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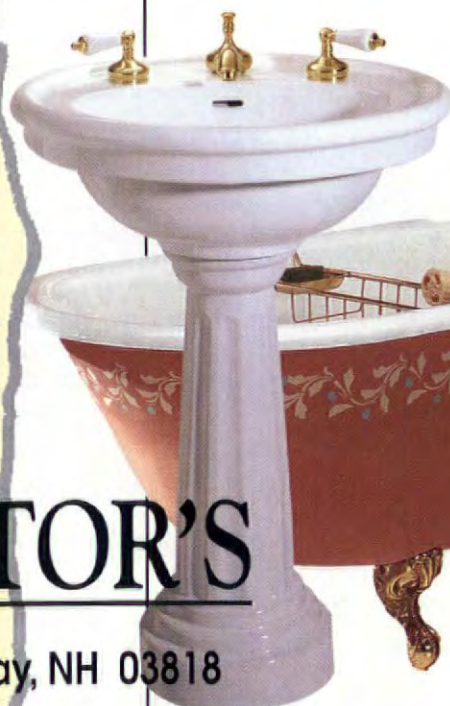
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COVER PHOTO BY DOUGLAS KEISTER

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Where Have All the Ladies Gone?

EVER HEAR THE STORY THAT FRANK LLOYD WRIGHT designed a mail-order house? It's not true.

What is true is that in July of 1901 a million-circulation magazine published "A Small House with Lots of Room in It," one of at least three plans by the up-and-coming young architect. That magazine was *The Ladies' Home Journal*, and Wright was not the only illustrious designer to grace its pages. We'd like to learn more about these houses and where they were built.

The house plans department was the brainchild of the renowned editor Edward Bok. (A terrific name, but no relation to this writer!) In Bok's hands, *The Ladies' Home Journal* had metamorphosed from a sleepy, Victorian circular about knitting and canning into the forerunner of the modern "shelter book." Bok had an uncanny feel for the interests of early 20th-century women, and those women were interested in houses.

Of course, mail-order house plans were not a new idea by 1900. The Palliser brothers, George Barber, and R.W. Shoppell had taken the concept mass-market by publishing books of plans. Carpentry manuals regularly tucked catalogs of plans in their back pages. Magazines too had taken up the house plans trade; Gustav Stickley was just one famous exponent. For the most part, though, all of these were anonymous designs by relative unknowns. Bok's particular inspiration was to commission plans from the top designers of the day—and to publicize their names. *The Ladies' Home Journal* was

the only popular periodical to take this route.

Besides being an intuitive editor and savvy promoter, it turns out Bok was on a personal mission to change the course of residential architecture. Before moving to Philadelphia, so the story goes, he had spent many years living in hotels and boarding houses. After marrying and settling down just outside the city, he became a devout believer in suburban life. He studied the requirements of the new modern house, which included innovations such as bathrooms and garages, eventually designing his own house with the help of William Lightfoot Price, the noted Philadelphia architect.

At Bok's behest, Price designed the first house plan for *The Ladies' Home Journal*, published in 1896. Other prominent designers followed. By 1919 the magazine had featured the likes of Ralph Adams Cram, Robert Spencer Jr., Charles White, and Bruce Price. Stanford White, initially opposed to the series, gave it a strong endorsement.

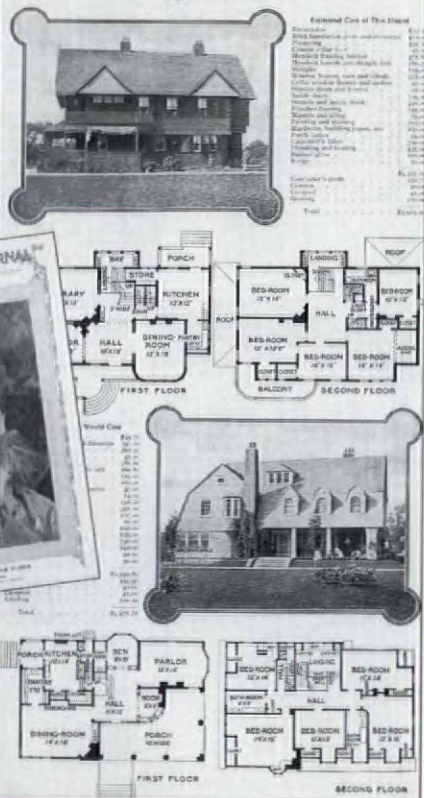
The 169 plans that ran in *The Ladies' Home Journal* are relatively easy to access in architectural libraries, but evidence about where these houses were built and what they look like is much harder to come by. We'd like to know more. If your old house was built

from a *Journal* plan anytime from 1895 to 1919 (or if you know of such a house), please send us a letter to my attention. If we can fill in enough of the gaps in the story, we'll present it as an article. Thanks!

Edith Keller

TWO PRETTY HOMES FOR \$5000 EACH

By E. G. W. Dietrich



Bok's vision of suburbia was generous, but then so were the talents of his architects. These 1904 houses are by E.G.W. Dietrich, who also did plans for Stickley.

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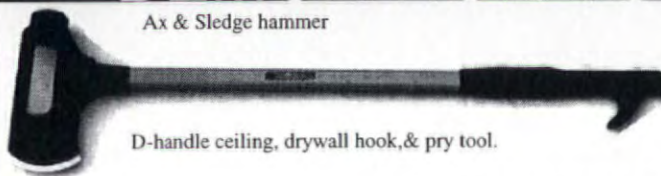
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M A I L B O X

PATCHING TIN CEILINGS

HERE'S ANOTHER TECHNIQUE FOR patching tin ceilings ["Making the Most of a Good Impression," May/June 1997]. To repair a 4' hole, I made a paper rubbing of a still-sound tin panel and sent it to every tin ceiling firm in the country. No one had the die for the pattern, though one company offered to make one—for \$1,000! What I finally did was give a sound portion of the ceiling to a fiberglass craftsman. He reproduced it beautifully and cheaply.

—HENRY J. MAGAZINER, FAIA
Philadelphia, Penn.

PUNCHED LIST

IN RESPONSE TO "HORSEING AROUND" [Mailbox, May/June 1997], it's my understanding that the term "punch list" comes from the practice of checking items off the completion list by punching holes in it, in lieu of marking it. A punch could easily be carried around the jobsite in a pocket, at a time when ink writing instruments, such as fountain pens, didn't travel well.

—RENEE WURZER
Colfax, Wisc.

PIERCING BEAMS

AS A PRACTICING STRUCTURAL ENGINEER, I found "The Underachieving Cantilever" [May/June 1997] quite interesting. I'd like to comment that laminated veneer lumber and I-

joists can be pierced, but this should only be done following the manufacturer's guidelines or with the approval of an engineer. In other words, check before you cut. Thank you for a great resource for engineers involved in old houses.

—JOHN S. ROSSI, P.E.
Silver Spring, Md.

PYRAMID IN TEXAS

"HIPPED AND PYRAMIDAL ROOFS" [May/June 1997] got my attention. My house is a simpler form. It's a small, single-storey cottage built ca. 1909 with a foursquare plan.

—MICHAEL L. BELL
Sherman, Tex.



A pyramidal-roof cottage in Texas.

OLD-HOUSE SISTERHOOD

CONGRATULATIONS TO JOANNE MARRA ["Shipping Out with a Restorer," May/June 1997]. Way to go, sister! Convincing my husband that it's worth our time and money to strip cabinets or refloor the porch is like getting him to clean the bathroom.

[continued on page 12]

INTRICATE IRONWORK



READERS WHO WOULD LIKE TO know more about historic ironwork ["The Art of Ironwork," May/June 1997] can access www.artmetal.com on the World Wide Web.

—BARBARA H. ROCKWELL
Horton Brasses
Cromwell, Conn.

YOUR RECENT ARTICLE ABOUT iron fences brought to mind an ornate fence in New Hope, Pennsylvania. An 1874 newspaper column described the new addi-

This ca. 1874 fence is cast-iron.

tion to the neighborhood: "The yard is to be ornamented with a substantial iron fence... The pattern is a rustic one, representing the grape vine in full fruitage, and presenting such a natural appearance by its green leaves and large, dark clusters of delicious looking grapes, as almost to tempt the passerby."

—JEFFREY L. MARSHALL
Heritage Conservancy
Doylestown, Penn.



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MAILBOX

[continued from page 10]

I'm going to try your lead-by-example approach. Your sheer will has turned your Bungalow into a beauty!

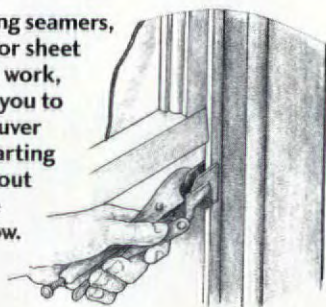
[NAME WITHHELD BY REQUEST]

Riverside, California

TOP TIP

YOUR MOST RECENT ISSUE CONTAINED the best tip I have ever seen in OHJ. "Parting Words" [Restorer's Note-

Locking seamers, sold for sheet metal work, allow you to maneuver the parting bead out of the window.



book, May/June 1997] recommends using locking seamers to remove the parting bead from double-hung windows. When the issue arrived, I was in the middle of refastening the sash weights on a current project. I put the idea to work and went from breaking every parting bead, to reusing every one.

—STEVE JORDAN
Rochester, N.Y.

LOG HOUSES

THE PROBLEM WITH MANY LOG BUILDINGS ["Between the Cracks" May/June 1997] is that they were never intended for long life, but for temporary housing. In my experience, using the daubing recipe given in your article could damage the logs, at least here in the Upper Midwest. The mortar would be too hard

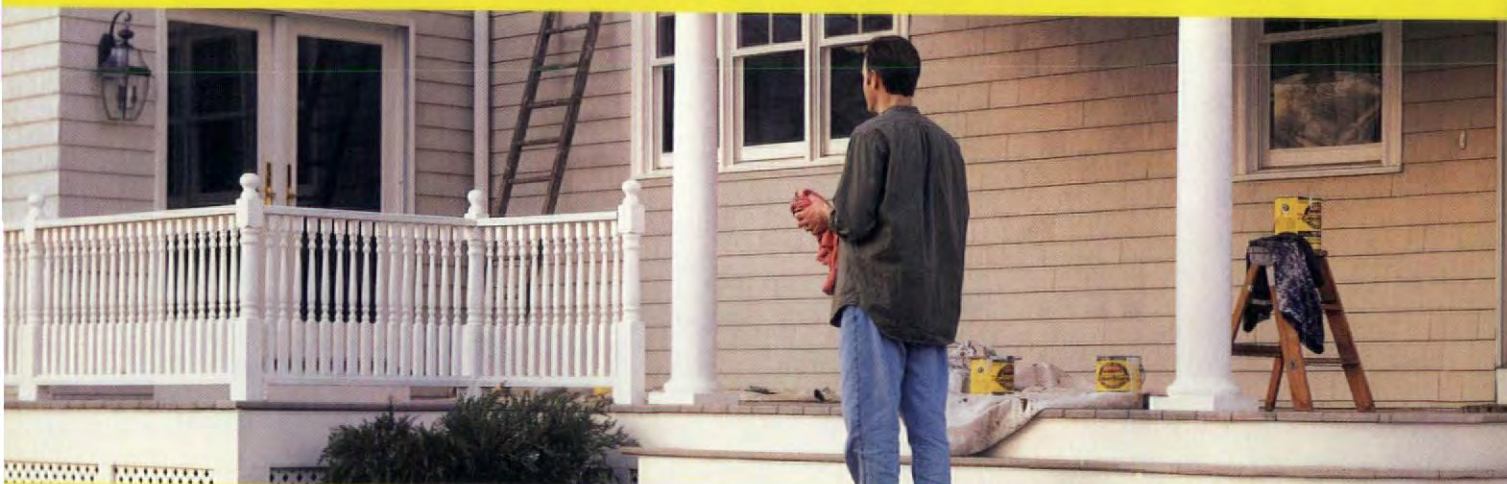
and inflexible to accommodate the expansion and contraction of the wood as it absorbs and releases moisture. I'd recommend very soft daubing such as muds, mosses, or pure-lime mortars with high-sand content.

—DAVID ARBOGAST
Iowa City, Iowa

A CO-AUTHOR RESPONDS:

While the earliest cabins were temporary, most of the half-million log houses that stand today were built to last for generations. Moss and mud were only used in temporary housing. Most homes were daubed with mortar. Since it would have been impossible to recommend recipes for all of the various conditions throughout North America, we suggested customizing a basic recipe for site requirements. Some 18th-century daubing was much harder

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than our basic mix. Structures in the northern United States and Canada might require a softer daubing.

—DOUGLASS C. REED
Hagerstown, Maryland

PLATING

I HAVE A QUIBBLE WITH YOUR informative article "A Date with the Plater" [May/June 1997]. I prefer dipped lacquer to sprayed lacquer. Lacquer fails when coverage is not complete. Dip lacquer evenly coats all surfaces of an item, including the edges and the back side. To prevent dust from getting in the lacquer finish—be it spray or dip—the plater should isolate the finishing operation from the buffing process.

—JIM KELLY, C.E.O.
Rejuvenation Lamp & Fixture Co.
Portland, Oreg.

TUDOR REVIVAL



Author Mark Hewitt will take us further down the Tudor path in 1998.

THANK YOU FOR TAKING ME BACK to my childhood with your March/April issue. I grew up in a Tudor Revival house ["The Other Proper Style"]. Built by a railroad executive, it was rustic to excess. Workers were paid the outrageous Depression-era wage

of \$3.50 per hour to sit on the roof and hand-cut shingles. I spent many hours imagining faces in the Spanish texture walls ["Textured Plaster"].

—NANCY-LINN NELLIS
Searsport, Maine

"THE OTHER PROPER STYLE" WAS a perfect article, a wonderful article, and we respectfully request more of the same. We don't see enough about Tudor Revival homes in OHJ. Our entire family lives in and restores old houses, and not one of us lives in a Victorian home—we detest them.

—ANNE E. BENNETT
Edina, Minn.

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A QUESTION OF GRAVITY

My 70-year-old house has a gravity hot-water heating system. The original coal-fired boiler was converted to oil decades ago and was last upgraded during the energy crisis of 1974. If we junk the old boiler, can we keep the gravity feed? Would a circulator pump have any adverse effect on the radiator valves?

—Allan S. Olsen
Trenton, N.J.

YOU CAN KEEP YOUR GRAVITY FEED, but you might be better off with a circulator pump, advises OHJ author Dan Holohan. Older boilers usually have large supply and return pipes. In a typical gravity-fed system, hot water rises from the boiler by its own buoyancy, displacing the cold water falling from the radiators by its own weight (hence the name "gravity"). Since modern, high efficiency boilers tend to have smaller passages, natural buoyancy alone won't propel hot water into circulation as quickly. This can cause the replacement boiler to short-cycle on its high-temperature control.

Beware, though—a new circulator can also impede the efficient transfer of heat inside a free-standing, cast-iron radiator. As hot water rises, it enters through an opening at the bottom of the radiator. The cold water exits through another low outlet. If you add a new circulator that's too powerful, the hot water will zip right through the lower part of the radiator. You're left with a radiator that's hot only on the bottom; the rest takes forever to heat. You can solve the problem by using the supply valve at each ra-

diator to throttle the flow. By slowing the flow, you'll promote gravity circulation within the radiator and increase its heat output. A good heating contractor should be able to help you select equipment that's suited to your system.

MOSSY CHIMNEY

Here in Oregon, moss is considered a standard building material and we have some growing on our chimney. Is moss a problem on masonry? How can we remove it?

—Ted Mihajlich
Astoria, Oreg.

DAMP MASONRY MAKES AN ATTRACTIVE medium for water-loving lichens and mosses. Left untreated, these oxalic acid-producing plants will eventually erode the brick and break down the chemical bonds that hold the mortar together, so it's important to remove them. If the moss is particularly thick, use a scraper and a stiff, natural-bristle brush to clear the surface, then apply diluted ammonia or bleach to the cleaned bricks to kill any remaining organisms. Another option is to spray the brick with a low-to-medium power

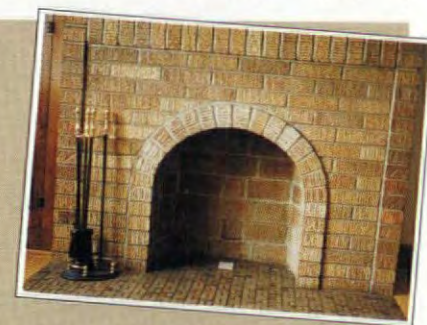
[continued on page 16]

PLUG-IN HEAT

The original fireplace insert in our 1930 Tudor Revival home has long since disappeared. Are there any companies that produce period electric coal fire grates?

—Robert Casey
Dearborn, Mich.

ELECTRIC FIREPLACES CAME INTO vogue along with gas logs and other simulated flames in the early decades of the 20th century. Inset or free-standing grates plugged into an electrical outlet and offered ambiance and a mod-



icum of warmth. The heating source was usually an element disguised under artfully arranged logs or glowing coals. The units worked without combustion and didn't need a flue. Free-standing electric coal-burners are available from Imperial Fires, Pacific Design Center, 8687 Melrose Ave., Suite M-29, Los Angeles, CA 90069, (310) 358-0474, or Danny Alessandro Ltd./Edwin Jackson Inc., 146 E. 57th St., New York, NY 10022, (212) 759-8210.

The outlet in the fireplace (above) is a tip-off that there was once an electric grate, possibly along the lines of the ca. 1928 "Glo-Hot" (left).





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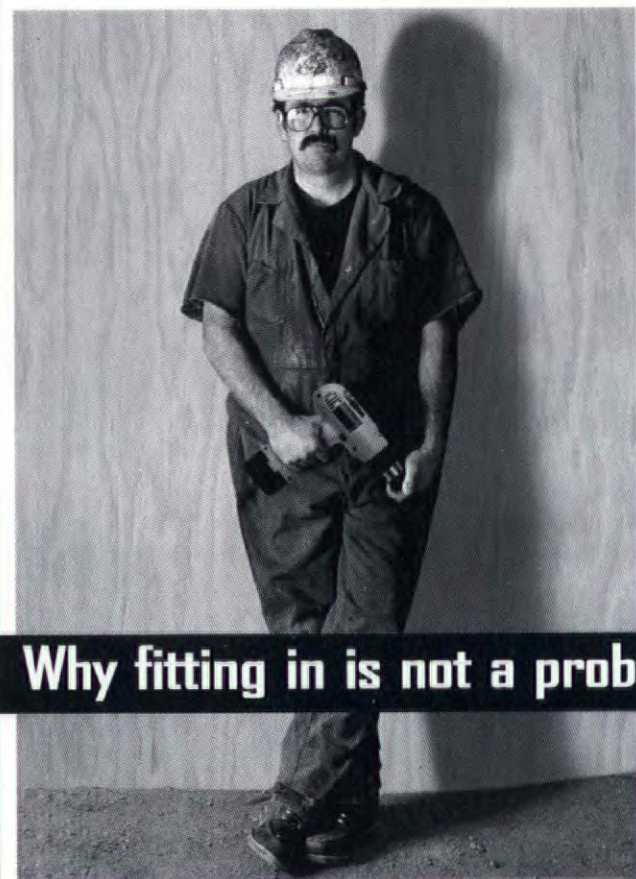
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wash (100 to 400 psi) and then apply the chemicals.

If neither solution is effective, apply ammonium sulfamate, a weed killer available at nursery and garden stores. It may leave a white powder, but this washes off easily. Handle all moss-killing chemicals with care. Once you've cleared the moss away, examine the chimney for signs of porosity in the mortar or damage to the brick. You may be due for re-pointing and repair.

STUMPED BY GUMWOOD

The exposed woodwork in my 1908 Colonial Revival house needs repair. I've been told it is either chestnut or "gumwood." What is gumwood, and how would I best match it?

—Rich Barbano
Rochester, N.Y.

IN THE EARLY YEARS OF THE 20TH century, gumwood was a popular trim wood for Colonial Revival and Bungalow interiors. The Gum Lumber Manufacturers' Association promoted it as "an enduring hardwood, yet soft as satin to the touch," comparing it to expensive walnut.

Prized for its rich coloration, which varies from grey to reddish-brown with dark streaks, gum-

Red gum (above) was billed as "America's finest cabinet wood" in this 1918 advertisement in *House Beautiful* (inset).

wood can be difficult to identify. Also known as red gum, sap gum, and hazelwood, this fine-grained, moderately dense hardwood comes from the heart of the sweetgum tree, a lowland species found from the southeastern United States to Connecticut.

Sweetgum has an interlocked grain that produces a ribbon stripe desirable for interior woodwork. Although sweetgum wood is still used for trim finishes, it's more commonly a component in plywood, veneers, furniture, and cabinetry. Short of examining your woodwork under a microscope, there's only one way to tell if your wood is gum: send a sample to Forest Products Laboratory, c/o Wood Identification, 1 Gifford Pinchot Drive, Madison, WI 53705, (608) 231-9200. They'll provide identification at no charge.

To find a match for your 90-year-old trim, contact a company that offers a matching service for woodwork, such as M.L. Condon Co., 254 Ferris Ave., White Plains, NY 10603, (914) 946-4111. You'll probably need to send a sample of trim to get a comparable replacement.

