout with that of Frank Lloyd Wright's Robie House: living room and dining room areas circulate around the central hub of the fireplace and in essence flow outdoors through the thin screen of windows onto the balcony.



In the Meyer May House (1908) in Grand Rapids, Michigan, Wright suggests the limits of the living room bay with a floor moulding and furniture; traditional barriers to the outdoors—the exterior wall and even the ceiling—are little more than glass screens.

plan. First, late 19th-century technological advances allowed better control over comfort in a house. With central heating from hot-air registers or steam radiators, rooms were no longer dependent on fireplaces for warmth, so space arrangements could be more flexible. By 1900 there were new construction materials creating new structural possibilities. Steel, available in the 1870s but more widely used for modern houses of the 20th century, increased builders' ability to span open space. Concrete block made it easier to build unconventional load-bearing walls.

At the same time, Victorian society was evolving toward more relaxed lifestyles. Family members, rather than servants, performed more—or all—household tasks. Social interactions were

feature a living room that flows into a dining room. The celebrated example of Richardson's residential architecture, the Glessner House, is among the first instances where an open-plan interior is integrated with a garden. The L-shaped house turns its back to the street, creating an enclosed courtyard that can be seen from all of the rooms. Other Shingle-style architects were also working toward continuous space, with the fireplace instead of a staircase as central to the scheme.

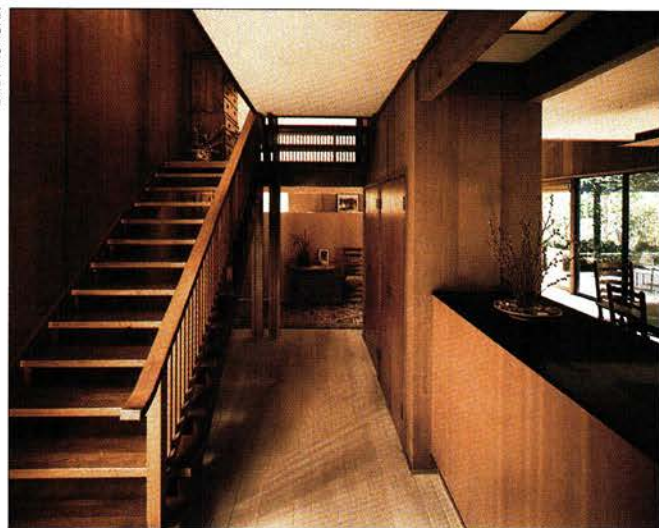
In California, Arts & Crafts architects Greene & Greene were also implementing the open plan in their high-style bungalows. The ground floor of the 1908 Gamble House has a capacious open plan that is visually unified by exposed mahogany framing. The floor plan makes the most of the view of the Arroyo Seco Canyon: The living and dining spaces overlook the terrace, joining the natural materials of the interior with the natural beauty of the landscape.

Although Shingle-style architects and the Greene brothers flirted with the open plan, it was Frank Lloyd Wright who drew on their influence to make the concept an integral part of his organic theory of architecture. In his Prairie-style houses, Wright rotated rooms around a central chimney. Casement windows and sweeping porches

Plans and Planners

Henry Hobson Richardson, the influential Shingle-style architect, is often credited with introducing the open plan. Both his Hay and Paine houses, built in 1886,

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allowed him to expand the interiors into the garden. Wright wanted to reduce the rooms in a house to the barest essentials, have those spaces be free-flowing, and unify the outdoors with the indoors. The 1909 Robie House, with its fluid space between living and dining room and extraordinary number of windows, embodies his principles for an open plan.

With Wright, the focus of the open plan shifts from merely reorganizing space to integrating the landscape with interiors. The wide rooms of the open plan go hand-in-hand with large fenestration that gives the garden greater visual impact inside the house.

The novel building materials of the 20th century made the open plan even more practical. Wright began using concrete block in the Hollyhock House and La Miniatura because block walls could be punctuated with glass or voids, further developing the concept of space. Partial walls of glass and the play of light and dark spaces open up these interiors in new and challenging ways.

International-style architects continued to develop the concept of an open plan. Richard Neutra's Lovell Health House (1927–1929) contains a living and dining area that opens onto a sleeping porch at one end and a library and patio on the other. The steel frame of the house eliminates the necessity for any load-

bearing walls. Instead, the house is clad with metal panels and has multiple voluminous windows that make the most of the hillside view. In the 1937 Gropius House, there is hardly a corridor anywhere in the building; one area flows into the next. Spaces have multiple purposes. For example, a study is also the accessway between the entry and the main living area.

Philip Johnson's 1949 Glass House is perhaps the ultimate expression of the open plan. With the exception of the chimney/bathroom column, there are no barriers inside and, because it's clad in glass, no barriers to the house's surroundings. The landscape is the living space's ornamentation. Furniture is used to divide the space into a bar, dining room, living room, and bedroom. Yet even as this rarified house seeks to pull away from everything traditional, it comes full circle: The hearth is still the anchor of its open plan. The concept of the open plan in these high-style homes trickled down into more modest houses—from bungalows and Colonial Revivals of the 1920s and '30s to the split-levels and ranches of the 1950s and '60s—forever influencing our idea of how the interiors of a comfortable home should function. 🏠

Lynn Elliott writes about old houses from Brooklyn, New York.



Left: Broad and low, the celebrated Gamble House shows how totally early modern architects took to the open plan. Here, the brothers Greene created three distinct spaces—entrance hall, living room, and large inglenook—using only inches of dividing wall. Opposite bottom: Larger spans, often aided by stronger materials such as steel, opened walls in mid-20th-century houses, such as The Fourcres by Joseph Esherick (1957).



Casement windows were one of the earliest types of moveable windows. Although hung sash windows overtook them in popularity more than 200 years ago, they're still ideal for many applications such as above kitchen sinks.

Pane Relief



BY KATHLEEN FISHER Old-house owners can be passionate, even defensive, about their old windows. They would rather put up with a few rattles and drafts than give up their wavy glass panes and aged wood.

Most windows are primarily practical, allowing fresh breezes and sunshine in, stale air and curious gazes out. But specialty windows—with distinctive shapes, muntin patterns, or artful placement or arrangements—are architectural and character-defining features as well.

What would a Gothic Revival house be without its narrow, pointed windows? Chicago windows, with their fixed sash flanked by operable vents, helped delineate the architecture of that city in the late 19th century.

Specialty windows can work their magic indoors or out. An eyebrow adds a visual surprise to a Shingle-style roofline, while an oriel opens up a Tudor dining room. A cameo provides staid Colonial Revivals with a punctuation mark as well as a peephole; a row of clerestories lends horizontal emphasis to the façade of a Prairie-style abode.

Most of us choose to repair existing windows when at all possible, but sometimes conditions call for new units. Perhaps you're putting on an addition or erecting an outbuilding and would like to echo the existing fenestration of your house. Maybe a newly discov-

ered photograph shows that one of these signature windows had been removed by previous owners, or a big tree has fallen and smashed your treasured lunette beyond repair.

Specialty windows are becoming more widely available as stock or custom windows from large national distributors. For quite a few dollars more, restoration millwork specialists—who have always been as willing and able as Alice's Restaurant to give you anything you want—can combine restoration glass with insulating properties. Today's computer-assisted design allows them to control specifications to a thousandth of an inch.

Virtually every major window manufacturer now offers casement windows, which predated double-hung windows by centuries, and round-top windows—seemingly a must for modern McMansions, albeit in different configurations than might be seen on, say, a 19th-century Adam-style dwelling.

Several companies stock cameo-style ovals. Kolbe & Kolbe has a "Decorative Series" in seven shapes with options for colorful glass, brass coming, and bevels. Most are fixed (nonopening), but both round and square can vent from the side (casement) or bottom (awning). Only slightly less showy are the company's Radius windows (round, oval, elliptical) in half a dozen different divided-light patterns.

A century ago it was fashionable for double-hung windows to have a single light (or pane) in the bottom sash and many small lights in the upper sash.

Investing in specialty windows can light up an old house, both literally and architecturally.

They were variously called “divided top,” “fancy top,” or “Queen Anne” (although they were seen on other styles of that period). The panes were often diamond or spear shapes, or a combination of the two. One window maker, Hurd, lists a Queen Anne option for a forthcoming new design.

Pella and Anderson make double-hungs with what they call “Prairie” grid patterns similar to those popular on early 20th-cen-

tury Foursquares and bungalows. For a more showy Arts & Crafts touch, Anderson has 11 art glass patterns, four of which are duplicates of Frank Lloyd Wright designs.

Although these national suppliers offer customization to a greater or lesser degree, if you want or need to meet historic district or preservation tax-grant standards, you should probably go to a specialist—especially if you want authentic touches like

antique glass, era-appropriate hardware, or even true divided lights.

As most old-house owners know, lights in early windows were small until technology made larger panes feasible and inexpensive. A single sash typically had a couple dozen lights in the 17th century, perhaps six by the early 19th century, with single-light windows available around 1900.

Today’s window makers recognize that

The Last Gasp of the Squeegee

Now, in addition to all the other options you can mull over when buying windows, comes a tempting scenario: Never again having to climb a ladder, sloshing bucket and squeegee in hand, to scrub them clean. (Only to find you’ve missed a spot when you’re back inside.)

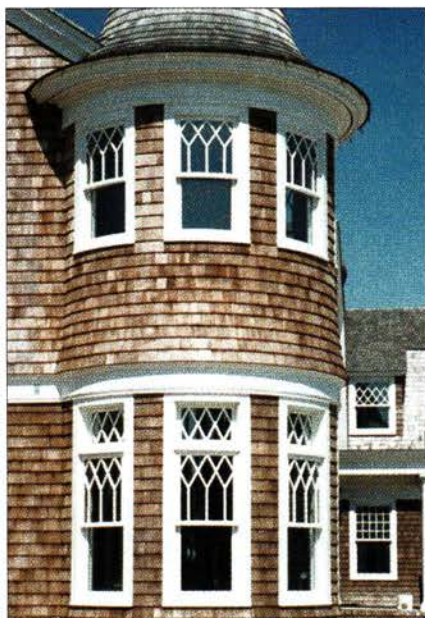
Both Pilkington, a British company, and PPG Industries (Pittsburgh Plate Glass) have come out with self-cleaning window glass, using different processes.

The Pilkington product, which they call Activ Self-Cleaning Glass, is made by applying a titanium dioxide coating to the glass while it’s still molten. The coating has two results: a photocatalytic effect, which causes organic matter to break down in ultraviolet light; and a hydrophilic effect, which causes rain to run off the glass in sheets rather than bead up.

PPG employs a baked-on polymer coating called Stay-Clean to make glass more slippery so dirt can be rinsed off with a garden hose.

These systems aren’t perfect. Because they repel only organic matter, typical dirt particles that contain a mix of organic and inorganic material may not slip off as readily. Huge blobs of matter—droppings from a condor, perhaps—will be slow to break up, and windows under large overhangs may not get enough rain to self-clean well.

Both coatings are invisible and, their manufacturers say, won’t yellow or become brittle over time. The bad news for old-house owners is that, so far, the glass is only available in vinyl windows, but they expect it to begin appearing in wood windows within a few months.



COURTESY OF THE WOODSTONE COMPANY



Top: The windows in this tower are true divided glass with each pane bowed to match the tower radius. Center: This window appears to be curved, but each pane is flat—a less expensive option. Above: Awning windows to the left, an eyebrow above the doors. All were made by Woodstone. For information on this company, circle 40 on resource card.



KEN DRUSE

Cameo windows, above, can punctuate exterior architecture, but are sometimes positioned to highlight an interior feature like a stair landing or entryway. Many window makers now stock cameo-style windows.



homeowners still like the look of these small divided lights, but argue that they're not energy efficient. Thus, instead of true muntins we have "grilles," either inside double-glazed windows or bonded to the surfaces of the sash (with the option of being removable for cleaning, usually just on the inside). You can still find stock windows that have true divided lights, however, with metal spacers between inside and outside grilles.

PHOTOS THIS PAGE BY PAUL ROCHELEAU



Left: The fanlight and sidelights exhibit the delicate intersecting muntins referred to as tracery. Below: Archtop windows are so definitive of Gothic architecture that they're called Gothic-head. Lattices are common. The narrowest ones in the center are lancet windows.

Custom window makers who specialize in restoration produce true divided lights almost exclusively. H. Jay Eshelman, chief executive officer of the Woodstone Company, notes several reasons besides authenticity. If a small pane gets broken, the whole window won't need replacing; large pieces of antique glass simply aren't available; and even if an old window has had its divided lights replaced with a single pane of insu-

Glossary

AWNING WINDOW. Tilts out with the opening in the bottom. Found on the sides of greenhouses, it allows in fresh air while keeping out rain.

BAY WINDOW. Projects from the surface of an exterior wall and extends to the ground.

BOW WINDOW. More rounded than a bay window, extending in a semicircle from an exterior wall; sometimes called a compass window.

CAMEO WINDOW. A fixed oval window with surrounding moulding, usually with muntins that may form ornamental patterns. Especially popular on Colonial Revival houses.

CASEMENT WINDOW. One of the earliest moveable windows, dating from medieval times to the first hung sashes around 1750, it swings on hinges like a door. Casements are still appropriate to many styles: Tudor, Gothic Revival, Spanish Eclectic, Prairie, and in steel on Modern houses.

CLERESTORY. Pronounced "clear-story," these are windows placed high in a wall, often in bands. Most frequently found above the nave of a church, they are associated with Prairie or Modern houses.

