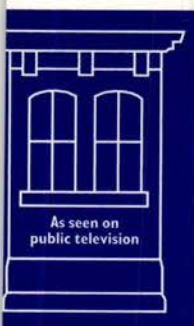


JUNE 1998

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Bugged Out

The C.I.A. method of searching out and destroying cockroaches, pantry pests and other brazen bugs that dare to invade a house has nothing to do with the Central Intelligence Agency, but it's pretty darn sneaky. P.106

FEATURES

Big Brass Buttons

Doorknobs, cast and intricately carved by hand, were considered an art form a century ago. They still are, thanks to an anachronistic factory in—of all places—the middle of New York City.

BY JACK MCCLINTOCK

Raise High the Flagpole, Carpenters

Just in time for the Fourth of July, Norm Abram shows how simple this weekend project can be.

BY VICTORIA C. ROWAN

An American Craftsman

Peter King, a Florida-based ceramicist, converts everyday gates, sinks and mantels into sculpture.

BY WALT HARRINGTON

Standing in the Backyard, Naked and Wet

Even in cool climes, an outdoor shower turns the simple act of bathing into a sybaritic embrace with nature. Building one is not only deceptively simple but also easy on your wallet and marriage.

BY JACK MCCLINTOCK

Safe Rooms

Burglars are unlikely to break in when someone's around, but home owners seeking peace of mind will find a bulletproof, bash-proof haven of steel and polycarbonate pure nirvana.

BY CURTIS RIST

The Bath as Institution

This Old House helps a San Francisco couple build a bold bath with salvaged sheets of marble and porcelain sinks, chrome trim, dark wood floors, and faucets that give new meaning to "pedal pushers."

BY BRAD LEMLEY

Paint Like a Pro

John Dee reveals his paint secrets for giving interior woodwork a slick surface, a coating that purposely falls just short of looking as if it's been sprayed on. The walls aren't canvas, but this is art.

BY GEORGE NASH

The Poster: Sprinklers

Hose draggers, unite! For more than 100 years, portable sprinklers have made American lawns great.

BY VICTORIA C. ROWAN

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THINK SINK, P. 94



RAIN ROBOTS, P. 113



KING KILN, P. 78

COVER: JOHN DEE DEMONSTRATES HIS FOOLPROOF PAINTING TECHNIQUE ON A NINE-PANELED POCKET DOOR AT A 1903 GEORGIAN IN CONCORD, MASSACHUSETTS. PHOTOGRAPH BY MATTHEW BENSON.

(continued on page 6)



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Best little books

33 Art amid the rubble



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Jeanne Marie discovers that mule plus horse equals fertilizer factory. One problem: Production exceeds consumption.

BY JEANNE MARIE LASKAS

Power ToolStrike up the **Band Saw** 35

No other tool can finesse fine scrolls, cut beveled curves and rip through thick beams with such speed, precision and quiet.

BY DAVID FRANE



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Hand Tool**Machete** Machismo 41

Hacking one's way through a backyard jungle unleashes the warrior instinct—and provides a pollution-free way to unwind.

BY JEFF TAYLOR

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A massive, gas-powered monument to the joy of cooking outdoors means never having to wait for coals again.

BY JACK MCCLINTOCK

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Medium-density fiberboard is actually more dimensionally stable than solid wood, and it's a breeze to paint or rout.

BY CYNTHIA SANZ

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Climbing the consumer-complaint hierarchy pays off for those who keep careful records—especially receipts—and persevere.

BY GARY BELSKY

The Money Pit**Paradise** Found 63

Not even a towering stack of contractor's bills can change the fact that love is truly blind when it comes to the perfect house.

BY BROCK YATES

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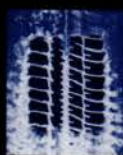


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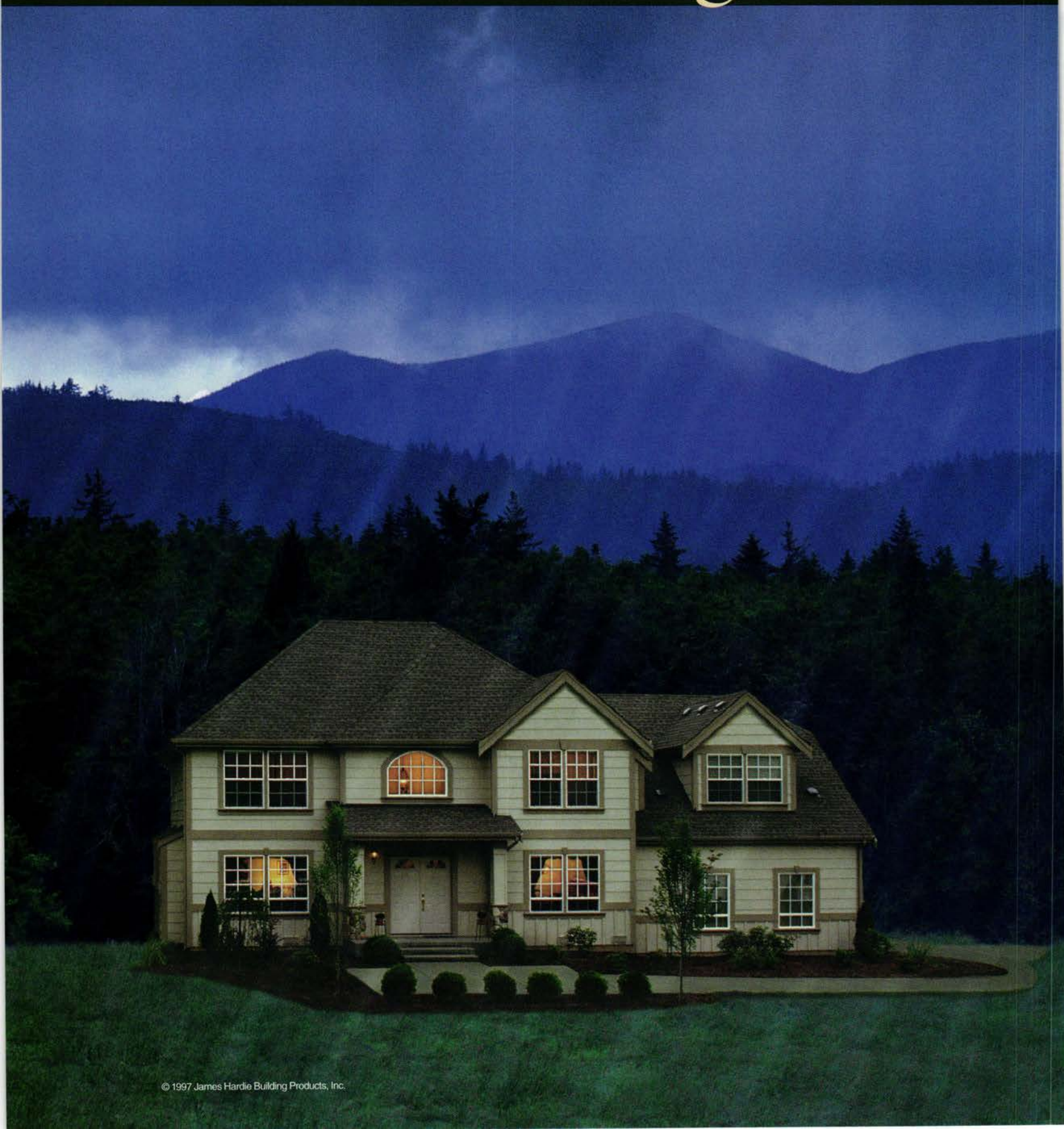
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JUNE 1998

DAVID GEORGE GORDON has written 11 books on nature, including *Field Guide to the Slug* (Sasquatch Books) and the *Eat-a-Bug Cookbook* (Ten Speed Press), just released. A science writer and all-around insect enthusiast who lives in Port Townsend, Washington, Gordon gives a lecture called "The Compleat Cockroach Traveling Road Show" at zoos and museums around the country. Local newspapers have called him a "cockroach-rights activist." Researching "Stop Those Bugs" (page 106) for *This Old House*, he says, "deepened my appreciation of the spiders who like to hang out in my office."



"I guess they just thought, 'Manure—Lou Brooks,'" says **LOU BROOKS**, whose first *T.O.H.* assignment was illustrating the ode to equine fertilizer in this month's Off the Wall column ("Start Spreading the News," page 23). Disconcerted but undeterred, Brooks accepted the *T.O.H.* job and started doing some fieldwork. "My neighbors own horses, so they brought me a little sample from their ranch," he says. "It actually smelled fine. I'm saving it to use in my tomato garden." A resident of Glen Ellen, California, Brooks has drawn illustrations for the covers of *Time* and *Newsweek*.

BROCK YATES's commitment to Wyoming, New York—a town of 380 residents—extends beyond the scope of Farmstead, the 6-bedroom house on 16 acres that he writes about in *T.O.H.*'s new column, The Money Pit (page 63). He also owns two local restaurants, Cannonball Run—named for the Burt Reynolds movie, which Yates wrote—and Gaslight Food and Spirits. Not a man to let practical demands impede the pursuit of speed, Yates enjoys riding his Harley-Davidson Heritage Softail motorcycle on the country roads surrounding Farmstead. His book *The Last Cowboy Song*, a social history of the Harley-Davidson, will be published by Little, Brown and Company in the fall of this year. Yates is also editor at large of *Car and Driver* magazine.



"Everyone seems to have a different opinion about how to paint," says photographer **MATTHEW BENSON**, "and John Dee definitely had his ideas." Benson—who photographed "The Art of Painting Woodwork" (page 100) as well as our poster on doorknobs (page 68)—has dallied in latex and enamel himself. He and his wife are renovating the stable on their upstate New York "gentleman's farm" to serve as a photography studio. But on the outside, Benson says, "We're trying to create a 19th-century environment. Every minute we're not working at our jobs, we're working on the house." A self-described "obsessive gardener," Benson has photographed work for *House & Garden* and *Garden Design* as well as *Condé Nast Traveler* and *GQ*.

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JUNE 1998



KEN COWAN 1962-1998

This *Old House* associate producer Ken Cowan was among 203 people killed on February 16, 1998, when China Airlines flight 676 crashed in Taiwan. Besides his work on *T.O.H.*, Cowan, 35, was an associate producer of *The Victory Garden* and *The New Yankee Workshop*. In his four years at WGBH-TV, his dry humor, easygoing nature and conscientiousness won him friends and made him an integral part of the team. With his encyclopedic knowledge of old TV shows, Cowan always knew the perfect Bugs Bunny or *I Love Lucy* line to lighten a situation. "He would observe until he knew just what would get you," says *T.O.H.* producer Bruce Irving. "Then he would slip in the knife, with this great knowing grin."

Cowan could also be spontaneous, as his friends' many stories attest. He once chalked scenes from "The Twelve Days of Christmas" on a sidewalk and, on another occasion, talked a friend into buying a new car on the spot. At 6 feet 2 inches, Cowan was blue-eyed and handsome. He was also fit—the result of frequent trips to Mike's Gym in Boston's South End—and known for his resulting robust appetite. (A typical lunch might be the meatloaf special plus an order of spaghetti.) His older sister, Lori Beth Canfield, remembers him as a Ferris Bueller type. In high school in Westwood, New Jersey, Cowan seemed barely to crack a book yet graduated near the top of his class. When he heard that the school band went to Europe every year, he took up the drums and, sure enough, led the percussion section on the trip his junior year.

Cowan's knack for figures (as a teenager he memorized all the numbers on his parents' credit cards) led him naturally to an accounting degree from Boston College. Except for a stint as a baker, he worked as an accountant for almost a decade. In his free time, he wrote fiction and painted with watercolors. His life was predictable until one day in 1993 when he was held up at gunpoint in a restaurant where he kept the books.

The incident caused him to rethink what he wanted from the future. His soul-searching led him to look for a job connected with his old love, television. He became a production secretary at WGBH in 1994, then landed a position at *T.O.H.* as a production assistant. His work kept him on the road 160 days a year, scouting locations, timing shots and keeping track of tape. "He used to joke about being a person like Mary Richards, the producer behind the scenes," says his friend William Olsen. But he was making television, and he loved it.

Last May, Cowan landed in the hospital with a virus that affected his heart. He decided to leave WGBH for a less demanding job, but by Labor Day he had changed his mind—to the relief of executive producer Russ Morash. "I was very concerned that we were losing this person who really fit this job perfectly," Morash says. Cowan had just one stipulation: a promotion to associate producer. Morash readily agreed.

In February, Cowan was wrapping up the *T.O.H.* project in San Francisco when he was asked to fly to Bali to scout locations for *The Victory Garden*. His friends say he was a white-knuckled passenger who feared dying in an airplane, but he was eager to see Indonesia. The day before the crash, he had spoken with *T.O.H.* administrator Barbara Carey. "It was the first anniversary mass of my mother's death," she says. "He called to say, 'You can get through this.' He was always doing things like that. He remembered everything." And we will remember him.

This Old House
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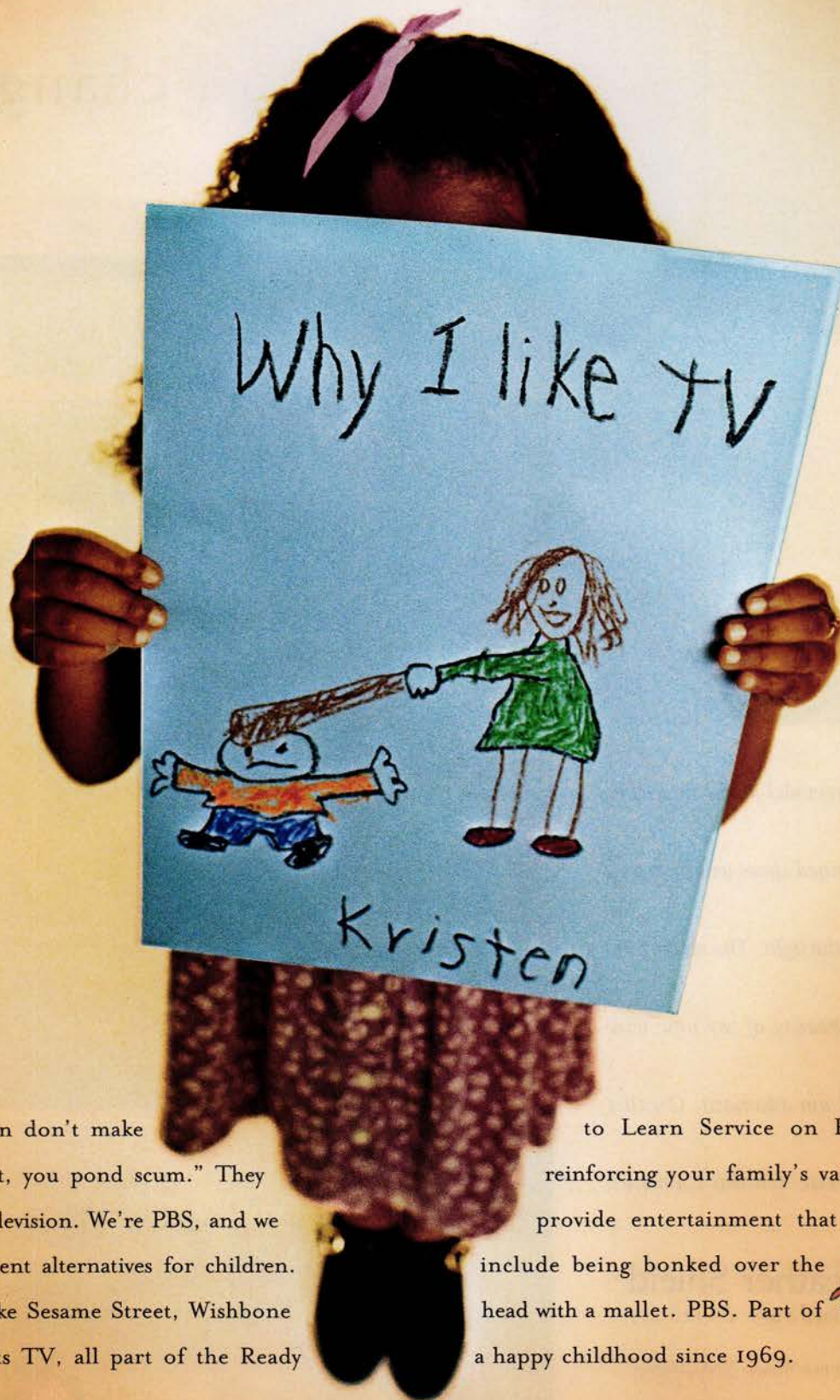
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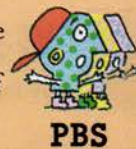
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Trenchant Observations
I cringed when I spotted the photo of the worker in a trench without any protection in "Swamp Fix" [March/April 1998, page 65].

Occupational

Safety and Health Administration regulations require any trench more than 5 feet deep either to be laid back to a safe slope or to have some sort of shoring to protect the worker. Neither is apparent in the photo. Everyone, from a multimillion-dollar highway contractor to a backyard gypsy with a backhoe, is required to adhere to these regulations.

TOM BRODHEAD, *Hurley, N.Y.*

The caption for the photo on page 65 states that the trench measures 9 feet deep but, when the picture was taken, workers had dug down to only 5 feet, says Dominick Rattacasa, the contractor for the project. The picture also makes the backhoe appear close to the crewman—when it actually lies several yards behind. Nonetheless, mindful of the dozens of excavation- and trench-related deaths every year, we agree that safety is paramount. For trenches deeper than 5 feet that are not cut through stable rock, the Occupational Safety and Health Administration requires that the walls be reinforced, sloped or stepped away from the bottom to prevent a cave-in. (When Rattacasa went deeper, he put in a steel shoring box to hold back the walls while his men worked.) And sometimes, the 5-foot rule may be too lenient. Shallower trenches may need reinforcing to hold back unstable or saturated soil. (Only an expert should determine whether soil conditions call for these additional safety measures.) "The job has to be reassessed by an expert any time conditions change," says Ted Twardowski, an OSHA safety and occupational health specialist. "Earth is extremely heavy. One cubic foot of earth weighs approximately 100 pounds. Imagine a cubic yard crashing down on you, or 5 cubic yards. That's around 3,000 to 13,000 pounds." (A midsize automobile only weighs around 2,500 pounds.) Other trench hazards include

flooding, compromised air quality (from sewer or other gases), even explosions (if a gas line breaks, for instance). A lot of technical knowledge is needed to dig a safe trench. *This Old House* contractor Tom Silva advocates placing ladders in the trench along with strictly adhering to the other OSHA rules. "Sure, they add to the cost of a job but, if the walls collapse, the dirt suffocates you."