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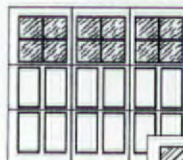
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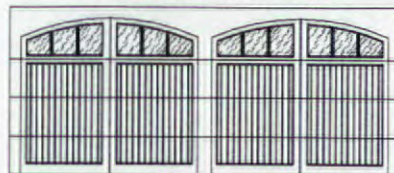
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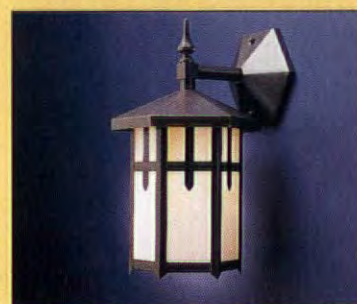
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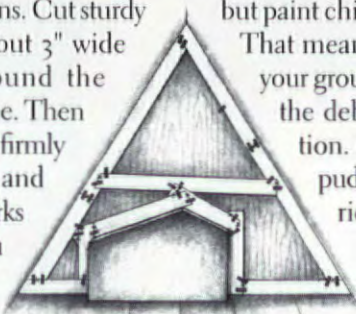
SHAPELY CUTTING

IF YOU'RE CUTTING AN IRREGULAR shape for plywood, Formica, wall-board, etc., try this method for transferring the dimensions. Cut sturdy cardboard strips about 3" wide and lay them around the perimeter of the space. Then fasten them together firmly with masking tape, and draw registration marks across the joints. You can add cross pieces to help stabilize the template. Carefully remove it, making sure it holds its form, and lay it on the stock for tracing. Check alignment of registration marks.

—BILL YOUNGER
Walnut Creek, Calif.

TOP DROPCLOTH

LANDSCAPING FABRIC MAKES AN excellent dropcloth when you're working on your house's exterior.



Taping strips of cardboard together makes a good template for reproducing an irregular shape.

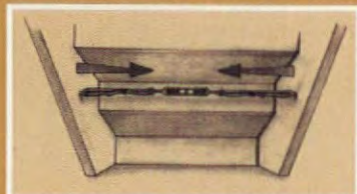
Since the synthetic fabric is designed for use under gravel or wood chips to prevent weed growth, water can move through the material, but paint chips and splatters can't.

That means it won't dehydrate your groundcover as it collects the debris of paint preparation. Plus, rainwater won't puddle. Landscaping fabric is cheap (I paid \$22 for a 100' roll), so you can throw it away with the debris. Simply roll out the material and tack it down with large roofing nails. Overlap as many of the 3'-wide lengths as you need. Cut around tree and shrub trunks, and wrap additional pieces over bushes. When it's time to remove the debris, simply gather the dropcloth along with the nails and scrapings, and dispose of it properly.

—ROGER W. KEYS
DeKalb, Ill.

STRINGING US ALONG

THE BASEMENT STAIRS IN OUR 1880 Queen Anne were becoming a hazard. The closed stringers, mortised to house each tread, were spreading so much that they barely held the steps. A previous owner had screwed wood cleats to the stringers to hold the treads, a band-aid fix at best.



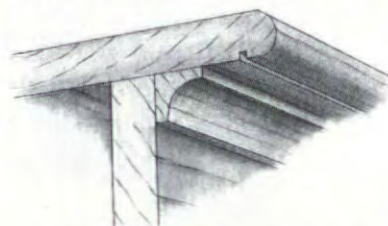
A turnbuckle under each step pulls the stringers together to keep the steps firmly in their mortises.

My solution? First I fastened the wall stringer to the studs with $\frac{3}{8}$ " bolts. Next, under each separated step, I installed $\frac{1}{4}$ " cable and 8" turnbuckles, anchoring the cable to the stringers with $\frac{1}{4}$ " eye bolts. Then, I tightened the turnbuckles two turns per day, carefully watching for cracks or other signs of stress and to make sure the treads and risers were moving properly into place. After three weeks, they were seated in their mortises. I left the cables in place. Going into the basement is safe again.

—PAUL GORGEN
Poughkeepsie, N.Y.

ROT NOT

INSTALLED NEW PORCH STEPS WITH a cove moulding at the joint between the tread and riser. The moulding rotted off in five years. I realized that water travels around the curved edge of the tread and into the space behind the moulding, causing rot. Our preservation consultant showed me a method to prevent the prob-



A groove under a step prevents water from running under the moulding.

lem. Cut a drip channel (also called a throat) with a circular saw, no more than $\frac{1}{8}$ " deep, under the edge of the tread. This channel acts as a drip edge by interrupting the creeping water. Be sure to seal the groove well with paint.

—DAN MILLER
Elgin, Ill.

CLAMPING IN THE ROUND

GLUING UP ROUND, FLAT OBJECTS, such as column bases or sections of finials, is tricky because they're hard to clamp. I like to use a spring-loaded plate hanger, a device made to display china on walls. The hangers have four plastic-coated hooks, but you can double up and get eight bearing points. They are inexpensive and available at hardware stores with 9" to 12" diameters.

—WILLIAM TALBOT
New York, N.Y.

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Arts & Crafts Archives

BY GORDON BOCK

IT WAS BOUND TO HAPPEN. *The Craftsman*, Gustav Stickley's landmark journal of Arts & Crafts architecture, decorating, and lifestyle, is back. This time it's a CD-ROM—fitting for a publication that, in its day, was as much in the vanguard of magazine design as the home arts.

Four years in the making, *The Craftsman* on CD-ROM contains all 183 issues starting with the 1901 debut, including all the house plans and all the ads—a rich resource in their own right. Every page is presented as it appeared in the magazine: original layouts, photos, copy type, and margins. Though each one has been digitally dusted off by removing stains and improving contrast, the CD preserves their character as well as their content down to occasional creases in the paper. Says publisher Jock Spivey, "Our goal has been to give, as much as possible, the sensation of having the actual magazines before you."

What he means becomes clear when you see *The Craftsman* on screen. Call up a cover, and you're looking at a four-color drawing on oatmeal-y paper, just like the originals. Articles are easy to read in a two-page spread—uncommon in CDs, but just like an open magazine. You can even zoom in on the crispest photos to make out the brass tacks on leather chair upholstery, or identify curtain patterns and paintings.

Producing such a CD takes only scanning a pile of old copies, right? Hold onto your mouses; it's not that simple. Not only did Stickley use a Gothic-style typeface—unmatched by current electronic typography—like all publishers, he changed it several times over the magazine's life. To solve this problem, the CD producers turned to state-of-the-art software (Adobe Acrobat) that could create a facsimile of the original issues, while being searchable like normal text.

It is this PDF Image-Plus-Text technology that



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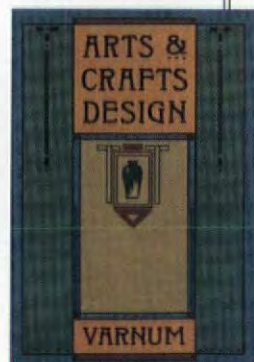
makes the CD a unique reference. Every word is indexed. There are also new background essays by noted Stickley scholars, such as Beverly K. Brandt and David M. Cathers, and a first-ever index of all articles, by Marilyn Fish.

The Craftsman on CD-ROM is an unparalleled resource for artists, architects, and designers interested in the Arts & Crafts, as well as students and serious collectors. Besides providing ready access to the entire run of now-rare issues, the CD enables

the user to make a print of any page—in color if the original was in color. Gus would have approved.

WHILE YOU'RE FILLING OUT YOUR post-Victorian library, don't pass up *Arts & Crafts Design* by William H. Varnum. Originally published in 1916 as *Industrial Arts Design*, the book was written as a textbook for students and teachers of manual training—that is, shop class. Yet there's much more here than the principles of design and decoration it lucidly explains. From metalworking to ceramics, each chapter is a lesson in making the famous works of the Arts & Crafts.

When Varnum shows how a tile fireplace is proportioned, his example is from no less than the legendary Rookwood Potteries. If his rules for furniture turn on the number of drawers or doors, we believe them because his models are clearly from the Stickley or Roycroft shops. Liberally illustrated, this readable guide is an essential tool for any 20th century artisan of the Arts & Crafts.



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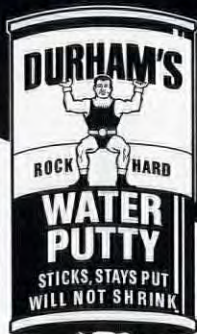
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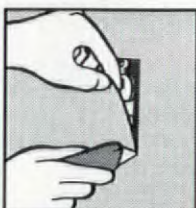
3. Apply fiberglass mat to wet surface.



4. Trim excess mat where wall meets ceiling.



5. Trim mat at baseboard and window.



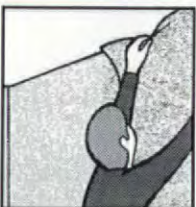
6. Trim mat at outlets, switches, etc.



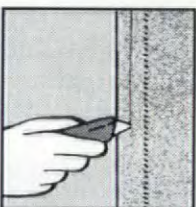
7. Apply second coat of saturant to wet mat.



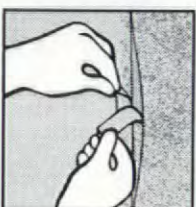
8. Apply 1st coat of saturant to adjacent area.



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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The cover of 'The Old-House Journal Guide to Restoration' features a photograph of a person in a white protective suit and mask, painting a wooden structure. The title is prominently displayed at the top in a stylized font, and the subtitle 'A COMPLETE GUIDE TO RESTORATION' is in a box below it. The publisher's name, 'BRUNNEN', is at the bottom.

[illegible]

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Snowballs in Summer

BY NINA A. KOZIOL

TOSSING ITS BLOSSOMS IN THE MIDSUMMER AIR, the pure white snowball was one of the most spectacular shrubs in the tasteful Victorian landscape. Popular in home gardens from the 1850s well into the 20th century, this woody ornamental is hardy and long-lived. If your lawn lacks a mature specimen, you can plant a period variety that will flourish with a little care.

Unlike the vivid blue and pink florist hydrangeas they resemble, snowballs won't change color based on the acidity of the soil. Snow white throughout the summer, a few varieties show a hint of pink or green as they bud, or mature to purple or brown in the fall. Some bear red or black berries that provide a striking counterpoint to green foliage or the dried brown blossoms of winter.

Snowdrifts on the Yard

THE ABUNDANTLY BLOOMING SNOWBALL melded easily into many 19th- and early-20th-century landscaping schemes. Homeowners typically planted an individual shrub in the middle of the yard, where the mass of white flowers would bloom to best advantage. In residential landscapes of an acre or more, snowballs might be combined with other flowering shrubs, such as lilacs, weigelas, and deutzias, to form a simple grouping on a front lawn.

Showy by nature, the snowball was ideal for prominent plantings, such as on either side of a front entrance or gate. Snowballs might anchor one or two corners of the house, or serve as a snowy backdrop for flower borders. Where evergreens like hemlock or arborvitae were used to screen one side of a property, a single snowball added contrast and a touch of softness. The ornamental might also nestle among the shrubs used to edge the inside of a front fence.

Before the 1870s, homeowners generally avoided landscaping next to the house. (Physicians warned that densely planted shrubs and trees made houses dark and damp enough to induce tuberculosis.) However, when builders began constructing the vertically massed houses of the Vic-

torian era, they often added plantings to conceal and soften the high foundations. Along with the snowball, gardening pundits recommended planting fragrant shrubs, such as variegated evergreens, barberry, roses, and rhododendrons, to perfume the air during the summer months when windows were open.

Sorting Snowballs

ALTHOUGH ABOUT TWO DOZEN SPECIES OF SNOWBALL ARE hydrangeas, more than 200 are of the genus *viburnum*.

The two types aren't related, but they have similar looking flowers. Choose from these favorites of 19th- and 20th-century homeowners.

COMMON SNOWBALL (*Viburnum opulus*)—Offered by commercial nurseries as early as the 1850s, this snowball is variously known as the Guelder Rose, the European Cranberry, the Snowball Tree, and the Snowball Garden Rose. Its 2" to 4" flower clusters bloom in May. Winter hardy and one of the easiest snowballs to grow, *V. opulus* typically reaches a height of 6' to 10' or more.

JAPANESE SNOWBALL (*V. plicatum*)—First available in the early 19th century, the Japanese Snowball produces pure white, globular flowers in May, on bushy plants that grow to 8' to 10'. The leaves on this winter-hardy cultivar change to reddish-purple in fall. Avoid planting the Japanese Snowball in heavy, poorly drained soils.

KOREAN SPICE VIBURNUM (*V. carlesii*)—Introduced in 1812, the 3" blooms of this Korean import fill the air with a sweet fragrance from late April through early May. The winter-hardy plant produces red fruit that changes to blue-black.

JUDD VIBURNUM (*V. juddii*)—First propagated in the United States in 1920, the scented pink buds of the Judd



The Common Snowball (above) and the PeeGee Hydrangea (opposite) are perfectly suited for lawn display. Inset: The Smooth Hydrangea's pure white blossoms soften the high foundation on this early-20th-century Foursquare.



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turn white in May. This winter-hardy species grows to 6' to 8'.

PEEGEE HYDRANGEA (*H. paniculata grandiflora*)—This early favorite was first imported from Japan in the 1860s. Although the PeeGee can reach 25', it usually grows to 10' or less in the home landscape. White flower clusters spanning 6" to 12" appear in mid-July and last for many weeks before turning brown. One of the most cold-hardy hydrangeas, the PeeGee is available in tree form. Prune PeeGees in winter or early spring, before flowers begin to appear on new wood.

OAKLEAF HYDRANGEA (*H. quercifolia*)—The native Oakleaf Hydrangea, discovered growing in the southeastern United States, was commercially available by 1803. The adaptable Oakleaf bears large clusters of white flowers that change to a light purple before turning brown in autumn. A newer variety called 'Snow Queen' has cone-shaped white flowers and grows to 5' to 7'.

SMOOTH HYDRANGEA (*H. arborescens*)—Also a North American native, the Smooth Hydrangea's 2" to 5" flower clusters bloom from late June through September, maturing from apple green to white, then fading to



The PeeGee Hydrangea's blooms turn rosy in autumn.

brown. An early-20th-century variety, 'Annabelle,' produces clusters of flowers up to 1' across. Although *H. arborescens* can be bothered by aphids, powdery mildew, leaf spot, and other problems, the winter-hardy 'Annabelle' is generally trouble free.

Snowballs can be beautiful in winter, too. Left on the plant, the dried flower clusters of most hydrangeas add an interesting feature to the winter landscape. To use indoors for dried flower arrangements, cut them at the base as they fade. Strip off the leaves, tie the branches together, and hang them upside down to dry. The pale-brown, dried flowers do not shatter and make excellent winter bouquets.

Nina A. Koziol is a horticulturist who lives in Palos Park, Illinois.

Caring for Snowballs

Snowballs prefer moist, well-drained soils, with viburnums favoring a slightly acid soil. All flower well in sun, but tolerate partial shade. Hydrangeas should be watered during dry spells to avoid wilting. Mulching the base of the plant helps keep the roots moist and cool. To extend the season of blossom, vary your plantings. Viburnums generally flower in spring, while hydrangeas usually bloom in summer.



The Oakleaf Hydrangea, discovered in the 1770s, is native to the South.

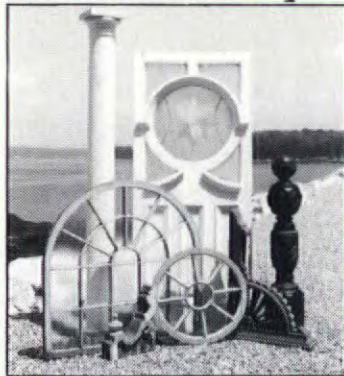
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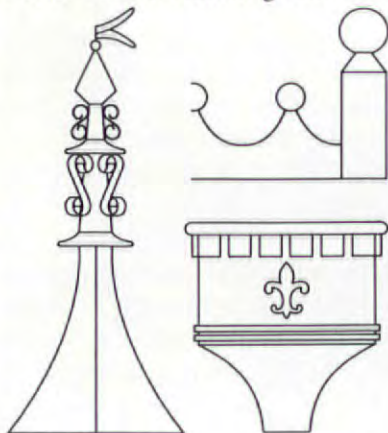
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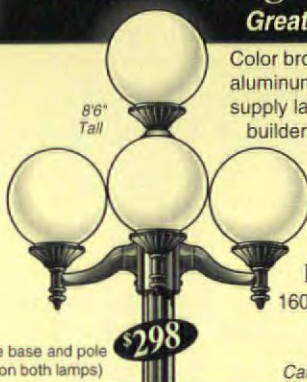
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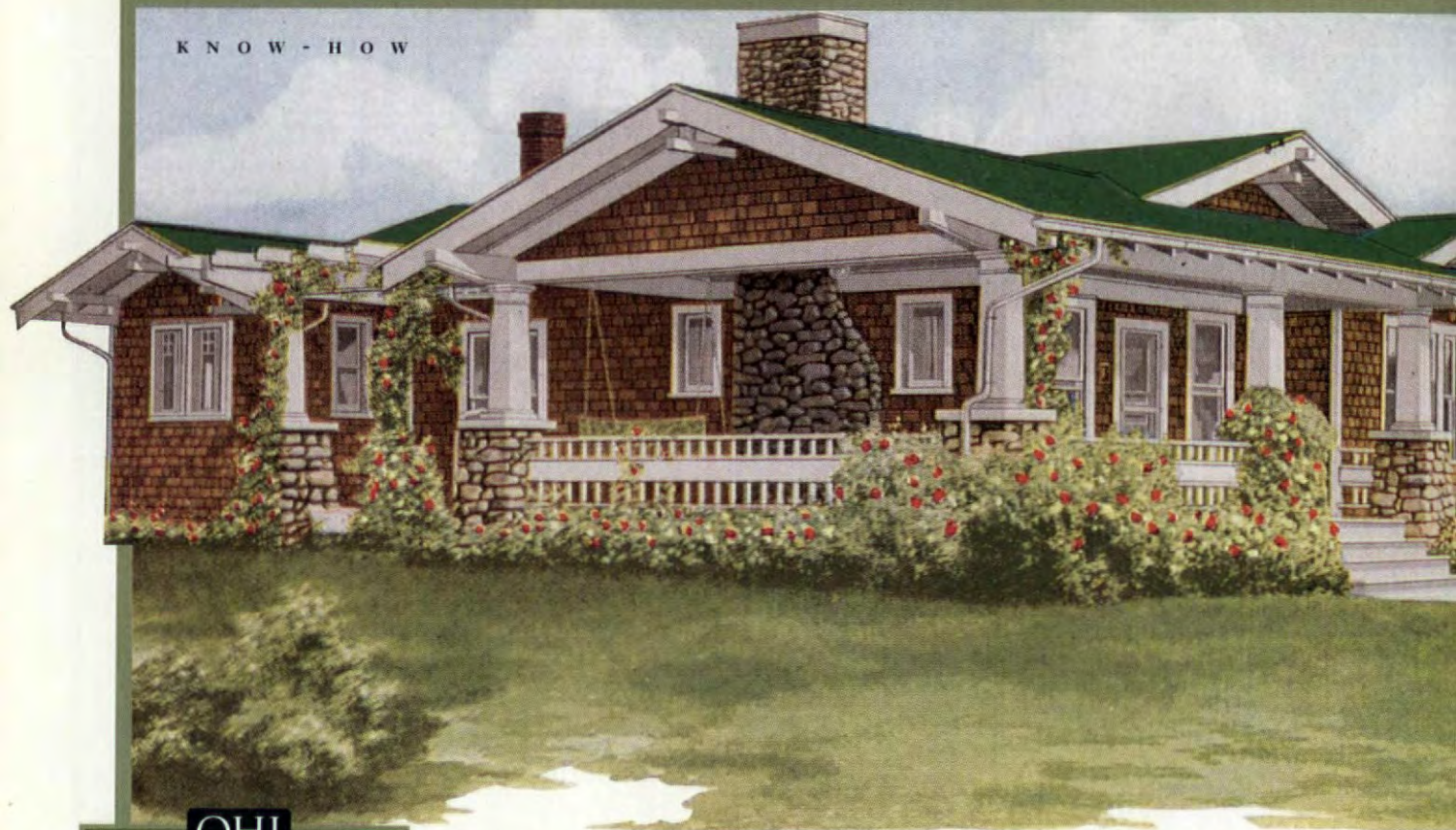
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JULY/AUGUST 1997

A Color Design Guide for Bungalows and their Porches

by
John Crosby Freeman

Heavenly Kissers

THE WONDERS OF BUNGALOW PORCHES! They remind me of Cole Porter's luscious lyric about a heavenly kisser from his 1928 Broadway show tune, "Don't Look At Me That Way." Bungalow porches are "Oh! so full of variety!"

Bungalow porches are the connection between late 19th-century Victorian romanticism and progressive early 20th-century suburban ideals. Classic bungalows of both periods are unthinkable without their porches — located up front, in open view, and deep enough to "sit a spell" with family and friends. They're also the face of the building. The tight, 50' frontages of working-class bungalow neighborhoods left no room for the less sociable side porch, or much else.