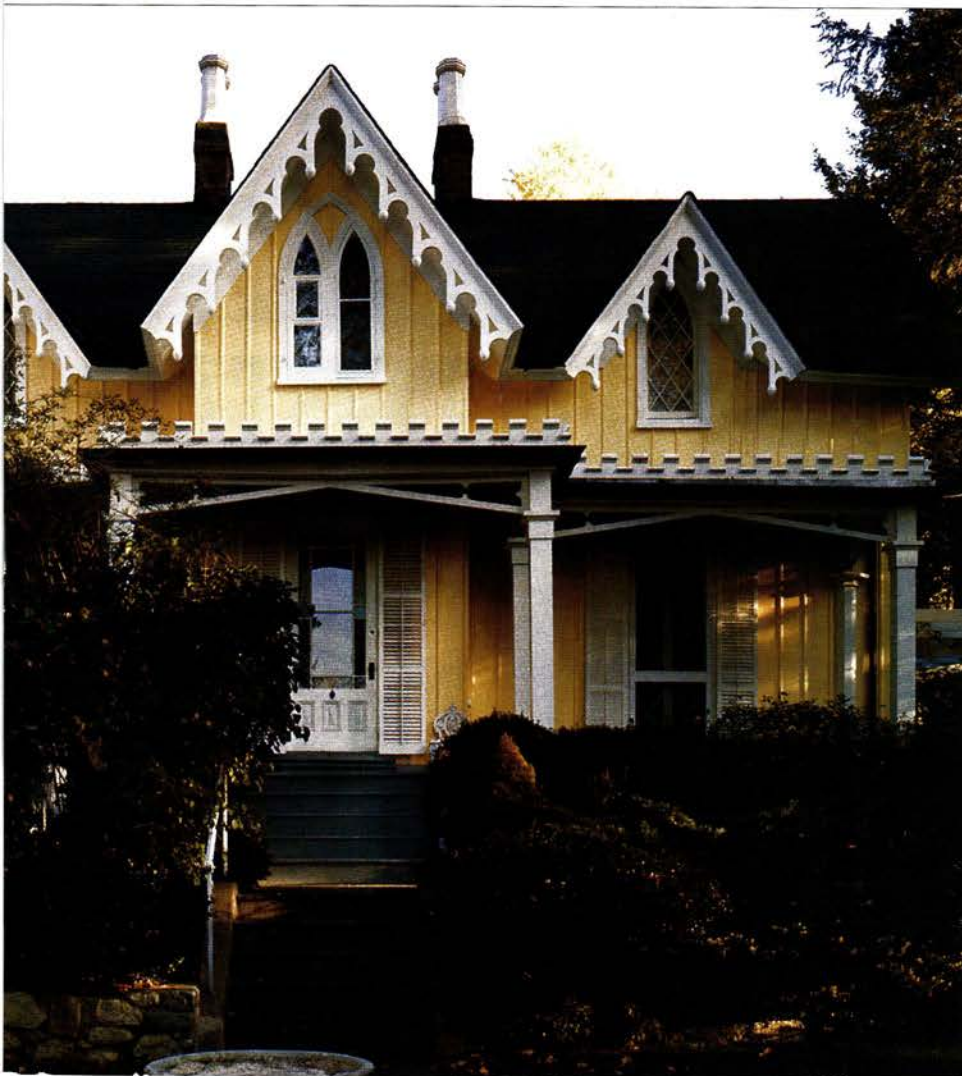
COTTAGE WINDOW. A single- or double-hung window in which the top sash is smaller than the bottom, often with a decorative muntin pattern.

DIOCLETIAN. An ancient Roman motif adopted by Palladio in the 16th century, this is a semicircular window divided into three parts by two wide uprights (mullions). Also called a "therm," it was most often seen on early 20th-century Classical Revival structures.

EYEBROW. Most commonly found on Shingle-style or Queen Anne houses, eyebrow dormers appear as a smooth curve in the roof.

FANLIGHT. A half circle or half ellipse over a door or occasionally another window, containing muntins in a fanlike pattern. Fanlights are associated with Adam, Colonial Revival, early Classical

Continued on page 59.



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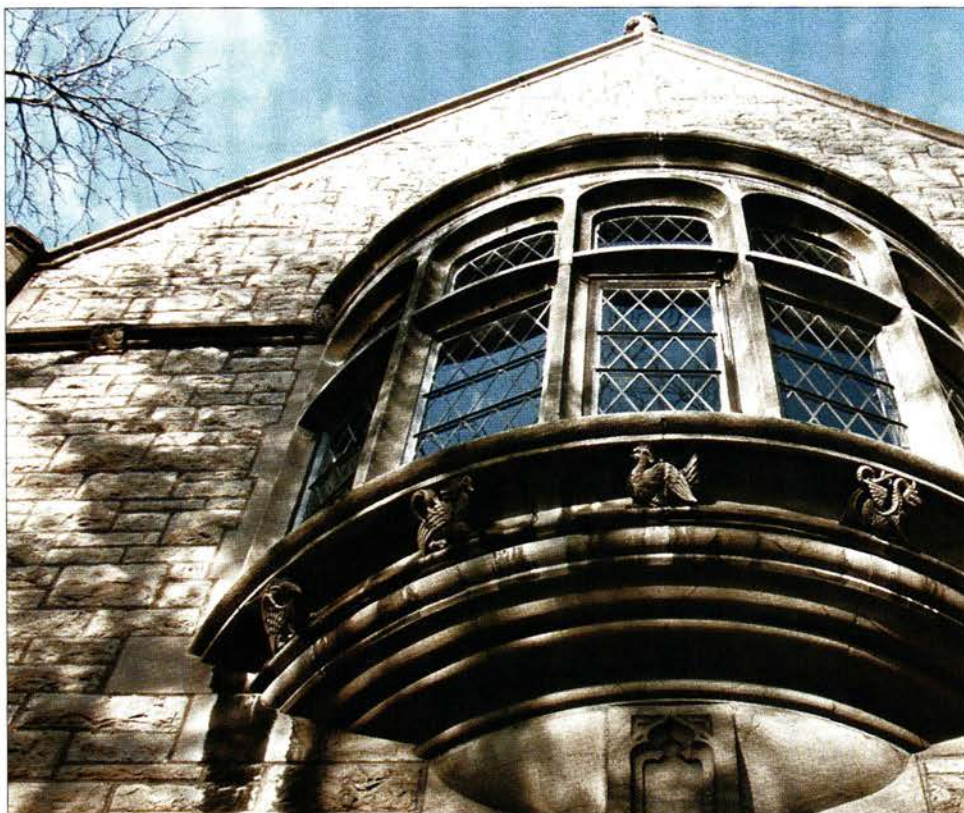
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lating glass, it may still leak where it matters most—between the sash and jam.

There is one instance where Woodstone might be unable to give a client true divided lights, and that is if they need super insulating glass, which requires a larger surface area and wider muntin than conventional insulating glass.

That's right, insulating glass. You don't have to choose between staying warm in

winter and having glass with a romantic wavy look—custom window makers can incorporate restoration glass in true divided light insulating glass sashes. Brent Hull of Hull Historical Restoration says he sometimes laminates historic glass to tempered glass for safety. In Texas, where he's based, insulated glass isn't a popular option because heat gain is a much bigger problem than heat loss.



Above: An ornate bow-and-lattice window in Buffalo, New York. Right: A classic use of a palladian window above the pedimented door of the Schenectady (New York) County Historical Society. Windows seen in new houses today often miss the boat by surrounding a round-top window with curve-topped windows.



PHOTOS THIS PAGE BY ANDY OLENIK

A custom specialty window's cost will depend on not only its overall size and the complexity of the design, but light size, the need for custom hardware and pulleys, and whether you must match the original muntin profiles or have a rare wood for the rails and stiles. Residential clients, unlike historic landmarks, can often compromise on some of these criteria, notes Hull.

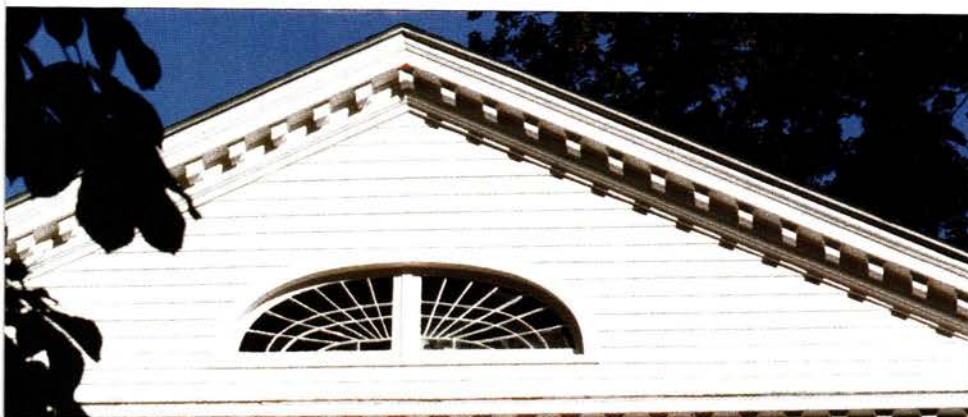
You may also want to factor in an

architect's fee; Woodstone recommends hiring one for all but fairly simple projects. Hull says he can often work from a photograph or template of a window, although spec'ing an oval cameo window, for instance, "requires a little more sophistication" than a double-hung.

For the sophistication they can add to your house, specialty windows are well worth the added effort. 🏠



ANDY OLENIK



PAUL ROCHELEAU

Top right: A quatrefoil window puts even more architectural icing on the cake that's this Gothic Revival "gingerbread" house. Above: A lunette.

Revival, and Neoclassical houses.

FOIL. Rounded lobes that meet in cusps. Trefoils have three lobes, quatrefoils have four.

GOTHIC-HEAD. A window topped with a pointed arch, not as tall and narrow as a lancet window. Seen on Tudor as well as Gothic Revival houses.

HOPPER. Operates opposite of the awning, swinging out or in from hinges on the bottom.

LANCET. A narrow window with a sharp pointed arch, sometimes with diamond-shaped lights, typical of Gothic.

LATTICE WINDOW. A window with diamond-shaped lights, originating in medieval architecture with glazing bars of lead. Now the lights are more likely to be divided by wooden muntins.

LOZENGE. A diamond-shaped light, sometimes set above a pair of lancet windows.

LUNETTE. A crescent or semi-circular window in a wall or vaulted ceiling, unassociated with a door or other window as a fanlight would be.

OCULUS. Based on the Latin word for "eye," this refers to a round or oval window with no tracery or ornamental divisions. It's sometimes called a bull's-eye window.


Oriel. A window projecting from a wall, supported by brackets, corbels, or a cantilever. Unlike a bay window, it doesn't extend to the ground.

PALLADIAN. A three-part window in which the central window has an arched head and the side windows have square heads. Used in Adam, Queen Anne, Shingle, Colonial Revival, and Neoclassical houses.

QUEEN ANNE WINDOW. Small glass lights arranged in patterns, usually only on the upper sash.

TRIPLE WINDOW. Any group of three windows with square heads, frequently found on Colonial Revival houses.

WHEEL WINDOW. A round window with muntins radiating from the center. Also called a rose window or a Catherine-wheel window.



Three greenhouses
at the Lyman Estate
in Waltham,
Massachusetts,
include this 1804
Grape House, con-
taining vines started
in England in the
1870s.

By KATHLEEN FISHER People who live in glass houses, as we all know, shouldn't throw stones. People who *want* glasshouses, on the other hand, are just a stone's throw away from a mind-crushing array of decisions.

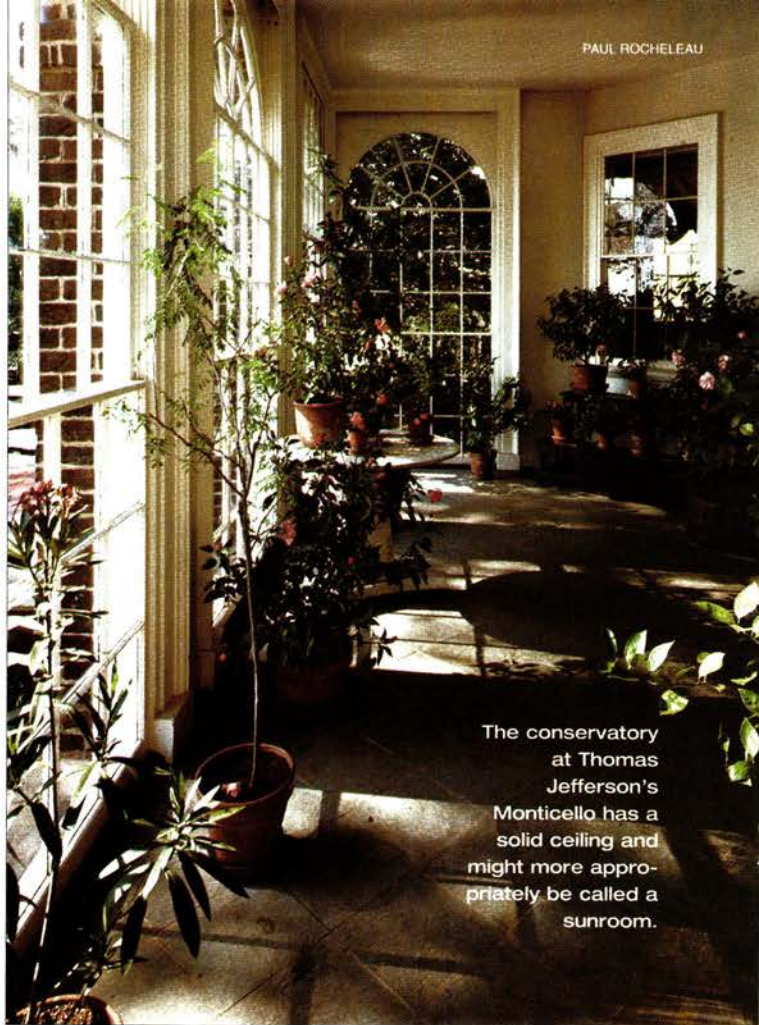
The basic design of greenhouses and conservatories has changed so little over the last century that it's no problem to find a style that's old-house appropriate. You can buy a kit greenhouse similar to ones William Randolph Hearst ordered in the 1930s if you want to feel like *Citizen Kane*. If you really *are* flush, you can have an architect design a custom conservatory with over-the-top Victorian detailing. You can "build green" and have a new greenhouse created from historic parts. If you're truly lucky, you may already have an old greenhouse or conservatory that can be restored with relatively little skill.

Some Semantics

The words greenhouse, conservatory, solarium, and sunroom have all been used interchangeably, depending on time and place. As a rule though, greenhouses are architecturally simpler but technically more complex buildings, intended for the winter survival or propagation of plants—perhaps to nurture strawberries for consumption in January. Conservatories can be sprawling structures built for ostentatious show of rare tropicals, or glass-walled rooms attached to houses, intended primarily for the pleasure of people.

"Orangery" was an early term for a conservatory, since this subtropical fruit was all the rage when first discovered by residents of temperate climes. There's evidence that Pompeians were growing oranges behind mica windows in the 15th century before their run-in with Mount Vesuvius. Probably the world's best-known orangery is the one Louis XIV built at Versailles in the last half of the 17th century.