Grain Man

I'm not a hammer and saw user (rather, a spindle and shuttle type), but the story on Sam Maloof ["Wood Worker," March/April 1998] inspired me. His life seems to be so all-of-one-piece, something worth emulating in this splintered world.

ANNA FOLKESSON, *Lubec, Maine*

I was more than delighted to see the article about Sam Maloof. I once worked for Pomona College in Claremont, California, and through friends there met Mr. Maloof many years ago. One of my fondest memories was the several hours spent in his home while discussing the order for a new dining room table. I was so pleased to learn that the wonder of his home will live on when the structure is moved. For years we worried about that outcome, with the advent of the Foothill Freeway.

GRACE K. MORGAN, *Belgrade, Mont.*

Don't Inhale

I appreciated your article "Arsenic and Old Wood" in the March/April 1998 issue. You left something out, however, and it's my biggest concern. I always hold my breath when cutting treated wood and, after reading this article, I am wondering if wearing a dust mask would be wise.

BRIAN LENGEL, *Austin, Texas*

Wise indeed. The U.S. Environmental Protection Agency recommends wearing a dust mask "when sawing or machining" pressure-treated wood to avoid inhaling chemical-laden particles. Make sure to buy a mask that has double elastic bands—rather than the less effective, single-elastic version—and has been approved by the National Institute for Occupational Safety and Health. (Look for the NIOSH listing on the package.) Better still, choose a NIOSH-approved respirator that has changeable filters for extra protection.

Be Forewarned

After reading Jeanne Marie Laskas's *Off the Wall* article "The Previous Owners Did What?" [November/December 1997], I cut it out and framed it. The article could easily have been called "Why You Should Hire a Home Inspector." As a home inspector myself, I see many things that just don't make sense in houses. These are not bad houses but, if the buyers knew some of the problems before buying, they would probably be less frustrated with the other quirks they'll eventually discover.

MATTHEW HOFFMAN, *Cushman, Ark.*



What's Been a Bin

I thought I would send you some pictures of my project in Lewisberry, Pennsylvania—even I was surprised at how this job turned out. The owner wanted to avoid the high cost of a new garage and foundation, so I jacked up the roof of the former corn bin and replaced all the studs and plates in the walls with 2x6s. He is pleased, as am I.

WAYNE ANDERSON, *Dover, Pa.*

Kitchen Commentary

I was very surprised and pleased to see the layout of the kitchen ["Pots and Plans"] in your January/February 1998 issue. Except for the wine cooler, this is the exact blueprint of the kitchen I have designed for myself. It's uncanny yet thrilling to know my design has so much merit.

LINDA TOWER, *Portland, Mich.*

I have been following the Milton project on TV, so the kitchen elevations on page 95 of "Pots and Plans" caught my eye—and told me how different Massachusetts must be. Just imagine standing at the sink, looking out the window to the north and turning your head left to see the double ovens and cooktop on the east wall. Incredible! Everywhere else in the world, when you face north and turn your head to the left, you are looking west.

ROBERT KNOUSE, *Arlington, Tenn.*

Massachusetts hasn't changed its compass; the labels on two of the three elevation

drawings are incorrect. From left to right, they should read: north, south and east.

I am annoyed by the Milton house kitchen ["Pots and Plans," January/February 1998, and "Kitchen Well Done," March/April 1998]. Kitchen "experts" often place the refrigerator across the room from the stove. Not to offend Julia Child and Marian Morash, but why is the fridge way across the room? I think kitchens should be arranged as such: fridge, counter space, stove, counter space.

DORIS YOUNG, Vineyard Haven, Mass.

Kitchen designer Phil Mossgraber replies: Doris Young brings up a good point. In a perfect world, the refrigerator would be closer in the work triangle. But, limited by the traffic patterns (which an open refrigerator door would block) and the window placement, we decided to put the refrigerator in proximity to the eating area, a good setup for a family with kids who are always in and out of the refrigerator for snacks.

Spray for Me

Thank you for raising awareness of automatic home fire sprinkler systems in "Sprinklers for Your Home" [January/February 1998]. Unfortunately, the article fails to communicate a key reason why home fire sprinklers remain rare. Despite conflicting opinions about local code requirements, the real issue is not the installation of systems but, rather, that most home owners have never even heard of them.

A survey conducted by Burke Marketing Research for the Home Fire Sprinkler Coalition (H.F.S.C.) revealed that 62 percent of the 200 single-family-home owners questioned had not heard of in-home fire sprinkler systems. Of those polled, 92 percent were not aware that the risk of dying in a fire is cut by as much as two thirds in houses where sprinklers have been installed. Of the 41 respondents involved in building a house, only one reported being offered an in-home fire sprinkler system as an option. And after being informed of the lifesaving value of the devices, 50 percent indicated that, if they were to build or purchase a new home, they would be very interested in a sprinkler system.

To ensure sprinkler reliability, H.F.S.C. urges home owners to use only qualified contractors who adhere to National Fire Protection Association (N.F.P.A.) codes and standards and local fire-safety regulations.

For further information about residential fire sprinkler technology, H.F.S.C., a partnership comprising three different nonprofit organizations—the American Fire Sprinkler Association, the National Fire Protection Association and the National Fire Sprinkler Association—is offering a free consumer booklet. To receive a copy, please contact the Home Fire Sprinkler Coalition at 1 Batterymarch Park, Box 9101, Quincy, MA 02269-9191; 617-984-7260.

GARY S. KEITH, CHAIRMAN

HOME FIRE SPRINKLER COALITION, Quincy, Mass.

Designs on Our Dormers

The weekend cottage in "Dormers Change Everything" [November/December 1997] by Dennis Wedlick really caught my attention. I would like to obtain a floor plan and know what the cottage looks like and how big it is.

BECKY BUFFINGTON, Troy, Ohio

Sometimes it's hard to put a label on what defines true craftsmanship.



Since 1877, quality-conscious homeowners and professionals have relied on Cabot products to achieve beautiful, long-lasting results. Over a century later, today's craftsmen continue to complement their skills and protect their work with Cabot's comprehensive line of wood care products.

The author of our story, architect Dennis Wedlick, says he designs client- and site-specific plans. He does not sell them per se. If you are interested in commissioning the firm to design a house once you have a specific site in mind, contact Dennis Wedlick Architect, 133 Fifth Ave., 4th floor, New York, NY 10003; 212-614-9147.

On Ordering

Why do you print names, addresses and toll-free telephone numbers for manufacturers (whose products you picture in your magazine) when I can't order from them? I called a number you listed recently and was informed that I had to be a business to order.

PAMELA PETERSON, *Baldwin Park, Calif.*

When you call a manufacturer, it's always worth asking the marketing department for the name and number of a local retailer.

Fanfare

I am writing to ask how I can acquire some back issues. I collect your magazines as well as religiously taping and watching your pro-

grams. There is no bigger fan than I! I am missing the issues for as far back as July/August 1995 and March/April 1997. I am embarrassed that I missed those at my local supermarket. If you can help, please let me know.

KELLY MARK RITCHIE, *Laguna Hills, Calif.*

To order back issues, call 800-898-7237.



My husband and I are big fans of the show and have been for many years. Nine years ago, we bought an old



stone and brick church built in 1892. It may take another nine years to complete (as we do all the work ourselves). We

were really surprised to find *T.O.H.* remodeling a church ["Church Estate," March/April 1998]! I hope Mark Dvorak and Laurie Ann Bishop enjoy their home as much as we do ours. Thank you for all the information and inspiration you have given us over the years.

DUANE AND BOBBIE MILLER, *Lapeer, Mich.*

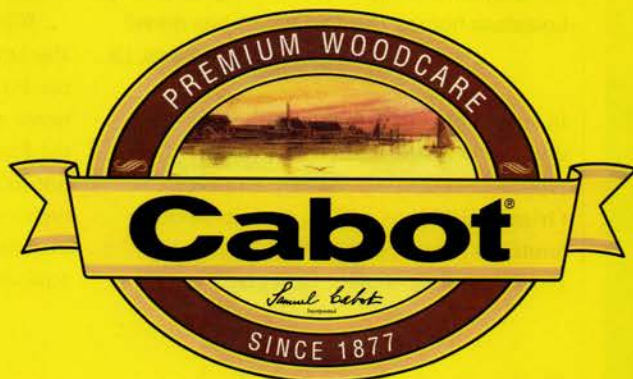
Out-Swing on the Upswing

I jumped for joy when I saw "Norm's Dream Workshop" on the front of your magazine. We have turned our deck into a much enjoyed screened porch. Now, to conserve space, we want to convert the French doors to swing outward, rather than into the dining room. Not one company or contractor in this area has ever done it. Even with the picture in hand, we cannot find anyone to direct us to out-swinging hinges. Can you help?

LINDA MCKINNEY, *Sulphur, La.*

French doors specifically designed to open out still have a reputation for leaking. (So don't even consider flipping around a pair of in-swing doors.) However, because out-swinging doors do free up floor space in small houses, several manufacturers—both Andersen and Hurd among them—have reengineered them for a tighter seal. We have not had an opportunity to test any of these new doors, but Hurd claims that its new, aluminum-clad exterior out-swing doors are the most weather-resistant patio models in its line.

Sometimes it's easy.



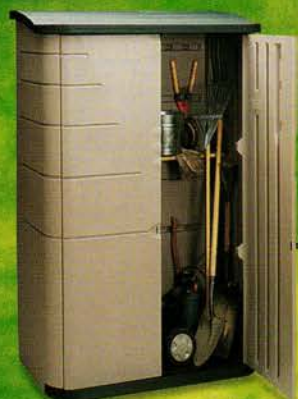
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Three Drill Bits

As the son of a carpenter, I greatly appreciated your article on corded power drills ["No Batteries," January/February 1998]. I have three questions. The caption for the "first pistol-grip drill" says it's from 1916 and turned at 600 revolutions per minute, but the label on the drill in the photograph says 475 r.p.m. and 1924. Is the newer drill a slightly modified version of the original? Second, was there an alternate electrical safety feature for the aluminum-housed Porter Cable model with a non-grounded plug? Last, why didn't the article mention hammer drills?

IVAN FELDMAN, *Scarsdale, N.Y.*

We'll take the last question first. We decided that hammer drills—which come in both corded and cordless models—deserve their own article in an upcoming issue. Question two: The handle of the Porter Cable drill looks all-metal but is actually metal encased in plastic, so it's not conductive. As for the first pistol-grip drill, the original model (600 r.p.m.) is in the Smithsonian and was not available to photograph, so we chose one that is nearly identical, a 1924 model from the Baltimore Museum of Industry.

Warmer Work

Considering that "Louisiana Fairy Tale" is the show's theme song, I'm wondering how many Louisiana homes *This Old House* has done?

JAMIE DELATTE, *St. Francisville, La.*

In search of comfortable weather for outdoor work in the wintertime, *This Old House* has taken on one house in New Orleans (1990) as well as projects in other Southern locations including Tampa, Florida, and Savannah, Georgia.

Be Counted

I am writing in regard to my upstate New York family homestead, which has a farmhouse and carriage barn dating back to about 1750. The house is the oldest one in a historic area and is located near two restored mills as well as a museum of early American life. At one time, the house and barn probably served as a general store and carriage shop along a main route to Rutland, Vermont. Our family has plans to restore the property sometime in the near future. How do we apply for registry as a historic landmark?

LARRY A. GIBSON, *Helena, Ala.*

For buildings more than 50 years old, three types of historical designations exist: local, state and federal. Your town or county makes local designations, which afford a building the best protection against historically incorrect changes by future owners. For state or federal landmark status, you can contact your state's office of historic preservation. You can get the phone number from the National Conference of State Historic Preservation Officers in Washington, D.C., at 202-624-5465. The federal review process hinges on consideration of maps, photos, plans and historical views you provide for the office of historic preservation. On top of that, you must also submit essays describing the property and its historic and cultural significance.

Why be on the National Register? Federally landmarked buildings may qualify for tax breaks, grants, loans and a plaque. Most home owners frame the official letter from the Parks Service and hang it inside so as not to mar the historic fabric of the building's exterior. Historic buildings were not historic back in their day—and they didn't announce themselves with signs.

punch list

definition: a list of items incorrectly done or remaining to be finished on a construction job

January/February 1998

- On page 91, we incorrectly identified the source of the clog-free gutters used on the Milton roof. Call Chip Newman of Minuteman Seamless Gutters Inc. at 617-469-2709 for more information on the Englert Leafguard Gutter System.
- In "Seeing the Light" on page 21 of the Extras section, we pictured a facsimile of the 1910 Edison Mazda lamp. For a true period look, choose the 30-watt version priced at \$8.95 (60-watt also available) from Aamsco Lighting of Jersey City, New Jersey; 800-221-9092.
- On page 122 of the Directory section, we failed to note that the retrofit kit for the wrenchless router chuck pictured in the Extras section ("Bit Part," page 20) will not become available until the end of 1998. At that time, readers can call Danaher Tool Group at 800-866-5753 to ask for the name of a local distributor.

March/April 1998

- Who's that guy? Our March/April 1998 cover pictures arborist Matthew R. Foti pruning a tree. Foti's landscaping and tree business is based in Lexington, Massachusetts; 781-861-0505.

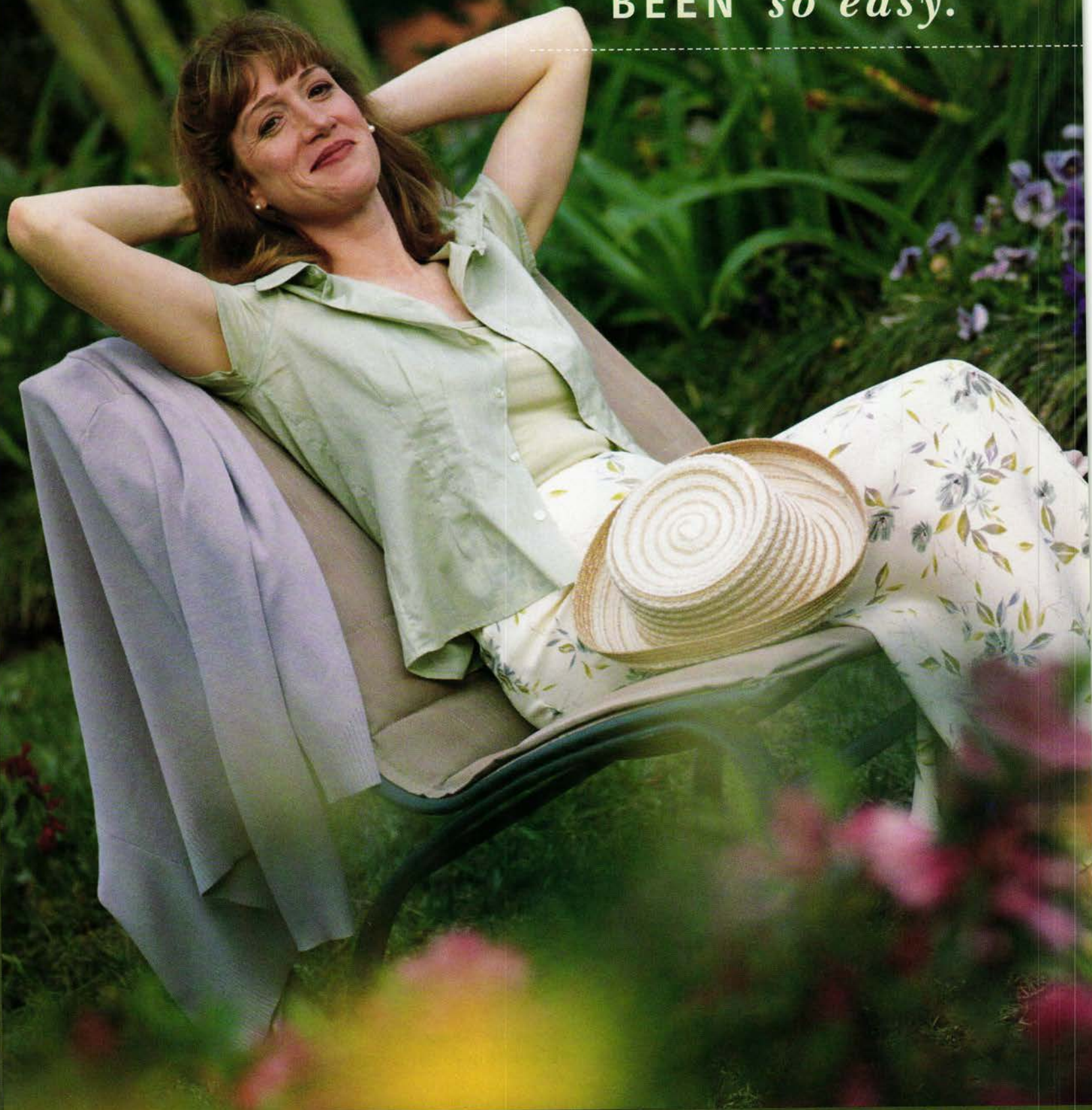


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garden party SWEEPSTAKES



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To enter, send a handprinted postcard with your name, address and telephone number to: HGTV Garden Party Sweepstakes P.O. Box 52824 • Knoxville, TN 37950.

Entries must be postmarked by June 15 and received by June 22, 1998.
For more information, access the official Garden Party homepage:
www.hgtv.com.