A bungalow's spirit dies when its porch is destroyed or coarsely filled in with windows or siding. A bungalow's spirit soars when bungalow porch colors are properly

selected and placed. Master the porch, and you master the entire building.

Know Thy Porch

I BELIEVE IT IS POSSIBLE FOR OWNERS TO REVEAL the architectural delights of their bungalow porch with a color scheme that captures the philosophy underlying its creation (see "The Arts & Crafts of Bungalow Colors"). But the boundless variety of bungalow porches can be confusing when it comes time to paint. The first step is to sort out the porch's tasty party mix of shapes, materials, and details. Study the relationships between its unified whole and its separate parts, and you will learn how to "read" its architectural drama. The key to this divide-and-conquer technique is categorizing its parts into those that integrate, those that separate, and those that accentuate. I'm not convinced that plants can talk to people,

In all their countless incarnations, bungalow porches divide into two types: those that are separate and attached to the house (left and right), and those that are integral with the roof and foundation (below). Seeing the difference is the first step in picking paint colors.



but I'm certain that architecture speaks to those who know its language.

The best places to start are the roof and the foundation, because they are parts that have the potential to integrate the porch into the body of the bungalow. Porch roofs and foundations integral with the house look pulled-out of the house. Those that are separate look plugged-into the house. For example, if the house roof is extended over the porch, architectural logic will compel you to carry its trim colors along the rooflines (see drawing, p. 32). The same holds true when the house foundation is extended as the base of the porch, especially if it is overscaled and uses the same surface material. Use the "Porch Parts Checklist" to study the subordinate parts of the porch in a similar way.

Support Groups

MANY BUNGALOW OWNERS WANT TO PICK OUT columns, piers, and pillars wholly or in part with color. Accenting porch supports is not a right, it is a privilege granted only to students who understand—you guessed it—the



The Arts & Crafts of Bungalow Colors

Since the philosophical context of the classic Bungalow was Arts & Crafts, porch color selections and their placements should enhance organic connections with the ground—into the earth, out of the earth, and along the earth.

Arts & Crafts philosophy of domestic design and color was based on the cottage tradition of using natural materials naturally, often



This ca. 1912 porch is integrated by the roof and foundation stucco. Note the trim color extended to the pillar bands—an extraordinary A&C touch.

with an aggressively primitive honesty. Sternly avoiding applied ornament, the goal was to create a simplified, but historically familiar, abstraction of the American Home. Claiming kinship with the earth via color and design, bungalow porches at their best were symbolic bridges between Humanity and Nature.

Thus it is appropriate that the most popular

bungalow paint colors of stone greys, sand yellows, clay oranges, tan browns, and terra-cotta reds were formulated with what are still called “earth pigments”—the iron oxide colorants of yellow ochre, red ochre, raw and burnt sienna, raw and burnt umber.

Olive greens were common colors for bungalows outside and inside, because they were inexpensively made with yellow ochre and lampblack. Of all the greens, they were the most durable, which is one reason why they have been popular in American homes since the 17th century. It’s hard to go wrong with olive greens.

Browns were popular for bungalow exteriors for the same reasons. They made a symbolic connection with the unpainted, naturally weathered, dark-brown siding of the 17th-century Pilgrim dwelling.

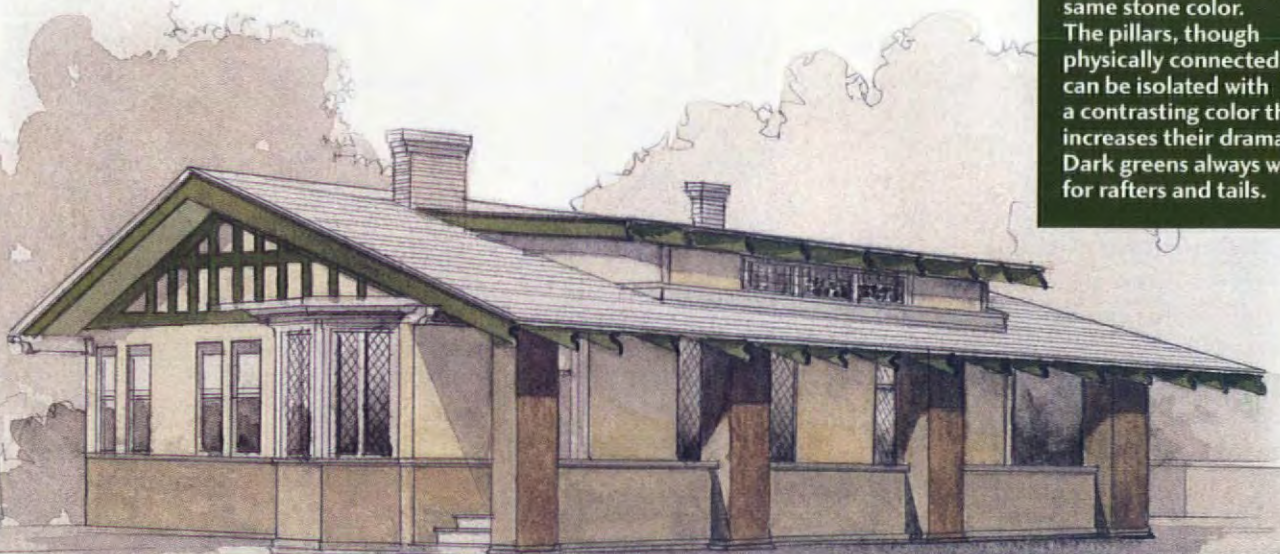
parts that integrate, parts that separate, and parts that accent. As the visible load-bearing system of the porch, supports are all three. Therefore, the extent to which they separate, integrate, or accent must be decided on a case-by-case basis:

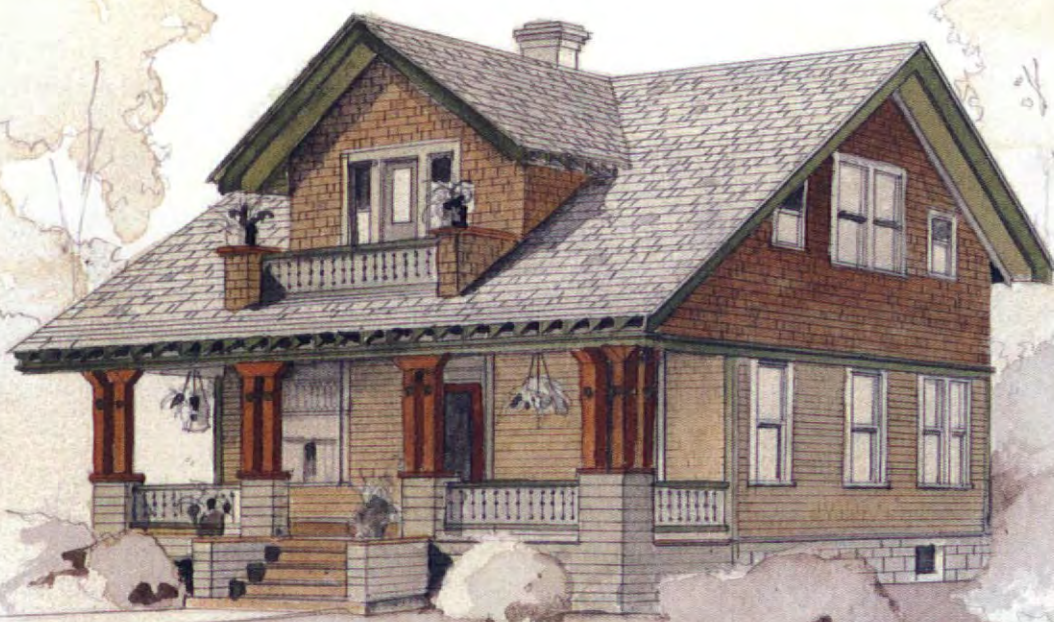
- If the supports flow smoothly into an arcade, they must share their color with the arches.

- If the supports hold up arches, they may or may not share their color. If their surface material is the same, they might be the same color. Different materials might justify different colors. Shape, size, decoration, and surface material of the support caps might indicate integration or separation as well as an accent color. These same principles might be applied to supports that hold up a straight entablature (a moulded beam).

- The best bungalow porch piers, pillars, or columns never totally abandon the classic relationship between base, shaft, and cap. No matter how aggressively archaic or proudly primitive they might appear with their battered (sloped) sides and chunky proportions, they neither forgot nor ignored the classical unity of Ancient Greek and Roman columns. If you mindlessly pick out parts of supports with color, you risk disintegrating the architecture of your porch.

Here, the porch walls are integrated with the foundation of the bungalow, and the hand rail continues the belt course, so they should be integrated with the same stone color. The pillars, though physically connected, can be isolated with a contrasting color that increases their drama. Dark greens always work for rafters and tails.





Traditional Support Colors

PAINT IS MEANINGLESS WITHOUT COLOR. WHAT gives paint meaning, especially old-house exterior paint, is color associations with natural and traditional building materials—particularly stone, brick, and tile taken or processed from the earth. The early 20th century continued the great American exterior paint tradition of coloring wood up-market to look like brick or stone.

An exterior color palette emulating traditional building materials safeguards against chromatic insults to architecture. It pays to ask yourself, Would it be possible to make this pier, pillar, or column with the material I am emulating in paint color? If the answer is Yes, congratulations! If it is No, think again.

For example, if a cobblestone pier was capped by an ordinary concrete slab, I would not hesitate to paint it to look like stone. If a pillar featured a recessed panel, I might put a tint or shade of the pillar color in the recess. Accent colors selected from a palette of traditional building material colors lessen the risk of disunity when details are picked out within a pier, pillar, or column.

Brick and Stone Tyranny

OVER THE YEARS, I HAVE COME TO THE CONCLUSION that thousands of old-house owners are bothered by “color anxiety.” In my di-

agnosis, however, they are not afraid of color. They are frightened by contrast. It is this fear that drives them to find a paint color somewhere in their home’s brick, stone, or stucco. Their defense against anyone rude enough to question that color is, My bricks made me do it!

Don’t look for a paint color in existing masonry. You are doomed to failure. Masonry materials contain many colors, but you can pick only one for paint. Brickwork tends to throw most people for a loop. Owners of bungalows with brick porch piers often paint the adjacent area, usually the body of the house, to look like the brickwork. When paint tries to copy brick, a single paint color will always trump the brick’s multiple colors. The real masonry becomes trivialized and visually lost in the painted area—it goes into hiding. This is the kind of home-improvement love that damages the love object.

Do look for a paint color that contrasts in color or value with existing masonry. Value contrast comes from a vaguely similar tint of the masonry that is much lighter in value. There are many warm greys and tans that often work well. Color contrast would come from a cool color in the green-to-blue spectrum, for the reason that nearly all masonry materials are in the warm yellow-to-red spectrum.

This two-storey bungalow has an integral porch, so why not integrate the porch base with the foundation using an appropriate color? Relate porch ceiling to balusters using the same color on both. Cornices, rafter tails, hand and foot rails, and pillar “pegs” are linked by the major accent color. Eave soffits and windows, however, get a warmer green.



The 1920 Curtis Millwork catalog was chock full of Colonial Revival house parts when it ran this modest bungalow—already passé and painted white to be sellable.

The Blight of White

White trim paint for bungalows is bad medicine, especially against dark body colors of paint and natural materials. White is a “scissors” color. Extreme value contrast of light against dark visually cuts architectural unity apart.

- White roofline cornices sever roof weight from walls.
- White weakens cornice bracket strength.
- White windows and doors cut voids into walls.
- White emasculates the compressed muscularity of columns and pillars.
- White water tables levitate walls from foundations.

By 1920, aggressive use of white paint was “whiting-out” bungalows. The example above is from a millwork company brochure. Everything has been soaked in white paint, except the dark green shutters. The wonderful pergola porch has been suppressed into the white body. The only clue that it’s there is something green growing up it!

By then it was no longer fashionable to use Arts & Crafts body and trim colors to make bungalows look like bungalows. Perhaps it’s an injustice to accuse Jazz-Age persons of Colonializing their bungalows with white-out. The same kind of color scheme had been promoted earlier to suppress Victorian ornamentation. In their defense, they probably would have said that white modernized their bungalows.

Blues are a restricted family of traditional exterior paint colors, because few bluish building materials exist. Greyed blues related to stone and clay are safe. Brighter blues are risky, because this color family is notorious for its dislike of its own kind. It is exceedingly difficult to select two blues that will work together in harmony, unless one is a simple, white-added tint of the other, or they occupy the extremes of the light-to-dark value scale.

Greens are a more congenial family of colors. They harmonize with a wide variety of colors. That is why greens in all their variety were so popular for bungalows, especially the yellow-greens that are currently fashionable for all houses. Of course, green is also the color of nature and ideal for a building type philosophically tied to the earth.

Since most masonry materials are warm and dark in coloration, consider lighter and cooler paint colors for adjacent areas of body, trim, or accent. Reddish brick is a special problem, because a lighter tint for value contrast would be an odd-looking pink. When in doubt, select a light tint from that non-descript family of greys called taupe. A soft background for brownish brick might be a pale

Stone colors would be logical for the body of this concrete block bungalow and help integrate the pergola porch. Since the outrigger piers are separate and doing a lot of work, I’d contrast them with a darker granite color. The pergola rafters are a different material—wood—hence the weathered green. Painting the steps and porch floor an accent color retains the sense of entrance.



tint of tan, beige, or bluish grey.

Bungalows hardly ever wore ceramic tiles on any area other than the roof, but that didn't stop their builders and owners from using ceramic tile colors. Wood shingles or asbestos-cement shingles and tiles were often painted in the yellow-to-red spectrum. These bungalow clay colors perpetuated the ancient association between wood shingles and ceramic tiles that was delightfully celebrated during the 19th century with decorative shingle siding for walls, gables, cornice friezes, belt courses, and raised foundations. You can justify painting bungalow wood shingles to emulate a clay tile color with paint when they:

- appear in a small area with surrounding trim, such as in a gable.
- form a geometric accent device within a plain field.
- are decorative in shape.

Shingles that are plainly applied to a pillar, pier, pedestal, or wall whose shape suggests the possibility of a stone structure might be painted with a stone color. When in doubt, select a weathered wood paint color in accordance with the Arts & Crafts principle of making natural materials look natural.

Hitting the Ceiling

IF YOU ARE LUCKY ENOUGH TO STILL HAVE A clear-finished, beadboard porch ceiling, keep it natural. If you plan to freshen the old, oil-based varnish that has yellowed and dirtied over time, consider a light, semi-transparent wood stain and one of today's clear acrylic coatings that will not yellow with age. If the paint has puckered, cracked, or peeled, try taking the paint off and restoring the natural look. If the paint is in good shape, keep on painting!

Folks besieged by spiders, mud-daubers, wasps, and other insects that disfigure the corners of porch ceilings solemnly inform me that a blue ceiling rarely attracts such critters, because sky color confuses them. I put my faith in a stout broom and regular shots of water from my garden hose. At any rate, blue was a common bungalow porch ceiling color. You can discover classic ceiling blue for yourself by tinting white with

Prussian Blue artist's color.

Recently, I've been suggesting variations on Heather Grey, a greyed purple porch ceiling color popular during the late 19th and early 20th centuries. My current favorites are a pale lilac or lavender whisper, especially if the porch trim color is green and the body color of the house is a yellow. Lavender and yellow are natural color complements that were fashionable for textiles and interiors during the bungalow era. I also like any elegantly cool tint and a pale yellow that might emulate maple or satinwood.

The Clash of Personal and Authentic Accent Colors

FOR ANYONE CONTEMPLATING A HIGHLY individual color scheme for his bungalow,

especially in the colored substance-abuse tradition of "the painted lady," I beg you: don't impudently and imprudently put odd colors on body and major trim. It will upset your neighborhood and mock your architecture.

Odd architectural colors are "intimate colors." If you apply them boldly, their beauties will be obvious only to you,

your best friends, and a small group of equally-cultured strangers. If you must, reveal your intimate colors on small and broken-up areas, such as window sash, railing balusters, and porch apron lattice. This will obscure them from unenlightened passers-by in the street, yet reveal their sophisticated pleasures at a closer, more intimate, range.

Study the architectural logic of your bungalow. Once you understand its separate parts and how they work together, you will more confidently and successfully make personal choices about colors and placements that maximize its beauty. 🏡

JOHN CROSBY FREEMAN, *The Color Doctor*®, is co-author of *The Joy of Color*, a book about early 20th-century exterior and interior paint colors due out soon. He also is Valspar's paint color consultant to the customers of Lowe's Home Improvement Centers.

I like maroon for muscular features that are doing architectural labor, especially pillars with battered sides and compressed "pumping iron" proportions. If the body color permits, it's also my favorite color for the colossal, but plain, cornice brackets often echoed on bungalow porches, as well as for entry doors.

Porch Parts Checklist

Use this guide to see which parts integrate, separate, or accentuate.

COLUMNS, PIERS, AND PILLARS

- ❑ Are supports integrated into outer porch walls? If so, there is no separation by materials or shift in plane.
- ❑ Are supports and outer walls integrated into lower wall of house or an over-scaled foundation? If so, the porch appears to be pulled out of the house.
- ❑ Are supports isolated from lower piers or pedestals?
- ❑ Are supports shaped to convey compression?
- ❑ Are any supports truncated so they support nothing?

BEAMS, ENTABLATURES, AND ARCHES

- ❑ Do supports hold up a straight beam, straight entablature, or flattened arch?
- ❑ Do supports hold up arches?
- ❑ Are supports integrated into an arcade?

ROOF AND SIDING

- ❑ Does the porch roof have side gables that appear to be separate from the body of the house, integrated with it, or requiring a special accent color?
- ❑ Does the existing porch roof color integrate or separate it from the house roof?
- ❑ Are the walls of the house covered in the same material or two different ones?

Mansard roofs were ideal for the display of decorative slate, like these grey and green fishscale cuts.



SLATE *from the* SOURCE

Once you know the origins of a certain slate, you're on your way to saving, matching, or replacing it.

BY JEFFREY S. LEVINE

DID YOU KNOW THAT THE SLATE roof on your old house may be as unique as the geology that shaped your region? Slates quarried mere miles apart can vary widely in color, texture, and durability. While some slates last less than 75 years, others have lives that can be measured in centuries. These features are clues you can use to identify a particular kind of slate.

Popularized as a roofing material in the late 19th century by A. J. Downing and others, slate use peaked in the U.S. between 1897 and 1914. Slate crowned many 19th- and 20th-century homes, particularly those built in the Gothic, Queen Anne, Second Empire, Tudor, and Colonial Revival styles. Many of these slate roofs are nearing the end of their natural lifespans. If you're interested in repairing, replacing, or matching a slate roof—or you want to learn more about where this beautiful and durable surfacing material comes from—here's how to identify and find slate from the source.

Slate Signatures

SLATE IS FORMED FROM SEDIMENTARY DEPOSITS of clay and silt subjected to the intense heat and geologic pressures of mountain building. The result is a dense, high-strength stone that tends to split into smooth, even sheets. The key identifying characteristics of slate are color, color permanence, luster, texture, and the presence or absence of ribbons.

COLOR. High quality roofing slate consists mainly of mica, quartz, and chlorite—minerals that give slate its broad and distinctive range of colors: grey, blue-grey, black, various shades of green, deep purple, red, and mottled purple and green.

COLOR PERMANENCE. Slates are classified as unfading or fading according to their color stability. Unfading slate maintains its original color for many years. Fading slate changes to new shades or may streak within a short time. With a few exceptions, color change is usually unrelated to weathering characteristics and durability.

LUSTER. The presence of mica adds luster to a slate's exposed surface; the more mica, the more luster. Buckingham Virginia slate (and to a lesser degree, Peach Bottom slate) are classic lustrous slates.

TEXTURE. The surface texture of slate is directly related to how easily it cleaves into



thin sheets. Slates that cleave readily, such as those of the Soft-Vein district of Pennsylvania, typically have a smooth surface. Slates that cleave less readily possess a rougher surface texture.

RIBBONS. Ribbons are dark bands on the cleavage face. These remnants of the original bedding planes often differ in color, composition, and texture from the main body of the slate. Ribbons can vary in width from a fraction of an inch to several inches.

Slate, State By State

SINCE SLATE IS A PRODUCT OF MOUNTAIN building, it's not surprising that the principal commercial slate deposits in the United States lie along the Appalachian Mountain chain. Slate comes primarily from Pennsylvania, New York, Vermont, Virginia, and Maine. Slate is heavy and was difficult to transport in the past, so usage well into the 20th century tended to be greatest near slate beds—that is, along the East Coast.

PENNSYLVANIA. About 60 percent of the slate produced in the United States between the 1880s and 1914 came from Pennsylvania. Most of this was Soft-Vein, the

dominant grey slate of the late 19th century in the Middle Atlantic states and beyond.

• Pennsylvania Soft-Vein slate was often called "Pennsylvania Black," despite its blue-grey coloration. Still widely available, this relatively soft, smooth-surfaced slate was marketed under such names as Bangor, Pen Argyl, Lehigh, and Albion. After many years of exposure, Soft-Vein lightens to a light grey, and may show rust stains or U-shaped bands of white efflorescence (gypsum) on exposed surfaces.