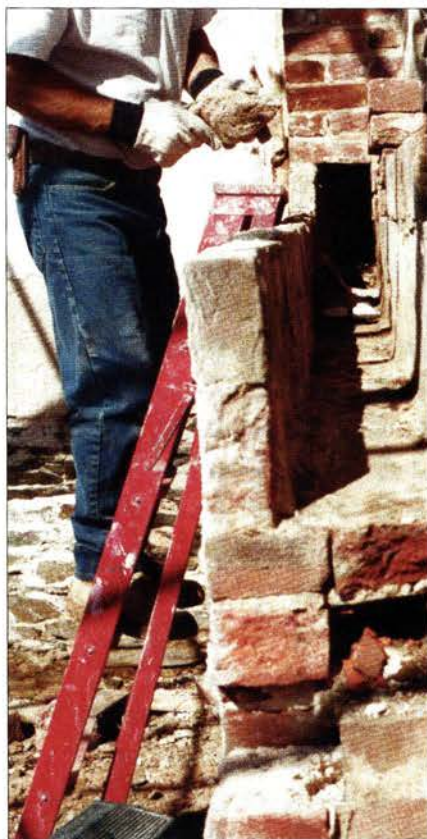
Some early greenhouses and conservatories looked like ordinary rooms with a disproportionate number of windows—masonry structures with a solid roof and a stone or packed-earth floor to stand up to moisture



The conservatory at Thomas Jefferson's Monticello has a solid ceiling and might more appropriately be called a sunroom.

Glass of the Titans

A conservatory or greenhouse was a must for the wealthy a century ago. Today you can spend a little or a lot.



The original floor of the 1810 greenhouse at Oatlands Plantation is 3 1/2' below the current grade. Like many greenhouses of that time, it was heated via a captive brick flue, but theirs also warmed an unusual masonry heat bench, above right. The pipes, above left, are from a 1903 remodeling in which wooden roof supports with tiny panes were replaced with iron frames and larger sashes, and the heat came from a coal-fired hot water system. Below is the Oatlands greenhouse before its extensive restoration.



CATRIONA ERLER

and plant clippings. In the 1700s a common design was a lean-to of south-facing glass with a brick wall to the north.

Around the turn of the 19th century, the availability of cast iron made possible stronger structures with more sash. In 1816, English horticulturist J.C. Loudon invented a wrought-iron sash bar, less brittle than cast iron and cheaper than wood, which could be curved for glass domes. Loudon championed ridge-and-furrow glazing—what amounts to corrugated glass. With the ridge running north-south and panes facing east and west, greenhouses would get more gentle sun than with a flat southern exposure.

Because England taxed glass by weight until 1845, individual panes were still small and thin. Joseph Paxton, gardener to the Duke of Devonshire, seems to have bided his time until the glass-tax repeal before designing and building his famous Hyde Park Crystal Palace in 1851. Erected in 22 weeks, it covered 19 acres.

The industrial prowess of the Victorian era easily accommodated stylistic excesses; conservatories got Gothic, Moorish, and even Anglo-Japanese touches. The structures often represented what one authority called a battle between architecture and horticulture. The Crystal Palace itself was unheated, and as the amount of glass in these buildings grew, better temperature control became imperative.

More humble early gardeners sheltered their crops in sash pits heated with decomposing manure or vegetable matter. The Dutch were among the first to heat larger greenhouses, using charcoal braziers. A common technology in the 1700s, both in the mother country and America, was hollow walls or flues that ran under the floor, allowing hot air or smoke to run the length of the building from a brick fireplace on one end to a chimney on the other.

By the late 18th century, the British were providing plants with both heat and humidity by steaming them with perforated pipes laid under stone or rock. Steam gave way in the mid-1800s to hot water heat.

Tanglewood Conservatories of Denton, Maryland, custom built this ornate glasshouse onto a renovated carriage house. For more information about this company, circle 22 on resource card.



COURTESY OF TANGLEWOOD CONSERVATORIES

Especially efficient were the cast-iron boilers patented by Lord & Burnham in the 1870s, which could go without tending through an entire wintry night. These advances—by such other names as Hitchings, Pierson Sefton, American, Metropolitan, National, Foley, Lutton, Josephus Plenty, Ikes Braun (IBG), and Rough Brothers—created a boom in both private (at least for the wealthy) and commercial greenhouses.

The heyday of greenhouse construction ebbed with World War I, when many of the factories (including Lord & Burnham) were given over to munitions. As fortunes waned during the Depression, many of these grand structures were torn down or left to the forces of nature, and only Rough Brothers and National (now marketed by Nexus Corporation) are still in business.

From Dream to Reality

If you're thinking of buying or building a greenhouse or conservatory, it's imperative to know what you want. Do you see yourself entertaining guests in a glassed-in room with parquet floors where a few

figus trees manage to remain presentable? Or do you want to propagate rare orchids and staghorn ferns?

Jim Smith and Mark Ward, who make their living restoring and rebuilding old glasshouses, say a lot can go wrong on both ends of the economic scale. "There's an inherent conflict of interest," says Smith, "between plants and oriental carpets."

Smith was formerly head of restoration at Rough Brothers in Cincinnati, and now operates his own company, Montgomery Smith. He's been involved in such huge projects as the U.S. Botanic Garden and the Biltmore Estate and New York Botanical Garden conservatories, also consulted on the restoration of the 1810/1903 greenhouse at Oatlands Plantation (a historic

Classic Glasshouses to Visit

Hearst Castle, San Simeon, California

Two renovated Lord & Burnham 1930s greenhouses.

www.hearstcastle.org

Lyman Estates, Waltham, Massachusetts

Features three greenhouses built 1804–1830.

www.waltham-community.org/Lyman

Lyndhurst Estate, Tarrytown, New York

Jay's Gould's mammoth Lord & Burnham conservatory built in 1881 was one of the first in the United States to have a wrought-iron frame.

www.lyndhurst.com

The Mark Twain House, Hartford, Connecticut

A conservatory off the library in the 1873 house was called "The Jungle" by Twain's three daughters.

www.MarkTwainHouse.org

Oatlands Plantation, Leesburg, Virginia

The greenhouse dates to 1810, remodeled in 1903, restored to reflect both periods.

www.oatlands.org

Smith College, Northampton, Massachusetts

The 13 glasshouses on its grounds range from 1890s to the 1980s.

www.smith.edu/garden/bgrenovatek

Mark Ward builds greenhouses, like this one on Brian and Kathy Hollen's ca. 1910 Virginia home, from recycled parts. Ward believes that old parts such as this vent wheel have more charm and integrity than new ones. Another client who, like the Hollens, has a heated pool in her greenhouse says it helps warm it—not to mention providing humidity for plants.



PHOTOS COURTESY OF BRIAN AND KATHY HOLLEN



property outside Leesburg, Virginia), a relatively modest 33' by 57'.

Avid gardeners wanting a small but historically detailed greenhouse can be disappointed by kits that yield what Smith describes as "little hybrid Victorian pavilions with double ogee roofs" that provide neither adequate venting nor shading.

Yet he's also rescued a New England gardener who spent a small fortune on top-of-the-line growing benches and temperature control, only to invest in window sash more appropriate for a solarium. With no ventilation, heat and humidity were deteriorating the structure within six months.

Shortly after earning his degree in social psychology 28 years ago, Mark Ward took on an intern project for a community garden. When the project fizzled, he found himself proud owner of the remains of a 3,000-foot commercial greenhouse. On his own, he learned that old glasshouses are considerably easier than Humpty Dumpty to put together again. For a while, he limited himself to reconstructing four or five greenhouses a year within a couple hours of his Concord, Massachusetts, base. But as he continued to amass vintage greenhouse remains, he concluded that what now amounts to some 100 tons of old cypress roof bars, cast-iron vent wheels, and galvanized supports will move faster if he travels farther and teaches his skills to local contractors.

People with moderate talent can repair old greenhouses, Ward says. Most structures are modular, similar to Erector sets, and so can be reborn smaller. New Jersey client Susan Shaw, for instance, paid \$1,500 for pieces of a greenhouse originally 24' by 56' and Ward rebuilt it as a more manageable 12' by 40'.

Greenhouses are more straightforward than old houses, where problems are often hidden behind plaster and moulding. "It takes a certain logic," Ward says, "but it's mostly assembly work, cleaning and scraping, getting steel sandblasted and galvanized. Vents may be decayed and need to be taken apart and reglued. The job is probably closer to finish carpentry than anything else."

Factors to Consider

If you want a solarium—an attached sunroom where you will relax and grow a handful of plants—decisions are relatively clear-cut, since the materials involved will be familiar to most builders. Depending on how much glass they have they can over-heat, so you may want skylights you can open. "Remember that when it's cloudy you need to crank up the heat," says Jim Smith.

A greenhouse for growing a lot of plants brings up other issues, whether you're buying or rebuilding:

Heat Hot water systems in old greenhouses produce efficient, even heat, but can't always be repaired easily. Smith says passive radiant heat is a close second choice. Ward's client Susan Shaw says her attached greenhouse is warmed sufficiently by a heated pool and her home's heating system. Another client, Brian Hollen, finds that his south-facing greenhouse helps heat his home, despite its location on a windy hilltop.

Ventilation Greenhouses need a way for heat and humidity to escape. Vents can be as low-tech as simply opening windows, or be set to open and shut automatically via a computerized system that responds to temperature, wind, and rain.

Glass For safety, greenhouse restorers usually replace old greenhouse glass with tempered glass, especially overhead. Ward says that, depending on the manufacturer, tempered glass can be wavy like old glass, "with kind of a funhouse effect." Experts don't always agree on whether the glass should be single- or double-glazed. Ward says it depends on whether you'll be growing temperate or tropical plants.

Shade In southern locations and depending on the structure's orientation, glass is sometimes tinted or whitewashed all or part of the year. Shadecloth is another alternative. Tall plants can help shade smaller ones.

Supports Museum houses usually replace the original material. At Hearst Castle, epoxy and reshaping allowed a restoration crew to rescue about 95 percent of one greenhouse's original wood supports. "It would have been easier to mill new pieces,"

says project leader Bruce Jackson. A homeowner would be hard pressed to put that much time and money into it.

Rusty cast-iron supports can be cleaned and galvanized. If any are missing, you can sometimes find original drawings and have parts recast. The New York Botanical Garden has a wealth of Lord & Burnham plans, as does Under Glass in Lake Katrine, New York, which took over the manufacture of that company's greenhouses. An aluminum extrusion is a less expensive alternative.

Among suppliers of greenhouses and conservatories, many are distributors of structures designed and built in England. Says Smith, "They've been doing this for 200 years, and we've spent just the last 20 trying to catch up."

With the recent flurry of high-visibility restorations and increased sales, however, he believes glasshouses may be on the cusp of a huge renaissance. He notes that Lord & Burnham built its famous Irvington, New York, foundry in 1895. "We've passed the hundred year mark. I think we're going through a second wave." 🏠

A restoration team at Hearst Castle is completing work on the second of two neglected greenhouses. One lacked a foundation; they built one, then buried it so the structure would look original. Glazing with a lime-and-water mix, below, prevents overheating in summer.



Suppliers

AMDEGA-MACHIN CONSERVATORIES

British-based maker of Victorian greenhouses and sunrooms.

(800) 449-7348
www.amdega.com
Circle 11 on resource card.

CITY VISIONS, INC.

Restoration, design, and building; also sells kits for historically accurate buildings.

(517) 372-3385
Circle 12 on resource card.

COLEBROOK CONSERVATORIES

Will custom design any architectural style.

(800) 356-2749
Circle 13 on resource card

CREATIVE STRUCTURES

Designs and manufactures custom conservatories.

(800) 873-3966
www.creativeconservatories.com
Circle 14 on resource card.

FOUR SEASONS SUNROOMS

Offers 40 styles of greenhouses, sunrooms, and conservatories.

(800) 368-7732

www.four-season-sunrooms.com
Circle 15 on resource card.

GLASS HOUSE CONSERVATORIES

Custom conservatories in a diverse choice of styles and materials.

(800) 222-3065
Circle 16 on resource card.

HARTFORD CONSERVATORIES

Traditional English designs in mahogany and tempered glass.

(800) 963-8700
www.hartford-con.com
Circle 17 on resource card.

MONTGOMERY SMITH, INC.

James M. Smith, specializing in historic restorations.

(859) 586-6508
Circle 18 on resource card.

OAK LEAF CONSERVATORIES

Custom-built hardwood conservatories.

(800) 360-6283
Circle 19 on resource card.

PRIVATE GARDEN GREENHOUSE SYSTEMS

English Victorian greenhouses and conservatories, consulta-

tion and renovation.

(800) 421-4527
www.private-garden.com
Circle 20 on resource card.

RENAISSANCE

American-made conservatories and greenhouses.

(800) 882-4657
www.renaissance-online.com
Circle 21 on resource card.

TANGLEWOOD CONSERVATORIES, INC.

Custom designed conservatories.

(410) 479-4700
www.tanglewoodliving.com
Circle 22 on resource card.

UNDER GLASS MFG. CORP.

Manufactures original Lord & Burnham designs, restores and customizes.

(845) 336-5050
www.underglassusa.com
Circle 23 on resource card.

MARK WARD

Supplies, restores, and rebuilds antique greenhouses—and also supplies old greenhouse parts.

(978) 369-1354
Circle 24 on resource card.

Home

BY NANCY E. BERRY **“We** don’t have children, so instead of baby books we have house books,” laughs Darlene Johnston, as she proudly pores over “before,” “during,” and “after” photos. Darlene is no stranger to old-house restoration. She and husband Eric are veterans of two other projects, but their 1885 Queen Anne (today the Ash Street Inn) in downtown Manchester, New Hampshire, is the couple’s first commercial endeavor. When Eric decided to trade in his corporate-America job to open the city’s only bed-and-breakfast with his wife, he hadn’t considered the stringent building codes the 117-year-old house would have to pass in order to receive guests.

After a year of scouring Manchester for an affordable fixer-upper, the couple fell in love with the vacant Victorian that had served as a private residence, a beauty parlor, an arts and crafts school, a boarding house, and a dermatologist’s office. Although it suffered from several bad renovations and years of neglect, the house still retained many original elements: stained glass windows, oak doors, hardwood floors, Eastlake-style mantels, and Victorian hardware—all the charming details a bed-and-breakfast should have.

“We knew the house had been used commercially before, but we weren’t sure if the zoning board would approve the plans for a bed-and-breakfast,” says Darlene. Obtaining this blessing turned out to be their biggest challenge, involving not only the city’s planning and zoning board, but also the fire department. There hadn’t been a true bed-and-breakfast in the city in the recent past, so Darlene and Eric had to follow local building codes designed for chain hotels. “This was really a surprise to us,” says Darlene. “We hadn’t spoken to anyone before the purchase and didn’t realize that we would have to follow so many regulations.”