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1. How to Enter: You may enter this sweepstakes by completing an entry form found at participating cable television offices. HGTV promotional events and other participating retailers and sponsors will be providing the completed form to the participating cable office or station by June 15, 1998, or posting it in its reception and mailing it to HGTV Garden Party, P.O. Box 52824, Knoxville, TN 37950. You may also enter by handprinting your name, complete address and phone number, other on a postcard and mailing it to the above address or on a separate card, putting it in an envelope and mailing it to the above address. All entries submitted by mail must be postmarked by June 15, 1998 and received by June 22, 1998. Entries are open to all ages. Mechanically reproduced entries will not be accepted. Entries must be hand printed and must be in ink. If a letter from someone is in the envelope and is found not being hand printed, the envelope will be discarded. For complete official rules, send a Xerox to HGTV, P.O. Box 51412, Knoxville, TN 37950. (Send for the complete rules, available at the HGTV web site: <http://www.hgtv.com>, but you may not enter via the web site. The E.W. Scripps Company, the Home of Garden Television (HGTV) or "Scripps") is not responsible for delays, lost, late, misdirected, incomplete or other entries or postage due mail. Proof of mailing is not required for eligibility. All entries become the property of HGTV and will not be returned. 2. How Winner will be Determined: One (1) Grand Prize Winner (the "Winner") will be selected in a random drawing from among all eligible entries on or about June 25, 1998 by an independent judging organization and will be contacted via mail within approximately 15 days of the drawing. Judge: Entries will be judged by the Winner and other judges participating in the sweepstakes. The Winner will be required to sign an affidavit of eligibility and release of liability and publicity, and accept same, within 15 days of prize notification. If the Winner is unable to contact the potential Winner or if the potential Winner fails to complete and return all forms by the time specified in the Winner's letter to comply with any of the requirements, an alternate Winner shall be selected. If the Winner is unable to contact the specified date, prize will be forfeited and an alternate Winner will be selected. The Winner's initial responses must be at least 18 years old and will be required to sign publicly and liability release, and accept same, properly executed prior to receipt of travel documents. The Winner consents to the use of their name, photograph, likeness, BIOGRAPHY, VOICE and/or video for advertising and promotional purposes, without additional compensation, except where prohibited by law. The odds of winning depend upon the number of eligible entries received. 3. Eligibility: This sweepstakes is open to residents of the U.S. who are currently, presently and commercially (including Puerto Rico) who are 18 years of age or older, except employees and their immediate families (spouse, parents, siblings, children and their spouses) of Scripps, Avon, Clorox, Ford, Lennox and Terminix. No correspondence will be entered into with anyone in the Winner. All entries, release the Sponsor, and its agents, advertising and promotion agencies and printing suppliers and all of their respective affiliated companies, employees, officers and directors (past and present) and agents of claims and damages arising in connection with this participation and/or entry in the sweepstakes and/or marketing or using any prize awarded in the sweepstakes. This sweepstakes is governed by U.S. law and is subject to all federal, state and local laws. Void where prohibited by law. 4. Prize: One (1) Grand Prize consisting of \$10,000 cash (the garden make-over and/or travel) and a trip for two to the Garden of England. The trip includes round-trip airfare from the nearest airport to the Winner's home to England, hotel accommodations, double occupancy for two (2) nights and a total of \$7500 per couple spending money. The Winner will be responsible for all other expenses, taxes and fees associated with trip. 5. Odds of Winning: \$2,500,000. End of Sweepstakes: \$2,500,000. No substitution or transfer of prize permitted, except by the Winner due to prize unavailability at time of award or prize value will be awarded. 6. Winner's Name: The Winner's name will be published in the HGTV Home Magazine or used as a Xerox to HGTV Win List, P.O. Box 51412, Knoxville, TN 37950. Requests received after September 1, 1998 will not be honored. 7. Sponsor: This sweepstakes is sponsored and promoted by Home of Garden Television, Box 50926, Knoxville, TN 37950.

When a new baby comes along, everyone has to
make adjustments.



It's not easy welcoming a new arrival. For a while, you'll be feeling a little short on sleep. And if you have other kids, they'll be feeling a little short on attention.

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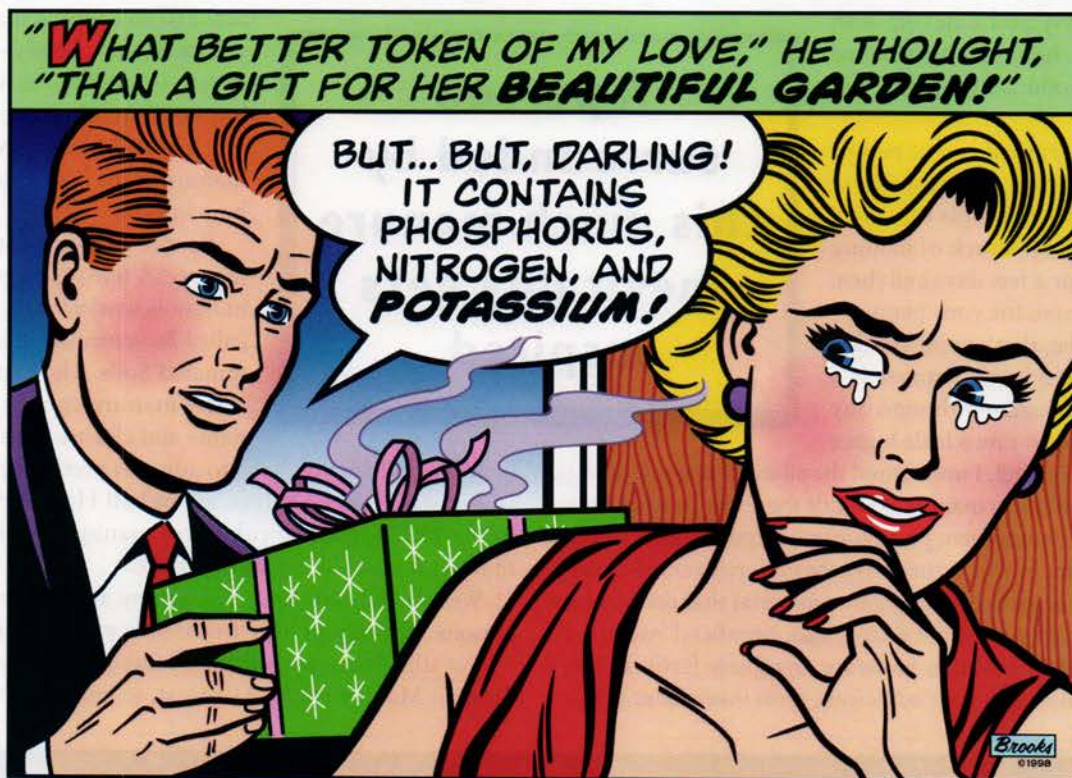
That way, you'll be able to rest easy. Between feedings anyway.

State Farm Understands Life.™



OFF THE WALL

BY JEANNE MARIE LASKAS



START SPREADING THE NEWS

Nothing warms a gardener's heart
like a fresh deposit of horse manure

recently brought Beth, one of my gardening friends, down to the barn to introduce her to Cricket, my new horse, and Sassy, the mule I bought my husband for a wedding present. Newlyweds, Alex and I have settled into a 50-acre farm. We are new at the livestock thing.

"This is Cricket," I said to Beth and flipped on the light in the barn. "And this is Sassy."

"Wow!" Beth said.

"Yeah, they're beautiful animals," I said.

"Holy @\$%!" Beth said, and that was when it occurred to me that she wasn't referring to Sassy or Cricket. "Look at all that manure!" she said. "This is great! This is really great! Do you know how this is going to change our lives?"

"Um...", I said.

ILLUSTRATION BY LOU BROOKS

OFF THE WALL

"Do you have a shovel? Where's the shovel? Oh, God." With that Beth rushed over to her car, opened the hatchback, put down a few flimsy pieces of newspaper, and began scooping manure right on top.

"Uh," I said. "You want a bag or something?"

"Fertilizer," she said. "The best fertilizer in the universe!"

I looked at Sassy and Cricket, both chomping on some hay as Beth continued looting their by-product. I felt guilty. Did they feel used?

One thing I've learned is that people can get wacky when it comes to horse manure. I've read about people who brew manure tea. You soak a sack of manure in a vat of water for a few days and then, presto: liquid manure for your plants.

Now that, to me, that's going too far.

True, composted horse manure is a gardener's best friend—although my friends would hope to rate a little higher than my manure pile. Still, I understand the allure of manure because I'm a gardener, and horse manure contains the three goodies essential for plant growth: nitrogen, phosphorus and potassium. You can buy these nutrients in the form of synthetic fertilizer, of course, but horse manure is packed with organic material that decomposes into humus, the dark earth that encourages beneficial bacteria to thrive and allows soil to retain moisture. Synthetic fertilizer can't come close to manure for your soil's long-term investment plan.

So who wouldn't love horse manure? It's not gross like cow manure. Horse manure's stink has a sweetness to it. A scent that conjures images of Little Joe or Tonto—or Laura Ingalls heading to church across the prairie in the carriage with the folks. A scent that takes you to a simpler time or, at least, to a mindless rerun.

But still. I read about a professional perfumer who has received

requests to create a manure-scented fragrance. Unfortunately—or perhaps fortunately—and for reasons unexplained, bottling that inimitable aroma is impossible. The only way to wear an authentic manure scent is to rub the real thing on human skin.

People devote a lot of time to horse manure. A few years ago, an eighth-grader in Illinois worked on a science project she called Bioremediation of Gasoline Contaminated Soils. The experiment? To see if horse manure could suck out contaminants and cleanse the soil.

It did. Which you have to admit is pretty impressive.

But still. Eddie Collins, a baseball Hall of Famer who played in the 1920s, used to rub horse manure on his bats because he thought it would keep them "fresh."

Well, he did compile a .333 batting average over 25 major-league seasons. Which you have to admit is extremely impressive.

But still. There are folks in Maine who hold an annual Harry S. Truman Manure Pitching Contest, so named because Truman liked

**A person
surrounded by
this much manure
inevitably gets
inspired.**

THE REASON YOU FEAR POLISHED BRASS.



OFF THE WALL

to characterize his opponents' views as "horse manure." Events at the annual Harry S. Truman Manure Pitching Contest include the gardener's spread, in which contestants are judged for evenness, neatness and speed as they distribute a wheelbarrow-load of manure over a measured plot. The farmer's spread is the same except that contestants have to use up an entire truckload of the stuff. In the basket pitch, the person who tosses the most manure into the basket wins.

Accuracy is a big thing when it comes to manure. This much I understand.

"Watch out," I say to Sassy, who is eating her evening grain. While she and Cricket chomp, Alex and I do our barn chores. Sometimes I use the wheelbarrow, and other times I just go wild and heave the manure scoop by scoop, hoping most of it lands in the designated refuse area. It depends on my mood.

Sassy and Cricket produce a heaping wheelbarrowful of manure every day. And that's just in the barn. I'm not counting the manure they produce out in the field because that is not my responsibility. My job is to find a place to empty a heaping wheelbarrowful of manure every day.

"We're down to three mountains," I breathlessly say to Alex.

"That's better than five," he says.

We have spread composted manure on virtually every flower bed and future flower bed we can imagine. We spread it on our vegetable garden. We mulched a grove of trees with it. We covered acres of needy grass with it.

And we still have three mountains of manure outside our barn.

"What are we going to do with all this stuff?" I say to Alex. Suddenly I begin to understand the origins of manure-pitching contests,

manure-related science projects and manure tea. A person surrounded by this much manure inevitably gets inspired.

We do. We think about Beth's enthusiasm for the stuff. We think about all our city friends and all their city gardens and all the money they are wasting on inferior fertilizers.

"City folk love manure!" I say to Alex.

"They do!" he says.

That's when we get the garbage bags.

Later, after we've cleaned up for an evening out, we head to a housewarming party for Nancy and Jack, two of our city friends new to gardening.

"Here you are," I say, all happy with our clever gift.

"Your garden will love this stuff," Alex adds.

Nancy is smiling—but in a more confused than happy way.

"Now, be advised," I say, "that there is a little bit of difference between the consistency of horse manure and mule manure."

"Manure," Nancy says. She seems to be waiting for some sort of punch line.

"The pellets are mule manure," Alex says, "and the loose stuff is horse manure. It's all the same to your garden."

"Pellets," Nancy says.

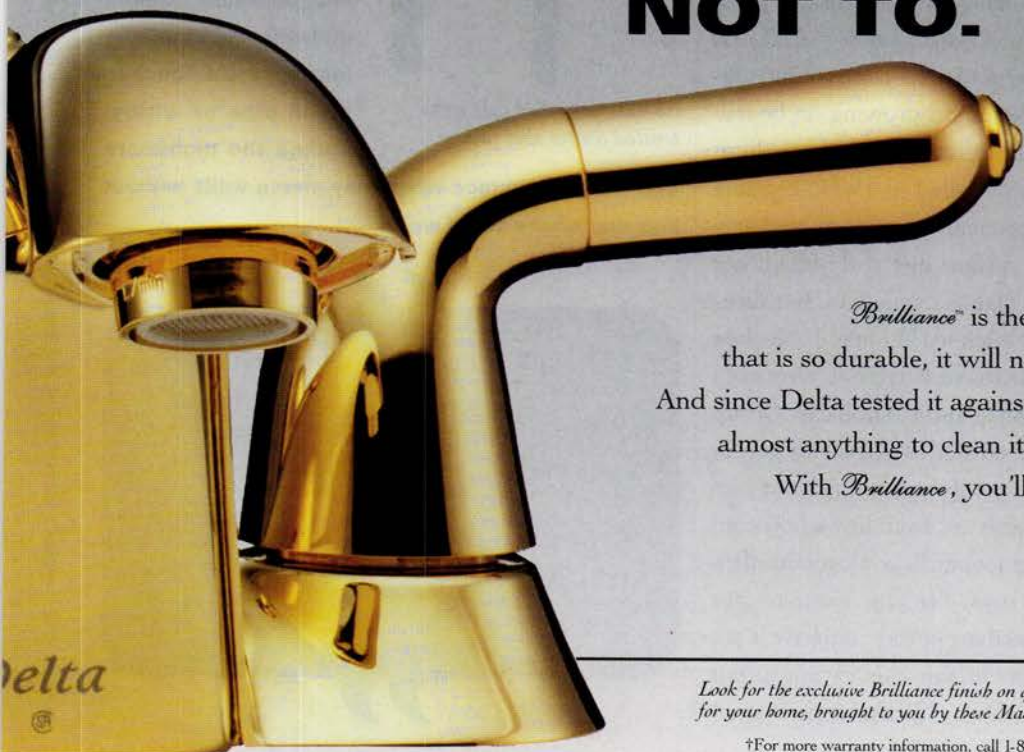
"Loose stuff," Jack says.

You can tell that Nancy and Jack do not get it.

"Manure?" Nancy says finally. "You brought us a bag of manure?"

Alex looks at me. I look at him. In his eyes, I see the truth: We definitely should reconsider my mother's birthday present sitting in the trunk. ■

THE REASON NOT TO.



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june

98

(extras)

Fungus Among Us

A deck that never needs to be oiled or sanded? A picnic table that stands up to summer sun and winter snow without a splinter? Wood-polymer composites known as plastic lumber looked like the answer a few years ago. The material supposedly resists rot for at least 10 years because the wood fibers that make up 50 percent or more of its content are protected by a moisture-resistant coating (derived from recycled grocery bags, milk jugs or other plastics). So imagine the surprise of two wood-preservation scientists on their day off from a conference in Florida last year when they headed to Everglades National Park and, expecting to find alligators and egrets, instead discovered an inch-wide fungus growing on boardwalk rails made of plastic lumber installed in 1994. Leading manufacturers say fungi feed only on surface dirt and pollen, not the planks themselves. But skeptics such as Thomas J. Nosker, director of Rutgers University's Plastics and Composites Group and author of dozens of papers on the topic, says that's not necessarily so. Even low wood content jeopardizes plastic lumber, he says: "If you want to put something outside and have it not degrade, you don't want to put wood in it. Wood absorbs water."

Manufacturers say that a shelflike fungus found on plastic lumber in the Florida Everglades is only a surface aberration, but some scientists say that the growth may indicate deeper rot.



walk rails made of plastic lumber installed in 1994. Leading manufacturers say fungi feed only on surface dirt and pollen, not the planks themselves. But skeptics such as Thomas J. Nosker, director of Rutgers University's Plastics and Composites Group and author of dozens of papers on the topic, says that's not necessarily so. Even low wood content jeopardizes plastic lumber, he says: "If you want to put something outside and have it not degrade, you don't want to put wood in it. Wood absorbs water."

Wundertools

European manufacturers strutted some remarkable innovations this year at Internationale Eisenwarenmesse, the annual springtime mammoth tool and hardware show in Cologne, Germany. One German company showed off a circular saw that slices cleanly through most materials without splinters, sparks



Twin power saw: Expected to be sold in the United States within a year as a tool for firefighters.

or kickback. Two carbide-tipped blades rotate in opposite directions, producing less heat than a single blade

does, so they don't damage paint and plastic coatings. The blades won't cut glass or stone, but the Swedish company that holds the patent is working on diamond blades that will.



Power paint stripper: Recently arrived on the market in the United States from Germany.

Another German toolmaker premiered a power paint stripper that skims off an adjustable number of layers and whisks the debris into an attached vacuum cleaner.

A cutter head with replaceable blades spins horizontally, cleaning a 3-inch swath. Also intriguing: new hammer drills that switch off the instant a bit touches metal pipe or wiring, ending the nightmare



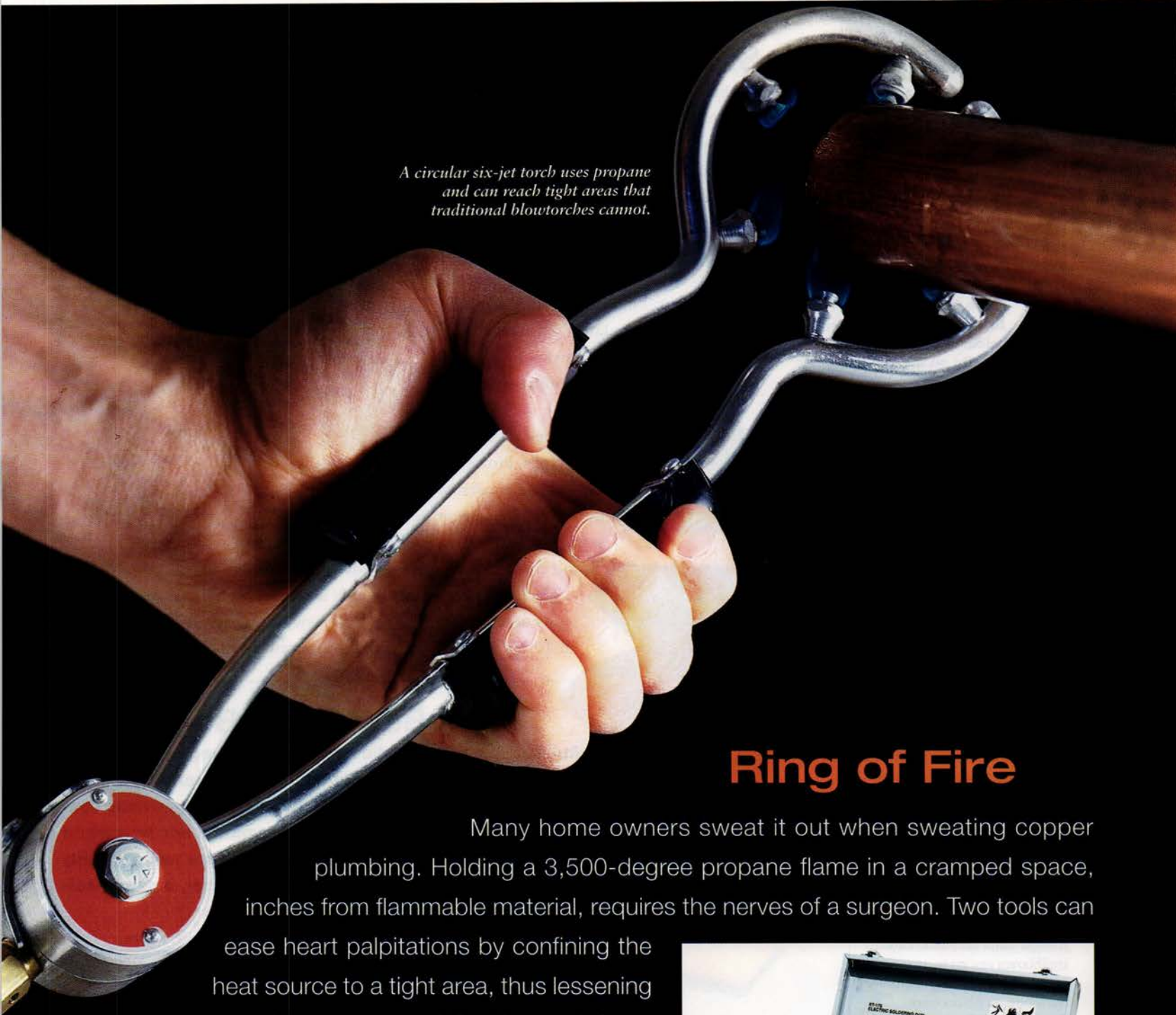
Contact drill: For sale in the United States this fall.

that remodelers face when they pierce walls without knowing what's out of sight.