• Pennsylvania Hard-Vein slate was quarried primarily in Northampton County, where it is still in evidence on many homes. This durable blue-black slate is streaked with closely spaced, white, light-grey, and orange ribbons, which give the slate its distinctive appearance. Pennsylvania Hard-Vein lasts 100 years or more; the Edelman, Belfast, and Chapman quarries that produced it have been idle since the 1950s.

PENNSYLVANIA/MARYLAND. America's oldest slate quarries, dating to 1734, lie in the Peach Bottom district along the Pennsylvania-Maryland line, near the Susquehanna River. Peach Bottom slate is heavier



The steeply pitched, complex roofs of Gothic Revival houses, like this example near Tarboro, North Carolina (top), lend themselves to polychromy—the use of two or more contrasting slate colors to create a striking pattern. The red slate on this Cape May, New Jersey, house (above) undoubtedly came from New York.

CHAIN OF COLORS

Most American slate is quarried in states along the Appalachian Mountain chain. Historically, deposits in the Rockies were too far from cities to be quarried profitably.



Slate Lifelines

If you know the age of your roof, you have another clue to its identity. Here's a guide to slate lifespans for the most historically popular varieties.

PA HARD-VEIN*	100 years +/-
PA SOFT-VEIN	60 years or more
PEACH BOTTOM*	At least 200 years
NEW YORK/VERMONT	125 years +/-
VIRGINIA BUCKINGHAM	175 years or more
MAINE	100 years or more

* NO LONGER QUARRIED

than most and possesses a deep, unfading black color. This rough-surfaced slate has a slight luster and is renowned for its strength, hardness, and durability. Most commonly seen in the Middle Atlantic states, Peach Bottom is so difficult to work that quarrying it is too expensive to be profitable. The slate was last quarried in 1945.

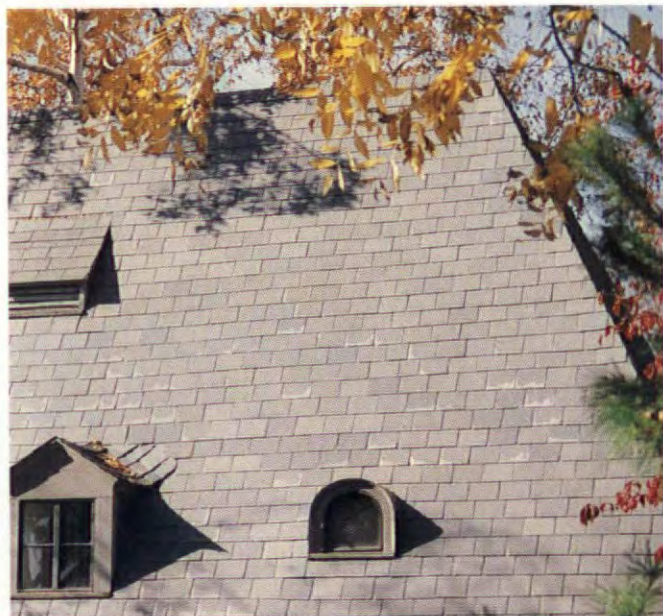
NEW YORK/VERMONT. Various green, grey, grey-black, purple, mottled, and variegated slates are still produced in Washington County, New York, and Rutland County, Vermont. Generally, all are relatively rough in texture. The availability of a wide selection of colored slates close to the heavily populated Northeast helped spawn the architectural trend for polychromy, where two or more contrasting colors were used to create a striking pattern.

Red slate beds in Granville and Middle Granville, New York, are the only commercial deposits of this color in the world. Reddish-brown and lusterless, the slate grows brighter on exposure.

Green slate is either unfading or fading. Unfading greens vary from soft shades of green and grey-green to emerald green. Fading green slate is sometimes referred to as "sea green" or "weathering green." Greyish green when freshly quarried, most of these slates fade to buff or brown. Some green slate is considered semi-weathering; after several months of exposure, about one-quarter will turn to soft tones of orange-brown, buff, and grey. This tendency to discolor made fading green historically the least expensive and most common colored slate.

Mottled grey-black slate possesses short streaks of dark grey and black throughout its exposed face. The surface of mottled purple slate is spotted or blotched with green, while mottled green slate contains spots of purple. Variegated green and purple slate contains streaks, clouds, or tints of the two colors, no two slates being alike.

VIRGINIA. Roofing slate was first quarried in Virginia in 1787 for the state capitol. Usually called Buckingham, this dark blue-black slate is extremely durable. Buckingham is a lustrous slate, which may no longer be apparent in heavily weathered examples. To check for luster, break a slate in half; the mineral particles inside should radiate in a feather-like pattern on its exposed surface. Buckingham slate, which is still quar-



ried near Arvonion, was most widely distributed in the South.

MAINE. Maine is one of the few places in the country where slate was extensively mined underground. Often called Monson slate, principal deposits lie in Piscataquis County near the center of the state. Monson slate is a dark, unfading black with a slight purplish cast and slight luster. It was most popular in the Northeast. After a long drought, Monson slate is being mined once again near Abbot, Maine.

Matching or Replacing a Roof

IF YOU'RE SEEKING TO DETERMINE THE ORIGIN of a particular roof, keep in mind that slate often came from the nearest quarry or the one most directly linked by rail, river, canal, or sea. Here are a few suggestions to help you identify and find a certain slate:

- You can sometimes use the age of the roof to narrow the range of possible sources of your slate. For example, if a grey/black slate in good condition is original to a house constructed in 1870, it's more likely to be Buckingham or Peach Bottom than Pennsylvania Black, Vermont grey-black, or Maine slate.

- Whenever possible, replace damaged slates rather than an entire roof. This is particularly true if the slate has a long natural life (see "Slate Lifelines," p. 38). Several companies salvage used slate (see "Suppliers," this page) and are good sources for replacements, even when a slate is no longer quarried.

- If you're replacing individual slates or

sections, be sure to match the new slate for color and color permanence. For instance, if the original slate is a fading-green from Vermont, chose a salvaged slate that closely matches its current condition. New fading slate will fade to match the old in six months to a year.

- Occasionally, the true color of slate is masked by years of exposure to its particular environment. Pennsylvania Soft-Vein slate can take on a green hue, and red slate from New York turns jet black when exposed to heavy accumulations of soot. To repair an environmentally altered roof, it's best to match the changed color of the slate, preferably with salvaged slate from the same area. However, if you want to replace such a roof, match the original color.

- It's possible to substitute a different domestic slate for varieties that are no longer quarried. New York/Vermont mottled grey slate, for example, is a reasonable replacement for Pennsylvania Hard-Vein slate. Buckingham slate and Pennsylvania Soft-Vein slate can be appropriate substitutes for Peach Bottom and Maine slate.

Finding a suitable match for a historic slate roof is an imperfect science at best, but worth a search. The roof you're renewing will likely be at work long after you're gone and may even outlive several generations of descendants.

JEFFREY LEVINE is a Senior Project Manager with John Milner Associates Inc., an architectural restoration firm in West Chester, Pennsylvania.

Pennsylvania Soft-Vein slate (left) lightens to a soft grey over the years. The newly installed Virginia Buckingham slate roof at right should last for nearly two centuries.

SUPPLIERS

BUCKINGHAM-VIRGINIA SLATE CORP.

P.O. Box 8
Arvonion, VA 23004
(804) 581-1131

DURABLE SLATE CO.

1050 N. 4th St.
Columbus, OH 43201
(800) 666-7445

GREENSTONE SLATE

P.O. Box 134
Poultney, VT 05764
(802) 287-4333

HILLTOP SLATE CO.

Rt. 22A, P.O. Box 201
Middle Granville, NY 12849
(518) 642-2270

KENNEDY SLATE

RFD 1, Box 112
Abbot, ME 04406
(207) 876-2269

SLATE INTERNATIONAL INC.

15106 Marlboro Pike
Upper Marlboro, MD 20772
(301) 952-0120

STRUCTURAL SLATE CO.

222 E. Main St.
Pen Argyl, PA 18072
(610) 863-4145



Mini ducts are flexible hoses that can be snaked behind plaster and lath. Outlets are 2" holes that can be placed in the floor, ceiling, or wall.

C O L D C O M F O R T

SPECIFYING MINI-DUCT AIR CONDITIONING FOR AN OLD HOUSE

BABY, IT'S HOT INSIDE. THE OLD HOUSE ABSORBS THE SUN'S HEAT ALL DAY, THEN RADIATES IT ALL NIGHT. PERHAPS YOU'VE BATTLED BACK WITH WINDOW AIR CONDITIONERS IN THE LIVING ROOM AND MASTER BEDROOM, BUT THESE ARE UGLY AND NOISY. YOU'D LIKE TO ADD CENTRAL AIR CONDITIONING, IF IT COULD BE DONE WITHOUT DAMAGING YOUR HISTORIC HOME. BY J O S H G A R S K O F

ADDING "AIR" CAN MAKE THE DOG days of summer more comfortable and can increase the value of your home. Just as previous generations introduced running water and electric service into existing houses, you're bringing in a modern system that must be weaved into the antique fabric of the building. The trick is to install the equipment without damaging structural members or period finishes.

If you've got forced-air heat, of course, air conditioning is a relatively simple add-on, requiring minor adjustments to existing ducts. For buildings that are heated by radiators, though, installing large galvanized steel ductwork would require carving up the building. Two widely available alternatives retrofit neatly into old houses. They can be installed by an experienced contractor and do not require an engineer.

Ductless air conditioning (see p. 45) means installing a blower in each conditioned space. Since there are no ducts, this system requires almost no damage to the historic structure, but the blowers are visually apparent in a period interior and don't provide true central air conditioning. **Mini-duct systems** do offer whole-house cooling with small, flex-

ible hoses that can be snaked into existing walls. The outlets are unobtrusive, and mini-duct (also called high-velocity) air conditioning can hide nicely behind the plaster, lath, and woodwork of old houses. It requires a cautious, well-informed approach. Here's how to make sure adding mini-duct air conditioning doesn't have much structural or aesthetic impact.

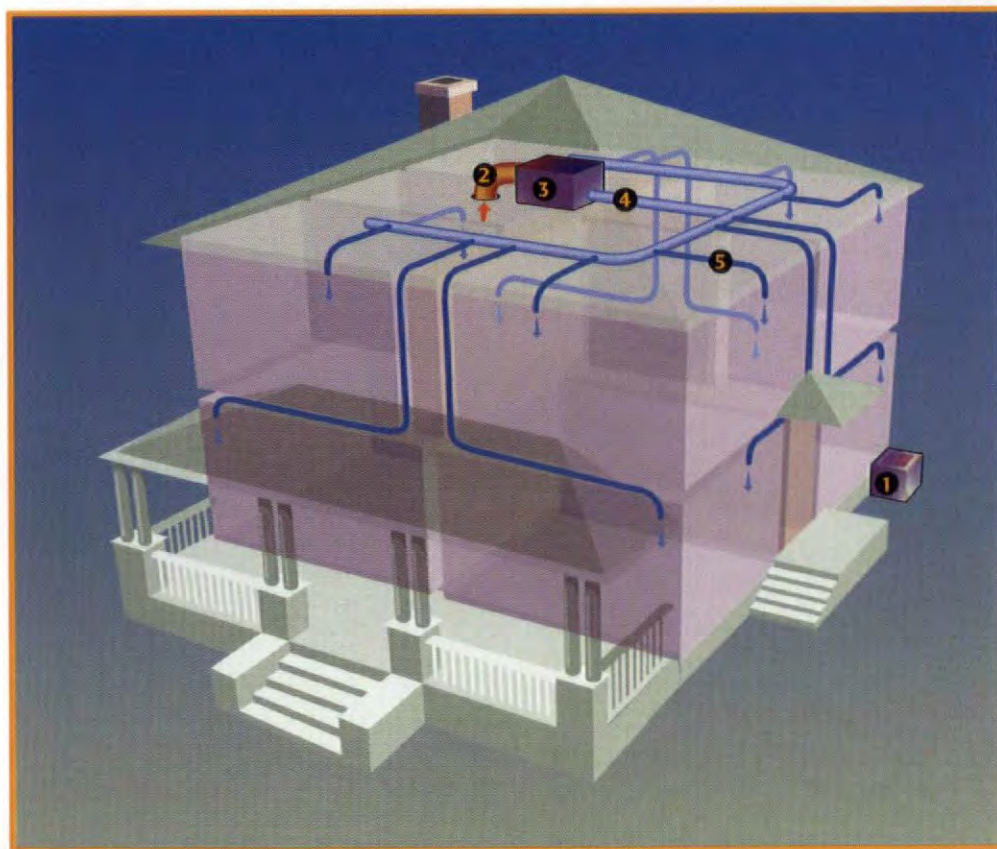
Putting on Airs

FIRST TOYED WITH IN THE 1940S BY A jet-engine fanatic, mini-duct systems have developed into a successful way to air condition old houses. The mini ducts are flexible tubes—think of the hose used for venting bathrooms and clothes dryers—wrapped in fiberglass insulation and a plastic sheath. The total diameter is about 3", small enough to fit between lath and sheathing in stud bays.

Installers simply cut a hole where the outlet will go and fish in the ductwork. Conditioning a single-storey house doesn't involve much demolition because you can easily access the rooms from the attic or the basement and the outlets can be placed in the ceiling or floor. For two storeys, the least intrusive method is to service the upper storey from the attic, and the lower storey from the base-



You'll want to use muffled ducts, lined with nylon fabric to deaden the sound of the high-velocity air flow, for all lines less than 12'. For longer lengths, use muffled ducts only for the final 3'.



Low-Impact Air

A refrigeration unit (1) pumps cold gas into a closed loop in the building (not shown). Meanwhile air moves from the return (2) into the air handler (3), which contains coils of the cold refrigerant. This cools the air and condenses out the humidity. (The air handler can also include heating coils.) Then the air passes through a filter and is blown into the main trunk line (4), made from either fiberglass duct board (rigid insulation) or galvanized steel tubes wrapped in fiberglass. Branching off the trunk line are the mini-ducts (5), which are snaked through walls to feed outlets in the living space.

The ABCs of AC

Whatever method you select to deliver air throughout the building, you have three common options for cooling the air. You can “chill out” with a refrigerant air conditioner, an evaporative cooler (swamp box), or a heat pump.

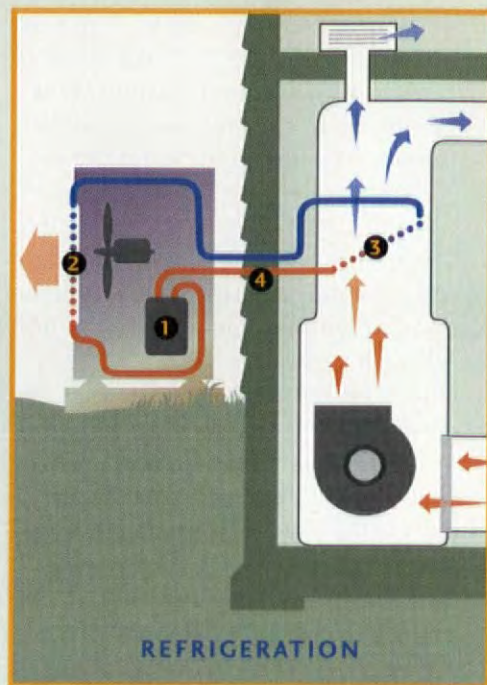


Above: Refrigeration units are best installed on the north side of the house, or in shadows of mature trees. Hide them with shrubbery, landscaping, or latticework.

REFRIGERATION

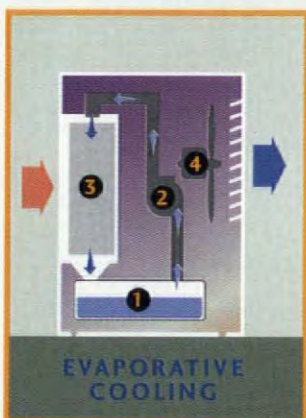
The vast majority of systems use refrigerant air conditioning, invented in 1902 by Dr. Willis Carrier. First used to cool factories, the technology didn't become common for houses until the 1950s. The systems draw heat from the air inside the house and transfer it to the air outside. Refrigerant is circulated through a sealed system. Inside the house, it absorbs heat. Outside the house it transfers the heat to exterior air (the hot breeze behind an air conditioner).

The system works because the refrigerant changes state from liquid to gas when it absorbs the house's heat. The air conditioner then puts the refrigerant under extreme pressure—concentrating it into a liquid, which raises its temperature. That makes it hotter than the outdoors, so it can



REFRIGERATION

give off its heat to the outside air. On its return to the house, the pressure on the refrigerant is released, which produces a corresponding reduction in its temperature. It's ready to absorb interior heat again.



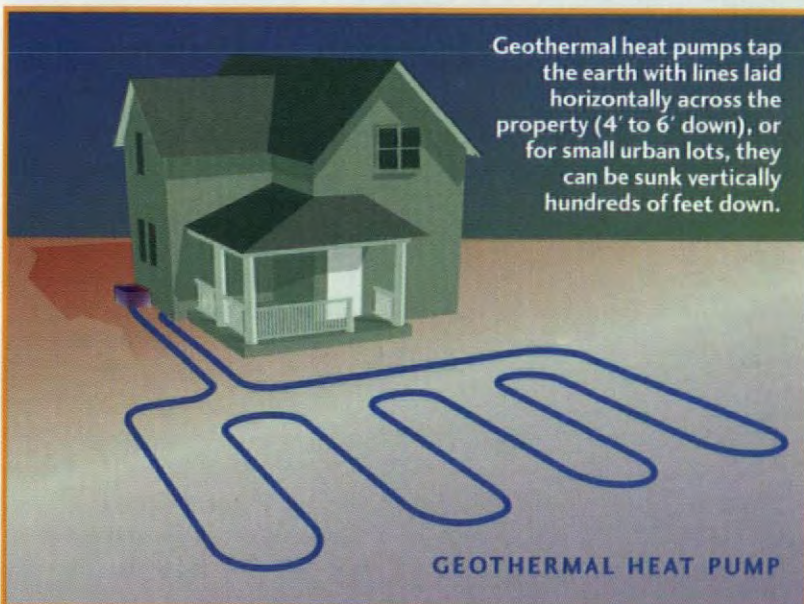
EVAPORATIVE COOLING

Left: A swamp box cools the air through evaporation. Water moves from a reservoir (1) through a pump (2) to a spongelike pad (3). Meanwhile a fan (4) draws fresh air through the wet pad and into the house. The physics of evaporation drop the air's temperature.

THE SWAMP BOX

In desert climates, there's another option for cooling. It operates on a simple principle that our bodies use to cool themselves. When we lie on the beach, run on a treadmill, or try to sleep in the upper storey of an un-air-conditioned house, we perspire. As the moisture evaporates from our skin, it makes us feel cool. Evaporation dissipates heat energy.

To capitalize on this effect, ancient royalty had their servants fan wet blankets to cool them. Native Americans used wet cactus fibers and natural breezes. Known as swamp boxes or swamp coolers (because of the organic growth that occurred in early-industrial versions), efficient, hygienic evaporative coolers are available today. These systems circulate air over a wet pad, and come in window units (\$700 to \$800) or ducted systems (about \$1,000 with existing ductwork). They are limited, however, to desert locations like Arizona, Southern California, and Texas. In areas with high humidity, additional humidity would be uncomfortable. Operating costs are $\frac{1}{3}$ to $\frac{1}{2}$ of standard air conditioning.



Geothermal heat pumps tap the earth with lines laid horizontally across the property (4' to 6' down), or for small urban lots, they can be sunk vertically hundreds of feet down.

GEOHERMAL HEAT PUMP

Left: The compressor (1) takes warm refrigerant, which is in gaseous form, and puts it under pressure, raising its temperature. The condenser (2) transfers the liquid's heat to the outside air. An air handler blows interior air over an evaporator coil (3), cooling it. The warmed refrigerant turns back into a gas (4) and heads to the compressor.

PUMPING HEAT

Imagine a single appliance that could provide heating, cooling, hot water—even heat for a swimming pool—all for a fraction of the operating costs of the most-efficient conventional equipment. Suppose this system produced almost no air pollution.

Sound like science fiction? It isn't.

In the summer, the heat pump operates like any air conditioner, transferring heat from the indoors to the outdoors through the use of refrigerants. In the south, where cooling is the major task, heat pumps transfer heat to outside air. In the winter, it reverses and extracts heat from the outside air to warm the interior. In the north, most heat pumps transfer heat to water, either a nearby lake or well (a water-source heat pump) or a closed loop that transfers the heat into the ground (a geothermal heat pump). This doesn't effect the heat pump's cooling ability much, but in the winter, when the system reverses, it provides a better heat source. About 6' underground, the earth's temperature is a fairly constant 40°–70° year round, depending on your latitude.

Heating with a geothermal heat pump is exponentially more efficient than the best furnace because, rather than burning fossil fuels, it uses heat that already exists underground. Geothermal heat pumps cost about the same as a conventional system, but excavation can cost thousands of dollars, depending on the site. Northern installations require backup heaters for extreme cold spells.

Since the 1960s, heat pumps have been a system for the south. The development of geothermal heat pumps and improvements in efficient backup heat (powered by natural gas instead of electricity) make them options for the north. They might just be the future of climate control for us all.

ment. When ductwork must be snaked through one storey to get to the next, existing pipe chases, ventilation shafts, and stacked closets make the best routes. When ducts navigate through walls, do not cut holes through floor joists or beams—a major concern in timber-frame construction. Nonbearing interior walls are generally the safest routes for ducts.