Before they began any work they consulted with Fire and Safety Chief Dave Albin, who told them all services—wiring, heating, plumbing—had to be updated, and they would have to install a fire alarm, sprinkler system, illuminated exit signs, and fire extinguishers. The electrical system hadn’t been touched in years and the couple had no records of maintenance, so they hired a certified electrician to install all new wiring.



Before the Johnstons bought the house in Manchester to run as an inn, it had been vacant for years. These “before” photos show that the house was covered in asbestos siding and the porch was held up by 2x4 supports. The couple removed the siding to reveal the original shingles and restored the porch.





Safe Home

Thinking B&B? Be prepared to jump through some unexpected hoops.

Another hurdle was retrofitting all the pipes and wires into the house without destroying it. Darlene and Eric worked with plumbers and carpenters to hide these lines under mouldings, in the attic, and behind walls. "All the pipes under the sinks were fitted with clamps so if there's a fire, the hole around the pipe would close to stop fire from spreading," says Darlene. "I know these elements are not old-house appropriate, but they sure do make you feel secure at night."

Other major concerns involved dimensions. Codes required that windows had to be 16" from the floor; otherwise the original glass would have to be replaced with tempered glass. Luckily the original windows passed that test. A preexisting fire escape railing on the back of the house had to be raised from 36" to 42" and fitted with a 2" diameter handrail to meet ADA (Americans with Disabilities Act) requirements.

Two other safety measures mandated installing a commercial range hood in the kitchen and a sprinkler system on the front porch. The law required that the range hood extend 6" over the sides of the cooktop. However, the kitchen cabinets would not accommodate a hood that big so the Johnstons were able to waive that rule. "It seems funny to have a commercial range hood even

though we're just making French toast and blueberry muffins," Darlene says. "With all these safety measures, we're ready for anything shy of a nuclear war."

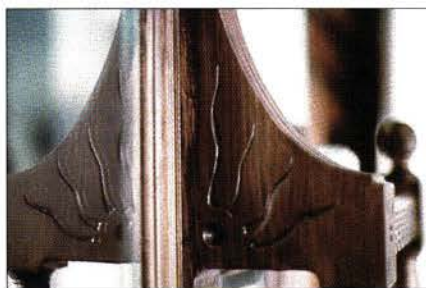
The couple could live with the sprinkler system, fire alarm, and range hood but when the city wanted to remove some of original building details—the reason the Johnstons purchased the house in the first place—Darlene had to put her foot down. The couple had to educate city employees as to why they wanted to keep these older fixtures in the house. "The city wanted us to replace all the original oak doors with automatic-lock steel doors," says Darlene. "I told them 'If I wanted a Motel 6, I would have bought one—and for a lot less too.'" The doors stayed, but the battle wasn't over. The fire department also wanted to close off the staircase with doors at the top and bottom. The city capitulated on the doors, but wouldn't let them reinstall the staircase's original 36" high balusters (which the Johnstons found in the basement) deeming them too low to be safe. Instead, Darlene and Eric incorporated the balusters on the third floor, which is their personal living space.

Another crucial safety measure facing the couple was replacing the existing porch. The support beams had been hollowed out



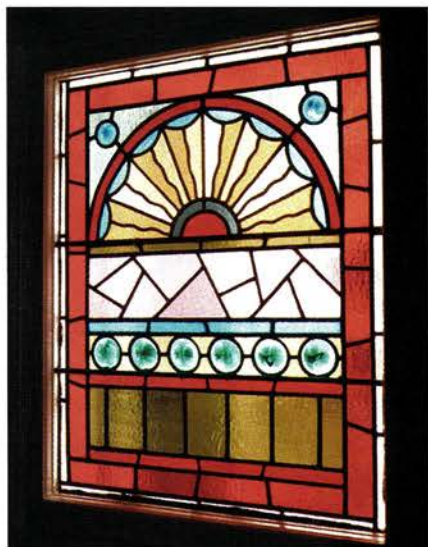
Above: Darlene and Eric scoured years of caked-on soot off the original mantels to reveal decorative Victorian glazed tiles.

Below: Also discovered throughout the house were sunburst details, such as the one found on this mantel. Right: The Johnstons enjoy their new-found careers as innkeepers.



by carpenter ants, which triggered other deterioration. "Nothing was salvageable except the porch roof," says Darlene. Much of the existing porch wasn't original and they had no records of what the house looked like when it was first built, so they worked with a carpenter to design an appropriate porch style. Darlene feels one of the couple's biggest mistakes was removing the original 24" high porch railings. "Once they were off the house, we couldn't put them back on because they didn't meet the 42" height requirements," says Darlene. "If we had left them on they would have been protected as part of the original structure." The finishing touch on the porch was the installation of the sprinkler system.

Eric and Darlene were given an award for saving the house by the Manchester Historic Association. "We know from driving around the city and passing so many empty lots that many Victorian houses have been lost," says Darlene. "We're glad we saved this house." One year into the bed-and-breakfast business the couple has no complaints. They have passed all the safety tests with flying colors and business is starting to pick up. With the major restoration work behind them, Eric and Darlene love to show guests their "baby books," which they keep on a shelf in the kitchen for everyone to admire. 🏠



The couple say that working jointly with a good contractor was invaluable in a project such as this. Left and above: Original stained glass abounds throughout the house. The front doors' glass was covered with contact paper and pieces were coming loose. Darlene hired a local artist to restore the glass.

Lost & Found

To celebrate the 10th anniversary of the Manchester Historic Association's Preservation Awards this spring, the organization will open **Lost & Found**, an exhibit featuring Manchester's historic buildings both lost and saved, and sponsor a home tour. The Ash Street Inn will be one of the homes featured on the tour.

The association began in 1896 to preserve Manchester's heritage and historic past and today offers low-interest loans to individuals or groups restoring Manchester's old buildings. Loans may be used to purchase a historic property, to restore, stabilize, and rehabilitate an exterior or interior of a historic building,

to move an endangered building, or to acquire technical expertise in the areas of evaluation, planning, or preservation.

Individuals, businesses, and nonprofit groups within the established city limits of Manchester are eligible to apply. Loan recipients are chosen based on the historical and architectural significance of the property, the impact of the project on the neighborhood, appropriateness of the plan, and soundness of the project budget. For more information on the Manchester Historical Association call (603) 622-7531 or visit www.manchesterhistoric.org. For information on the Ash Street Inn call (603) 668-9908.



Left: The parlor had been divided into two examining rooms when the house was run as a doctor's office. Darlene and Eric restored the room to its original layout.



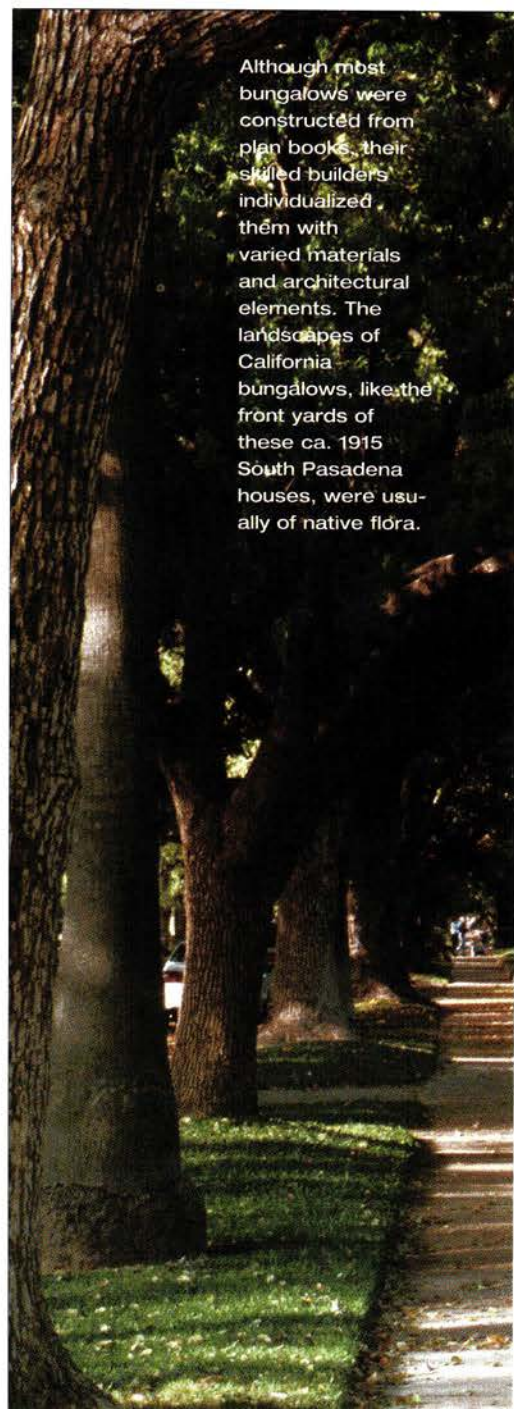
What is a bungalow? Besides being the most innovative and broadly promoted house of the early 20th century, precise definitions of “bungalowness” can be hard to pin down. Exceptions challenge even the most universally agreed upon characteristics, such as size (one to one-and-a-half storeys), roof shape (low pitch), and floor plan (bedroom on the ground floor). Derided in its day as “the least house for the most money,” the bungalow is now admired as a pioneering house type that ideally met the new requirements of a modern lifestyle. A simple winning formula that could be readily adapted to the specific needs of a builder or region—or varied almost endlessly within a single block—bungalows were built by the thousands across the continent in nearly every community.

The bungalow has so many incarnations, in fact, that one umbrella discussion does not do this multifaceted house justice. To try to bring a more diverse perspective to the subject, we’ve asked authors from four different parts of the country—the East Coast, the Chicago area, the South, and Southern California—to write about the bungalow as it has evolved in their vicinity. We hope you’ll agree the results are as interesting as they are informative. — *Gordon Bock*

**A look at the
many faces of a
ubiquitous
house.**

Bungalows

Although most bungalows were constructed from plan books, their skilled builders individualized them with varied materials and architectural elements. The landscapes of California bungalows, like the front yards of these ca. 1915 South Pasadena houses, were usually of native flora.



Without Borders

JUAN GOMEZ-NOVY



California Bungalows, Streets, and Courts

By STEFANOS POLYZOIDES **T**he California bungalow could well be the most beloved house form in Southern California today. Created and built between 1900 and the 1920s, it is also the most modern of 20th-century production houses, the product of architects trained in traditional design and practicing in the Midwest in cities like Chicago, St. Louis, and Minneapolis.

Bungalows were designed a hundred years ago as active contributors to the character of some of America's greatest neighborhoods, and they still offer a plethora of valuable lessons. If urbanism is concerned primarily with the design of the spaces between buildings, then the street and the court are two principal aspects of a bungalow-based urbanism worth noting and admiring.

The streets in neighborhoods dominated by bungalows exhibit a number of extraordinary urbanistic characteristics. Typical front setbacks at 20' to 30' are very ample. Streets are relatively narrow. The streetscape is highly articulate, typically of alternating canopy-

shaped and column-shaped trees. The combined front yards of houses give the impression of a huge shared park overlooked by porches. (Cars are parked in backyard garages accessible through side-yard driveways or alleys.) The repetition and variety of front porches and the continuity and color of materials (principally shingles and siding) gives a vivid

impression of both individual houses and a rich fabric of continuous building. This is a rare moment of harmonious design in an ensemble of production-made, common, 20th-century buildings in America.

As densities tended to increase within Southern California neighborhoods in the second decade of the 20th century, attached housing types—first duplexes and quadruplexes, then courtyard housing, popularly known as courts—were designed in bungalow form. At the turn of the 20th century, the court was a new housing type. Bungalows were arranged in a two-part pattern: one pair facing the street and more pairs situated sideways lining a courtyard—as many as would fit the depth of a lot. The two bungalows at the head of a court were designed as typical porch-dominated front-facing houses—no more and no less so than any other single-family house adjacent to them. The space be-

JUAN GOMEZ-NOVY



Above: Pasadena's Gartz Court, built ca. 1910 and relocated and restored in 1984 by de Bretteville and Polyzoides Architects, shows a variety of influences, from Tudor half-timbering to Craftsman rubble chimneys to Colonial Revival columns.

DOUGLAS KEISTER

While the Gartz houses bear typical gable roofs, those of this working-class San Diego court are Mission Revival style.

DOUGLAS KEISTER FROM RED TILE STYLE DUE OUT FALL 2002



Bungalow interiors aren't all geometric moulding and Mission furniture, as shown by the Mediterranean flourishes inside the Andalusia near West Hollywood.

tween the bungalows, slightly wider than typical side-yard setbacks, became the entrance to the court. Cars were typically parked behind the court or to the side, entered from a side-yard pathway or alley. On rare occasions, and on sloping sites, cars were parked in underground garages. The consequence of the court design was a seamless incorporation of density into a neighborhood. The construction of a court next to a single-family house represented a density four to six times that of its neighbor, an increase that was unobstructive and virtually invisible.

On the interior of the lot, the space between each bungalow pair was large enough to define, through repetition, a central courtyard. Symbolically and functionally, this was a common garden that represented and enabled the simple social rituals of mutual dependence typical of community. The narrow spaces beside each pair became private gardens.

The design of single bungalows, duplex and quadruplex bungalows, bungalow courts, and their streets was so simple to repeat that they are now commonly found in city after city throughout

Southern California. Their beauty can be measured both by their continuing popularity after over four generations of owners and by their inclusion in list after list of culturally significant buildings and neighborhoods. Isn't it time we start using more of the potent, common-sense architectural and urbanist lessons that bungalows are silently imparting to us every day?

Stefanos Polyzoides is a principal at Moule & Polyzoides Architects and Urbanists in Pasadena, California (spolyzoides@mparchitect.com).

In the East, brick is less common than wood as a bungalow cladding. Chilly year-round weather meant fewer windows and the eventual enclosing of the front porch.

Eastern Bungalows

BY JAMES C. MASSEY AND SHIRLEY MAXWELL Eastern bungalows may be a bit less glamorous than their western cousins, but they were just as popular during their ca. 1905 to 1935 boom. Generally, eastern examples look firm-boned and somewhat chunky, with a less fluid quality than those in the West. They are also smaller and more rigidly geometric. These little houses tend to perch firmly on top of the land, rather than blend "organically" into their sites. Though they are undeniably bungalows—one-and-a-half-storeys, front porches, low lines—many have a decidedly cottagelike character.