“Your mind is like a tipi. Leave the entrance flap open so that the fresh air can enter and clear out the smoke of confusion.”

—Chief Eagle, Teton Sioux

A circular six-jet torch uses propane and can reach tight areas that traditional blowtorches cannot.



Ring of Fire

Many home owners sweat it out when sweating copper plumbing. Holding a 3,500-degree propane flame in a cramped space, inches from flammable material, requires the nerves of a surgeon. Two tools can ease heart palpitations by confining the heat source to a tight area, thus lessening the risk of an errant spark igniting an inferno behind the walls. One is a clamp-style blowtorch that divides its flame among six small jets as it encircles a pipe. The other, an electric soldering gun, uses low current to fuse pipes, so there's no open flame at all. The pipes will never know the difference.

Plugged into 115-volt AC power, a transformer quickly converts standard household current into 1,000 degrees Fahrenheit at the carbon tips of the soldering gun.



(extras)

WEB

For anyone contemplating a move to a new town, a virtual welcome wagon awaits on the Internet

www.movequest.com

Move Quest, a consumer-oriented cartographic Web site, gives users a taste of a town before they load up the moving van. Type in a prospective street address or just a city and state; then hit colorful candylike buttons to map out supermarkets, pharmacies, banks and schools in the new 'hood. Calculate monthly mortgage payments and moving costs, and even alert local cable-TV providers to expect a new account.

www.relocationcentral.com

Click on a globe icon to select a prospective city, and find lists of real-estate agents, merchants, houses of worship and agencies for nannies and housekeepers. Click on a pocketknife icon for handy pre-move reminders: Get pet records from veterinarians, drain power-tool gas tanks to prevent fires in transit and transfer bank accounts. Global trailblazers can go to an international-relocation link for the scoop on places from Argentina to Vietnam, plus help contacting expats in the know.

www.moverquotes.com

Mover Quotes estimates moving costs according to dwelling size and state-to-state distance. For a customized estimate, try the weight-distance calculator or contact one of the moving companies that advertise on the site. The appliance column denotes the additional cost of disconnecting and reconnecting various washers, dryers, dishwashers and refrigerators.

Stamp of Approval

When a citizens' committee designated Frank Lloyd Wright's 1909 prairie-style Robie House for a 1998 32-cent stamp, Wright became the most honored architect in the history of the U.S. postal system. A 2-cent stamp, based on a drawing of the master with his Solomon R. Guggenheim Museum in the background, was issued in 1966, seven years after his death. Then in 1992 came a 20-cent portrait of Fallingwater, Wright's design for department-store baron Edgar Kaufmann near Mill Run, Pennsylvania. In creating the latest tribute—available on a sheet with 14 other classic American images

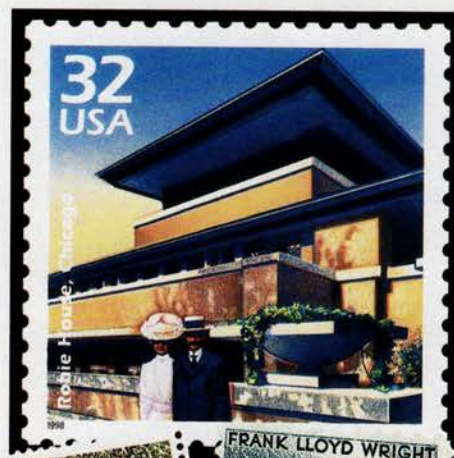
from the early 1900s—veteran stamp artist Richard Waldrep relied on period photographs. However, he could have chosen to

draw Robie House from real life: The house

stands unchanged at South Woodlawn Avenue

and 58th in Chicago's Hyde Park section. When the Chicago

Theological Seminary, which used to own the historic building, considered demolishing it for a new dormitory in 1941 and again in 1957, Wright successfully protested the decision.



Beyond the Box

Stacked in a clear acrylic stand, a set of progressively sized blocks resembles a colorful diamond-shaped parfait balanced improbably on its culet. Knock over the stand, and the plastic confection disassembles into 11 rhomboid doughnuts and four white octahedrons. Beveled edges and mitered corners wedge neatly into each other to form a cubist frog, a skyscraper, a candy-colored robot. Frank Lloyd Wright meets Mondrian.

Big Bad Bowl

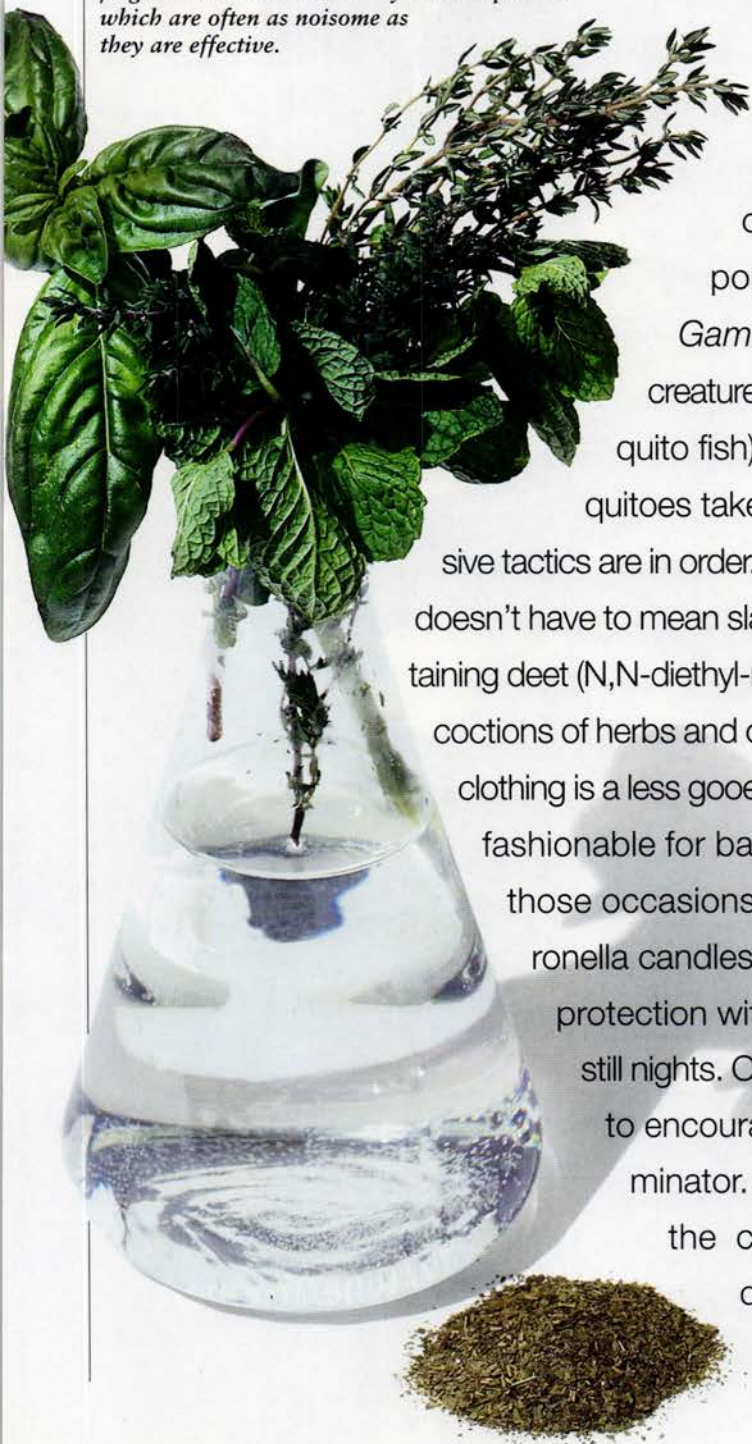
After investing in a fancy lathe—and filling every shelf and closet with countless vessels for salads, peanuts and bean dip—many woodworking hobbyists have endured the pleading of loved ones: “We beg you! No more bowls!” The philistines. How to make them appreciate the turning obsession? Perhaps an entry in the *Guinness Book of World Records*. Since 1990, the record for the world's largest wooden bowl has stood at 5 feet 9½ inches in diameter, 6 feet 7 inches tall and 18 feet in circumference. Now there's a new bowl on the block. Last fall, *American Woodworker* magazine's staff attached a 5,600-pound chunk of found Sitka spruce to a \$10,000 custom lathe. Then, British turner Stuart Mortimer went at it with an 8-foot gouge. After six days and 3,500 cubic feet of shavings, he produced what the woodworkers hope is the world's largest bowl: 7 feet 9¾ inches in diameter and 6½ feet tall with a circumference of 23 feet 7 inches. The beast weighs a mere 300 pounds. Filled with bean dip, it will, of course, weigh considerably more.



Damn the Mosquitoes

After months of soppy weather courtesy of El Niño, much of the country will be hosting a super influx of mosquitoes this summer. Step one: Zap the skeeters where it hurts by draining their breeding grounds—any place where water collects, such as open boats, wading pools, clogged rain gutters and saturated flowerpots. Next, use biological

Folk repellents combine herbs such as neem leaf, basil and thyme with citronella and tea tree oils for natural, fragrant alternatives to ready-made repellents which are often as noisome as they are effective.



larvicides such as Altosid (a synthetic hormone) or bacterial spore crystals

(known as b.t.i.) to sabotage larvae found in ponds. Or drop in a few

Gambusia affinis (guppylike creatures commonly called mosquito fish). Of course, once mosquitoes take to the air, other defensive tactics are in order. Thwarting bloodsuckers

doesn't have to mean slathering on topicals containing deet (N,N-diethyl-meta-tolumide); folk concoctions of herbs and oils can work too. Netted clothing is a less gooey option, although hardly fashionable for backyard barbecues. For

those occasions, incense coils and citronella candles provide inconspicuous protection within an 8-foot radius on still nights. Or install a few bat houses

to encourage nature's own exterminator. Brown bats live all over the country and can scarf down 600 to 1,000 mosquitoes an hour.



Where bats are scarce, set up a bat house with lots of chambers for guests to roost in.



Dare anopheline and culicine species to stick their bloodsucking stylets through jungle-vetted garb made of nylon netting.



Incenselike coils that mimic the noxious essence of pyrethrum flowers repulse mosquitoes as well as other insect pests.

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The real "Spruce" and "Maple" and "Chestnut" should be just as familiar to you as the streets that are named after them. The thoughtfully refined Trooper will help you find them. Its new **TORQUE-ON-DEMAND** traction system senses varying road surfaces and swiftly and intelligently directs power to the appropriate axle: simply put, the Trooper thinks for you. With extensive improvements in functionality and a more powerful 215 horsepower engine, the new Trooper will take you out to see where your street got its name.

STEVE THOMAS

• June 13—Neighborhood Housing Services of New York City, Queens, N.Y.; 10 a.m.-5 p.m. Details: call Stacey Fitzpatrick, 212-645-6363.

EVENTS

• June 11-13—Iowa-Heritage Expo, Migration in History: People, Ideas, Culture. Workshops on historic stained-glass restoration, preservation “chat rooms,” pioneer cemeteries and urban sprawl. State Historical Society, Des Moines; \$55-125; 515-281-6412.

• June 25—Do It Yourself: Home Improvement in 20th-Century America symposium, National Building Museum, Washington, D.C.; panelists include *This Old House* producer Bruce Irving and Cornell professor Jan Jennings, among others; 6-7:30 p.m.; \$8-12; 202-272-2448, ext. 3904.

Plug-in G.F.C.I.s stop leaking current before it seriously harms the body—often the quickest route to ground. Spring-binged covers keep water, dirt and grease out of this four-outlet model.

are likely to serve appliances and tools—outdoors or in garages, kitchens, bathrooms, crawl spaces and unfinished basements and within 6 feet of wet-bar sinks. The devices monitor current flow. If they detect a leak, indicating that some volts may be heading for an exposed metal part of an appliance or tool, G.F.C.I.s trip the flow before anyone gets electrocuted. Unlike regular fuses or circuit breakers, G.F.C.I.s react to tiny amounts of current. Outlets in older houses should be rewired with G.F.C.I. receptacles in code-designated locations. But for appliances or tools used elsewhere or for outlets awaiting conversion, new plug-in G.F.C.I.s offer protection. These devices require three-prong outlets, but a grounded two-to-three adapter won't interfere with their effectiveness.



Current News

National Electrical Code requires new houses to have ground fault circuit interrupters (G.F.C.I.s) built into a central circuit breaker panel or into outlets that



Hipsters

Sitting down when one has a rafter-angle square stuffed into the waistband of one's pants can mean getting stabbed. But cramming the unwieldy square into an already overflowing tool belt inevitably means losing it. To solve that problem, *This Old House* contractor Tom Silva packs a hard plastic holster on his tool belt. Invented by two carpenters in Bend, Oregon, the accessory holds not only rafter-angle squares but either a squangle or a combination square simultaneously, as well. Six other Silva Brothers crewmen have armed themselves accordingly.

POCKET POWER When the going gets arcane, the pros get out their trusty little handbooks and start flipping

Pocket Ref: *The ultimate little black book packs the punch of an almanac loaded with information both helpful and obscure—airport codes, minerals sorted by density, drill and cutting lubricants. Need to know the specific gravity of delinted cottonseed? It's here, along with conversion tables for more weights and measures than you can shake a statvolt at.*



Plumbers Maintenance Troubleshooting Pocket Manual: *An on-the-job reference for plumbers and other brave souls. Its backflow preventers section includes gruesome case histories—human blood from a funeral home spewing out of drinking fountains—and is definitely not for the faint of heart.*



Vest Pocket Guide for Builders and Contractors: *Check used bookstores for this out-of-print gem, which provides recipes for concrete, a blueprint primer, chapters on rough and finish carpentry and an illustrated guide to common molding profiles. Although written for pros, sections on estimates and billing practices give laymen insiders' knowledge.*





Tons of old architectural ornaments find a final resting place in the Anonymous Arts Museum in upstate New York.

ness of their work) and, finally, Anonymous Arts Recovery Society, incorporated as a nonprofit organization in 1958. Nearly 26 years and 4,000 salvaged pieces later, Karp renovated a 19th-century general store in Charlotteville, New York, and called it the Anonymous Arts Museum after the European immigrant artisans who created the work but never signed it. The one-room space holds some 200 of his treasures, ranging from Egyptian forms and cherubs to leering cats and a noble horse head. Standing sentinel, many of the carvings are tilted slightly to convey how they were originally meant to be seen: from the streets below.

Rubble Without Applause

In the 1940s, as postwar glass boxes began replacing New York City's beaux arts buildings, countless stone and terra-cotta swans, lions and cherubs tumbled into demolition heaps. A World War II veteran named Ivan Karp began ferreting these architectural ornaments out of the rubble and storing them in a cohort's Brooklyn backyard. When caught scaling scaffolds after hours, he and his friends fooled nosy passersby and cops by improvising impressive affiliations: Sculpture Rescue League, Rubble Without Applause (which they decided was too irreverent for the serious-

Heavenly Angles

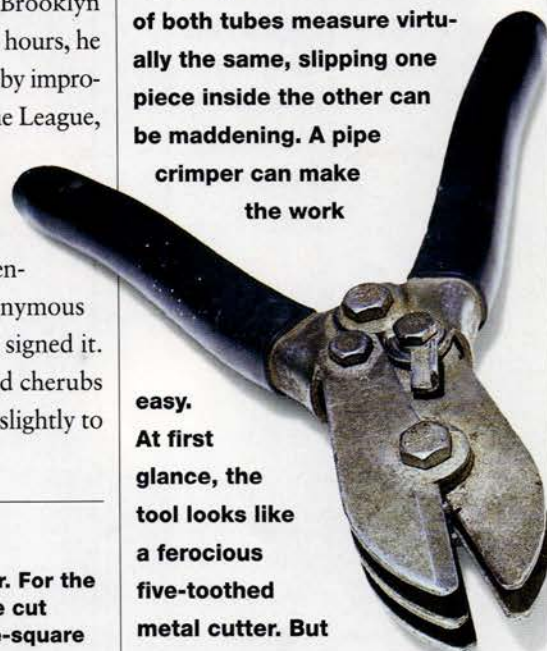
If God is in the details, nirvana must be a tiled kitchen floor. For the floor to look good, boxfuls of unyielding rectangles must be cut precisely to fit flush against cabinet toe-kicks and not-quite-square walls. Although professionals can usually eyeball a cut with uncanny accuracy, they sometimes rely on carefully calibrated layout tools. Now, amateurs intent on avoiding tile hell can measure and mark perfect edge cuts using a plastic—and less expensive—version of a professional angle square. Slip the tool into place; snuggle the swiveling angle bar against the nearest wall or other obstruction; then tighten the head. To replicate the exact angle and location of the cut, simply place the tool against a loose tile and mark accordingly.