Done right, the installation goes on behind the scenes, and the results are quite covert in your historic interior. Outlets are 2" in diameter, and a flange locks the duct in place at the outlet. White plastic flanges can be painted, or you can get oak flanges to blend with woodwork and flooring. For installations in tile or woodwork, you can install the flange behind the finish material. Then simply cut a hole in the surface.

Quick Drawbacks

BECAUSE THE DUCTS ARE SMALL, YOU'LL need one outlet for every 100 square feet or so of floor space to get sufficient cooling. Plus, the conditioned air must be carried at about three times the velocity used in conventional systems. This helps to mix the cooled air into the room, but it can mean drafts and noise.

To limit draftiness, place outlets away from the household traffic. (This also helps them to stay out of sight.) The outlet should not be aimed where people work, sit, or congregate, such as near doorways or sitting areas. That means locating outlets along walls and in corners. (Plan them so they won't be blocked by furniture.)

To keep the system as free as possible from the noise of fans and moving air, your contractor should use muffled ducts—made with a thin metal spiral, like a Slinky toy, wrapped in a sound-deadening nylon fabric. The main trunk line should be straight and positioned to minimize the length of the mini-ducts, which should have no sharp turns or kinks. Beyond that, the system must be properly balanced. There should be at least five outlets (and no more than seven) per ton of air conditioning. (A ton of refrigeration is the equivalent cooling effect of a one-ton block of ice melting over the course of 24 hours. A mid-sized window air conditioner—12,000 BTU per hour—provides a ton of cooling.)



Top: The best outlet locations are in the ceiling at each corner along the exterior wall, but this may not always be an option. **Middle:** The duct blows cold air into the corner of the room where people rarely stand. **Above:** You can feather the plaster surface with joint compound to hide the flange.

UnConditional Surrender: Passive Cooling

Let's face it, if the builders of your house had access to affordable, efficient air conditioning, they probably would have installed it. Instead, they constructed wide roof overhangs and deep porches to shield the midday sun and cupolas to provide an exit for hot air that rises through the house. And they sited houses to capture summer breezes. External chimneys and separate summer kitchens helped to vent cooking heat outside.

If you're having a hot time in the old house, but have no plans to install air conditioning, try these passive cooling techniques:

- Shutters, awnings, and drapery aren't just design highlights. They are age-old barriers to solar heat gain, and you can use them to stop the greenhouse effect in your house.
- Plant leafy deciduous trees on the south and west sides of house. Once mature, they'll block the sun's rays and shade the house.

- An attic fan will draw hot air up and out of the house. To provide make-up air, open low windows on the cool side of the building.
- Ceiling fans are an old-fashioned way to circulate air within the living space.
- When you're painting your house's exterior, select light colors that reflect the sun. (Color matters—ever notice the difference between getting into a black car or a white car that's been parked in the sun?)
- If you can't stand the heat, get out of the kitchen. Baking and large cooking projects, as well as dish washing and clothes drying and even stripping paint, are best left to the nighttime or the cool hours of the evening and morning.
- Open windows at night and during cool periods, then keep them shut, with drapes drawn, in the high heat of the day. At most, open low windows on the cool side of the house and high windows on the hot side of the house.



Before compressors and condensers, deep porches and gingerbread kept the hot sun away from windows, and families used age-old ventilation tricks to bring in cool air and exhaust hot air.

- For cross ventilation during cool spells, open the upper sash, which ventilates the hotter strata of air in the room and is less drafty to people. If you're lucky enough to have transom windows open them.

Workers install mini-ducts from the main trunk line. The air handler can take up floorspace, or it can be hung. The modular unit comes in three pieces small enough to fit through the hole cut for the return air vent. Don't let the contractor cut rafters or joists.



Cold Cash


ADDING CENTRAL AIR CONDITIONING IS AN expensive project. You'll need the air conditioning unit, 220-volt electrical service to handle its power requirements, the ductwork and air handlers, and installation.

Mini-duct equipment costs about 20% more than standard air conditioning systems. But installation is quick (a complete job typically requires less than a week), and reduced labor means a competitive total price. Mini-duct systems run \$1,500 to \$4,000 per ton depending on the house, the complexity of the system (number of zones, etc.), and where you live. A typical old house, say 3,500 square feet, might cost \$10,000 to \$20,000. There are two manufacturers: Space Pak (413-568-9571) and Unico (800-527-0896). Each has a network of installers.

Clean Air

MINI-DUCT AIR CONDITIONING (AS WELL AS ductless systems) do more than cool. They also dehumidify and filter the air. The standard filter on an air conditioner removes 10% of airborne particulate—if cleaned and replaced according to manufacturers recommendations.

Considering what could be in the air—mold, animal dander, asbestos, furnace soot, cigarette smoke, cooking grease, viruses, bacteria, smog, plant spores, and pollen—many homeowners are tempted to upgrade to a filter that can improve the air purification. Do this cautiously because filters can stall airflow through the system, reducing its effect and causing it to ice up. Check with the manufacturer or an engineer to make sure the fan can handle the resistance of the filter. For old-house residents with severe allergies, hospital grade filters and HEPA (High Efficiency Particulate Air) filters remove up to 99% of all airborne particulate. These are probably best in free-standing air cleaners, but can be retrofitted into an air conditioning system.

Installed by an experienced hand, mini-duct air conditioning can deliver climate control, while playing it cool with your historic home. 

Thanks for technical assistance to Brian Cooper, Early New England Restorations, Gene Frantz, New England Service & Controls, and Ernest Conrad, PE, Landmark Facilities Group.

Ductless Alternative

If you're lukewarm about the idea of shoe-horning central air conditioning into your period home—no matter how small the ducts—you can select a ductless system. A fan unit in each room turns cold refrigerant into cooled air. Up to four blower units can run off a single condenser outside, which can be located in a low-visibility spot up to 160' away. Insulated copper refrigerant lines—generally less than 1" in

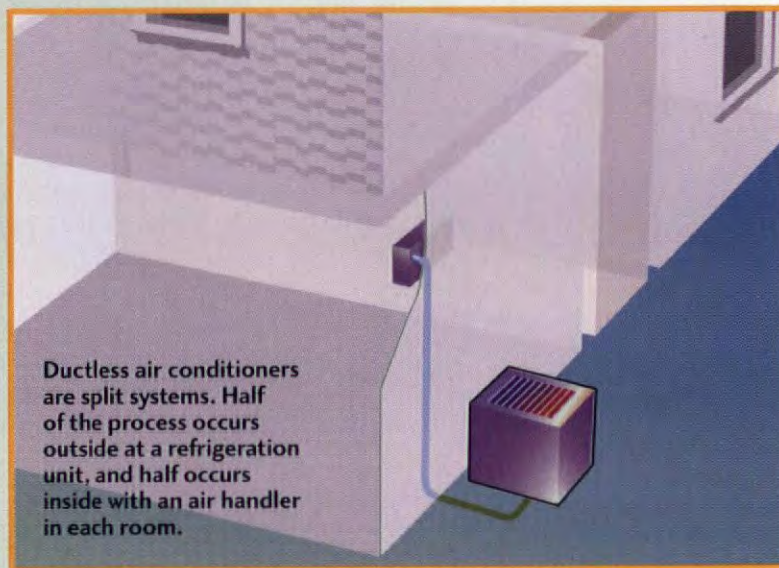
diameter—are snaked into the building. The pipes are smaller than mini-ducts, but riskier in the event of breakage. At minimum, these systems require a single 3 1/2" hole through the exterior wall—for both ends of the refrigerant loop, wiring, and condensate drain. This allows air conditioning of masonry and log houses, where fishing ducts into walls might be impossible. Hiding the lines inside frame walls requires snaking, but still far less than a ducted system.

The big trade-off is aesthetics. The fan units are visibly modern in a historic interior. A wall unit for an average room protrudes about 8" from the wall and measure 15" tall by 37" wide. If there's enough space behind a wall or ceiling, the units can be recessed



Although undeniably modern in an old house, the ductless system has very little physical impact on the historic structure.

and covered with a grille. Also, the systems are not really central air conditioning; they cool room-by-room—each space has its own remote control. This requires a bit more from the user, but prevents the hot and cold spots that may occur with a whole-house system. Ductless units are often used to supplement other cooling systems or to create cool zones in some living spaces without air conditioning the entire house. The systems typically cost \$2,000 to \$3,000 per ton of cooling. Dozens of manufacturers offer ductless equipment.



Ductless air conditioners are split systems. Half of the process occurs outside at a refrigeration unit, and half occurs inside with an air handler in each room.



Why Using Modern Mortar Can Damage a Historic House

BY JOHN P. SPEWEIK

REPOINTING RIGHT

THESE DAYS, MASONRY MORTAR comes as bags of premixed powder. Much like baking with a cake mix, you just add water and stir. What you won't read on the bag or learn at a home center is that putting modern mortar between old bricks can be a recipe for disaster. The mortar can crush old masonry and can cause severe moisture problems. Let's review the properties of historic masonry so you can select compatible materials for your old house.

Sacrificial Lime

WHETHER YOU'RE REPOINTING A masonry chimney, porch, foundation, or whole walls of an entire house, the mortar must be softer than the brick or stone that it bonds. When masonry expands and contracts during temperature changes, the softest areas absorb

the movement. Mortar should also be the easiest exit for moisture inside the building. That means it must be more porous than the masonry units so the potentially damaging water will move through the mortar, not the

brick or stone. Mortar, in essence, is sacrificial; it yields to protect the bricks, which is partly why it needs to be repointed every century or so.

Old mortar, made from lime, sand, and water, is softer than historic brick. But modern portland cement mortar can be many times harder. The problem is, if portland cement is used for historic masonry, the bricks become the weakest part of the system. When the wall flexes with climatic change, the bricks absorb the force. This stress can crack, chip, and delaminate the brick. Plus, portland cement mortars do not breathe like lime mortars. Moisture may get trapped in the wall or may be forced into the masonry units. To judge what is right for your old masonry, take a look at the chronology of mortar.

Like a Rock

THE OLDEST ARCHAEOLOGICAL SITES IN THE world are, of course, masonry. From the Egyptian pyramids to the Roman Coliseum, masonry has long been used for civilizations' most important buildings. So we know more about the history of masonry construction than about other, less durable materials.



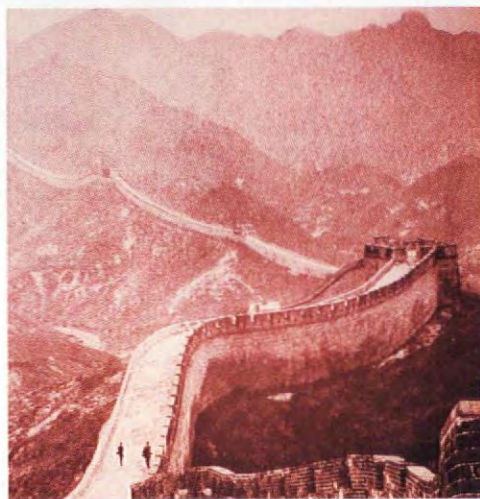
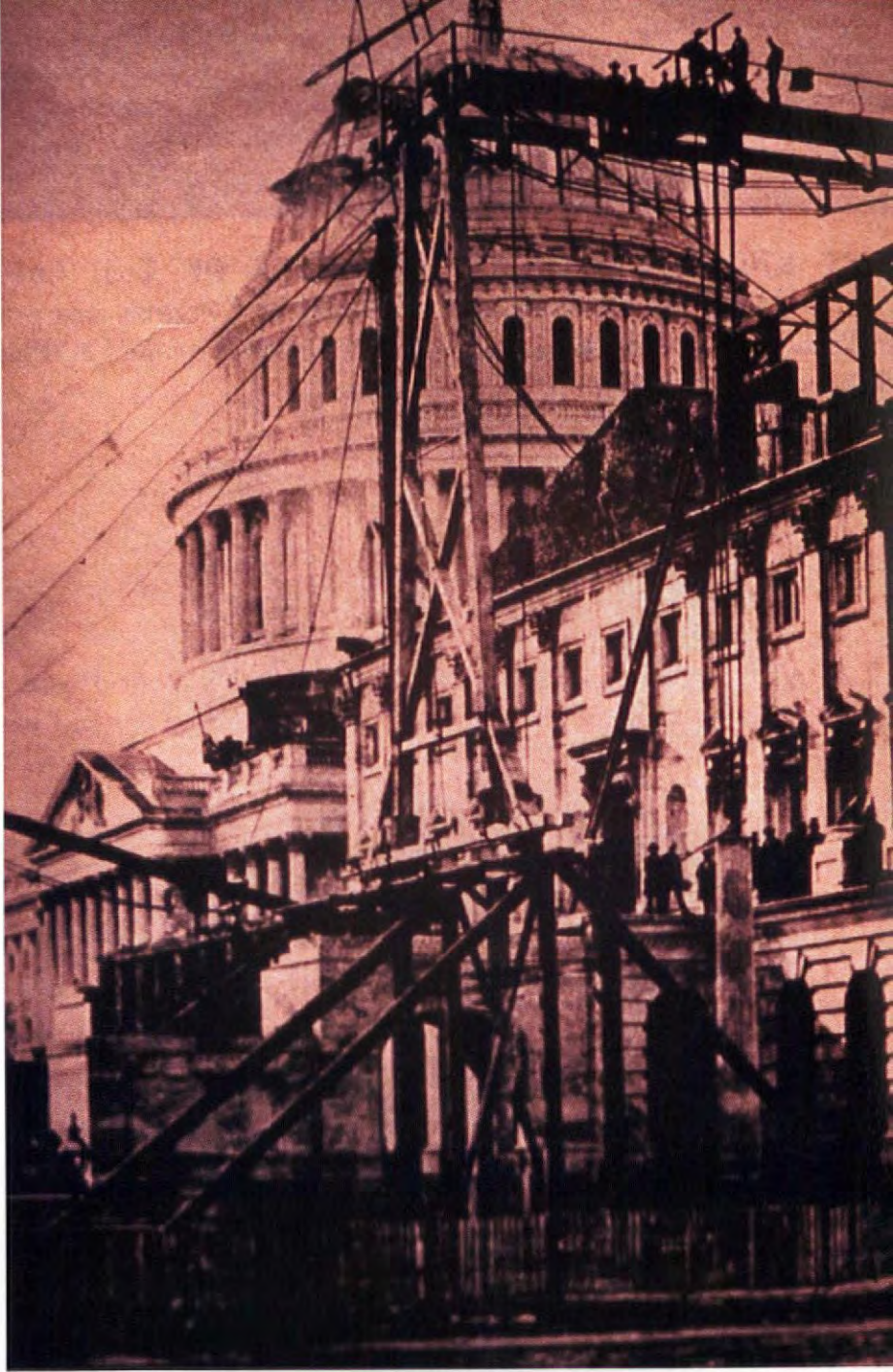
Before you can repoint, you have to determine the right mortar mix to match the existing mortar's color and the hardness of the brick.



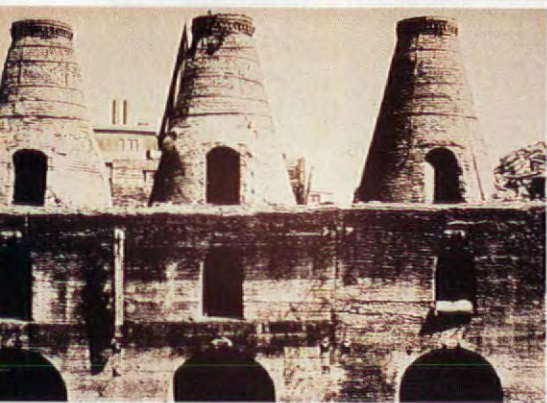
Initially, stone was bedded in mud, used primarily as a lubricant for heaving stones into place. Then builders began to find materials that produced strong mortars: first gypsum (a mineral now used in plaster and drywall), then clay. As early as 2450 B.C., masons began using lime.

Lime is made from limestone (calcium carbonate), a rock formed from organic materials such as shells and coral. (In fact, oyster shells were also a source of lime for coastal masonry.) The limestone is heated in a kiln to at least 1,650° where the heat drives off carbon dioxide and water, turning limestone into calcium oxide. When you mix lime with water, and it absorbs carbon dioxide from the air, it essentially turns back into limestone.

Historians speculate that ancient civilizations discovered lime when they happened to line their firepits with limestone. After many fires, the limestone turned to lime. Its beneficial qualities must have been apparent when the lime was inadvertently combined with water. Eventually builders figured out that lime made strong mortar when mixed with an aggregate, such as sea shells, clay, or river sand.



Above: The Union Army stood guard as the Capitol was built (with lime mortar). **Left:** Lime was used in the architecture of ancient Rome, Greece, and Mexico, and in the Great Wall of China. **Inset (opposite):** Workers pose with their product at a lime plant in Ohio in 1925.



Top: The first portland cement factory opened in England in the 1820s. It was the 1870s before portland was manufactured in this country. **Above:** Kilns burn lime, clay, and other minerals to form portland cement.

Made in America

FLASH-FORWARD TO THE PERIOD when North America's oldest extant housing was being built. The lime manufacturing process had been refined and, by the late-19th century, industrialized. Limestone was mined and burned in hundreds of kilns across the country, then delivered fresh to the construction site in sealed wooden barrels.

This factory-made lime, though, was a far cry from today's ready-to-use mortar. It still had to be *slaked*, combined with water so hydroxides are formed—a caustic chemical interaction which gives off considerable heat and actually causes the mix to boil. The wet lime was left to mature in a pit or wooden box for at least two to 12 weeks, sometimes a year.

Slaking wasn't the only inconvenience for the builder. Laying bricks and stones with lime-based mortar was time-consuming because it cured slowly. A mason might lay only seven to eight courses of brick per

day because the lime mortar would not support any more weight without drooping until it began to set.

Portland Trailblazer

MASONS HAD ALWAYS ASSUMED THAT THE best lime came from the purest limestone. That began to change in the early 19th century. In 1824, the English bricklayer Joseph Aspdin patented a formulation of lime and additives that sped the curing process. He named his mix portland cement because it resembled the color of a widely used stone quarried on the island of Portland, off the English coast.

Portland cement consists of specific proportions of limestone, clay, and other minerals fired at more than 2,600°. This firing creates a hard, rocklike material, which is then ground into a fine powder and mixed with 5% gypsum. Portland cement rehardens when mixed with water.

For generations, masons believed portland cement was not as strong as good old-fashioned lime mortar. Very small amounts were imported from Europe, but American

THE RIGHT STUFF

If your old house was built between the 1880s and 1930s, how can you tell what mortar is right? Your mix must meet two criteria: it must be softer and more permeable than the masonry units and it must match the original mortar still inside the walls; inconsistency can cause shifting and trap moisture. The easiest way to insure both criteria is to analyze the existing mortar and reproduce it.

- Investigate the old mortar as you remove it. Lime is pure white, but portland cement is grey (although you can get white portland cement for restoration use).

- Note the way the mortar comes loose. If it dislodges easily with a screwdriver or masonry chisel, it's likely made from lime, or a high lime mix with portland cement. If it's very hard and stubborn, it probably contains a high volume of portland cement.

- Carve a hole in a sound mortar joint with an old penknife. If you can make a hole—even if it's difficult—the mortar is all or mostly lime. If you cannot make a hole, the mortar contains a significant amount of portland cement.

- Take a chunk of solid mortar and drop it on a sidewalk. If it falls with a dull "clunk," it's a high-lime mortar. If it hits with a sharp "ring," it has a lot of portland cement. Next try to crush the mortar. If it falls apart in your hand, it contains a lot of lime. If it breaks under a hammer, but does not crumble, it contains a lot of portland cement.

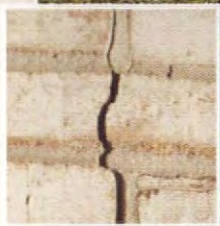
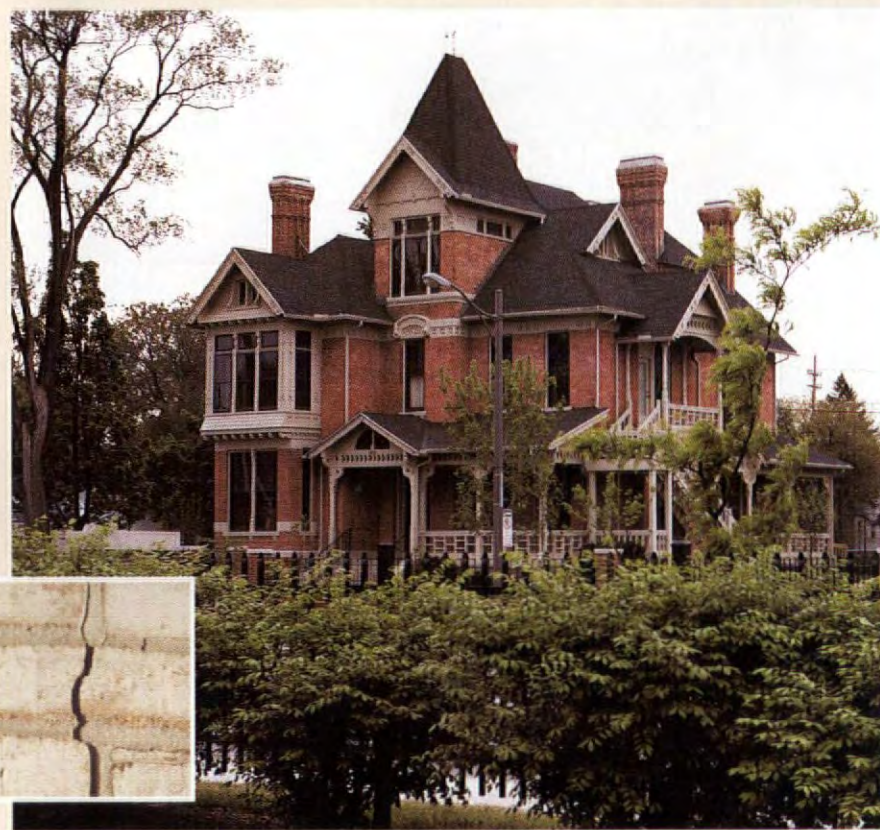
- Try wetting it and then crushing it in your hands. Lime mortar may break down in water, or a vinegar-and-water solution. If it's portland cement, it won't come apart. A muriatic-acid-and-water solution will separate mortar (see "Color by Numbers," p.50).