That's not surprising, since the bungalow was most often designed to appeal to the tastes and pocketbooks of middle- and working-class owners in new trolley-car suburbs. Many belonged to first-time home buyers, a conservative group who valued the bungalow's coziness and low cost as much as its novelty. Although there are good examples of high-end bungalows in the East, these are relatively few—and, of course, none rivals



JAMES C. MASSEY



Pasadena's Gamble House.

Meant for year-round living in chilly climates, these bungalows usually have fewer large windows and French doors (although they were still well supplied), and they almost never sport the slatted gable ventilators or wide-open sleeping porches found in Southern California. Their floor plans are compact, generally less amenable to indoor-outdoor living than those favored elsewhere, and the small rooms are laid out in conventional, often formal patterns.

The houses are most commonly of wood—either horizontal siding or shingles—but brick, stucco, or a combination of two or more of these materials can be found. In the East, stone and ornamental concrete blocks are usually reserved for foundations, porches, pillars, and posts, where they add a decorative element to a rather plain façade.

Although hipped roofs are not unknown, most Eastern bungalow roofs are gabled—perhaps end-gabled, front-gabled, or even multigabled—with a broad sweep over the ubiquitous front porch and sometimes over a porte cochère as well. Dormers on the front, rear, and (often) sides denote intensive use of the attic for bedrooms.

PHOTOGRAPHS BY JAMES C. MASSEY



Top: The room behind the gable dormer may have started as attic space. Above: This relatively big house, with its shed dormer, would qualify as an über-bungalow.

Porch roofs often smoothly follow the slope of the main roof, but there might be a barely discernible break between porch and house—though nothing like the dramatic swoosh of western examples. Sometimes the porch has its own front-facing gable. Porches often sport plain, boxed posts; round columns (chubby in some Arts & Crafts-influenced houses, slim in those with Colonial Revival aspirations); or, less often, Prairie-style battered columns. The porch might have a single broad, open span, with large posts at the corners only, or it might be in three or four bays with multiple posts. As with bungalows elsewhere, eastern porches very often include one or more sturdy, flat-topped, truncated pillars for displaying pots of flowers or greenery—a token effort towards outdoor living.

Interior ornament in eastern bungalows is restrained, with relatively little stained glass and fewer beamed ceilings and paneled wood walls than elsewhere. The fireplace is usually of brick, although rounded stones are a popular alternative material, and the mantel most often is in a simple, blocky Arts & Crafts or Mission style.

Just how popular were bungalows in the East? As the evidence shows, very popular indeed. But in eastern communities that were already well established—if not built out—by 1910, the bungalow was always just one among many building choices, and it never achieved quite the center-stage cachet it enjoyed in the West.



RICHARD SEXTON

James C. Massey and Shirley Maxwell, OHJ's long-time architectural historians and the authors of House Styles in America, are based in Strasburg, Virginia.

Southern Bungalows

Arts & Crafts touches such as the porch lantern, geometric door muntins, gable trusses, and double porch supports give this 1920s one-storey New Orleans house an oriental flavor.

BY RICHARD SEXTON **T**he southern bungalow, in its most common form, is more varied, more vernacular, and a bit younger than many of its relatives from other regions. It is perhaps best described as a raised, frame-constructed house, with its architectural detailing derived from Arts & Crafts inspirations. It is usually deeper than wide, with a prominent front porch and a roof of sufficient pitch to provide space for optional attic rooms lit by shed or gabled roof dormers. There are front- and side-gabled versions, with the former being more common. Like the shotgun house before it, the Southern bungalow is a climate-responsive design well suited to the South's hot, humid summers.

As many old-house devotees know, the name "bungalow" is a corruption of banggolo, a type of peasant hut native to Bengal in India. When British colonists adapted the form for summer homes on Bengali hillsides, their banggolos were characterized by broad roof overhangs and porches that sheltered sliding wall panels to let in cool breezes. The southern bungalow, however, didn't migrate directly from India, but spread from other regions of the United States through magazines and pattern books.

In the second decade of the 20th century, bungalow houses, along with oak Mission furniture, were icons of the Arts & Crafts movement then in vogue across the country. The style's popularity prompted the building of purist western-style Craftsman bungalows in the South in the early teens. This trend was followed in the 1920s and '30s by a tendency to adapt, rather than adopt the bungalow form. New Orleans builders, interestingly, applied Arts & Crafts detailing to the pervasive shotgun house before the raised bungalow became the more prominent form.

The southern predilection for clapboard siding and screened porches was a common derivation imposed on the Craftsman model, which was typically clad in stucco with open porches. In low-lying areas like New Orleans and along the Gulf Coast, bungalows were raised up—sometimes as much as a full storey above the street—in defiance of the low-to-the-ground look that characterizes most bungalows. In the rural South, the bungalow could

Bottom: A house in Atlanta reflects a more literal Craftsman influence with its stone half pillars and cottage-style windows. Below: The screened porches on these 1940s Seagrove, Florida, bungalows, otherwise the epitome of simplicity, make them speak with a marked southern accent.



be quite vernacular, devoid of any Arts & Crafts detailing whatsoever—its bungalow status conveyed solely through its form, sense of proportion, and front porch configuration.

In its heyday between the wars, the southern bungalow was one of the most pervasive forms of new middle-class housing. After World War II, it was rapidly eclipsed by the ranch house. In fact, it's possible to trace a brief history of middle-class southern residential architecture though the declension from shotgun to bungalow to ranch house.

Today in new southern metropolises such as Atlanta, Houston, and Dallas, the bungalow is regarded as a significant historical type, whereas in antebellum bastions like New Orleans, Savannah, and Charleston, the bungalow is regarded as a modern idea.

One of the more significant contemporary developments for the southern bun-



RICHARD SEXTON



ROBERT M. CRAIG

galow is its emergent revival. In the acclaimed new urbanism community of Seaside, Florida, the southern bungalow is the most commonly prescribed residential building type in the town's urban code. The popularity of these highly publicized Seaside houses—which are quite vernacular in inspiration—has rekindled wider interest in the southern bungalow, particularly in resort areas along the Gulf Coast. The southern bungalow is not merely a recent historical type, but a viable housing model poised for a comeback.

Richard Sexton, the author of The Cottage Book and Parallel Utopias, writes and photographs from New Orleans.

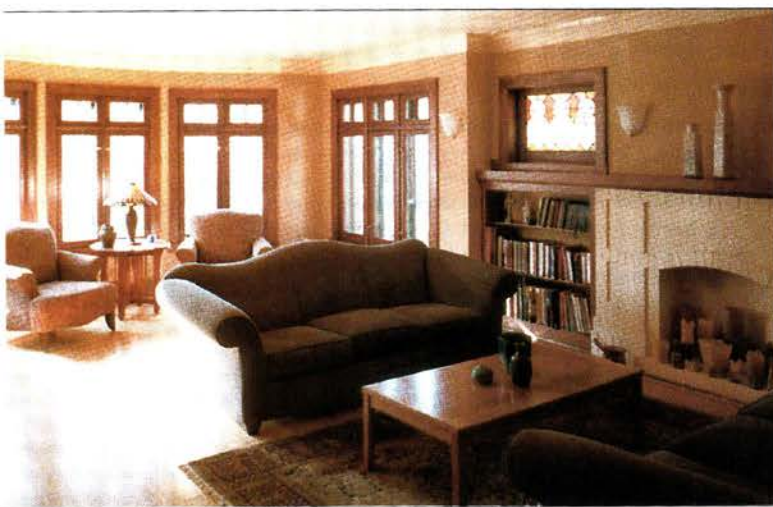
Chicago Bungalows

BY NEAL A. VOGEL **F**amous for architectural masterpieces by Louis Sullivan and Mies Van der Rohe, Chicago is home to more bungalows than any other single building type. Estimates hover at around 80,000 bungalows just within city limits, representing nearly one-third of the single-family homes. A crescent-shaped area, dubbed the “bungalow belt,” spans the western outskirts of the city from north to south. Generally constructed between 1910 and 1940, bungalows were the home of choice during Chicago's biggest growth spurt, with thousands being built at their peak in 1925.

What is it that makes Chicago bungalows unique? Their distinctive style was influenced by many factors, perhaps dating back to the Great Fire of 1871. Bungalows in the Windy City are invariably one-and-a-half storeys and of fireproof, solid-brick construction. Bricks called Chicago “commons” were employed by the millions for secondary el-

elevations, chimneys, and back-up masonry, while bungalow fronts were frequently faced with cream or yellow bricks. Front façades often feature decorative herringbone, checkered, or other brick patterns that add interest and are typically trimmed with Indiana limestone or cast stone.

Deep, narrow Chicago lots—typically 125' front to back but only 30' to 35' wide—dictated unwavering rectangular floor plans. Butting up to their neighbors, Chicago bungalows address light and privacy by concentrating the largest windows in the chief living space at the front of the



To safeguard privacy, bungalow windows are clustered in the front. Small decorative side windows often set off bookcases, buffets, and stairwells.

house. Many times these windows are accented with art glass housed in bowfront bays and serve as the focal point of the house, inside and out. Truncated “clipped” hipped roofs commonly nestle prominent dormers on the front of the house as well. Often built as unfinished attic or storage space, the crow's nest (or half storey) has normally been converted to bedrooms years ago. Windows along the side of the house are plentiful, but smaller and located high on the wall over built-in bookcases, buffets, and staircases.

While the city's density required its bungalows to provide more privacy than those built elsewhere, the Chicago model remains informal and welcoming. A modest front entrance is always located off to one side. Many Chicago bungalows hug one lot line in order to surrender as much space as possible to the other side of the house. Generous setbacks and small front stoops encourage socializing with neighbors and historically contributed to Chicago's close-knit working-class neighborhoods.

Chicago bungalow interiors are modest but deceptively expansive inside. The primary rooms are open, flowing from the front to the back of the house. True to bungalows in general, bedrooms, bathrooms, and closets are usually small in order to relinquish space to the primary living and dining rooms. Another Chicago invention, Pullman kitchens (where the sink, cabinets, and counter top were all aligned on one wall) were commonly installed in these bungalows.

Bowfront windows and broad, clipped-roof dormers are the essence of the Chicago bungalow façade—the only elevation worth embellishing on the long, narrow lots.

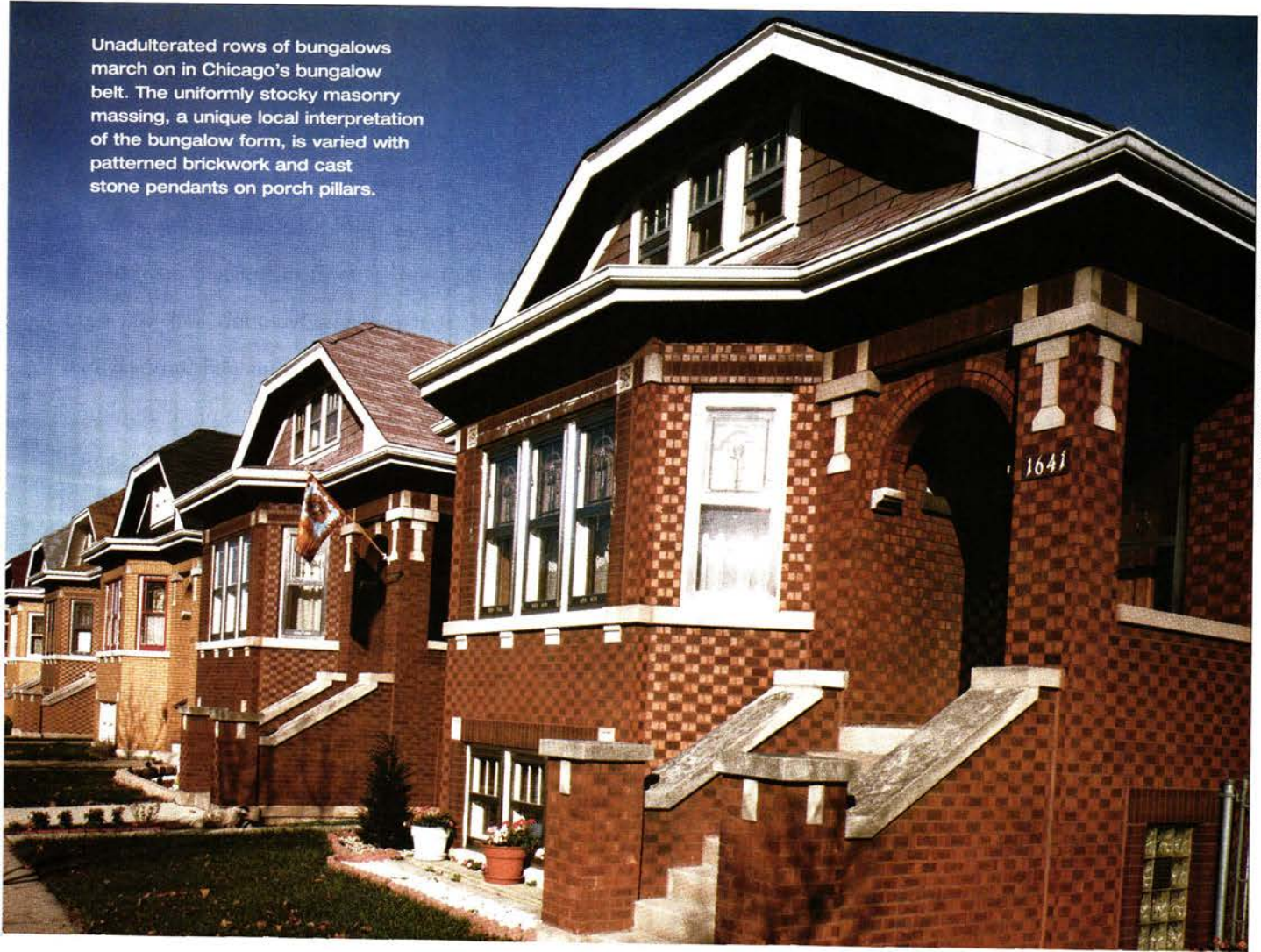
Of course, the Chicago bungalow could not escape the Prairie School influence. Most have a hunkered-down, horizontal emphasis bolstered by masonry bands, overhanging eaves, and linear Prairie School art glass. While Frank Lloyd Wright, Walter Burley Griffin, George Maher, and other important Prairie School architects inspired some of these decorative details of Chicago bungalows, the origin of their overall design remains unattributed.

Bungalows are the most abundant single-family home not only in Chicago proper but also in many of the area's older suburbs. Chicago Mayor Richard M. Daley grew up in a bungalow, and the Daley administration encourages the preservation of bungalows through the Historic Chicago Bungalow Initiative. As Mayor Daley himself put it, "For many Chicagoans, a bungalow was the first house—and the only house—they ever owned."