UNSUNG TOOL

Pipe Crimper

When properly fitted, the joints of single-wall chimney pipe slide together so perfectly they're vapor-tight. But if the diameters of both tubes measure virtually the same, slipping one piece inside the other can be maddening. A pipe crimper can make the work



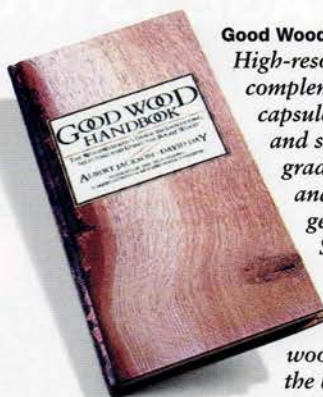
easy. At first glance, the tool looks like a ferocious five-toothed metal cutter. But this is a benign beast—the teeth are actually too dull to cut much. Put the crimpers on the flat or curved edge of a piece of sheet metal, and squeeze. The teeth chomp two nice accordion pleats. When crimped all around—like a piecrust—the end of a chimney pipe or heating duct becomes a smidgen smaller in diameter, just enough to fit snugly inside an uncrimped pipe.

“It wasn't just the house I sought: it was the building of it.”

Richard Manning,
A Good House



Powers Rawl Fastening Systems Handbook: An in-depth guide to one company's world of proprietary fasteners. Covers tools as well as hardware. The distinctive, red-bordered graphic design makes digesting copious charts and illustrations as painless as shooting a powder-actuated tool.



Good Wood Handbook: High-resolution color photos complement informative capsules on identifying and selecting furniture-grade lumber. Veneers and man-made boards get fair coverage. Small felled tree icons alert readers to endangered species of hardwood. Hands off the bubinga!

The Pocket Size Carpenter's Helper: An easy-to-navigate spiral-bound format allows readers to fold back the pages to straightforward explanations of shingle grades, mortar formulas, typical plywood grade trademarks and myriad other digests. The only better helper might be an architect or engineer. Then again, it might not.





THE DARK AGE IS OVER.

Under the dash, in the crawl space, behind the stereo, in the closet, way back behind the furnace, or under the eaves on the back porch. Now, when you need to tighten a loose screw hiding in the shadows, you'll be happy we put a light on the Craftsman rechargeable cordless power screwdriver.

CRAFTSMAN

MAKES ANYTHING POSSIBLE

BY DAVID FRANE

CUTS BOTH WAYS

Band saws shine on curves and straightaways



Outfitted with an arsenal of blade widths and tooth types, the band saw can finesse fine scrolls, cut beveled curves and rip through thick beams with equal aplomb.

I met my first band saw at boat-building school. It stood tall, smack in the center of the school's barnlike workshop, a ½-ton totem of cast iron surrounded by unfinished dories and peapods and the soft sounds of sliding planes and tapping mallets. Over the rumbling saw's wear-polished table, one apprentice gently coaxed a piece of mahogany into a moving blade thin as a ribbon on a birthday present. A nudge to the left, then to the right, and a square board became a sweetly curved transom. Behind him, clutching pieces of wood, other would-be boatbuilders waited to work some band-saw magic of their own.

My instructor patted the sturdy machine and said, "If you're going to build boats, you'd better learn how to use a band saw." I did learn its ways, by pushing more board feet of stubborn oak, scented cedar and splintery fir through its relentless blade than I care to remember. At apprenticeship's end, I could resaw thick, rough planks into thin boards, make perfect no-gap angled dovetail joints and sculpt square stock into beveled-edge curves.

But band saws are more than tools for building boats, as I discovered later working as carpenter, cabinetmaker and furniture builder. Band saws offer a combination of speed, precision, safety, efficiency and quiet unmatched by any

PHOTOGRAPHS BY ERIK RANK

other cutting tool. By comparison, circular saws and table saws have ludicrously thick blades (that cut only in straight lines) and paltry cutting depths; they wail painfully and fling wood at high velocity without warning. Scroll saws, jigsaws and reciprocating saws will cut curves, but they vibrate and work slowly—only once on every back-and-forth stroke. So when T.O.H. master carpenter Norm Abram needs a round tabletop or fresh boards from an old beam, he turns to a band saw.

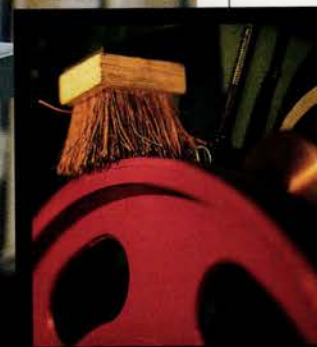
Patented in 1808 by an Englishman, John Newberry, the first band saw had a pair of water-powered iron wheels mounted one above the other on a wooden frame. Today's electric-powered band saws operate on the same principle: two (or more) wheels pulling a loop of thin, toothed steel through a narrow hole in a table.

Band saws for workshops range from small bench-top versions with 9-inch wheels to 1,600-pound, 9½-foot-tall floor models with 37-inch wheels and the ability to rip a 23½-inch-thick beam in half lengthwise. These tools are classified by wheel diameter because that usually determines how wide a board can pass between the blade and the narrow throat supporting the top wheel. Norm's 14-inch saw, for instance, has a 13½-inch-wide throat capacity. Some band saws turn blades over three wheels, but what they gain in throat capacity they lose in frame stiffness, making it hard to tension the blade properly.

A band saw's other crucial dimension is cutting thickness: how far the upper blade guide can be positioned above the table. Bench-top tools can accommodate pieces 3 to 5 inches thick; Norm's 14-inch saw has a cutting depth capacity of more than 6 inches, while the dedicated resaw machine at the New Yankee Workshop can handle stock nearly 12 inches thick.



The blade guide has three rotating bearings that prevent a blade from twisting or sliding backward when cutting. Some saws' guides have solid metal blocks instead of bearings. When not cutting, the blade should clear its bearings or blocks by about the thickness of a dollar bill ($\frac{1}{64}$ inch).



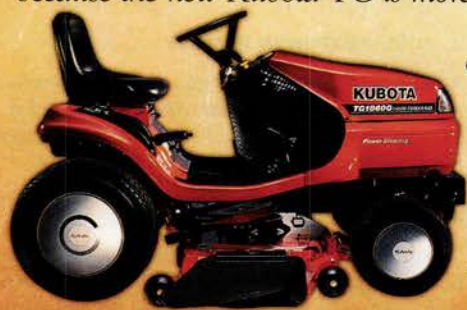
A stiff brush prevents sawdust from collecting on the wheel's rubber tires, protecting them from nicks and abrasion. To prevent blade wobble, the tires are ground to within .002 inch of perfect roundness.

This 400-pound resaw maestro from Italy has a 3.6-horsepower motor that spins a blade at nearly 4,200 feet per minute. Maximum blade width: $1\frac{3}{16}$ inches. Maximum cutting depth: 12 inches. Throat capacity: 17 inches. 1. Wheel guard. 2. Blade-guard lock. 3. Blade guard. 4. Tensioning wheel. 5. Blade-tension gauge. 6. On-off knob. 7. Fence. 8. Motor. 9. Lower blade guide. 10. Belt-driven cast-iron wheel. 11. Dust collection port. 12. Foot brake.



**Dreams of playing on
this field someday.**

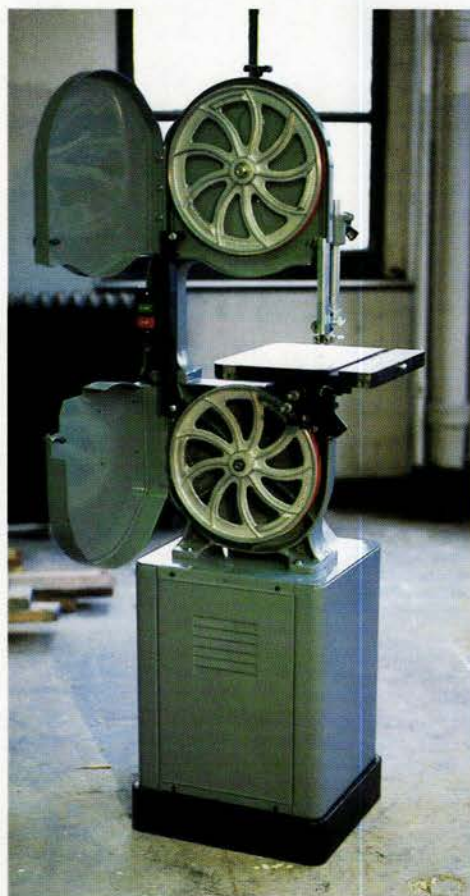
**Dreams of mowing
this field someday.**



To a Kubota TG owner, mowing the lawn is not a mere chore. It's a pastime, a passion, an obsession. Perhaps that's because the new Kubota TG is more than a mere lawn mower. Built like a sports car, this highly advanced tractor comes fully loaded with electronic rack-and-pinion steering, Cushion Ride Suspension and an 18-hp liquid-cooled gas or diesel engine. Which all adds up to the smooth, quiet, comfortable ride you've always dreamed of. For more details, and possibly a new fixation, call 1-888-4-Kubota, ext. 115.

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FLOOR MODELS

**ALL-METAL CLASSIC**

Aluminum wheels 14 inches across make cuts up to 13 $\frac{3}{4}$ inches wide possible. A blade guard slides up and down an oiled runner for easy adjustment. Maximum blade width: $\frac{3}{4}$ inch. Maximum cutting depth: 6 $\frac{1}{4}$ inches. Motor: $\frac{1}{2}$ horsepower.

**NO, IT'S NOT BROKEN**

Unlike band saws with tilting tables, this model has a 621-square-inch work surface that is stationary as the wheels pivot. Maximum cutting depth: 6 inches. Throat capacity: 11 $\frac{1}{2}$ inches, or 14 inches at 30-degree bevel cut. Motor: 1 $\frac{1}{8}$ horsepower.

To cut stock as thick as the guide will allow, a band saw must have sufficient power. An underpowered saw cuts slowly and strains the blade and motor, which burns the work. It takes at least a $\frac{1}{2}$ -horsepower motor to cut cleanly through 3 to 5 inches of wood. Norm's 14-incher has a $\frac{3}{4}$ -horsepower motor, while the resaw machine generates nearly 3 horsepower.

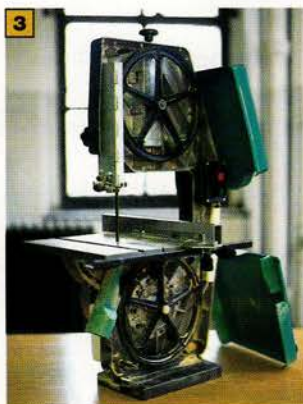
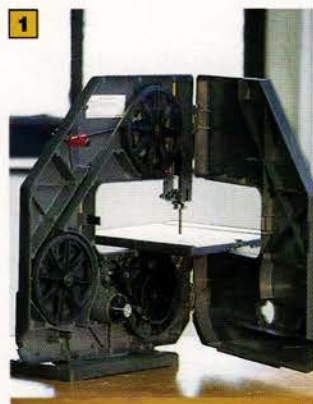
The key to a band saw's performance isn't horsepower or cutting capacity; it's the blade. Off the machine, its thin, flexible coils seem incapable of slicing much more than stale bread. When mounted on the wheels as tautly as a piano string, this strip of steel—half the thickness of a dime and moving 2,000 to 6,000 feet per minute—can cut through almost anything.

Width determines how a blade cuts. The narrower its profile, the tighter the curves it can make without twisting. A $\frac{1}{8}$ -inch blade, for instance, can follow a $\frac{3}{8}$ -inch radius, while a $\frac{3}{4}$ -inch blade can only manage a 5 $\frac{7}{16}$ -inch radius. And $\frac{1}{16}$ -inch blades can turn as sharply as a scroll saw but with greater speed.

Wider blades, from $\frac{3}{4}$ inch to 2 inches or more, cut fast and straight, resist twisting and rarely break. Typically used for resawing thick boards, these blades require saws with wide wheels, powerful motors and heavy, stiff frames to withstand the high tension that keeps blades on course.

Those who want to make curves and then to go straight should master the trick of changing blades or settle on a width that cuts both ways fairly well— $\frac{1}{4}$ inch is a good compromise. Norm resolves the curved-versus-straight dilemma by having two saws:

BENCH-TOPPERS

**1. THREE-WHEELER**

An idler (the third wheel) allows cuts up to 10 inches wide with wheels 6 $\frac{1}{2}$ inches in diameter. Maximum cutting depth: 3 $\frac{1}{2}$ inches. Maximum blade width: $\frac{1}{4}$ inch. Motor: $\frac{1}{2}$ horsepower.

2. FULL-FEATURED MIDGET

A rack-and-pinion blade guard allows precise, nonslip adjustment. Throat capacity: 7 $\frac{5}{8}$ inches. Maximum cutting depth: 5 $\frac{1}{4}$ inches. Maximum blade width: $\frac{3}{8}$ inch. Motor: $\frac{1}{5}$ horsepower.

3. FRENCH TWIST

The direct-drive motor has no belt to slip or wear out. Throat capacity: 10 $\frac{1}{2}$ inches. Maximum cutting depth: 6 $\frac{1}{4}$ inches. Maximum blade width: $\frac{11}{16}$ inch. Motor: $\frac{3}{4}$ horsepower.

Two ways to "wow" them this Father's Day.

"Uh. Oh. Uhhhh...wow."



Father's Day gifts that are "uh...interesting" can be nice, but to really "wow" them, give electronic hand tools from Zircon. Amaze any do-it-yourselfer or handyman with advanced tool technology to do everyday jobs faster, easier, and more accurately than ever before. "Wow" the ones you love this year. Give them tools from Zircon. The perfect gift...no mistakes about it.

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MAKING THE CUTS



SQUARE AND TRUE

When Norm Abram installs a fresh blade, he first adjusts its tension to deflect only about $\frac{1}{16}$ inch when pressed. While slowly rotating the top wheel with his hand, he then eases the tracking screw in or out until the blade runs a straight line with no hint of wavering. After adjusting the upper and lower blade guides, Norm places a small square upright on the table and against the blade to check whether the table is level. Last of all, he holds a file against the back of the moving blade to remove any burrs that could damage the wheels' rubber tires.



ON A SCROLL

Before he cuts tight curves, Norm makes a few relief cuts from the board's edge, roughly perpendicular to his layout line. As the blade carves through the curve, waste stock comes off in pieces rather than in one big hunk, and the blade negotiates the turn without binding. If the curve is too sharp, Norm will change to a narrower blade. For a smooth, ripple-free cut, he applies steady pressure to the work and watches the blade intently; if it starts to twist or veer off course, he slows down.



STRAIGHT SLICE

When resawing thick stock into thinner boards, Norm ensures the straightest possible cut by using the widest blade the band saw can handle. For this job, he clamps a homemade plywood ripping fence to the table and makes a test cut to be sure the board is perpendicular to the table, the right distance from the blade and exactly parallel to it. The band saw's downward-moving blade allows him to saw pieces as thin as $\frac{1}{8}$ inch without the kick-back or rise-up risks associated with table saws.



NEAT NOTCH

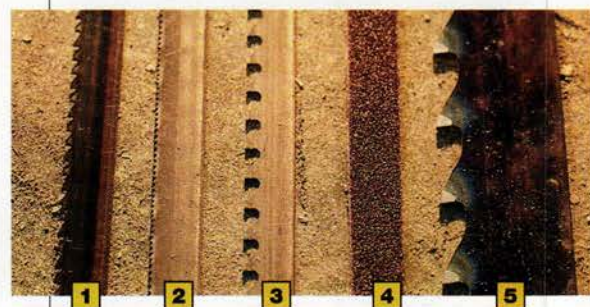
A miter gauge makes crosscuts and notches easy and accurate. Norm simply sets the gauge to the cut angle, adjusts the height of the blade guard to just above the wood surface and anchors his thumb behind the gauge—a good habit that keeps fingers out of blade range. When he wants to make identical cuts on separate pieces, he stacks the two pieces and clamps them together with double-sided tape so they won't shift during cutting.

a curve cutter, which spins blades from $\frac{1}{8}$ to $\frac{3}{4}$ inch wide, and a resaw machine, which has a carbide-tipped 3-inch blade.

Band-saw blades are usually tightened to 15,000 pounds per square inch, although tensions up to 27,500 p.s.i. may be necessary for resawing. Woodworkers who distrust their saw's gauges compare the note of a plucked blade to a tuning fork or harmonica's pitch. Blades at 15,000 p.s.i. make an E; those at resawing tension produce a G-sharp.

It's counterintuitive, but the fewer teeth per inch, the faster a blade will cut. Big resaw blades might have two or three t.p.i., while tiny blades for scrollwork may have 20 t.p.i. A good basic rule is to use many-toothed blades on thin stock and sparsely toothed ones on thick. Most woodworkers use blades with four to 10 t.p.i.

Despite their versatility, band saws are not perfect cutting tools. They aren't portable and can't make plunge cuts. But they do multiply the amount of work that a small shop can handle. And the smoothness of the skinny blade shooting through stock—it's the most pleasingly hypnotic way to part wood. ■



Bendy Blades

1. Carbon steel is the oldest and least expensive blade metal. Fine for cutting wood, but glued woods and plastic dull it quickly. Won't cut steel.
2. Bimetal blades for cutting metal have tough high-speed-steel teeth joined to spring-steel backs by electron-beam welders developed at NASA.
3. Carbide teeth brazed onto spring-steel stay sharp longer but are expensive and brittle. Not meant for metal cutting.
4. Sanding belts can smooth otherwise unreachable curves in scroll cuts.
5. Teeth made of an alloy of carbide, nickel and cobalt are not as durable as carbide, but they are less likely to break and can be re-sharpened. A favorite in sawmills.

BY JEFF TAYLOR



Swamp grass doesn't stand a chance against the onslaught of a sharp, well-swinged machete.

For the cautious bladesman: A glove on the free hand, boots on both feet and a polyethylene shin guard on the leg opposite the blade hand protect those extremities from misguided swings.



BRING ON THE BRUSH!