Getting a read on mortar may be difficult for an inexperienced

repointer. For an absolute determination, send a sample to a laboratory for analysis, where they use petrographic methods (looking at particles under a microscope) or chemical techniques (testing the mortar against a battery of chemicals). For large-scale repointing projects, this cost is relatively small.

Of course, you can also hire a restoration mason or consultant to come on site and investigate. Otherwise, err on the side of soft mortar. Better to have high-lime mortar between machine-age bricks than to have too-hard mortar between soft bricks. The risk is you'll need to repoint sooner—a dilemma that's far preferable to cracked or moisture-damaged masonry units.

Above: Remove some sound mortar to test it. Right: A laboratory has separated mortar into its components. Below: Brick is a beautiful and durable building material, but incompatible mortar can crack it (inset).





Very few older buildings require complete repointing. Spot repointing is safer, cheaper, and conserves the original building materials.

MORTAR GLOSSARY

HYDRATED LIME: Today's machine-slaked lime has just enough water to act on the lime, but is still a powder. Hydrated lime was invented in the 1930s to compete with portland cement, which required no slaking.

LIME PUTTY: Slaked lime that has a putty or paste consistency. Increasingly, restorers are turning toward lime putty over dry hydrated lime. Putty re-creates original materials, and bonds better to sand particles than hydrated lime.

MASONRY CEMENT (MORTAR MIX): Premixed, bagged mortar, which contains portland cement and generally sand. It usually does not contain lime, but may include inert additives such as fly ash or ground limestone. This is the easiest product to find and to use, but it's not recommended for any historic masonry.

QUICKLIME: Processed but not hydrated lime. It is made by firing limestone or shells at more than 1,650°. It requires slaking, which causes extreme heat and may splash the caustic material as it boils. (If you're slaking your own mortar, wear a protective suit, gloves, and goggles.) Once it's slaked, lime putty should be allowed to mature for as long as possible before mixing into mortar.

SLAKED LIME: Lime that has been combined with water to prepare it for mixing into mortar. Traditionally, that means lime putty. Modern hydrated lime is mechanically slaked through pressure.

We've all seen mortar and brick repairs that don't match the appearance of the original masonry.

COLOR BY NUMBERS

Matching the color and texture of original mortar is very important for an aesthetic job. Most conservators shun mortar dyes because they can fade and appear splotchy. Better to match the sand and other original ingredients (including clay, lampblack, iron oxides, crushed brick, and powdered coal).


You can analyze mortar to see what components it contains. Fill a mason's jar $\frac{1}{4}$ with a solution of 3% muriatic acid and water (use proper precautions

when working with this acid). Put a handful of old mortar in a cloth and pulverize it with a hammer. Place the crushed mortar into the jar, without the lid, and allow it to bubble. When the bubbles subside, add one cup of water to stop the reaction. Dirt will float to the top and sand will remain on the bottom. Slowly pour the entire mixture through a paper coffee filter. Allow to dry. Then note color and size of the sand particles and other materials used in the original mortar.

builders generally continued to use a straight lime-sand mixture. With the development of compression testing near the turn of the century, the industry realized portland cement was indeed much harder.

Portland cement was first manufactured in America in 1871 in Lehigh Valley, Pennsylvania, but its use did not become truly widespread until the 20th century. As late as 1883, there were only three portland manufacturers in the U.S. If your home was built before 1880, it's a very safe bet that it has a straight lime-sand mortar. By the 1930s, most masons used a mix of equal parts portland cement and lime. In the transitional period, homes might be pure lime, or a wide range of lime-to-portland cement combinations.

Some restorers refuse to use portland cement mortars for any work, including new masonry. As we've seen, portland cement doesn't handle change in climate or structural shifting very well. Lime mortars are more pliable and forgiving. What's more, lime mortars are self-healing. If tiny cracks form between the brick and mortar, rainwater is absorbed into the space. This moisture dissolves minute amounts of lime in the hard mortar, rewetting it and allowing it to reknit. Portland cement mortar cannot reknit once it has cured.

Restoration masons, who specialize in eyeballing historic brick- and stonework, all have their own preferred mortar recipes. These vary by region, age of the building, and the mason's approach. If you're hiring masons to do the project, discuss the mortar mix with them. Armed with the information in this article, be sure they intend a hand-mixed, high-lime approach. Ask proportions they'll use and why. For folks doing the work themselves, you can use a number of testing procedures to evaluate your mortar (see p. 49), or you can hire a restoration consultant to recommend a mix, or even to make the mortar for you. 

JOHN P. SPEWEIK, CSI, is a fifth-generation stonemason and historic masonry specialist for U.S. Heritage Group, which analyzes and custom reproduces historic mortar: 2511 North Elston Avenue, Chicago, IL 60647, (773) 286-2100, USHeritage@aol.com. Thanks for technical assistance to John E. Harry, Allentown, PA, (610) 434-5465 and Brian Pfeiffer, Society for the Preservation of New England Antiquities.



OLD BRICKS AND MORTAR

The best way to insure a good mortar mix is to reproduce the original mortar. You can also learn a lot by investigating the masonry units. Identifying the three recognizable types of historic brick can help you select a good mortar mix.

SOFT-MUD BRICK: Used before the industrial era (and in some areas through the 19th century), these bricks were made by hand-packing clay into wood molds, then firing in wood- or coal-burning kilns. The bricks are very soft and inconsistent and often have irregular edges. You can use a straight lime-sand mortar—1 part lime and 3 parts sand. Be sure to keep it covered and wet for 72 hours so that the water can carry carbon dioxide to the lime inside the joints. Many restoration masons add some portland cement to speed the curing process. A good range of recipes for soft-mud brick is 1 part white portland cement, 3 parts lime, and 10 to 12 parts sand.

PRESSED BRICK: In the mid-19th century in many areas, machines began pressing the clay into molds. Hotter kilns produced harder brick. The surfaces of these bricks may exhibit streaks from sand or water that was used as a separator. A pressed brick usually has a frog (an indentation in its bed), where a manufacturer might identify itself or date the brick. A good mortar recipe range is 1 part white portland cement, 2 parts lime, and 8 to 9 parts sand.

WIRE-CUT BRICK: By the late 19th century, extrusion machines worked dry clay and squeezed it out under high pressure, like a pasta maker. The resulting slabs of clay were cut by wires, in much the same manner as cheese. These bricks do not have frogs, but they may have holes through the bricks. Use 1 part white portland cement, 1 part lime, and 6 to 7 parts sand.



New bases bear the columns of Wichita's Parks-Houston House—a model of the Neoclassical style down to the second-storey speaker's porch.



*A Technique for Turning
Large Column Bases —
Without a Lathe*

Wheels of Fortune

BY WILLARD G. EBERSOLE WITH JEFF TULLY

A COUPLE OF SPRINGS AGO I CONTRACTED to do some restoration work on the Parks-Houston House, a historic mansion here in Wichita, Kansas. Built in 1899 by A.S. Parks, an enterprising lumber "baron," the house is a local landmark. Besides its reputation for having the first real garage in the city (designed to stable Parks's steam-powered car) the house is an excellent example of Neoclassical architecture. True to the style, the full-height porch is dominated by four two-storey columns.

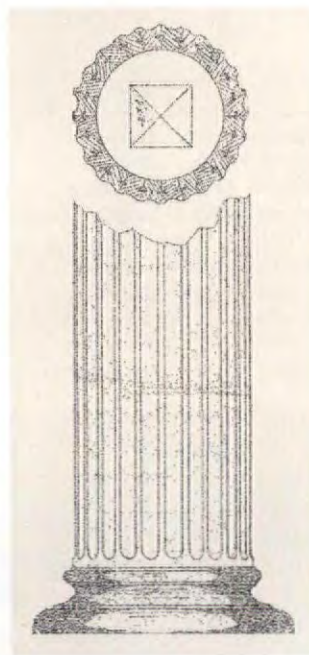
The porch and columns were in sad shape by the time I signed on, and replacing the turned bases was a major item in the reconstruction plan. Faced with reproducing bases larger than any I had worked on before—they're 34" in diameter—I began with some pretty conventional carpentry tools and techniques that anyone can adapt for similar projects. As with so many restoration projects, however, the final shaping became the spark—vehicle, one might say—for devising a one-of-a-kind technique.

Big Bases on a Small Budget

BEING THE GENERAL CONTRACTOR FOR THE job, I originally put the bases out for bid. As luck would have it, there were only two estimates submitted, for \$750 and \$2,800 per base, and the low bidder eventually dropped

out. Not wanting to spend over \$10,000 for the set of four, I began to explore other possibilities. Since I already owned bits that matched some of the base profiles, I figured that I would be able to shape them with a router. However, I couldn't find a supplier to provide a router bit the same size as I would need to make the large bullnose torus profile at the bottom.

I grew up on a farm in Illinois and recalled that farmers often used trucks and even cars to power agricultural machines and farm equipment. By jacking up a rear wheel, mounting a pulley on the wheel, and then hitching up a drive belt, an operator could run a pump, buzz saw, or a grain elevator. With that basic idea in mind, it occurred to me that I should be able to use a vehicle for some large-dimension turning.



Top: I was not new to lathe work, but making yard-wide bases turned into a challenge. Above: Original drawings provided clear outlines of the base profiles and evidence of posts inside each column. Left: The bases were so far gone, their true form was hard to imagine.



SUPPLIERS

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Carbide router bits, saw
blades, other cutting tools.

Blanks First

THE LOCAL LANDMARKS COMMISSION specified that the bases be made out of cypress, a highly weather-resistant wood, to prevent them from deteriorating again. I chose $\frac{3}{4}$ stock ($1\frac{3}{4}$ " thick), which I cut into pieces a little wider than the thickness I would need for the finished base. Since cypress is quite expensive at \$4.30 per board foot, the pieces were cut to varying lengths to create the required diameter circle.

I aligned the pieces using biscuit joinery and glued-up the blank with liquid polyurethane wood glue. These new adhesives not only stand up well, but they also expand and fill gaps in the assembly. I've been using EXCEL ONE brand, manufactured by Recta Vit of Belgium (see suppliers list).

Right after the glue clamps were removed, I determined the center of each blank by simple measurement. I bored a small pilot hole to mark the spot, then, using this hole as a bearing point for a stiff wire the ra-

dius of the desired circle, I laid out the circumference of the base. Once the glued-up blanks had cured, I took them to a millwork shop to have them rough-cut into circles on a band saw and run through a large thickness sander.

If I were doing the job again, I probably would lay out the bases with pie-shaped pieces in order to save material. This way, there would also be less end grain at the circumference—tricky to shape and vulnerable to the weather. In this case, it seemed simpler to deal with straight pieces, plus I needed the solid center for supporting the 6x6 post in the core of each column (see drawing, previous page).

A Good Profile

I WAS ABLE TO MAKE THE TOP PROFILE BY starting with standard tools. I used a 1" radius, rounding-over carbide bit chucked in a $3\frac{1}{4}$ HP plunge router. In order to rout in-the-round, I relied on an adjustable circle-cutting jig. While it's possible to buy these accessories off the shelf at tool suppliers, like most jigs mine is shop-made to fit the job.

Start with a center block $\frac{3}{4}$ " thick that is cut to a 3" by 9" rectangle. Next cut two hardwood dowels several inches longer than the radius you will be routing. (You'll have to match the diameter of the dowels to the particular holes in your router's base plate.) Mount the dowels in the router to find the proper position for them on the center block. Then bore holes about $1\frac{1}{2}$ " deep, glue and mount the dowels, followed by a single brad to lock each of them in place. Last, bore a hole in the center of the block for a wood screw pivot. A plunge router is the power tool of choice here because its spring-loaded base lets you get in and out of the cut without changing its position on the circle-cutting jig.

To rout the top profile, I anchored the pivot screw in the center hole and routed counterclockwise around the base. Switching to a $\frac{3}{4}$ " diameter carbide straight bit, I also used this process for removing excess material from the other profiles and for truing up the circles of rough-cut blanks. Depending upon the wood you are cutting, the amount of end grain you have left exposed, and the kind of shape you desire, it often pays to rout in steps—that is, make more than one pass using a sequence of bits and depths.

Right: All three profiles were made as separate sections, then stacked to complete the base. Below: Base blanks were glued-up from parallel stock. Using the circle-cutting jig—basically a block and two rods—it was possible to rout one complete profile and rough-out the others with a sequence of cutters.



Off the Road Again

MY UNIQUE SOLUTION TO THE PROBLEM OF shaping the other profiles came in the form of a 1970 Ford van. I reasoned that since the axle of a motor vehicle had the machinery to hold a tire steady at high speeds, and the power to drive farm equipment when stationary, it should have an easy time spinning one of the bases. Unlikely as it sounds, the setup started to come together when a friend gave me an empty tire rim that I could use as a lathe stock to hold the raw bases.

The most critical part of the process is mounting the base accurately. To keep the blank centered properly, I fastened each base to a circle of plywood that was cut to just fit inside the wheel rim. This insert was held in place with five #10 wood screws, 2" long, passing through holes I had drilled in the rim. The center bearing hole in each base has to be as perpendicular as possible so that it is exactly the same position on the back-side for mounting on the plywood and centering on the rim.

Special care is required in fastening the blanks to the rim. Some shimming may be needed between the blank and the rim in order to eliminate any runout so the base spins without wobble. A simple way to check for runout is by setting an object with a sharp edge as a marker on one side, then turning the blank and wheel by hand to observe the movement of the base edge.

A Lathe Like No Other

THE REST OF THE LATHE SETUP WAS SIMPLE but effective. I used two 6x6 beams laid on the ground as my tool rest. To provide adequate space for the base in the wheel well, I had to put some blocks between the axle and the body frame. After experimenting with different gears, I found that high gear at a medium idle seemed to work the best. I also had to experiment a bit to find the best tools and position for cutting. Cypress is a wood that will gouge and tear out fairly easily, particularly going against the end grain, if you try to cut too much at once. To keep the bases identical, I made templates out of 1/8" Masonite for each profile and used them as a standard for turning the multiple base pieces.

Of course, I put together this rig for a special project and used it at my own risk. A simpler approach for anyone needing



large bases is to seek a custom turning shop or supplier of stock wood or metal bases. With the van/lathe method, I first had to cut away as much unwanted wood as possible using the router and circle-cutting jig; you can't remove material very fast when turning, especially end grain. Also, 6x6 timbers do not make a perfectly solid tool rest. (Concrete blocks would probably have been better.)

All in all the whole process worked quite well and I was able to do the eight turnings in a couple-days' time. In fact, it took longer to do the gluing-up than it did to do the actual turning. I may never need to make any large bases again, but if I do, I know what kind of equipment I can turn to. 🏠

Top left: A pilot hole in the blank marks dead-center for a plywood mounting disc. **Top right:** The disc, when seated inside the wheel rim, is secured with five screws. **Above:** The completed van/lathe setup is certainly a special case. It probably shouldn't be recommended as standard procedure. It does show, however, that common materials and creative thinking can bypass many restoration obstacles.

HOW - T O

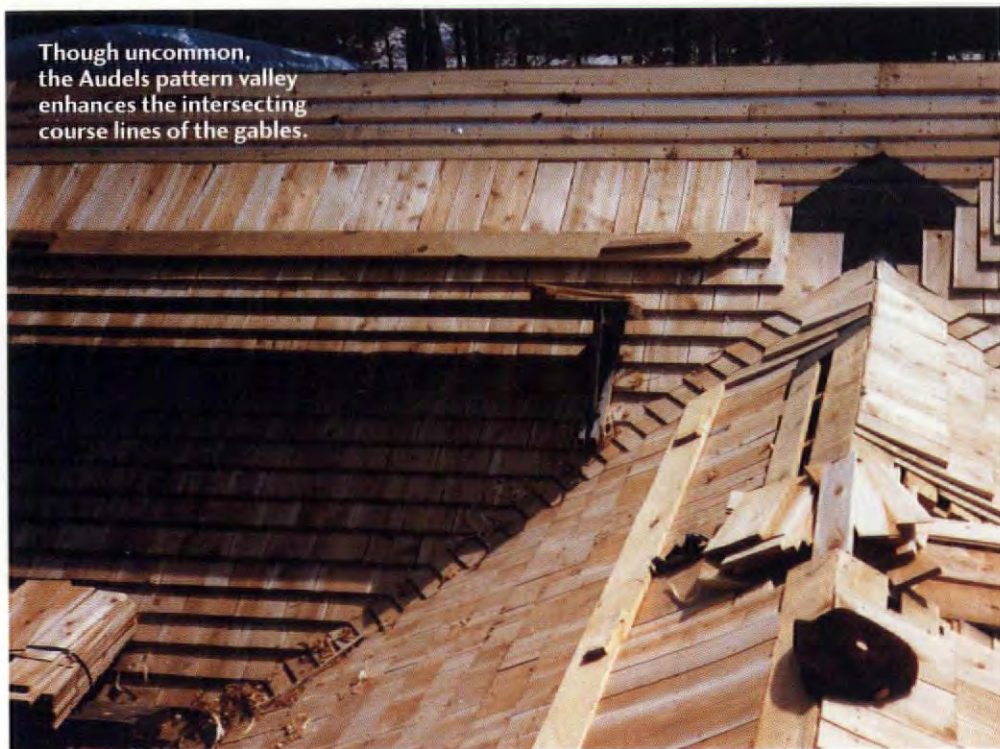
Down in the Valley

How To Create a Victorian Wood Roof Effect

BY JOHN LEEKE AND LARRY FORBES

Closed valleys, such as this swept-shingle example on the ca. 1684 John Ward house in Salem, Massachusetts, can bridge roots of different centuries, as well as different pitches.

Though uncommon, the Audels pattern valley enhances the intersecting course lines of the gables.



ON A PROJECT HERE IN Maine, my colleague Larry Forbes was asked to lay a wood shingle roof with closed valleys. Larry is a knowledgeable carpenter with plenty of old-house experience, but he had never seen a description of a “woven” valley. A little research yielded a drawing from an early 20th century construction manual—a big help, but sketchy on procedure. After some real-life testing, Larry sorted out the missing details and we have expanded the method into the following step-by-step procedure, which is appropriate for old houses built in the late 19th century or early 20th century.

Strategy and Materials

BEFORE YOU BEGIN ANY SHINGLING, PLAN to start with the valley. It is much easier to let the valley determine the actual course spacing, instead of trying to shingle two roofs so they converge neatly at the valley. This is particularly true if the two roofs have different heights and slopes.

Valley shingles are exposed to a lot more water than shingles out in the field of the roof. Using the best quality shingles and materials will help valleys stand up to the abrasion and deterioration caused by water:

- Select the best shingles with clear, straight grain to prevent curling and twisting that can result in open joints (see sidebar on p. 59).
- Trim away all sapwood, which is more susceptible to fungal decay than heartwood.
- Treat shingles with a water-repellent preservative. Give them a 10- to 15-minute dip, paying particular attention to butt-ends and beveled-ends.
- Use stainless steel or hot-dipped galvanized nails. Electro-coated and bright (uncoated) nails will rust out.

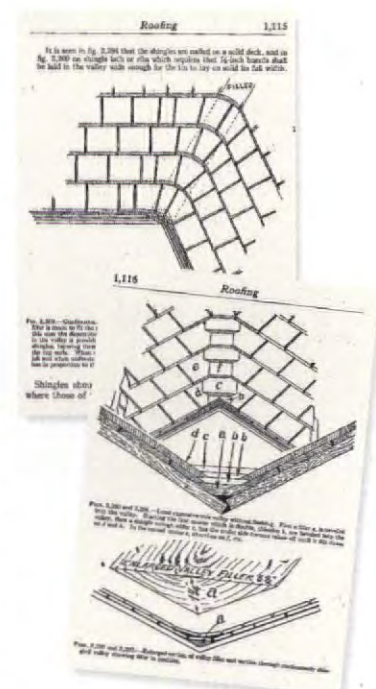
It is important to consider the kind of flashing placed under the valley shingles. Asphalt-impregnated roofing felt, sheet metal, and rubber membrane roofing are all commonly used materials. We chose self-sealing ice-and-water shield, which is popular for preventing ice dam damage at eaves.