Neal Vogel, the principal of Restoric, LLC (847-492-0416; restoric@earthlink.net), lives in a 1908 bungalow in Evanston, Illinois.



Unadulterated rows of bungalows march on in Chicago's bungalow belt. The uniformly stocky masonry massing, a unique local interpretation of the bungalow form, is varied with patterned brickwork and cast stone pendants on porch pillars.



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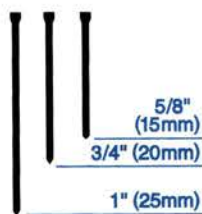
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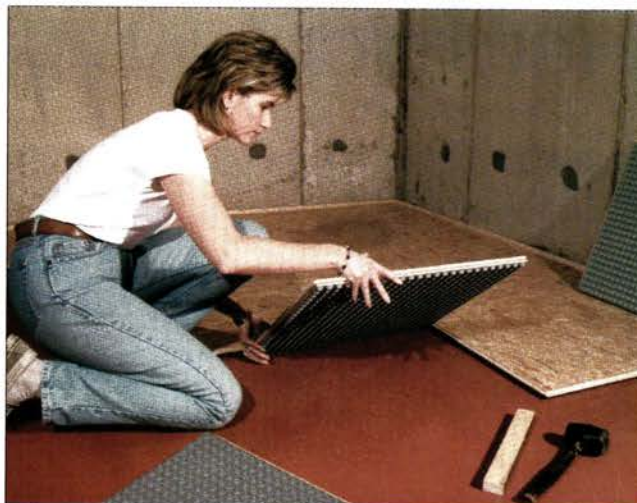
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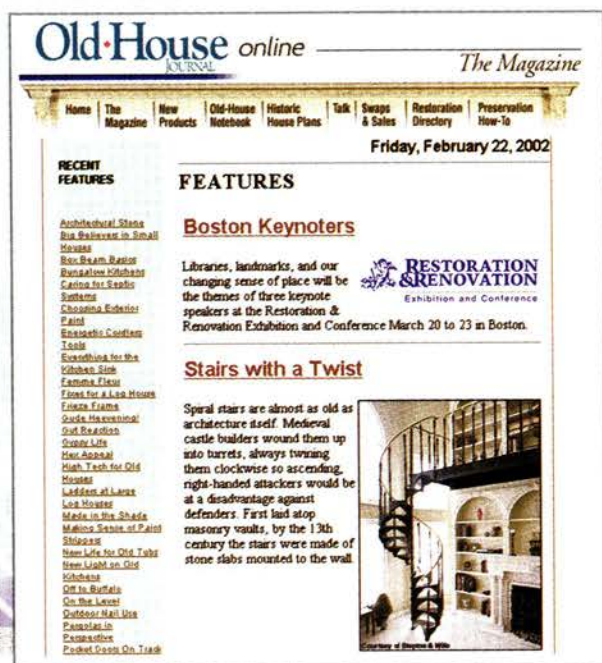
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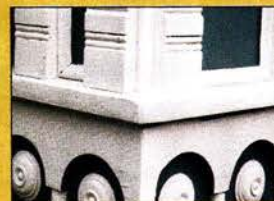
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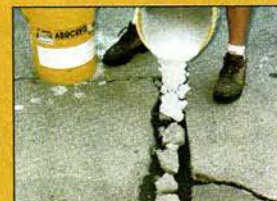
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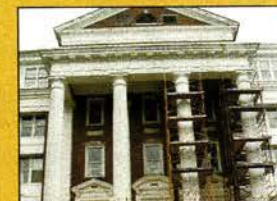
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Saving Face

**Offsetting
the march
of time in
brownstone
façades.**

BY NANCY E. BERRY **U**nlike granite, which seems to stand the test of time, brownstone-faced buildings reveal their years readily. Many brownstone owners fight these ravages of age by giving their home's façade a facelift with patching techniques and, in a few cases, replacing the stone in kind.

Used in middle-class neighborhoods of East Coast cities between 1820 and 1890, brownstone offered a handsome Italianate-style veneer as well as the prestige of stone—considered more sophisticated than the mundane brick structure it covered. It was also easy to quarry, inexpensive, plentiful, and soft enough for fine carving and honing, making it a favorite among 19th-century masons. More than 50,000 row houses in the Northeast were finished with brownstone, and because of the high demand, the best quality stone was not always available. Historical records show that some brownstone began deteriorating 30, 20, and even 10 years after it was installed, says Alex Herrera, director of technical services at the New York Landmarks Conservancy.

Below: Through the New York Landmarks Conservancy Historic Properties Fund's low-interest loan program, both homeowners were able to resurface their brownstones using patching materials. A. Malek Contracting did the work. For more information on this company, circle 25 on resource card.

Above: These brownstones in Fort Greene, Brooklyn, were in desperate need of an overhaul. The façade on the left was failing due to improper patching, while the building on the right had lost over 60 percent of its original brownstone.

In the 1950s many Brooklyn residents tried to disguise these modern ruins by covering their tattered façades with aluminum siding, faux brick, and paint. By the 1970s, however, preservation-minded folks began to look for more appropriate choices. Patching with a mixture of cement, sand, lime, and mortar colors became the preferred fix. It was economical as well as offering a range of shades—from a seductive dark chocolate to milky cocoa—to match the brownstone.

Today there's a resurgence in preserving these "Brown Decades" buildings, in part because of the success of commercial patching materials and masons who have perfected their own patching brews and techniques over the years. Another boost is the reopening of the Portland Brownstone Quarries in Portland, Connecticut, which supplied 85 percent of the original brownstone used in New York and surrounding areas. This source offers homeowners whose homes were originally Portland brownstone the choice of in-kind repairs on small restoration jobs or, if their budget allows, refacing the entire building with in-kind stone. "When it comes time to do the work, homeowners should consider how long they want the treatment to last and what they want it to look like," says Ivan Myjer, principal of Building and Monument Conservation in Arlington, Massachusetts.

Why Brownstone Fails

Brownstone is a medium- to coarse-grained red-brown sandstone, usually with noticeable mica content that gives the stone





A mason applies patching material to the front steps of the Fort Green brownstone. Note the scratch marks in the stone.

its characteristic sparkle. The stone is held together with silica and clay, and Myjer says it's the weaknesses of these elements that lead to most of the damage. These minerals swell after long periods of exposure to moisture and don't return to their original size when the stone dries. This action causes small cracks, usually along the bedding planes, allowing more water to enter. Then pointing may crumble between blocks of brownstone, compounding the problem; as these joints open up, they allow water to seep in. When the temperature drops, the water freezes, expands, and further damages the stone in a continuing freeze-thaw cycle. Crumbling architectural details on top of a building may also channel water in patterns that severely wear away the brown-

stone façade. Drainage problems such as this must be corrected before repairing the brownstone itself. Maintenance of mortar joints, flashing, roofs, gutters, downspouts, and coping stones limit the amount of water that enters the masonry wall.

Another reason brownstone fails is that it typically was *face-bedded*, with the stone's planes (layers) set perpendicular to the ground, rather than *naturally bedded*, with the bedding planes set parallel to the ground. This installation method allows water to penetrate through weakened mortar joints and flashing and into the stone's layers. Face bedding was fast, aesthetically pleasing, and less costly—but definitely not the way Mother Nature intended. The stone spalls or flakes off, roughening the once smooth surface. Although you can counteract some water problems, you're stuck with the original orientation.

Patching Techniques

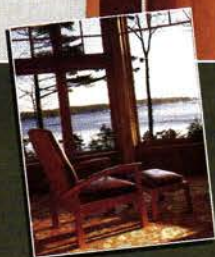
Building out with patching materials is a common treatment for re-creating lost surfaces, profiles, and finishes. Approximately 95 percent of brownstone repair in New York involves patching, according to Herrera. Along with first-time repairs, some of this restoration includes reworking patches that have begun to fail. Unfortunately, when an old patch fails there's usually not enough substrate remaining to repatch. The original veneer was typically only 3" thick. Plus, as the patch reaches the end of its serviceable life, the underlying stone tends to deteriorate. Replacing the stone in-kind is the safest alternative at this point, says Myjer.

Crushed brownstone (found at salvage yards) is a desirable component for a patching mix used on a Portland brownstone building because other aggregates lack mica particles and look flat in contrast. The mix should contain 1 part portland cement, 1 part lime, 6 parts sand, crushed brownstone, dry mortar colors, and water. The amounts of mortar color and water vary, depending on the right color and consistency. Experiment first with the dry masonry colors, then introduce the cement and brownstone. Begin with white portland cement to avoid introducing unwanted color to the mix. If you find you need a greyer hue, use a light grey portland. Match the color of the original brownstone, not the weathered surface. When you under-

Below: Spalling or flaking results from a failing brownstone veneer. The example shown is from the Lafayette Avenue Presbyterian Church in Brooklyn, which is undergoing extensive brownstone restoration. In-kind replacement stone is being used on this project.



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Above: An example of Edson USA restoration work in Brooklyn. The company has been in business for decades. Owner Angelo Caputo remembers patching OLD-HOUSE JOURNAL'S first home back in the 1970s—a Brooklyn brownstone. For more information about this company, circle 28 on the resource card.

cut you'll expose unweathered stone. As the patch weathers, it will appear more like the stone façade. Many masons add the dry mortar colors and crushed stone only to the finish coat.

Applying the Mix

Patch when you can rely on the temperature remaining at 45 degrees or above for a 72-hour period. Using a hammer and chisel, cut back the stone to a solid subsurface. Undercut the perimeter of the patch to provide a key (a rough surface) to hold the mix. Once the deteriorated stone has been removed, bore 1/4" diameter holes approximately 1/2" deep at varying angles, about every 2" along the newly exposed surface. Remove all loose and deteriorated stone, dust, and dirt from the patch area and lightly spray with water. Then apply a bonding agent—a thin paste consisting of 1 part portland cement, 2 parts lime, and 6 parts sand mixed with water. After the bonding agent is in place, apply the first layer of patching mix, called the scratch coat, to the area. The mix must be applied in layers no less than 3/4" and no more than 3" thick. Layering is very important to the success of the patch, says Herrera. To provide keying for each layer, use a trowel to gouge many scratches into the surface of the pre-

vious layer while it is still damp. Wait 2 to 4 hours before applying another coat. When working on small patch jobs, it is important not to patch across a building's mortar joints, says Myjer. Each stone expands and contracts individually, and if you bond two stones together they will ultimately crack.

In-Kind Repairs

The Secretary of the Interior's Standards for Preservation rank in-kind replacement as being far preferable to replacement with alternative materials. In some cases, repairing with stone can cost the same as using patching materials. A partial replacement, called a dutchman, involves removing deteriorated portions of the stone and inserting a piece of stone that is profiled and tooled to match the adjacent areas. These types of repairs should only be done by a skilled mason, says Myjer.

Get a mason's advice when choosing replacement stone. The ultimate strength of sandstone, measured in terms of psi, is not a good indicator of how a stone will weather. Porosity, permeability, and chemistry of the stone's binder and mineral components are far more important than ultimate strength, Myjer says. It's also important to use stone from the original source. Do your homework to find out if your row house is made with Portland brownstone. Whether choosing to patch the stone or replace in kind, keep in mind how long you want the repair job to last. If a patch is done well it could last anywhere from 20 to 40 years or so, but replacing in kind could last 100 years, according to Myjer. 🏠

OHJ thanks Ivan Myjer, principal of Building Monument Conservation in Arlington, Massachusetts, for his help with this article. Myjer is restoring the Cooper Union in New York City, hand selecting stone from the Portland Brownstone Quarries. OHJ also thanks Alex Herrera, director of technical services at the New York Landmarks Conservancy.

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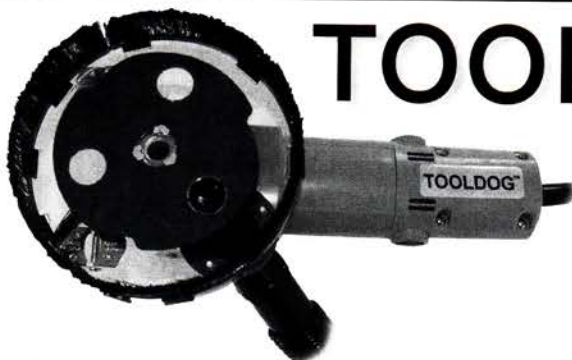
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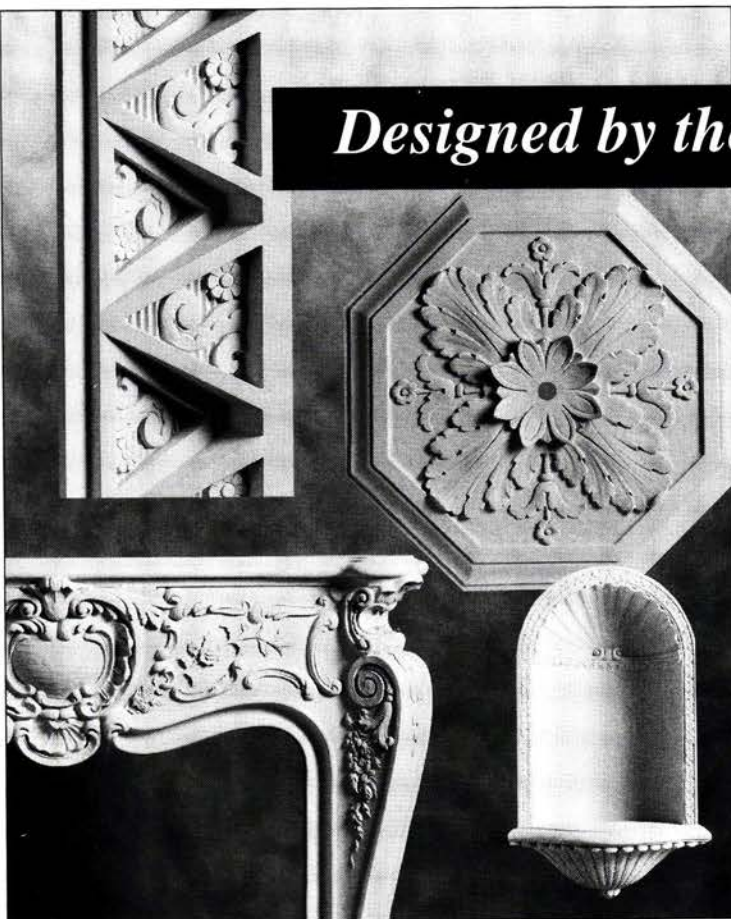


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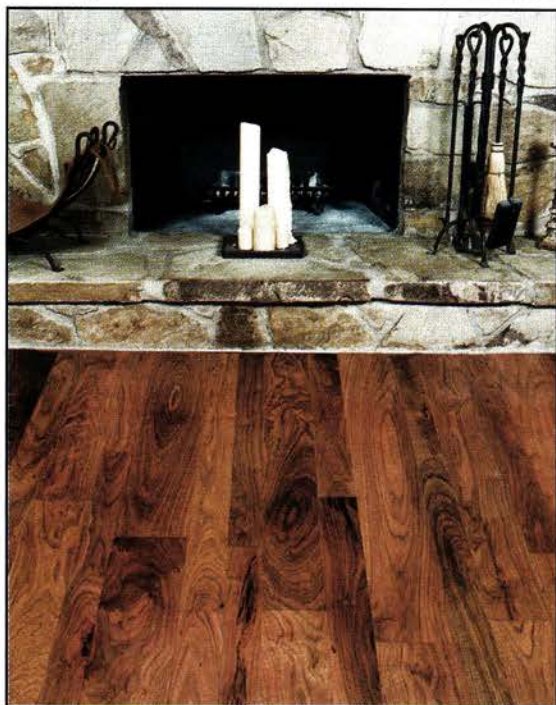
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Home Pages

Think your old house is unique? Its individual details, construction, and history surely are one-of-a-kind, but that doesn't mean your old house won't share basic looks and layout with a near twin across town or across the country. Since the 1970s, architectural historians have found increased evidence that mass-published plans played a pervasive role in shaping the North American residential landscape. Now Daniel

before 1750 appear to be limited, they do exist. The famous example is Drayton Hall, built 1738–42 near Charleston, South Carolina, and closely modeled on a villa in Palladio's *Book II*—the seminal classical cookbook for colonial as well as continental builders.