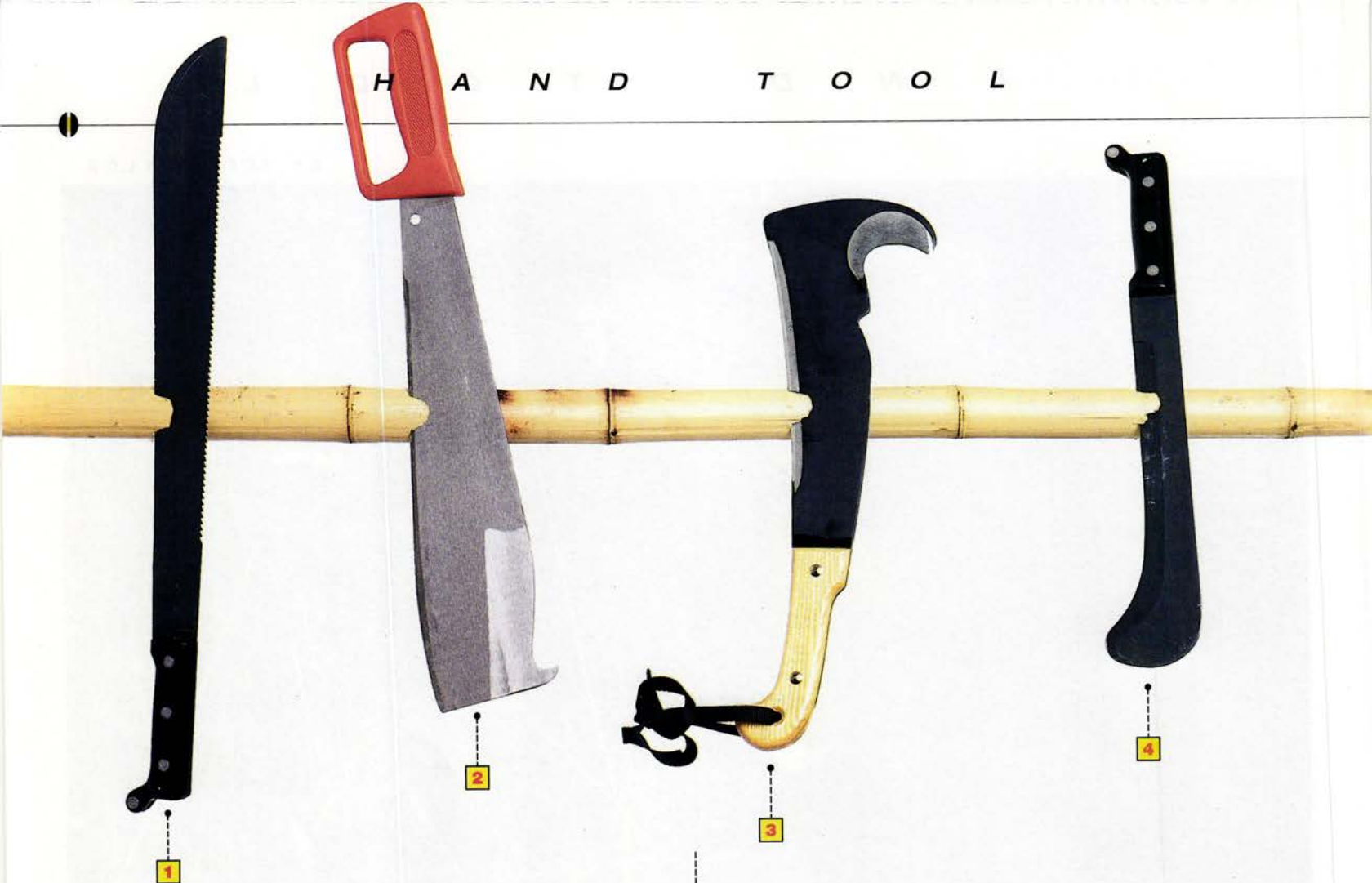
Machetes tame the backyard jungle

Like one of the outnumbered Spartans who held the pass at Thermopylae against the army of Xerxes, I stand alone with a naked blade to oppose a blackberry empire creeping uphill into our garden. Thousands of dark tentacles rise 10 feet in the air, blocking the sunlight. ("Good," said the doomed Leonidas, told that the Persian arrows were so dense that in flight they made dark clouds. "Then we will fight in the shade.")

With 2 or 3 feet of cold steel in my hands, old warrior instincts take over. Wading into the thickest clump of vines, I hack them down until sunset, sweat dripping off my grim smile. They prick me a thousand times, but I'm wearing gloves and a long-sleeved shirt for extra armor.

Let imagination off its leash, and soon a sweaty chore becomes a real *whew*. In my case, it harks back to the play of childhood, with my beloved first machete. It was an LC-14-B survival tool, World War II military issue with safety shoe, leather grip, cutlass-style

PHOTOGRAPHS BY ERIK RANK



Wicked Slicers

1. For unwhackable brush, a 24-inch machete has a saw on the back of its carbon-steel blade. A black oxide coating prevents rust. Weight: 1¼ pounds. **2.** A cane knife has a wider blade so it can penetrate the hard, woody husk of sugar stalks. It has a little hook on its tip for disabling small vines on the pull. Weight: 1⅛ pounds. **3.** The ash-handled hybrid of the Army's LC-14-B survival tool boasts an 11-inch blade of high-carbon steel hardened to Rockwell 47. Arrives sharp and ready to work. Its primary cutting edge is 8¼-inches long, but the last inch of the blade is left unsharpened to reduce the risk of deflective injury and allow close-to-the-ground cutting. An evil-looking sickle hook cuts just about anything on the pull stroke. Weight: 1½ pounds. **4.** The droopy nose of the soft-beak machete places blade weight where it will do the most good. Weight: 1 pound.

guard and evil-looking brush hook. I was 12. "Always control the blade," my father commanded, teaching me proper machete technique. "And wear boots, not tennis shoes. Watch your stance. If you cut yourself, your mother will kill us both."

Give a kid a sword, a Saturday and something to chop down; if he survives, he will forever feel master of his own universe. In my nightly dreams, Kid Conan was now armed and dangerous, and nightmare monsters got cleaved to the teeth. Now that I had a way to unwind after school, my grades skyrocketed. Dad was a genius, even if his particular old-school brand of fatherly Darwinism might today qualify as child endangerment. He showed me the entertainment value of manual labor.

Nowadays, with so many motorized gadgets for twig grinding and branch decapitation, few home owners study the machete, although cutting by hand is good exercise and pollution-free. Near the city, chippers wail and chain saws snarl, but out here in rural Oregon, simple country folk slay briars and brushwood with their

machetes, blades ringing cheerfully as they shear through wood. And on the Christmas-tree farms, machete-wielding laborers sculpt row after row of evergreen saplings into perfect cones a few months before the holidays.

Machete comes to us as a diminutive of *macho*, which is derived from the Spanish word for sledgehammer; early machetes probably began as pirates' cutlasses and became all-purpose tools on plantations and in revolts. Inevitably, the U.S. Army adapted them for jungle warfare.

Modern machetes range in size from the traditional 26-inch Caribbean cane-cutter to the comparatively small gardener's versions such as the beavertail bolo and the corn knife. Some types have an integral

brush hook at the end to cut on the pull stroke, also handy to snag brush and move it aside after cutting.

Grip a machete like a tennis racket. Just be sure to lock thumb over fingers because, unlike a tennis racket, a machete is sharp enough to sever your leg on a bad swing. Although a machete can chop down a tree with repeated hacks, it wasn't designed to



5



6



7



8

Sword Sharpening

A sharp machete bites into wood, but a dull one can bounce off and bite you instead. Professional macheteros work up an edge using only a flat double-cut file, which they push toward the edge in long diagonal strokes. Amateurs should do the same, while wearing leather gloves to avoid slicing digits. But a machete will cut better and stay sharp longer if the microscopic grooves left by the file are polished out with a medium-grit slipstone. Lay the blade on a flat surface; slowly run the stone at a slight angle from the heel of the blade to the tip. Push away from the edge with light strokes. Some fanatics strop the edge afterward on Scotch-tanned bull hide. Stropped machetes acquire a wire edge that makes the first few cuts inconceivably easy, but the edge dulls rather quickly. Save the bull hide for a really blood-thirsty tool: the straight razor.

Fine Cutlery

5. On most machetes, a wrist lanyard keeps the tool in tow when palms get sweaty, but the knuckle-protecting cutlass handle, secured to the blade with three compression rivets, nearly eliminates the chance of a machete slipping from one's grip. Weight: 1½ pounds. **6.** The multipurpose mini-machete enabled stranded Soviet pilots to get food, shelter and protection. Its hollow handle conceals matches and fishing wire and hooks. The blade has a saw, a curved 8-inch edge, a parachute cord cutter, screwdriver and wrench. Weight: 1½ pounds. **7.** A beavertail machete has a sharpened edge that extends around its tip. Good tool for severing roots buried in soft soil. Weight: 1¼ pounds. **8.** The cane-cutting king: Its 26-inch blade settles any arguments about whose tool is longest. Not much use in jungles, because of the wide clearance needed to achieve a solid swing. Weight: 1¼ pounds.

cut anything thicker than a couple of inches. Keep your elbow joint bent slightly throughout the swing and your wrist perfectly straight. A short, controlled chop is much safer and less tiring than a full swing. Never, ever swipe at anything higher than your head. It's wise to wear a glove on the free hand. With two gloves, you'll avoid blisters and protect your fingers during resharpenings (see sidebar). Wipe a machete clean of dirt and plant blood, and oil it after use. Then keep it in a sheath until the next battle.

Machetes don't cut people, at least not on purpose. Many winters back, I was thinning brush with a crazy young farmer in an Iowa forest—a dozen trees in the middle of a field. He was no student of the machete, nor was

he open to safety advice, so I chained the inevitable dog safely to a distant tree and gave Jungle Jim plenty of clearance. His flailing Congo-explorer stroke had too much follow-through, and he swung just as wildly even when off balance. Somehow he managed to avoid injury for the first hour, but eventually the machete deflected and sliced into his calf muscle. After our trip to the hospital, his ghastly 17-stitch wound made me recall my dad's advice: *Always control the blade.* ■



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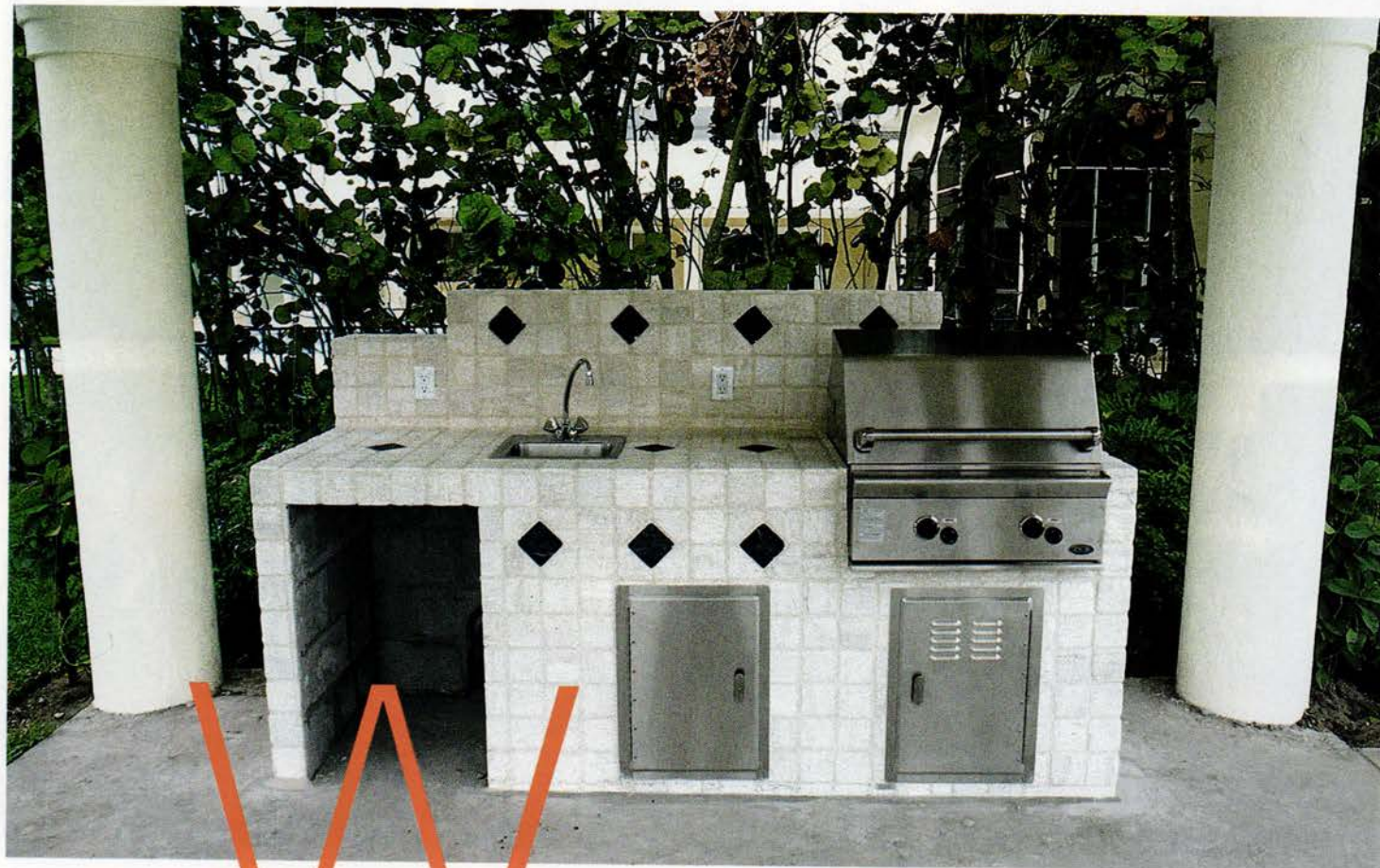
T H E R E ' S O N L Y O N E

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BY JACK McCLINTOCK

FIRE IN THE PIT

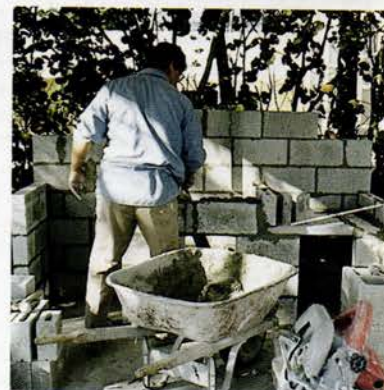
Building an altar to outdoor cooking



When the barbecues flare up each spring and the scent of charring seasoned meat floats across America, it's a wonder how vegetarians keep their resolve. Even a burger broiled on a rickety hibachi has that primal, irresistible hunter-gatherer allure and a tang of genuine alfresco hospitality. But Dr. Paul Gotkin's family wanted something more than a primitive fire pit to grill the day's catch. So under a gazebo, beside the swimming pool, along a yacht-crowded waterway in Jupiter, Florida, masons Chuck and Paul Palazzo gathered the tools and materials they needed to build the Gotkins' cookout space.

For those who can afford such luxuries, there's no denying the appeal of these massive monuments to the joy of cooking outdoors. They provide broad expanses of countertop to set down a plate of burgers or basket of buns. Their supporting pedestals, whether built of brick or block, make a perfect all-weather storage space for the mitts, tongs and other barbecuing accoutrements. And unlike those movable feast-cookers that require bottles of propane or bags of coal-dusty briquettes—both of which have a way of running out when most needed—stationary grills can burn natural gas.

Beneath a riverside gazebo in Florida, a no-rot, no-rust barbecue awaits its first cookout. Mason Chuck Palazzo, below, created this elegantly tiled structure from a heap of concrete block and a wheelbarrowful of mortar.



PHOTOGRAPHS BY ERIK RANK

SET IN CONCRETE



1 The first rule of masonry—to make sure that everything is plumb and horizontal—keeps Chuck Palazzo's mortar-stained 4-foot level busy as he checks the barbecue's front wall of 4-inch block.

2 By the end of the first day, the 8-foot-long pedestal is ready for countertops. In all, the project requires 88 pieces of block—both 4- and 8-inch-thick—and four bags of mortar.

3 Solid concrete pavers, 2-by-2 feet, form the base for the barbecue's countertops and grill. Chuck drops them into hummocks of mortar, filling the cracks between with his trowel. He cuts the square hole in the paver, lower right, with a circular saw and a dry diamond blade. The hole gives the grill access to the gas line. He will later cut open a countertop paver to accommodate the sink.

4 A level countertop is easier to tile, to use and to admire. But rather than try to level the heavy pavers, Chuck waits a day for the mortar to set, then tops them with a bed of stiff mortar 1 inch thick. In this bed, he buries custom-made aluminum guides, levels them to the proper height and then, using them like rails, scrapes off the excess mortar with a plasterer's darby. After leveling, he will remove the rails, fill the creases and get ready to tile.

5 The brutal look of concrete block disappears under a refined covering of travertine tile, bedded in an unsanded thin-set adhesive.

6 The next day, after the adhesive sets, Chuck grouts the tile and sponges it clean. All that remains is for the local gas company to hook up the grill and for the owners to go shopping for steaks.

For their barbecue, the Gotkins had a natural-gas grill, 6 feet of countertop and two storage compartments, as well as a refrigerator to keep drinks frosty and a sink. "This is not a barbecue; this is a kitchen," says Larry Malesky of the Fireplace & BBQ Center in nearby Coral Springs and the designer of the Gotkins' project.

Under the Gotkins' gazebo, the Palazzo brothers could have been building a miniature house, judging by the stubble of wire and pipe poking out of the gazebo floor: electric wires for the fridge and lights, water-supply and drain lines for the sink, a natural gas line for the drop-in grill. The barbecue cradling all these amenities is going to be solid as a house too. Eight feet long, built of concrete block and pavers covered with travertine tile, this cooking island will be cemented to the gazebo's 6-inch slab, a sufficient foundation in frost-free Florida. Here the problems are salt air, moisture, bugs and rot. "Ten years ago, people built these out of wood, with tile tops," Malesky says. "But those don't last in the Florida climate. Half our business is ripping them out and replacing them with concrete." He kicked a loose block. "This'll last forever with no maintenance."

To avoid blocking the house's water view, Malesky centered the barbecue between two columns on the gazebo's north side. In a

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couple of hours, the Palazzo brothers stacked the 8-inch-thick block into a wall 55 inches high, tall enough to provide a 16-inch backsplash behind the 39-inch counter. They worked in companionable silence, smiles on their faces. Each chore seemed to divide naturally and wordlessly into Chuck chunks and Paul portions. "Mud," Paul might say, and Chuck would know to drag some bags of mortar over to the wheelbarrow for mixing while his brother laid out the barbecue's next element.