A Place to Land

TO GIVE THE SHINGLES A BASE THAT WILL carry them across the intersection of the two roof planes, you have to bridge the sharp angle of the valley with a flat surface. This “land” is a $\frac{3}{4}$ " x 6" pine board cut to lay in the valley. First record the angle formed by the two roofs using a bevel gauge. Next, shape the land to match this angle with two bevel cuts on the table saw. The result will be a triangular to trapezoidal cross-section, depending upon the geometry of the valley.

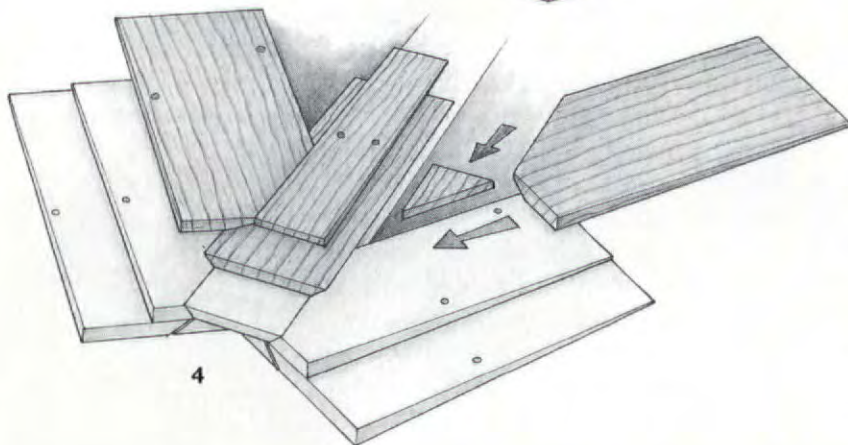
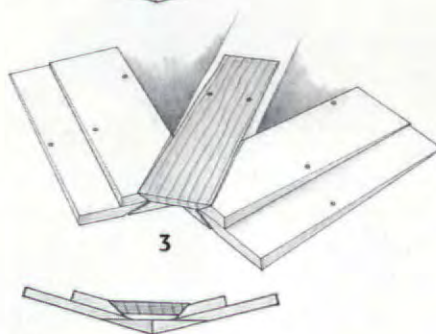
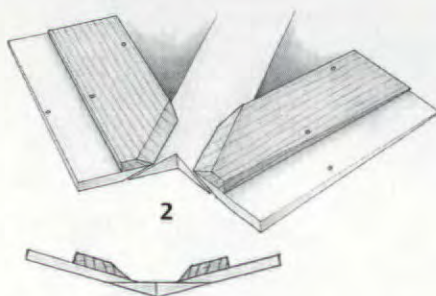
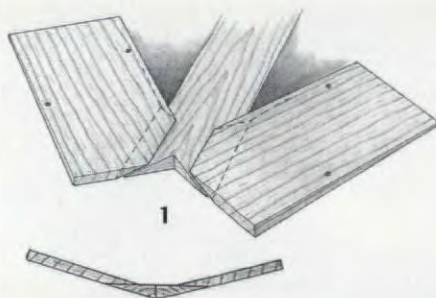
About Audels

In his carpentry quest, Larry turned to one of our favorite sources of old fashioned carpentry work: *Audels Carpenters and Builders Guide*. This four-volume set, published in 1923, is packed with traditional carpentry practices from the late 19th century. Sure enough, *Audels* had two illustrations with captions on wood shingle valleys. Larry's clients chose the more unusual of the two (bottom plate), described as the “least expensive safe valley without flashing.” This valley may have been an economy design back when materials cost more than labor—the reverse of today's building industry. Research suggests the authors of the *Audels* series, Frank Graham and Thoms Emery, worked in the building trades at the turn of the century, and I suspect one of them had seen this method used in the late Victorian era.



Valley Overview

The first three steps are only used to start the valley at the eaves. The fourth step is repeated, course after course. (1) Start the valley by making a "land" board, then shape and nail two starter shingles. (2) Next, shape and nail two "wing" shingles. (3) A narrow valley shingle completes the starter course. (4) For each subsequent course, install an "inbetweenener," then "wing" shingles and a valley shingle. (Note triangular shims.)



The beveled sides of the land should nestle securely into the valley on top of the roof sheathing or shingle laths (see drawings).

For the average length of most valleys, you'll most likely need to cut one or two land boards. On the bottom end of the lowest board, cut a notch that forms a right angle. This "bird's mouth" should line up with the two eaves where they meet at the bottom of the valley. Once you've tested the fit, tack the land into the valley.

Starting the Shingles

THE HIDDEN, STARTER COURSE AT THE bottom of the valley is a bit different from the rest of the run up the valley (see drawings #1 and #2). You have to shape two starter shingles with bevels so they lap onto the land yet still lay flat on the roof slopes. Begin by cutting off the inner corner of each shingle with a saw. (Mark the angle for these cuts by laying the shingle on the roof, then drawing a line on the shingle that is parallel to the edge of the land board.) Then bevel the backs with a drawknife and hand plane until they lie flat.

Nail the starters in place. Keep all nails nearest the valley as high on the shingle and as far away from the valley as possible (see drawing). Remember, too, to position the nails $\frac{1}{2}$ " in from the edge of the shingle and at least $\frac{1}{2}$ " up from the bottom of the next course. Use nails three times longer than the thickness of the shingle butt.

The first course of regular shingles must also be shaped with a bevel—this time on the top face. After nailing them in place, you can follow up with the regular run of starters and first-course shingles along the eaves. However, it is a good idea to shingle only a few feet, just in case. If the initial course spacing and angles chosen for the valley do not work out, you may have to rip everything up and begin again. In standard roofing practice, the course spacing—also called the exposure (to the weather)—is less than $\frac{1}{3}$ the length of the shingle to make sure that every part of the roof gets a three-ply layer of shingles.

The last starter shingle is for the valley itself. Bevel the bottom sides of the starter to mate with the bevel of the first-course shingles. The bottom third or so must be a tight fit, with the bevels in full-surface contact with each other.

SUPPLIERS

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SOVEBEC INC.
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Charny, Quebec
CANADA G6X 1L5
(418) 832-6181
Eastern white cedar shingles.

W.R. GRACE & CO.
Construction Products
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Cambridge, MA 02140
(617) 876-1400
Ice and water shield.



TOP: Valleys usually come in pairs, and finishing them depends how they meet and mesh with the main roof. We flashed the ridge before completing the valleys, then flashed under the main roof before capping the ridge. **RIGHT:** Getting mating shingles to lie flush requires accurate bevels and cuts.

Run Up the Valley

ONCE THE STARTER COURSE AND FIRST COURSE of shingles are established, installing the subsequent courses requires the following procedure, repeated for each course on up the valley. Begin with an "inbetweenner" valley shingle shaped to lay flat on the land. Bevel its bottom sides to meet the first-course shingles (see drawing #4). Nail this shingle so the butt is half a course's distance up from the butt of the valley starter. (At a $7\frac{1}{2}$ " exposure, this dimension will be about $3\frac{5}{8}$ ".)


Next, select or cut a narrow shingle, about 4" wide. No bevels are needed. Nail this shingle centered on the previous inbetweenner shingle at the normal course exposure. Afterwards, cut and fit little pie-shaped shims, and tack these in the triangular voids at either side of the inbetweenner shingle. These shims will help support the shingles over them.

Last come the "wing" shingles, which are the beginnings of the new course in each direction. Trim each shingle with a saw so it aligns with the edges of the narrow valley shingle. You will also have to cut bevels to get the wing shingles to lie flat. Be careful; if it is a windy day they might take off before you get them nailed down.



Capping the Job

EVENTUALLY YOU WILL SHINGLE UP TO THE ridge and the top of the valley. In the typical job, complete the valley by flashing over the ridge and on top of the wing shingles. Next, bevel an inbetweenner shingle to mate with the previous course's wing shingles (see photo this page), and cut the top to meet the same shingle on the other valley. After installing the valley course shingle over the inbetweenner, lay more flashing over this joint and up under the main roof.

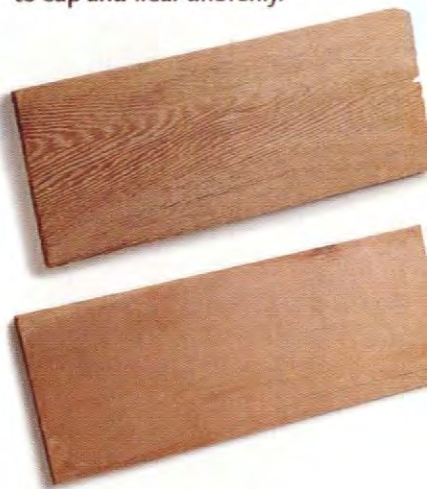
Today this valley method is certainly more labor-intensive to produce than a strip of sheet metal. Nonetheless, its pattern is interesting and unusual—just right, perhaps, for detailing a Queen Anne-style porch, gazebo, or fanciful outbuilding. 

JOHN LEEKE helps homeowners, contractors and architects understand their historic buildings. (26 Higgins St., Portland ME 04103, 207-773-2306; e-mail at johnleeke@aol.com.)



A Cut Above

As with siding and flooring, grain orientation in shingles has a big influence on life and performance. Vertical-grain (above left) is perpendicular to the butt. This cut limits expansion and shrinkage of the shingle's width, reducing the chances for open joints, and weathers evenly, extending the life of the shingle. Flat-grain (above right) looks semicircular. It tends to cup and wear unevenly.



On the shingle face, flat-grain has an unmistakable flame pattern (top); vertical-grain appears homogeneous (bottom). You can order vertical-grain shingles (often sold as Number 1 Grade, Blue Label) or hand-pick them from a lesser-grade bundle.

Talk of the Town

BY TYNA LAUTH AND MARY ELLEN POLSON

SET IN THE HEART OF TINY HIRAM, OHIO, OUR 1896 Queen Anne is as much a landmark as the bank and the town hall. Tackling the restoration of this long-vacant beauty cost us more than a little privacy. After all, this is a village where the clerk at the post office announces that there's a letter from your mother as she hands you your mail. We may have fallen in love with the house at first sight, but folks here had already made a bigger emotional investment.

Community Property

WHEN MY HUSBAND TIM AND I bought the house, it had been a public library for a large chunk of its history. Generations of schoolchildren had read books in the company of its polished woodwork and high ceilings. Everyone in the village felt that they had a stake in what had once been the grandest house in town.

When the bank next door considered demolishing it, the townspeople stepped in and saved it—but at a price. By the time we moved in five years later, the house was a mess. We felt as if we were adopting an abandoned child.

We quickly learned we weren't raising this child on our own, however. More volunteers than we can count have helped us paint siding and tear out crumbling linoleum. Since townsfolk had fought so hard to save the house, they thought nothing of dropping in unannounced to check on our progress. Late one Saturday night, a fellow stopped in to reminisce about the juvenile fiction section, now the front parlor. One day, when Tim was dumping loads of debris down chutes from the top storey, a local fireman pulled up in front of the house. There was so much dust he thought the house was on fire, he told us. We think that was just his way of checking out what was going on.

Any outdoor project tends to draw a crowd. A couple of people camped out in the yard for two days when Tim used low-pressure crushed corncob blasting to clean flaking paint off the house. People waiting in line at the bank next door sat on their hoods to watch. Others brought lawn chairs or milled around on the grass. With the scent of hot corn wafting through the air, the place definitely had the festive feel of a county fair.

The day we poured the driveway, 20 or 30 people must have turned out in a show of respect. "That's when we realized you were serious about the house," one neighbor told us. "If you were willing to go to that much expense, we knew you must be in it for the long haul."

Opening a Window

PEOPLE REALLY DO CONSIDER our house their house. It's not unusual for us to find neighbors sitting on the front porch, admiring the five-color paint scheme. I'll walk into the kitchen and find someone examining the cabinets. If I walk the dog early in the morning while I'm wearing my pajamas, a neighbor might

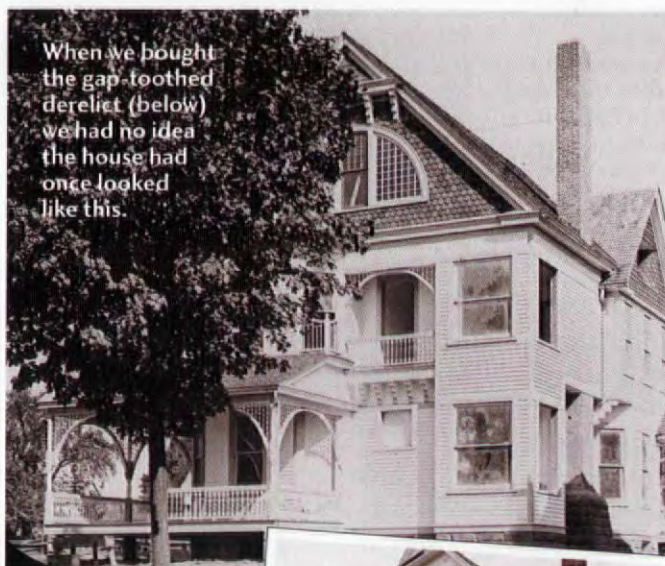
call and say, "I like the yellow pajamas better."

At one point, I turned to Tim and said, "Do you want to move?"

"I don't know," he said. "Do you?"

We consulted a friend who had lived in Hiram for 50 years. "You just need to develop thicker skins," he told us. "Then go on about your business."

So we plunged ahead. That same neighbor also



When we bought the gap-toothed derelict (below) we had no idea the house had once looked like this.





Top: We've restored most of the architectural details on the house. This summer, the arches and rail-and-ball filigree will go up. Right: We found the rough opening for the large semi-circular window when we tore out buckling plaster. Above: Tim cleans paint off the siding with crushed corncobs at low pressure.





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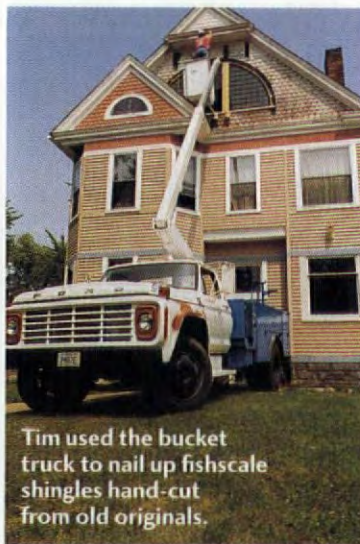
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led us to our greatest discovery—an antique photograph taken soon after the house was completed. The photo shows a spectacular semi-circular window in the third-storey gable, a solution to the mystery of our too-dark bedroom.

We found the window in sections in a third-floor closet. Tim rebuilt the frame, improvising in his makeshift workshop in the garage. To recreate the semi-circular curve, he had to bend the wood in place, then shim it and manipulate it as he worked, in true trial-and-error fashion.

To install the rebuilt window, we rented a bucket truck. It was show time. As Tim broke through the siding boards from his perch in the bucket, the original opening began to appear. Neighbors stretched out in lawn chairs cheered and applauded as the sashes went in. One wept. "I remember the day they covered that window up when I was a boy," the man said. "What a day this is for our village!"

Our master bedroom now seems open to the sky. It's a fantastic haven during a thunderstorm. The window also opens us up to the neighbors. This being Hiram, we make sure to dress on the other side of the room.



Tim used the bucket truck to nail up fishscale shingles hand-cut from old originals.



Tim and Ginny, one of our six children, take a break on the porch.

A Fall With Grace

I WAS ALONE THE DAY I FELL OFF the front porch. We had raised the turned porch columns and the roof, but had yet to install the railings. As I swept up sawdust, I kept stepping back until I found myself tumbling to the ground. Stunned by the impact, I heard a disembodied voice.

"God is speaking to me," I thought woozily.

Then I realized the voice was coming from the loudspeaker at the bank. Of course, I thought, there's a teller always watching.

"You OK over there?" Three tellers were standing inside the bank window, wondering whether I'd managed to kill myself. I was fine, if a little bruised, but it was news for a week in Hiram: "Did you hear Tyna fell off the porch?"

Naturally, everyone had. Some things never change, but you accept them. I keep reminding myself that it's one thing to put your nose into somebody else's business, and another to put your heart into someone's problems. In Hiram, there's never been any doubt about which side our neighbors are on—they've supported us all the way.

Even so, we think we'll keep our plan to build an enclosed garden in the back yard this summer. Don't tell anybody we're home.

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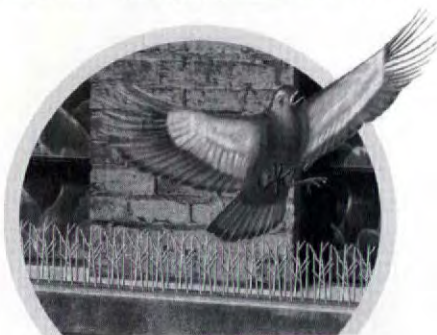
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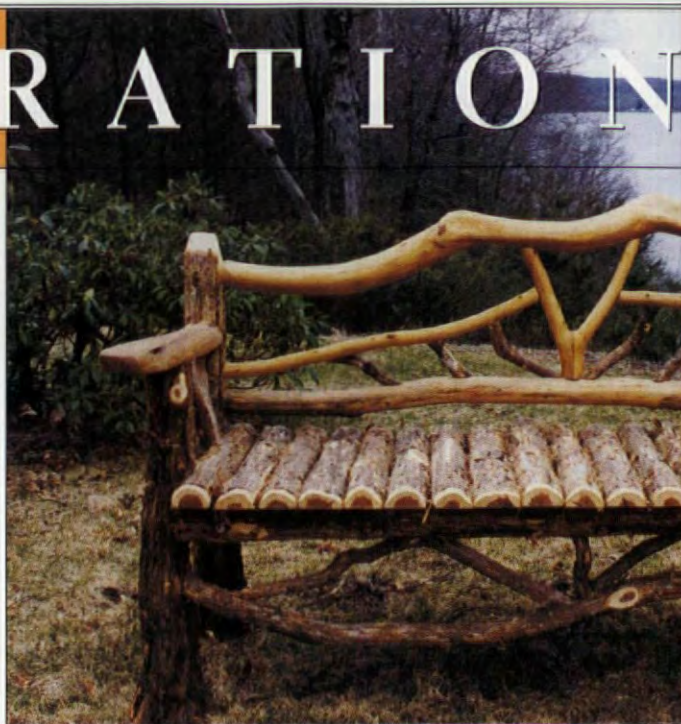
garden settings, each seat is handmade from unfinished, aromatic cedar limbs and branches, with a choice of planed, natural bark, or contoured seats. Inspired by picturesque 19th-century originals, more than a dozen styles are available, including a tree bench and two chaise longues. Custom designs include arbors, pergolas, gazebos, bridges, fences, summer houses, porches, and follies. Prices begin at \$550 for a 5' bench. To order, contact Romancing the Woods, 33 Raycliffe Dr., Woodstock, NY 12498, (914) 246-1020.

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IN PROPORTION

THANKS TO COMPUTER technology, these architectural columns perfectly match the classical proportions of the five orders of architecture set down by Vignola in 1562. The staves that make up each shaft are tapered and angled to align perfectly using a numerically controlled profiler. Shafts are manufactured in poplar, pine, redwood, and a choice of hardwoods. Capitals and base mouldings are available in wood, fiberglass, or high-density polyurethane, with a marble option for bases. Pilaster, square, and other columns are also available. Prices for exterior columns begin at about



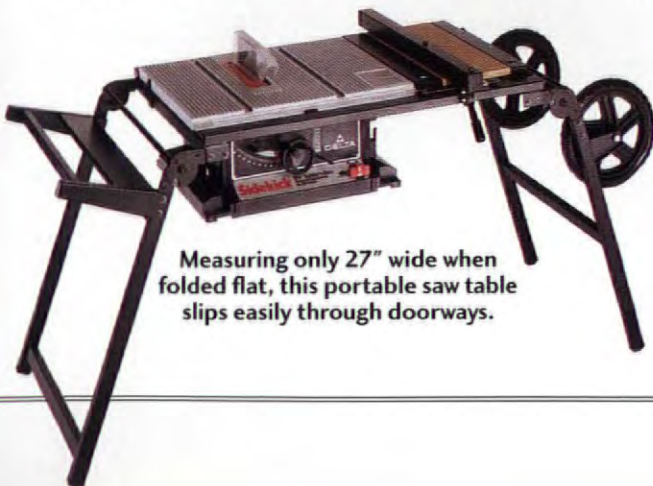
The two-storey columns on this antebellum-style home near Dallas reflect the Tuscan order.