After the American Revolution, the concept grew as English architectural and pattern books became the design source for mansions and public buildings. It took a homegrown publishing industry though (especially in the hands of media-savvy carpenters, architects, and designers) to spawn the highly detailed builders' manuals and pattern books that soon dotted the landscape with dwellings.

While others have sketched the outlines of this history, Reiff's significant contribution is to show though daunting field research and meticulous library work how richly detailed and widely built these designs actually are. *Houses from Books* also helps make the case that the cadres of planbook

designers—long considered a subclass of architects, if architects at all improved not only the quantity, but also the quality of houses in America. Moreover, the book sheds light on some of the technological innovations that went hand-in-hand with published plans. Prefabrication for instance, which we tend to think of as a post-World War II concept, was in full force as early as the first decade of the 19th century.

Houses from Books

Treatises, Pattern Books, and Catalogs in American Architecture 1738-1950:

A History and Guide

Daniel D. Reiff

The Pennsylvania State University Press, 2001
424 pages, \$75

At over 400 pages, *Houses from Books* is not simply a hefty desk reference on this remarkable industry but a guide to spotting plan-built houses in their many permutations. Part of the service—and pleasure—of Reiff's years of research comes in his use of illustrations and photographs to compare built houses with the plans and drawings that were their clear antecedents. Sometimes the verisimilitude is astounding. What fun, for example, to see an architectural icon like an A.J. Downing/A.J. Davis Gothic cottage, so familiar as a black-and-white woodcut on a page, presented in real life as it still stands in Rhinebeck, New York—and again in New Haven, Connecticut, and once more in Newark, Ohio. The architectural matching game is made even more attractive by the sharp, clear photos and an index that includes the names of virtually all the architects mentioned in the text and footnotes.

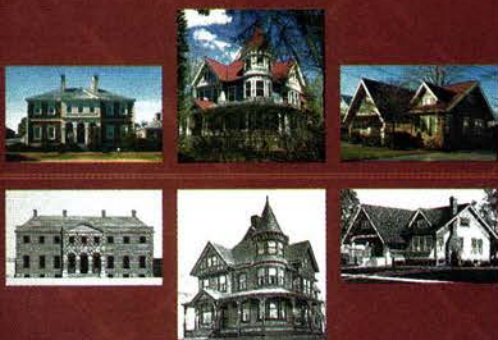
We've come to realize that in many communities the lone 1890s George Barber Queen Anne or 1920s Sears Foursquare that catches our eye may just be the tip of an iceberg; more likely around the corner there are whole blocks, neighborhoods, and even towns built from pattern books or design catalogs. With the broad view and lucid explanations of references like *Houses from Books*, it will become even easier to read the faces of these houses like a book.

Continued on page 96

Daniel D. Reiff

Houses from Books

Treatises, Pattern Books, and
Catalogs in American Architecture,
1738-1950: A History and Guide



D. Reiff, professor of art and design at the State University of New York in Fredonia and regular OHJ contributor, has written a major book that pulls back the curtain on the full stage of this phenomenon.

Just a quick glance at *Houses from Books* makes it clear that building from books is as old as America itself—even older. Though the extant examples of houses constructed from book designs

American Architects and Their Books to 1848

Edited by Kenneth Hafertepe and James F. O'Gorman
University of Massachusetts Press, 2001
248 pages, \$29.95

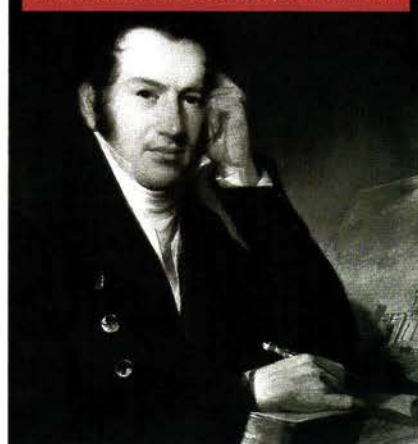
The link between books and architects is even older and deeper than it is between books and houses. If you're interested in exploring where it led in the early decades of this country, you'll find many guideposts in *American Architects and Their Books to 1848*. A collection of 12 papers presented at the 1997 Deerfield-Wellesley Symposium on American Culture, it's a surprisingly readable look at the influence of architectural books on archi-

tects in the 18th and early 19th centuries.

This was an age when the profession of architect was just beginning to separate itself from the ranks of builder/carpenters or gentleman architects in the Jeffersonian sense, and an architect's stock in trade was in no small way the books he owned or could access. Indeed, by 1800 it embraced the first books written by this new breed of American architect. Students of Asher Benjamin and Benjamin Latrobe will enjoy the closer look at their relationship to architectural books, while Minard Lafever and Owen Biddle fans will covet the chapters on these seminal architects. In fact, anyone interested in architectural history will learn something

AMERICAN ARCHITECTS AND THEIR BOOKS TO 1848

EDITED BY KENNETH HAFERTEPE AND JAMES F. O'GORMAN



from the footnotes in each chapter, all written by top scholars and experts in the field. As books on books go, this svelte volume is one to build on. 🏠

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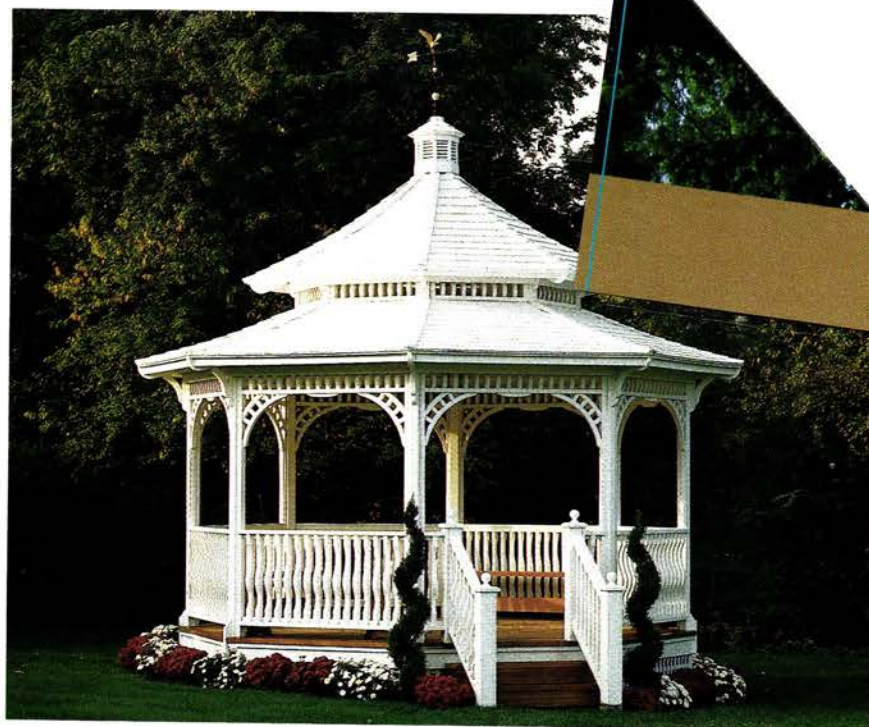
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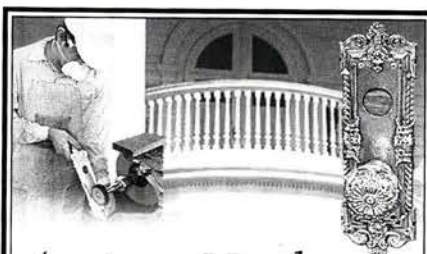
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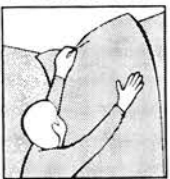
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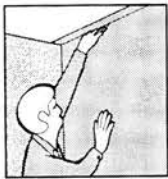
1. Cut fiberglass mat 2" longer than height.



2. Apply saturant to area to be covered.



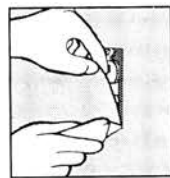
3. Apply fiberglass mat to wet surface.



4. Trim excess mat where wall meets ceiling.



5. Trim mat at baseboard and window.



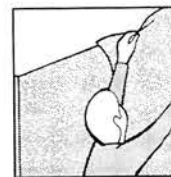
6. Trim mat at outlets, switches, etc.



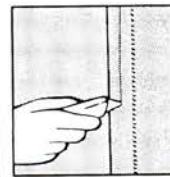
7. Apply second coat of saturant to wet mat.



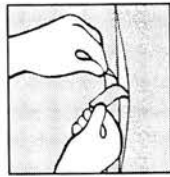
8. Apply 1st coat of saturant to adjacent area.



9. Apply mat to 2nd area, overlapping by 1".



10. Cut down center of overlap (both layers).



11. Remove mat strips on both sides of cut.



12. Apply 2nd coat of saturant (include seam)

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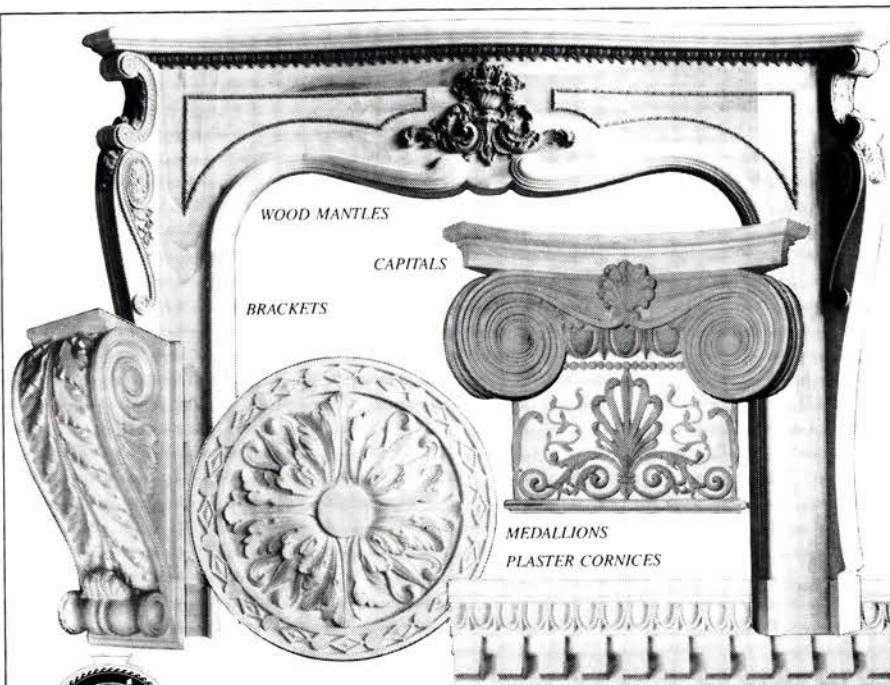
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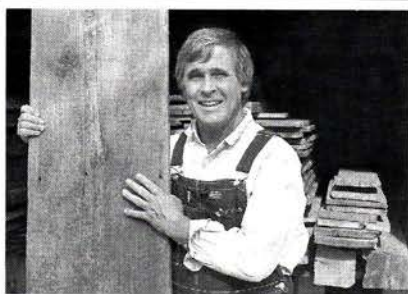


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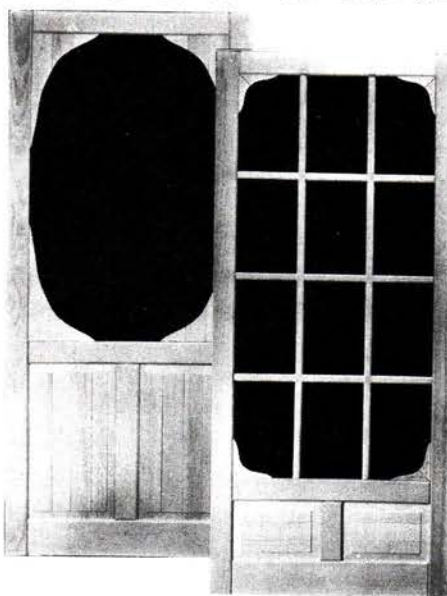


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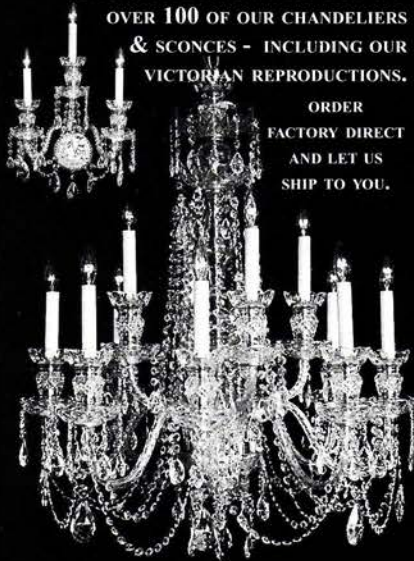
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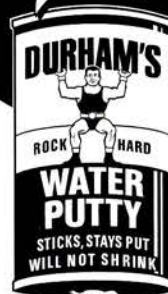