With chalk and tape, Paul carefully marked out the location of the two end walls, which projected 26 inches from the rear, so that Chuck, with deft slaps, flips, snicks and taps of his trowel, could skillfully build the 4-inch blocks up to counter height. At the left-hand end, he installed a block with screened holes to ventilate the refrigerator. If the barbecue unit had been fired with

If life seems too short for building a fire and waiting for coals, the quick answer is a gas-powered grill. But which one? The first decision—what size to buy—depends on how many people you expect to cook for, how much they eat and how much you want to spend. Gas grills range in width from 24 to 65 inches and in price from a few hundred dollars to \$3,679 (plus tax) for a top-of-the-line cooker with everything, including an infrared rotisserie.

These ready-when-you-are grills burn either natural gas from a pipe or LP (propane) gas from a tank. Their burners are rated in Btus. Larry Malesky of the Fireplace and BBQ Center says 15,000 Btus per burner is the minimum for grilling: "The higher the better to sear in the juices. If you go below 15,000, you're throwing your money away." When shopping for Btus, compare apples to apples. Some manufacturers advertise the heat produced by the entire grille surface (they multiply the number of burners by Btus per burner), which gives the impression of a significantly higher output.

bottled gas, the containment space for the tanks would have been ventilated too.

When both the end walls reached countertop height, the Palazzos prepared additional supports for the countertop's 2-inch-thick concrete pavers. Against the back wall, Chuck mortared pilasters of cut block to counter height and cemented a piece of angle iron on top of them. Then he

blocked up the barbecue's facade, leaving openings for the refrigerator and under-counter storage. Flat bar steel bridged the top of these gaps. On the steel and block, Chuck troweled a ridge of fresh mortar into which he pressed each paver, then he went back and filled all the paver joints. At this point, he didn't concern himself with making the pavers level—he planned to fix that later.

He set one paver down low, creating a recessed platform for the stainless-steel barbecue unit. "Watch the dust," Paul said with



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Yankee Grill

The barbecue at the *This Old House* fall project in Milton, Massachusetts, started with a simple hole in the ground that would have made a fine fire pit for a family wiener roast. But the backhoe kept digging until the hole was 8 feet long and 4 feet deep, far enough below the frost line to prevent a slab-cracking heave. *This Old House* contractor Tom Silva had his men fill the cavity with 4½ yards of ¾-inch washed stone on which they poured a slab. Tom's men then erected a brick pedestal that embraces a gas grill where the new owners could, if they were so inclined, cook some hot dogs. "It's one of the most elaborate ones I've built," Tom says.

The 4-by-8-foot barbecue appears to be an organic part of the brick patio it sits on. Three feet high with a 20-inch backsplash, it has a stainless-steel door in front and dividers inside that create storage cubbies. The centerpiece of this brick cooking island is a 12-inch-wide, 4-burner black porcelain-enamel grill with a roll-back lid, a warming rack and 424 square inches of cooking area covered with stainless-steel cooking grates. Next to the grill sits a separate burner for steaming clams or corn on the cob. The countertop itself is three pieces of 2-inch soapstone, a material that takes heat and can be refinished easily with sandpaper. Tom's men installed floodlights on the house to illuminate the area and hooked up the grill to natural gas piped from the house. It's a handsome pit, but *T.O.H.* executive producer Russ Morash, a longtime barbecue buff, marvels at the effort required to build it. "This is a long way from hot dogs over a fire," he says.



a grin, as he got ready to cut a 6-inch-square hole in the platform to admit the gas line. Sure enough, the instant his circular saw touched the paver, a gritty white cloud erupted from the diamond blade, enveloping him in a cementitious fog. In the counter itself, he cut a larger hole for the bar-sized stainless-steel sink. Every exposed piece of metal in this installation, even the storage compartment doors, would be stainless steel. Nothing else survives the salt air.

The skeleton of the barbecue was finished. Now it needed skin and innards. Next day, when the mortar had set up, the Palazzos sponged off the pavers and began leveling the countertops. They plopped hills of stiff, low-slump mortar on the counter and flattened them out with a 26-inch aluminum bar, working it back and forth like a sidewalk builder's screed.

The Palazzos could have encased the pedestal in stucco to match the house, but the Gotkins chose the elegant and more expensive look of tile. So, starting with the countertop, Paul covered every exposed inch of his concrete and cinder-block creation with tumbled beige travertine accented with black pieces. He chose the accent positions with the eye of an artist, sitting back on his heels to study their placement, taking his time, as if he were reluctant to finish.

But after a day and a half of tiling, he did, and the grill was dropped into its new home. A fitter from the local gas company connected and tested the hookup as required by law. The Gotkins had a perfect place to cook and entertain, shaded by the gazebo and coconut palms and cooled by the breezes off the waterway. It wasn't as elaborate as the job that makes Fireplace & BBQ Center sales rep Larry Malesky proudest—35 feet of triple-tiered countertop in a U shape plus a refrigerator, an ice maker, a 6-foot gas grill complete with rotisserie and, on the rear wall, a waterfall tumbling into a heated whirlpool—but it would get the family outdoors for dinner. Ena Gotkin thought the family would cook there at least twice a week. "I have a grill on the stove inside," she said, "but the food doesn't taste the same." ■

Strategies for Piping the Gas

The grill is gorgeous, but there won't be any sizzling steaks until there's fuel to cook with. Installing and connecting a gas line is a job only for a licensed plumbing contractor familiar with the local codes, permits, tests and inspections required by the municipality; a mistake here could blow your house into a pile of rubble. A gas utility is a good place to start looking for a qualified professional.

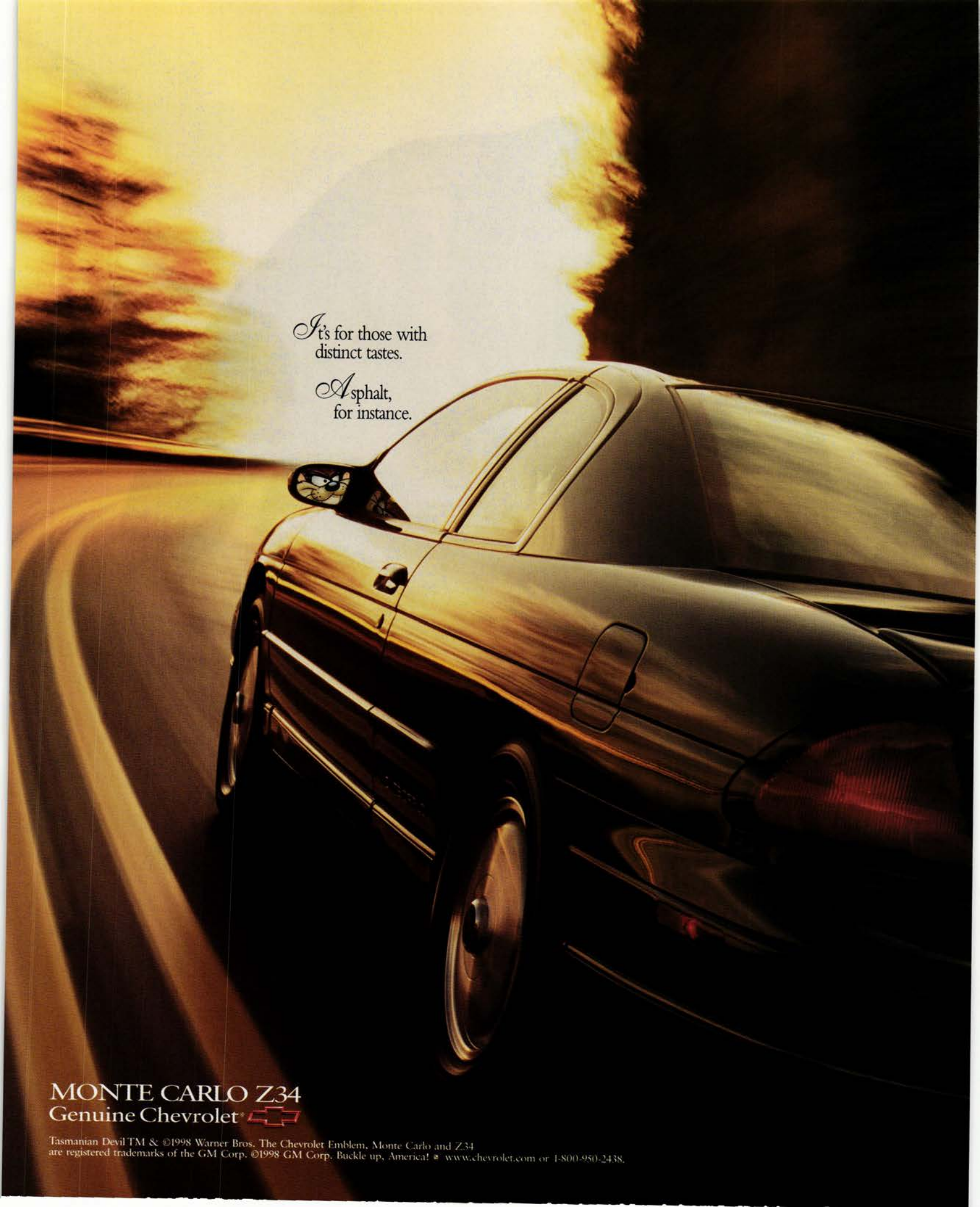
For natural gas, the piping of choice—and code, in most cases—is schedule 40 black steel pipe, a ½- to 1-inch conduit that has been used for about 100 years. (Copper tubing, usually not allowed for natural gas, is often permitted for propane.)

To make the pipe-to-grill hookup, the contractor first turns off the gas, cuts the most convenient line and threads on a T-fitting, to which he attaches the grill line and a shutoff valve. All underground con-

nections are primed, wrapped with a special rust-inhibiting tape 6 to 8 inches on either side of the fitting, and then tested for leaks.

Exterior pipe has to be buried, usually just 12 to 18 inches deep. (Gas will flow even in the freezing northern winters.) Underground black pipe needs a factory-applied plastic coating to stop corrosion and should have a strip of plastic yellow caution tape placed over the ditch after burial, to alert future diggers to stop before it's too late.

On his next barbecue project, Tom Silva wants to try a flexible gas pipe made of corrugated stainless steel covered by a PVC sleeve. The ¾- to 1-inch-diameter pipe comes coiled on a reel and uses easy-to-attach threaded brass fittings. It has to be encased in a PVC pipe if buried, and is more costly than black steel, "but it saves on labor," Tom says. "You just unroll it and screw it on." —Sasha Nyary



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BY CYNTHIA SANZ

MDF—FAKING IT WITH STYLE

Medium-density fiberboard doesn't look at all like wood, but it can be a downright elegant copy when painted

Wood fibers fluffed up like cotton candy are added to glue to form MDF.



F

or years, medium-density fiberboard has been the Rodney Dangerfield of the wood industry. Never mind that it is more dimensionally stable than solid wood. That its smooth surfaces offer a flawless substrate for paint and veneer. Or that it can be routed as easily as oak or maple. If people know it at all—and most don't—they tend either to lump it with its cousin particleboard or to grumble about its early, less sturdy incarnations. "The biggest challenge this industry has had to overcome is an image thing," says Tom Julia of the Composite Panel Association, which represents MDF makers in North America.

Today, thanks to improved technology and dwindling reserves of high-quality lumber, MDF is getting some respect. Cabinet and molding makers are using MDF more often as a cost-effective substitute for solid wood or plywood. (MDF molding is priced about a third lower than finger-jointed pine.) The furniture and laminate-floor industries



Is it wood, or is it MDF? Only Tom Silva knows for sure. For last fall's TV project in Milton, Massachusetts, he built the media room's shelves, cabinetry and wainscot, above, completely of MDF.

PHOTOGRAPHS BY STEVE WISBAUER

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Hot Off the Press

To make MDF, a factory needs a large supply of high-fiber furnish (the chips, sawdust and shavings—not bark—supplied by sawmills). Its first stop is the 20-foot-tall, bell-shaped digester, a 100-pounds-per-square-inch pressure cooker set at 350 degrees Fahrenheit, which softens the wood bits. After a 15-minute steam bath in the digester, the hot, moist wood scraps travel to the refiner, where they are injected between a pair of grooved steel plates—one fixed, one rotating at 1,800 r.p.m.—held just .003 inch apart by a hydraulic ram. Like a pair of millstones grinding wheat into flour, the 3½-foot-diameter plates rub the softened wood apart into individual fibers at a rate of 10 to 15 tons per hour. "It looks a little like cotton candy," John LeFors of Willamette Industries says. "And it's very light, with a bulk density of 2 pounds per cubic foot."

Next, the fibers shoot through a blow line, where they are misted with bonding resin as well as with other additives that enhance fire or water resistance. At this point, says LeFors, the board is "just a tall fluffy mat of material" about 18 inches thick, riding on a conveyor belt toward the hot press.

There are two types of MDF presses: the old-style platen press, in which pairs of plates produce individual panels, or the modern continuous press with pairs of steel belts 100 to 150 feet long that yield uninterrupted sheets. Both plates and belts are heated to 350 degrees Fahrenheit so that, after a 5- to 10-minute squeeze at 350 p.s.i., the glue sets and the thick, fluffy mat becomes a thin, hard board needing only a light sanding.

MDF is usually made in 4x8 sheets from ¼ to 1¼ inches thick. Some trim is 16 or even 24 feet long to minimize joints. "If you had a way to handle it, the boards could be endless," says LeFors.

What once was wood is now MDF, left, a dense, unblemished under-board for paint, plastic and real-wood veneers.

have adopted it as a sturdier alternative to particleboard, which chips easily. Water-resistant varieties are turning up in kitchens and bathrooms. (As yet, no MDF is suited to outdoor use or constantly moist areas.) And where codes require fire-rated materials, special fire-resistant MDF makes its appearance. (Untreated MDF has the same fire rating as plywood.) "We're finding new uses for the product every day," says Will Warburg, sales and marketing manager for MDF at Plum Creek Manufacturing.

Not bad for a product that bombed at its debut in 1966. Sawmills had long turned their chips, shavings and sawdust into particleboard and hardboard, but the Allied sawmill in Deposit, New York, decided to make a new kind of siding—smoother than particleboard and less brittle than hardboard—from their own mountains of wood waste. To Allied's regret, these first boards swelled when wet, an undesirable characteristic for siding, but were soon found acceptable indoors as a base for veneered furniture.

As the number of product applications grows, more and more lumber companies are cranking up MDF plants. Most are in the traditional lumbering regions of the West and South, near ready sources of sawmill leavings, but some are also near cities, where the waste stream contains copious amounts of wood. According to the Composite Panel Association, U.S. companies shipped 1.2 billion square feet of MDF in 1996, a 450 percent increase from 1975. Those numbers are small in comparison to figures for plywood—with approximately 18 billion square feet produced in the U.S. in 1997—but no new plywood plants are in the pipeline. Some makers estimate that MDF production has doubled in the last two years alone, bringing down prices (now \$12 to \$15 for a ¾-inch 4x8 sheet) and increasing MDF's visibility.

Whether most people actually recognize MDF, however, is another story. Bland as oatmeal and about the same color, it usually hides under a coat of paint or beneath a veneer of plastic or wood. Consumers often lump the material together with other man-made panels such as plywood, flake board and particleboard. (See "Glued-Wood Gang," page 56.) But while all of those boards are essentially pieces of wood stuck together with glue, MDF consists of wood broken down into fluff no more than ⅛ inch long and as fine as cotton fibers. Mixed with a resin and compressed between plates or belts, the fluff forms dense, uniform sheets that are free of knots or other defects.

DOES ANYONE SMELL FORMALDEHYDE?

MDF is about 92 percent wood fiber, but the remaining 8 percent is glue holding the fibers together. The glue is often composed of urea-based resins that freely off-gas formaldehyde—not a molecule anyone should cozy up to. It may cause everything from mild respiratory irritation and watery eyes to nausea, vomiting, abdominal pain and cancer. "The emissions from MDF today are far less than they were 10 or 15 years ago, but they can still be significant," says Alex Wilson, editor of *Environmental Building News*. MDF emits more formaldehyde than all other glued-wood products including particleboard. "For anyone with a chemical sensitivity, this should be a high-priority concern," Wilson says.

To stem off-gassing, some manufacturers use low-formaldehyde resins or add chemical scavengers to lock formaldehyde in. Covering MDF with laminates, veneers, sealants or paint also reduces emissions. One company makes formaldehyde-free (and moisture-resistant) MDF with adhesives similar to those in polyurethane glues.

The MDF industry in the U.S. has a voluntary standard limiting emissions to 0.3 parts per million. However, George Semeniuk at the Environmental Protection Agency's chemical-control division says the standard "doesn't correlate to indoor situations." (The Occupational Safety and Health Administration requires employers to warn workers if indoor formaldehyde levels exceed 0.1 p.p.m.)

Tom Julia of the Composite Panel Association says its tests show that the formaldehyde in MDF has a half-life of six months or less. Semeniuk is skeptical. He says independent studies are needed to verify the half-life results and to take humidity and temperature into account. "A 10-degree increase in temperature doubles emissions," Semeniuk says. As a practical way to limit exposure, he recommends that home owners stagger purchases of cabinetry and furniture rather than loading up a room at once. "It's unrealistic," he concedes, "to stay away from these materials entirely."

The smooth look means less waste because cut pieces can be used in any orientation. "With plywood, you have to follow the grain, so you wind up with lots of small pieces of scrap you can't really use," says *This Old House* master carpenter Norm Abram. "Whereas with MDF, it's nondirectional, so you get more efficient use of the sheet." Also, unlike plywood, MDF is homogeneous, so it can be routed as easily as solid wood. "With plywood, every time you expose an edge, you've got to find a way to cover it," Norm says, "but with MDF the edge is treated just like a solid piece of wood."

MDF has advantages over solid wood as well. Because MDF has nearly the same density throughout, it expands and contracts minimally and consistently, which eliminates warping, cracking, cupping and the like. There's no worry about tear-out, the spiky roughness left behind when router bits and saw blades rip wood grain open. MDF's smooth texture is ideal for paint, which also tends to last longer because of the board's dimensional stability. "I love the way it paints," says John Dee, who often uses it on the job. "And once it's painted, there's no distinguishing between MDF and wood."

Nonetheless, MDF has drawbacks. It's about 50 percent heavier than plywood. "The thicker sheets are almost a two-man job to move around," says Norm. And it's only about a third to a quarter as stiff as solid wood of the same thickness. Shelves of $\frac{3}{4}$ -inch MDF should be kept to about 3 feet in length or be given extra support to prevent sagging.