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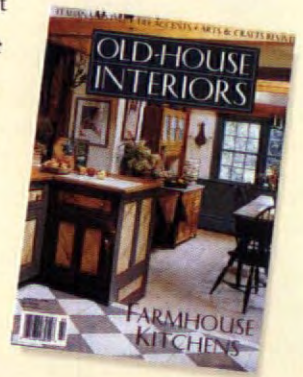


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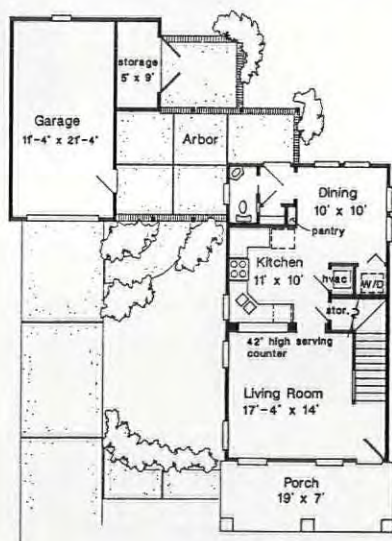
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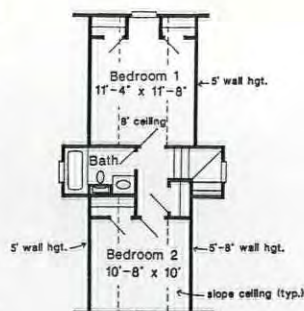


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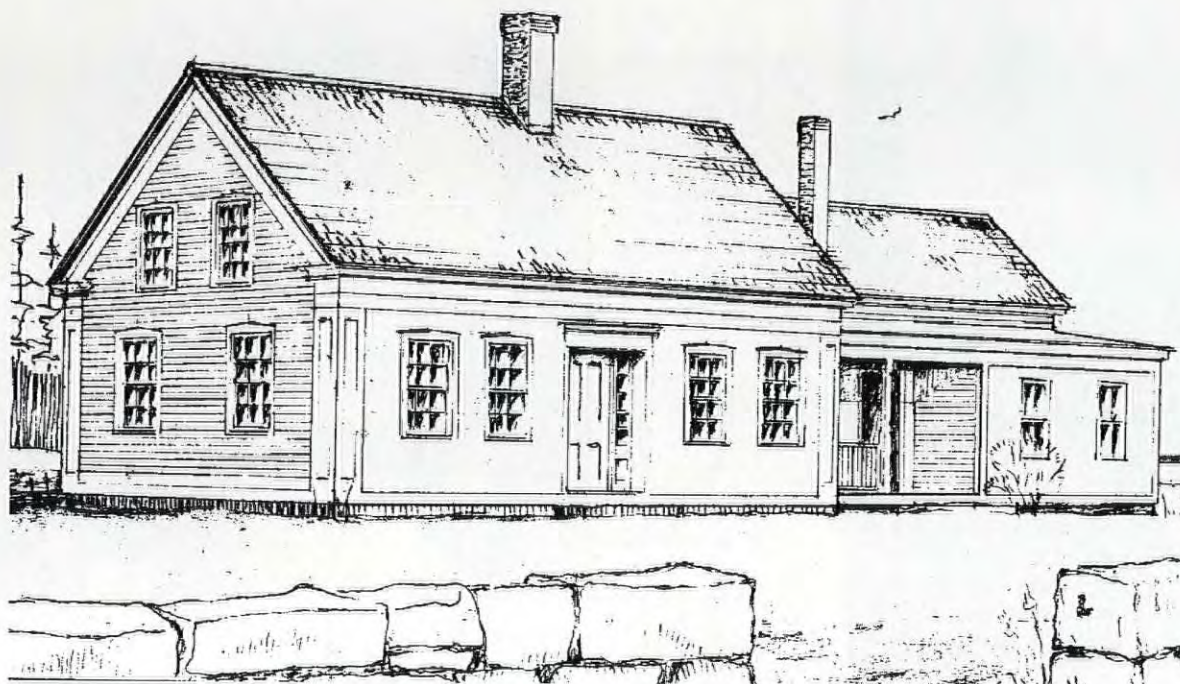
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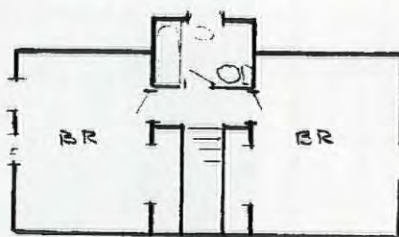
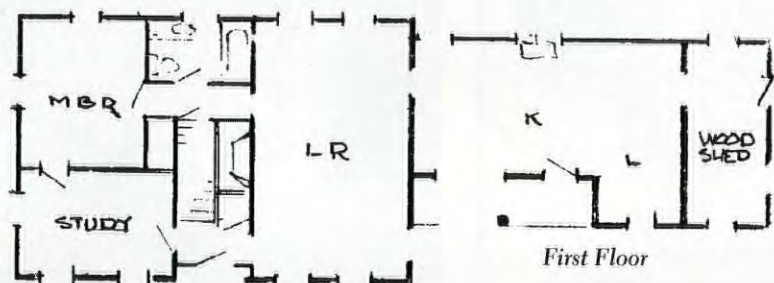


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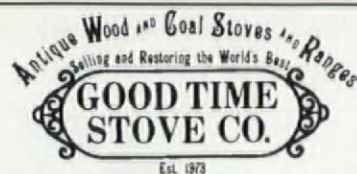
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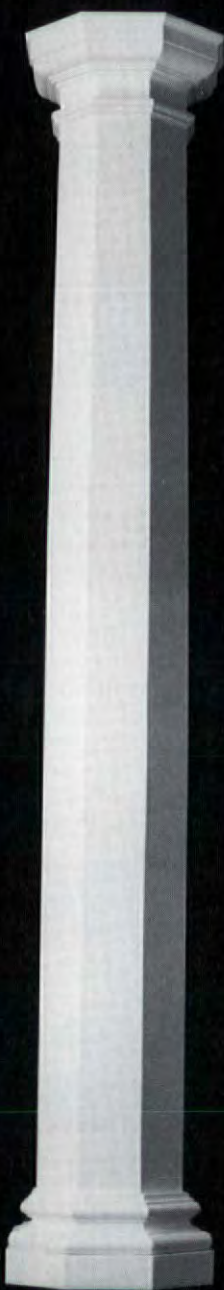
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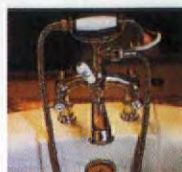
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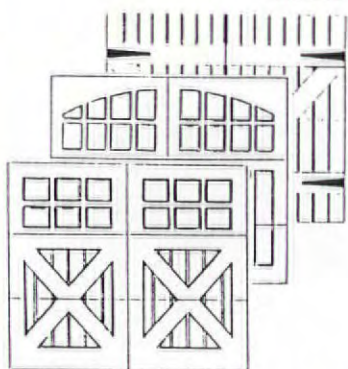
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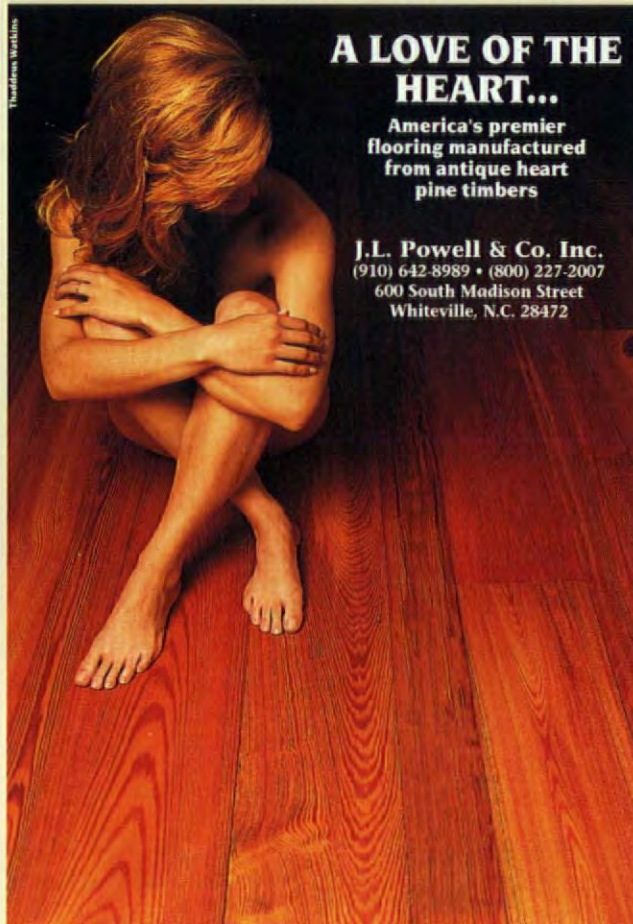
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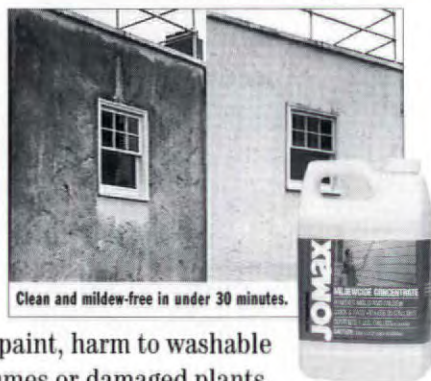
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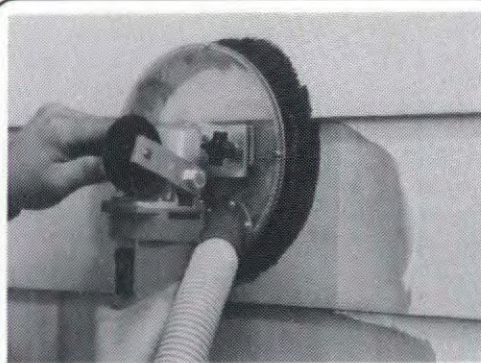
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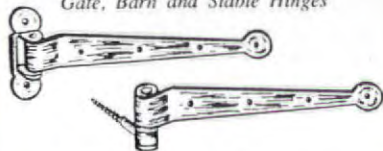
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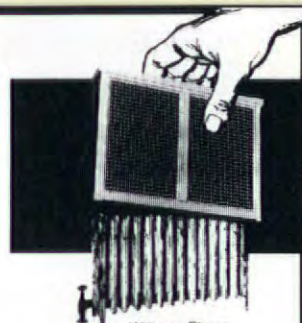
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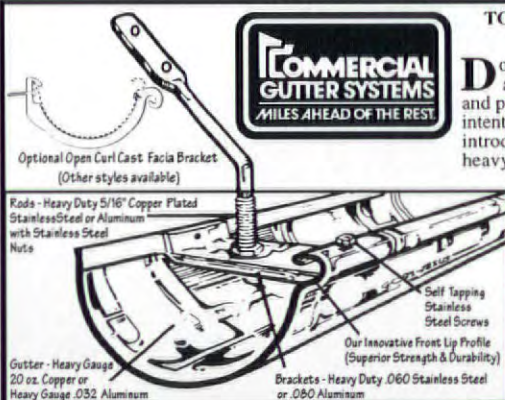
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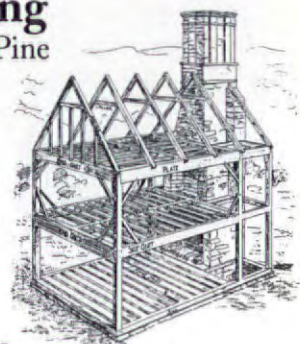
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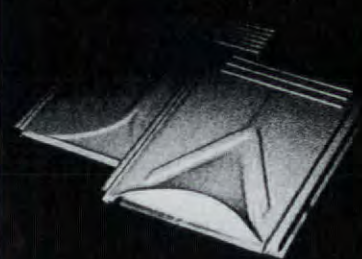


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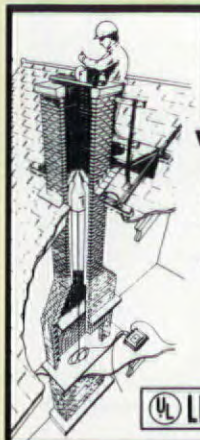


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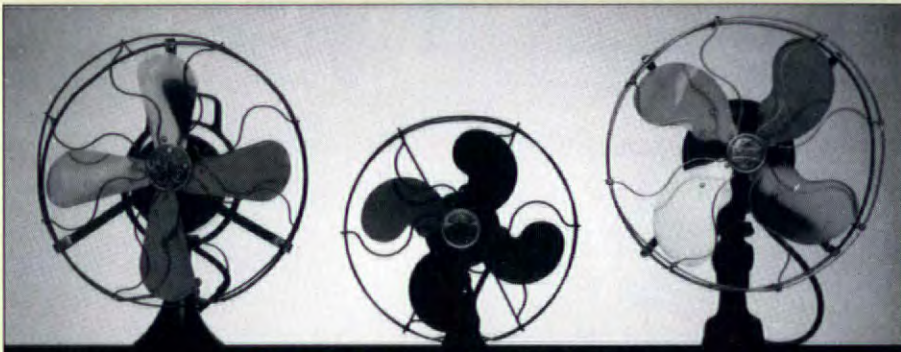
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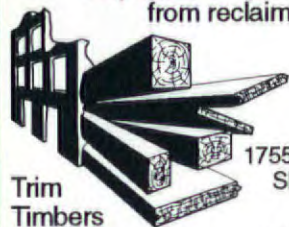
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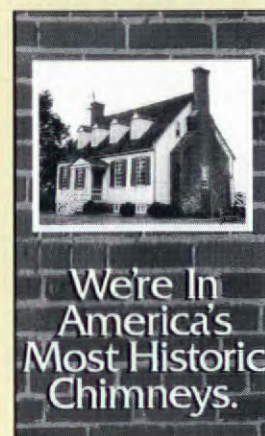
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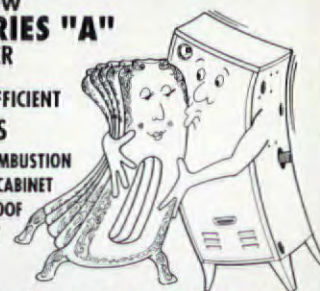
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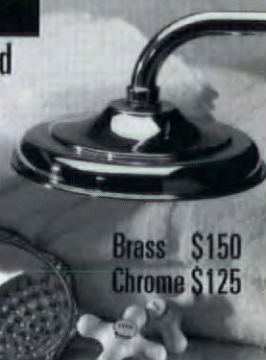
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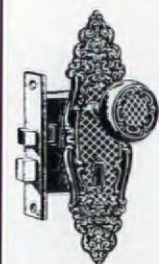
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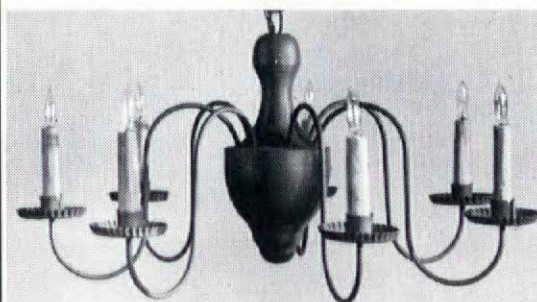


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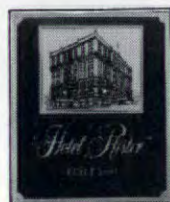
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OPINION



Who's On Top?

SOME 30 YEARS BEFORE THIS TURN-OF-THE-CENTURY FOURSQUARE (ABOVE) WAS BUILT JUST OUTSIDE Philadelphia, the mansard was the height of sophistication—and we do mean high. Besides capping the best houses in Paris, New York, and Washington, this double-pitch “French roof” was a stylish way to squeeze a full storey of space into an attic. While mansards were sometimes mixed with other roof types in the 1860s, they usually got top billing as the pinnacle of the building.

Fashions and roof trends change over time, however. The wood-shingle mansard here probably dates to the 1970s, a decade when strip malls, community banks, and burger joints began sprouting mansard makeovers. No longer a crown, it has dropped to the first storey, over what seems to be a porch-level expansion. It's also nearly twice the size of the Foursquare's main hipped roof, only adding to the bottom-heavy appearance. Clearly, when it comes to mansards, magnitude is not a substitute for altitude.

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Right: Take a basic cube with a pyramidal roof, add a broad porch, and you've got a Foursquare, a classic American house type. As this planbook prototype shows, front or side window bays were common variations.



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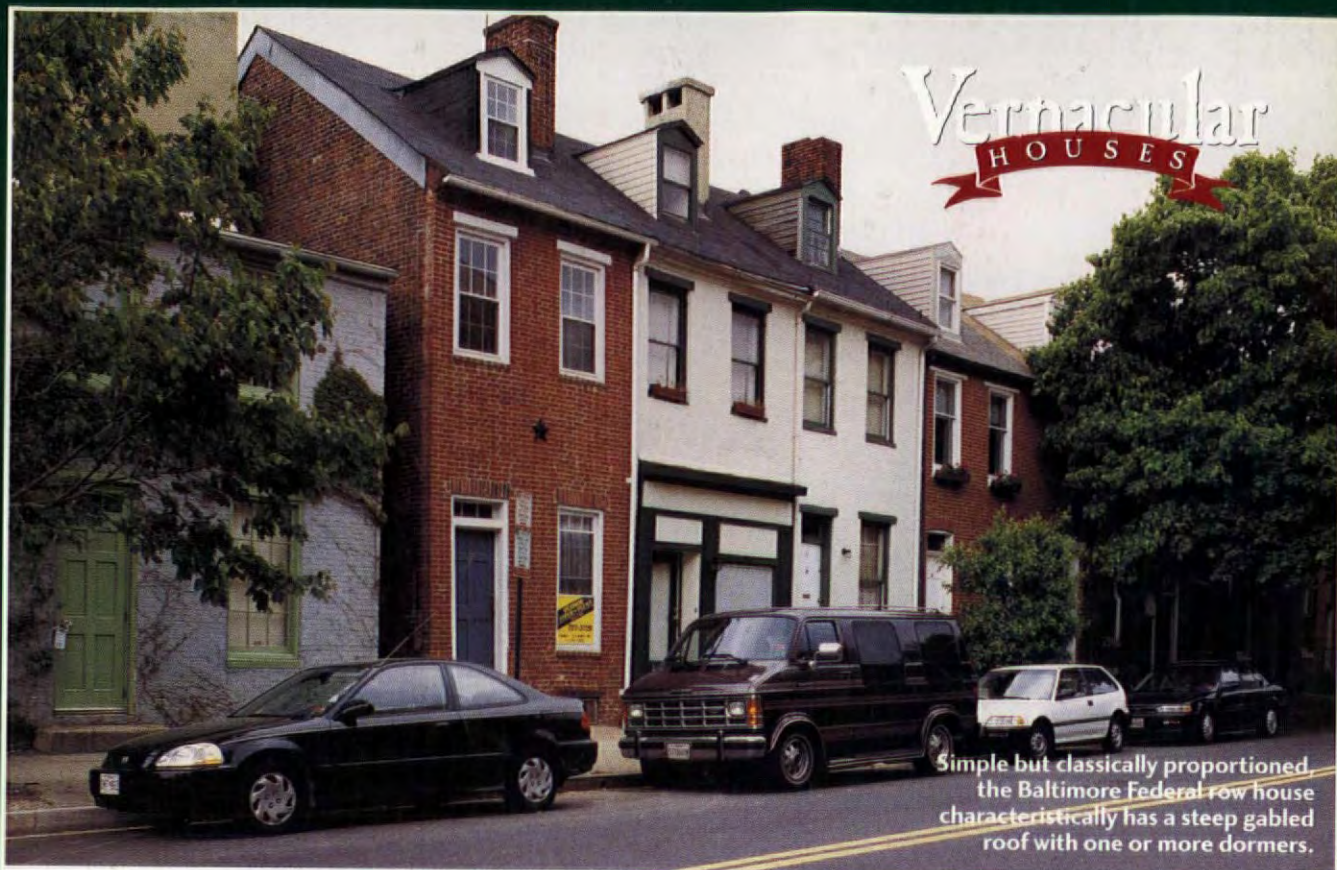
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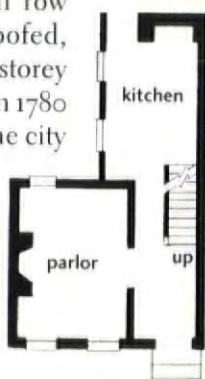


Simple but classically proportioned, the Baltimore Federal row house characteristically has a steep gabled roof with one or more dormers.

FEDERAL ROW HOUSES OF BALTIMORE

AMONG THE EARLIEST AND MOST enduring urban residential buildings in the United States are Baltimore's Federal row houses. These gable-roofed, two-and-a-half to three-storey structures were built from 1780 to 1830, a period when the city emerged as a major port. Built by the harbor and shipyards for laborers, mariners, and factory workers, these row houses were scaled-down versions of the grand, Federal-style houses that served Baltimore's more affluent merchant class.

Usually constructed of brick, these simple dwellings are two or three bays wide and one or two rooms deep, with a narrower kitchen



wing off the back. Some plans include a side entrance hall containing a stairway. In another typical plan, the hallway is omitted, and the parlor opens directly on to the dining room or kitchen. An enclosed stairway occupies a corner of the second room.

The Federal influence is apparent in the classical proportions of door and window openings. Exterior decorative details are limited to Flemish bond brickwork, stone or brick lintels, and an occasional transom light over the door. Later houses differed only slightly from the earliest prototypes, usually reflecting shifting architectural de-



A two-bay Federal row house could be as little as 14' wide.

tailoring. Threatened by neglect and abandonment as recently as the 1960s, the plain Federal row house is now one of the city's most sought-after dwellings.

—W. EDWARD LEON
Historic Preservation Planner
Baltimore, Md.