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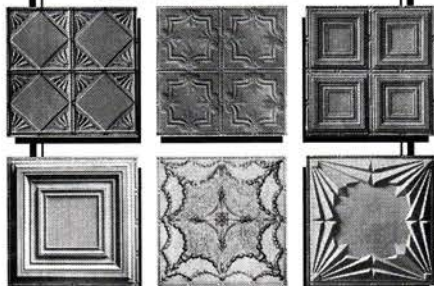
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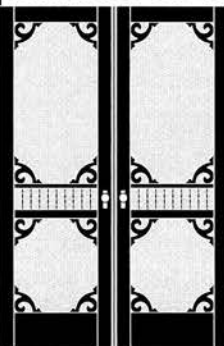
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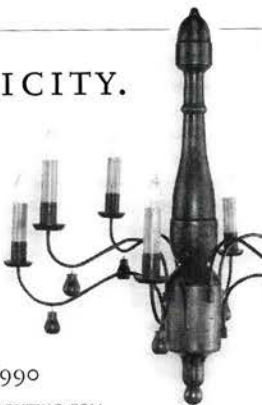
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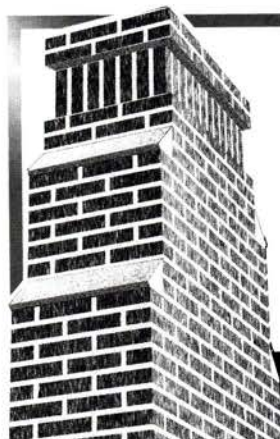


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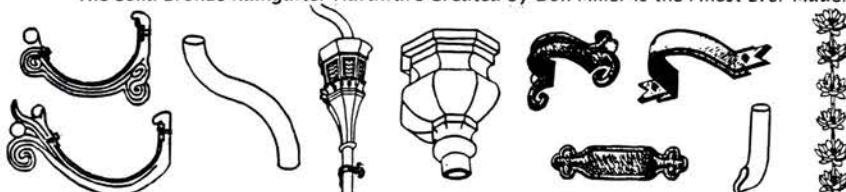
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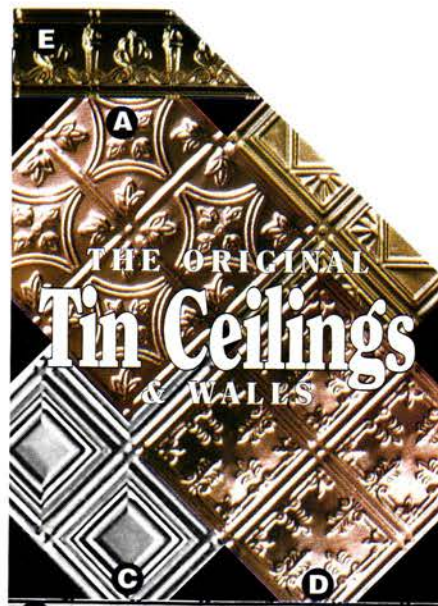
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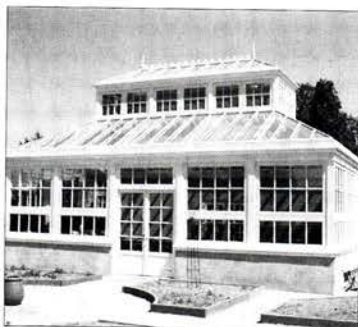
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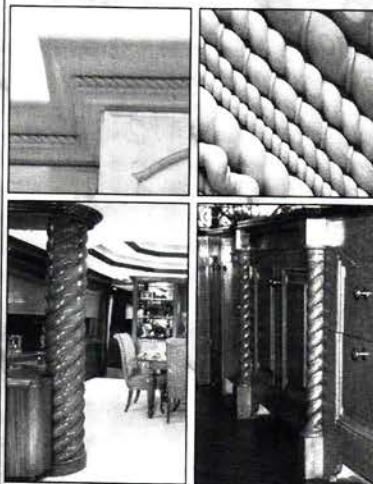
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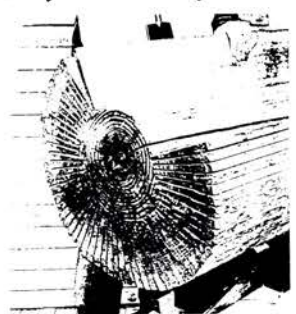
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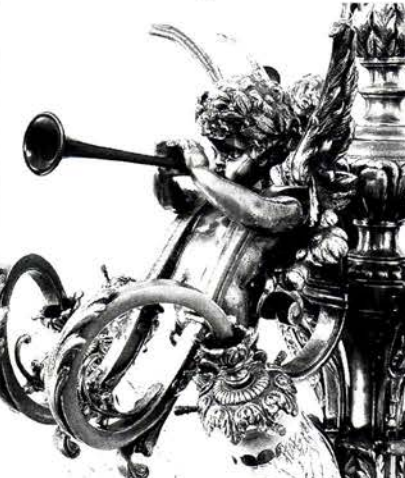


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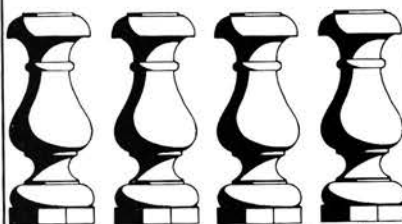
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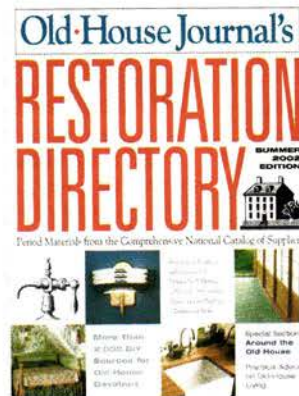
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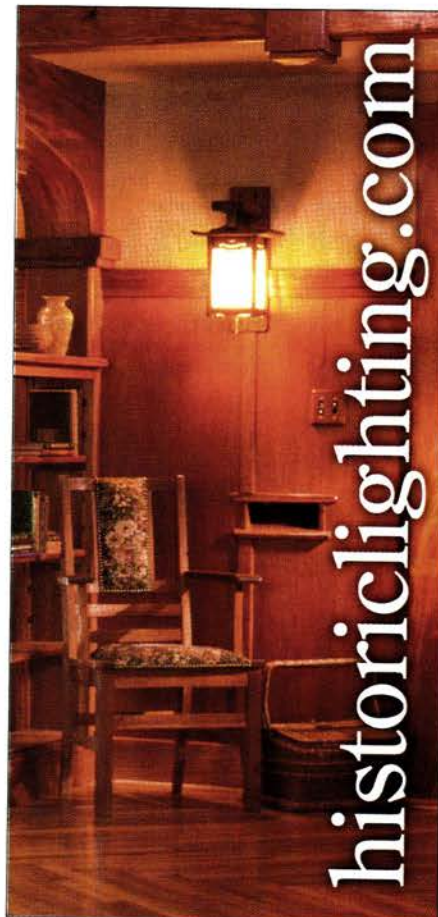
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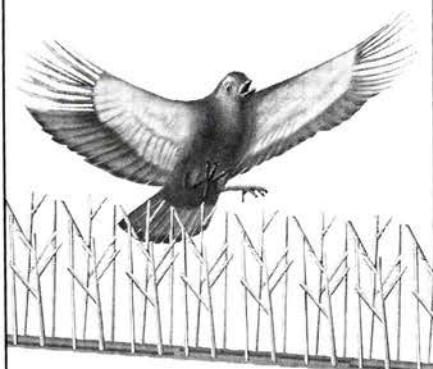
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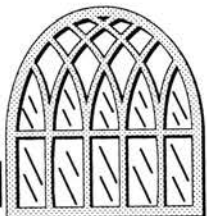
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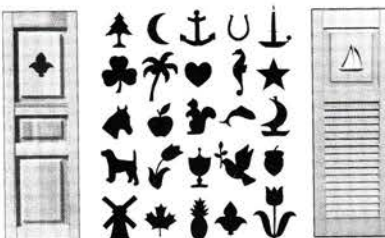


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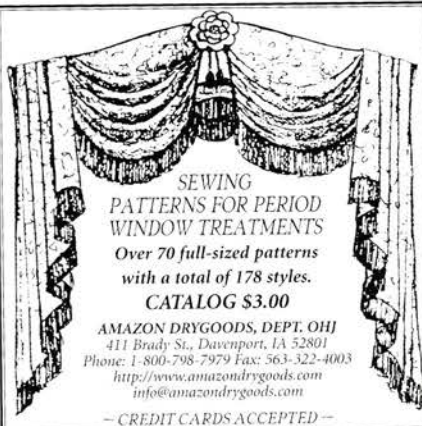
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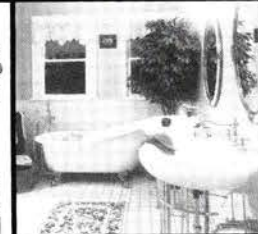
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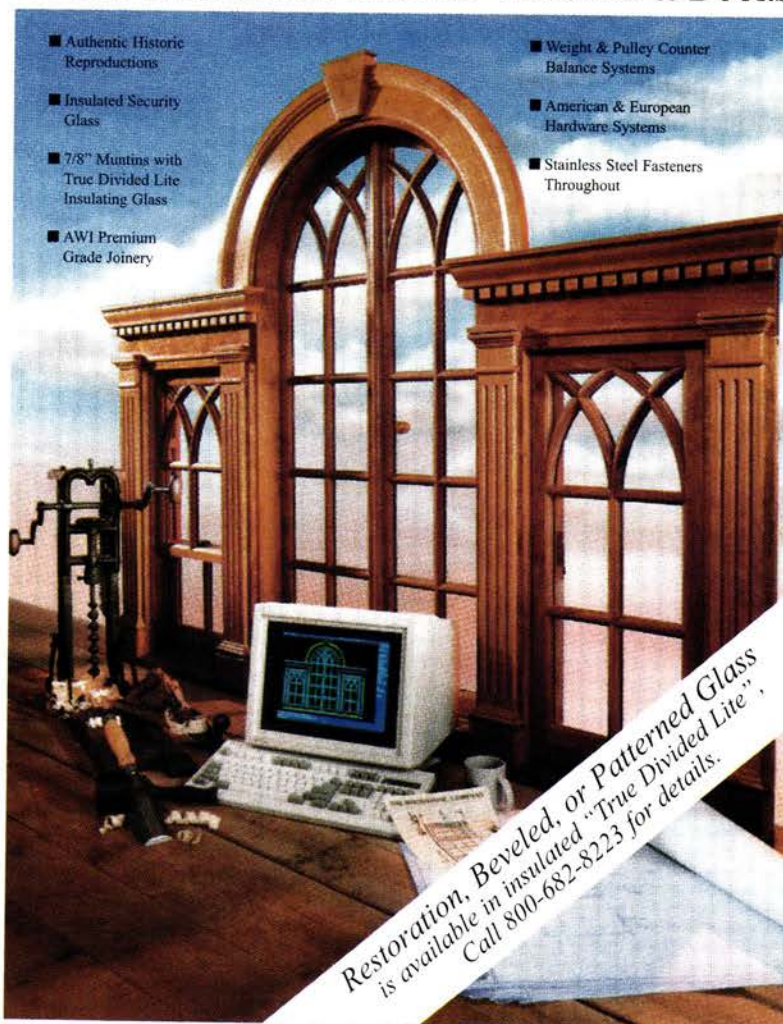
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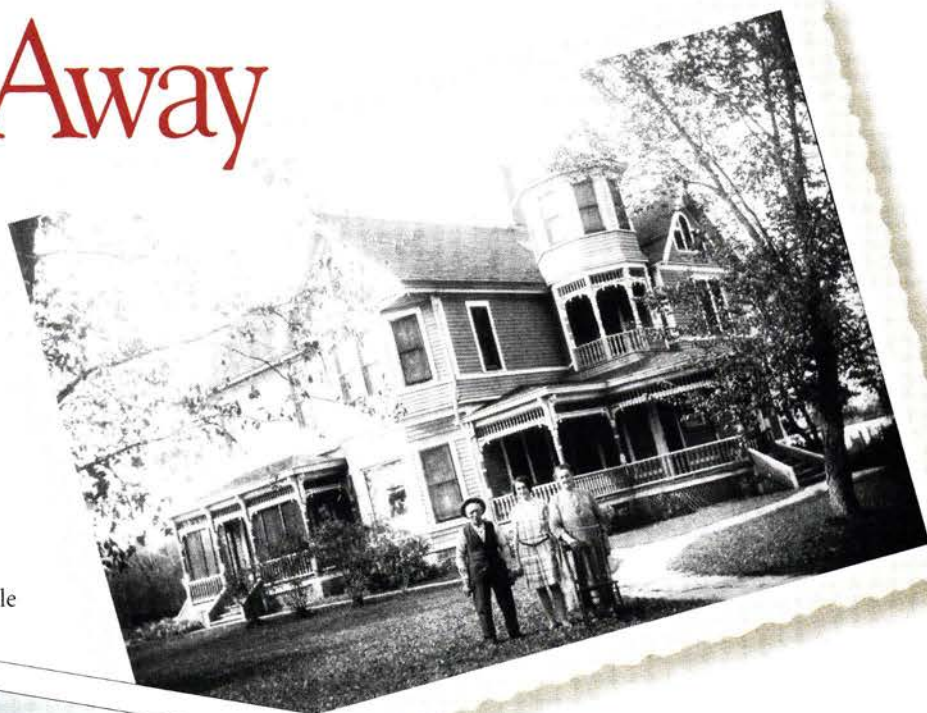
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Blown Away

Our usually fathomless supply of verbiage failed us when Eugene Bertrand submitted these photographs of his old family home in Granville, Iowa. The top photo, taken around 1921, shows his great grandparents and their daughter. The bottom photo is of his mother and her brother, posing in front of the, er, slightly altered house in 1999. Bertrand's family moved from Granville in 1922. The radical surgery was performed 40 or 50 years later. "It's hard to believe these are the same house, but look at the bay window of both and go from there," directs Bertrand. "The present owner says it has the same footprint as the old house. The first floor still contains the decorative woodwork, fireplaces, and parquet floors." Hard to say that's a comfort.



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