Because it's more dense than most wood, MDF requires some adjustments when it comes to fasteners. Nails do not penetrate it easily even when shot from a nail gun, and they can leave a slight pucker around the head. Nailing near edges can break off chunks of the material. MDF holds screws about as well as softwoods such as Douglas fir but has only about half the screw-holding value of red oak. "I use typical drywall screws, but a coarser-thread screw is better than a fine," says Norm. To eliminate puckering, cabinetmakers recommend either using self-drilling screws or drilling pilot holes and countersinking. Biscuit joints, however, work well without special treatment.

The resins abrade blades and bits, dulling even carbide-tipped ones much faster than most wood. And cutting or routing produces a fine dust that can be irritating if inhaled and is hard on motors. Says *T.O.H.* contractor Tom Silva, "You'll want to wear a dust mask to protect yourself, and use a vacuum attachment on your tools."

A spilled drink won't hurt MDF, but it will swell if kept in prolonged contact with water. To find out how much, we soaked an uncoated $\frac{1}{2}$ -inch piece in water for a week. The MDF didn't dissolve, but it bloated 42 percent, turned spongy and became home to a thriving mold colony. Although extreme, our test emphasizes the need to keep MDF dry.

Spurred by the increased acceptance of MDF, manufacturers are experimenting with ways to make it both easier to use and more versatile, offering pre-cut, primed, plastic-coated or veneered molding and millwork in various sizes and thicknesses. Many are varying the density of their MDF to meet specific applications. (Lower densities weigh less, sag more; higher ones tend to be stiffer, be more brittle and produce sharper edges when routed.) Others are modifying the manufacturing process to make finely textured boards lighter or to eliminate or reduce formaldehyde off-gassing. (See "Does Anyone Smell Formaldehyde?" page 55.)

To date, the efforts to refine MDF have focused on the furniture and cabinet trade. Most home centers don't stock many of the choices or have much information if they do. Would-be MDF buyers have to call the Composite Panel Association for a local distributor. MDF manufacturers want to change that. "If you think about the inside of a house—all the painted wood trim around every door and every window, the chair rails, the skirt boards that go up the staircase, the shelving in the closets—that all used to be lumber," says John LeFors, Willamette Industries vice president for sales and marketing. "But as wood becomes less available and more expensive, it can all be MDF." ■



Glued-Wood Gang

- 1. PLYWOOD:** Thin sheets of wood veneer, bonded together by an adhesive. The grain of each sheet is perpendicular to that of neighboring layers. The strongest and most expensive man-made wood.
- 2. HARDBOARD:** Highly compressed cellulose fibers with a density of approximately 65 pounds per cubic foot. Often perforated to hold pegs.
- 3. MDF:** More flexible than hardboard and smoother than plywood or particleboard, a good substrate for veneers. Panel density between 44 and 50 p.c.f.
- 4. PARTICLEBOARD:** Made from sawdust and other mill residue. Comes in densities ranging from 25 to 70 p.c.f. Widely used as a substrate for melamine-veneer furniture and laminated countertops. Holds screws better than MDF of the same density but sags more readily.
- 5. FLAKE BOARD:** Comes in two varieties: waferboard (wide flakes randomly glued together) and oriented strand board (long, narrow flakes loosely aligned in the same direction, then glued in layers perpendicular to each other). Densities for both range from 38 to 50 p.c.f.



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BY GARY BELSKY



IF IT BREAKS, THEY WILL FIX IT

How to play the warranty game

with her to college where, all at once, the battery charger stopped charging and the motherboard started behaving badly. The eventual breakdown of the \$2,500 machine was inconvenient, to be sure, but the timing couldn't have been worse. The laptop was just three months older than its one-year warranty, and the Scarsdale, New York, plastic surgeon figured he'd be stuck with the \$1,100 repair bill. But then Reiffel remembered having bought the unit with his gold credit card, which extended the manufacturer's warranty a full year. "I called the credit-card company, and they said, 'Absolutely, you're covered,'" he says. "All I had to do was send them the receipts, a copy of the warranty and the repair bill." In less than a month, Reiffel got a check for \$1,100.

When it costs more than a grand to fix a computer or even \$200 to get a stove running again, it only makes sense to maximize warranty protection. Besides flashing the card, buyers have other ways of keeping fresh purchases from becoming expensive post-warranty problems, even after the coverage expires.

Original warranties for household goods typically last a year, although many appliances come with longer warranties for a specific part, like the transmission on a washing machine. That's what makes reading the mind-numbing fine print worthwhile. But don't worry about registering your purchase with the manufacturer. Sending in the card

he end came quickly for Robert Reiffel's laptop computer. His daughter, Lauren, had taken it

ILLUSTRATION BY PHILIP ANDERSON

may ensure that you'll be notified in the event of a product recall but, says Jordan Clark, president of the nonprofit United Homeowners Association, "As long as you can produce a sales receipt or canceled check that proves when you bought a product, you'll generally qualify for warranty coverage. I just staple my receipts to the instruction booklet and file them away."

When Clark says "receipts," he means two: the one for the product and the one that proves you charged it. In their gold and platinum incarnations, Visa and Master Card typically double the original coverage, up to an additional year, and pay as much as \$10,000 per claim, as does American Express for all of its cards.

Coverage beyond the card can also be had from expensive extended warranties sold by retailers and equally costly umbrella policies issued by home warranty companies. But on the scale of wise investments, these two rank pretty low. (See "Unwarranted Warranties" on the next page.) The only other way of getting longer, albeit limited, coverage is by spending a few dollars to add a rider or endorsement that names a specific item to a home owner's insurance policy. It's not a warranty, so there's no coverage for wear and tear or routine maintenance. But it does cover several perils including theft, accidental breakage and water damage.

A rider wouldn't have covered the demise of Reiffel's laptop but, had it failed after his credit-card coverage ran out, he still might have been able to get a free fix. "There may not be formalized programs to cover out-of-warranty claims, but there is definitely an area of flexibility," says Robin Leonard, an attorney and the author of several books on personal finance. That's particularly true if the malfunction occurs within a relatively short

time—say, two or three years—after the warranty expires and if it clearly resulted from faulty parts or shoddy workmanship. "The more often you call and the higher in the organization you get, the more likely your success," says Mark Connelly, director of appliance testing for the nonprofit Consumer's Union.

Start by dialing the company's customer service line and as you climb the hierarchy, write down call dates and times and the names of the people you deal with. "Chances are that you'll get a different representative every time you call the service center," says Clark. "But if you call and say, 'I talked to Betty on the 20th, and she said this,' they'll know you are someone to be taken seriously."

If playing the squeaky wheel doesn't bring satisfaction, making some noise at a state consumer-protection agency might, as could a trip to small-claims court (although collecting on a judgment against an out-of-state defendant can prove difficult). The Better Business Bureau and the Federal Trade Commission will, alas, only record your complaint; neither can intervene directly on your behalf. But if the offending product is a washing machine, refrigerator, wall oven or other major appliance, you can appeal to a little-known but surprisingly effective agency of last resort: the Major Appliance Consumer Action Program.

Founded in 1970 by the home appliance industry, the program provides consumers with mediation of otherwise unresolvable complaints. MACAP starts by contacting the manufacturer in hopes of gaining a simple, swift resolution. If that fails, the case goes before a nine-member arbitration panel consisting entirely of industry outsiders including the chairman of the home economics department at the University of Minnesota-St. Paul, a retired Baltimore Gas and

We know a great place for dinner.



Electric engineer, and a senior editor of *Better Homes and Gardens*.

Virtually all major U.S. appliance manufacturers participate in the voluntary program, but few consumers take advantage of it. In 1996, for instance, MACAP worked through 890 complaints, says program administrator Marion Stamos. "Many, though not all, of the companies include information about us in their owner's manuals, but few people actually get that far in the literature."

Too bad, because consumers have a decent chance of winning. (Forty-two percent of the 1996 complaints were resolved in their favor.) A recent case illustrates how the program works. After buying an electric range in 1993, the owner had problems that repeated service calls couldn't solve. (MACAP opened its files for this story but maintained anonymity for both sides.) In April 1994, the owner asked the manufacturer to replace the \$1,125 range or extend the warranty for another year. The manufacturer agreed to the extension, but in September 1996, after more than a dozen service calls, the consumer demanded a replacement, a refund of most of the purchase price or a warranty good for as long as he owned the troublesome unit. To all requests, the manufacturer said no.

Last June, the owner filed a formal complaint with MACAP. After being notified, the manufacturer offered to refund \$39.95 for an April 1997 service call. When the owner said no, the matter went to the arbitration panel. Within days, the panel recommended that the manufacturer give the owner a new range and that the owner pay the manufacturer \$198.50 (the value of his use of the original unit). "Obviously, not every case goes against the manufacturer," says Stamos. "But we have files full of let-

ters from people who were pleasantly surprised by the results of their complaint. That's why it's always worth pushing things to the limit." ■

Unwarranted Warranties

After talking up the merits of some big-ticket item, and then selling it, the salesman starts pushing the buyer to shell out more for an extended warranty or service contract. It seems an odd proposition. A few minutes ago this object was durable and reliable; now it needs breakdown protection. Don't fall for it. At \$50 to \$500 per year, add-on warranties and service contracts are mostly a waste of money. "Our research has shown that if something major is going to go wrong, it will most likely occur within the warranty period," says Mark Connelly of the Consumer's Union. Still, sometimes extended coverage is wise. For heating equipment that needs regular maintenance, for example, the coverage may be cheaper than paying for service calls one at a time.

Home warranties, which cover major home defects, including appliance breakdowns, also cost a lot—\$300 to \$500 a year plus \$35 to \$150 per service call—and the fine print may contain exclusions that can leave a policyholder with little real protection. And there's always a chance that the issuing company won't be able to make good on its promises. In 1994, state insurance regulators took over one of the largest extended warranty providers, Home Owners Warranty in Arlington, Virginia, because the company hadn't set aside enough money to cover claims.

FOR SOURCES, SEE DIRECTORY - PAGE 117

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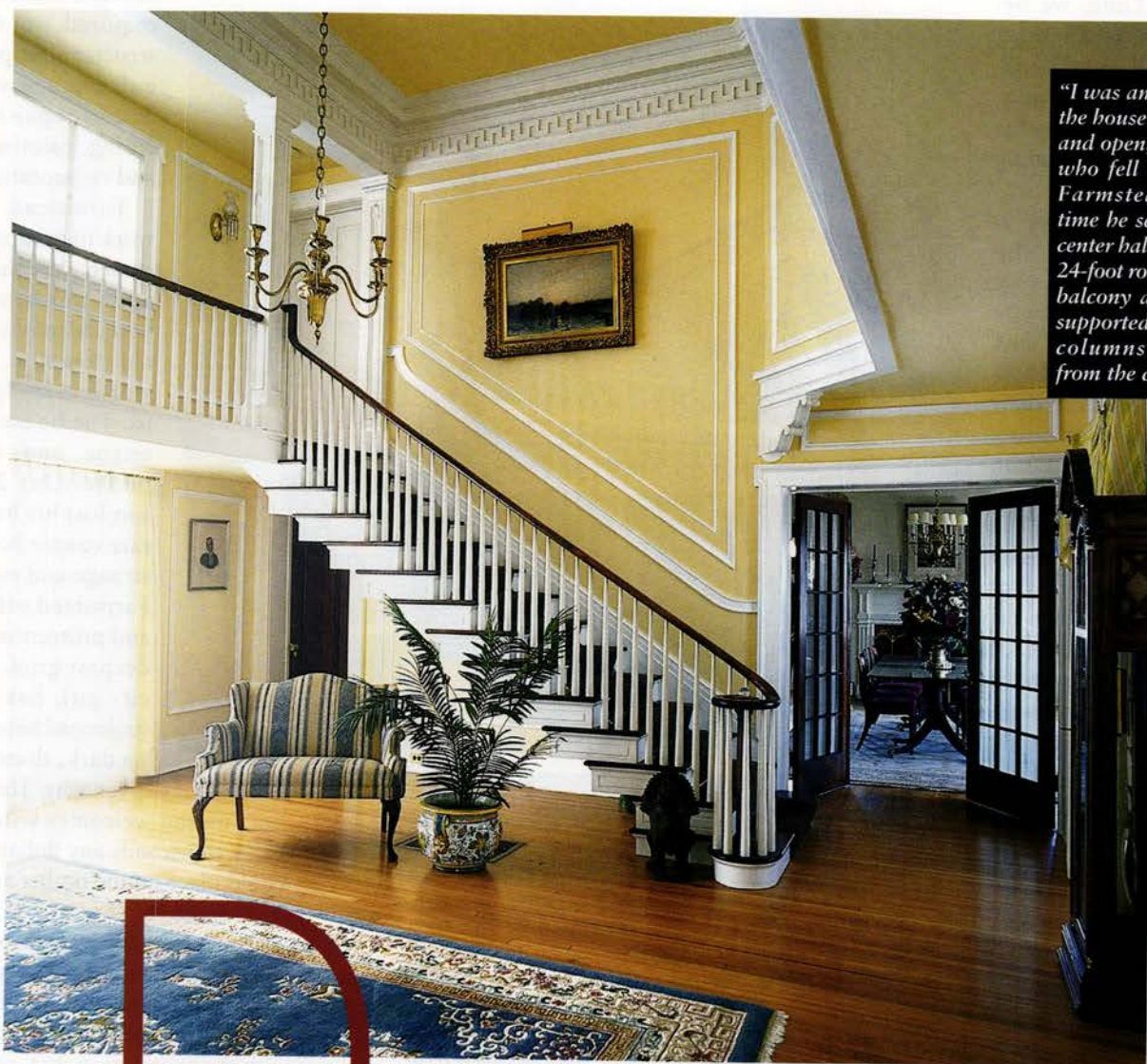
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THE MONEY PIT

BY BROCK YATES

PARADISE FOUND

Measure an old house's value in happiness not investment potential



"I was amazed to find the house so light, airy and open," says Yates, who fell in love with Farmstead the first time he set foot in the center hall. The 20-by-24-foot room features a balcony and stairway supported only by two columns suspended from the ceiling.

Does life imitate farce? I consider that possibility every time I climb the staircase in the center hall of my house in upstate New York. I'm reminded of a scene in the 1986 comedy *The Money Pit* when Tom Hanks, playing the hapless owner of an elegant but decrepit mansion, starts to ascend a floating staircase and the magnificent structure suddenly disintegrates beneath him. Amid a shower of treads, risers, spindles and shattered banister bits, poor Hanks ends up scrambling for a second-floor balcony. I'm ever mindful, as the proud owner of an old house, that grandiose

PHOTOGRAPHS BY QUENTIN BACON

sweeps of architecture and stunningly crafted woodwork can hide disasters. I always step cautiously, humbled by the knowledge that my next footfall might trigger a precipitous descent into financial ruin. So be it. What's a collapsed stairway or two on the way to the nirvana of proper country living?

My intrepid wife, the lovely Lady Pamela, and I fled a complex postmodern life in a town-house condominium near Torrington, Connecticut, 18 years ago to buy Farmstead, a Greek Revival manor perched on a wooded hillside on the edge of the historic gaslit village of Wyoming, New York. Like Hanks and his girlfriend, played by Shelley Long, we believed that clear-thinking adults, accompanied by talented craftsmen and wads of cash, could overcome any pitfalls an old house might conceal.

Farmstead beckoned us with Circe-like ardor. Situated on the 16 acres that remained of a 1,000-acre Black Angus farm long since reapportioned to neighboring dairymen and their herds of holsteins, the 6,000-square-foot mansion and the adjacent oak-paneled carriage house had been built in 1910-'12 by C.B. Matthews, a rival of John D. Rockefeller in the Pennsylvania oil fields. Lady Pamela and I were hooked the moment we saw Farmstead, especially considering the fire-sale price. We had been shopping for property in southern California, where sellers described everything built prior to the Carter administration as historic and even the most mundane shoe box commanded a price in the range of the G.D.P. of a third-world nation. By contrast, the market for large country houses in upstate New York was sluggish, and the people selling Farmstead were desperate. As a broker told Hanks in the movie: "You get to capitalize on a fellow being's misfortune. That's the basis of real estate."

Lady Pamela and I effortlessly swept aside concerns about structural failures and other trivialities. The house's attractions—the soaring two-story center hall with its elegant staircase and balcony, the six elaborately manteled fireplaces, the carved woodwork and the Italian crystal wall sconces and chandeliers—all transcended any possible shortcomings. True, our contractor did mutter about the ancient wiring, some of which dated to the days when the house was lit by direct current supplied by its own naphtha-powered generator. True, the water pressure was dismal in the three tiny bathrooms. True, the twin furnaces had boil-

ers apparently salvaged from a light cruiser, perhaps because the walls contained not a shred of insulation. (This permitted spaces in the outer walls to harbor all manner of small critters—including bunch flies, which swarmed across the 84 windows on warm days in a grisly reenactment of *The Amityville Horror*.)

We ignored the labyrinth of tiny bedrooms in need of expansion into livable spaces, notwithstanding the observation of Leonardo da Vinci that "small rooms discipline the mind; large ones weaken it." (No wonder his rivals Michelangelo and Bramante got the commissions to create St. Peter's.) Oh yes, a major

kitchen renovation was required, not to mention structural improvements including a new roof, foundation repairs, total rewiring, painting, papering and redecoration.

Farmstead is still a work in progress. I cannot contemplate the thousands upon thousands that we have fed into this charming old money pit, because it's worth every last dime to us. The house has been a serene and comforting refuge. Our 27-year-old son lost his battle with a rare cancer here but, in a strange and majestic way, Farmstead offered solace and protection during our deepest grief. My wife, a city girl, has never been frightened here, even alone on dark, thundery nights.

She cannot explain why. This house harbors us and welcomes visitors, and its value transcends any dollar amount we could place on the timber and glass and

stone that compose it.

Mutual funds, cattle futures or even rare stamps would undoubtedly have been a better bet if I'd wanted an investment. But this is a house, not a portfolio. It is the height of folly to pinch pennies with the expectation that, one day, if the Fates smile and the creeks don't rise, you will end up profiting from the sale of a house. Had Lady

Pamela and I followed such a path, we wouldn't have purchased Farmstead in the first place. And we would have cheated ourselves out of nearly two decades of unforgettable country living.

Did we find the simple life? Of course not. We're more crazed than ever. There is no escaping the madness of the late 20th century, regardless of location. And we have learned to heed our own version of Teddy Roosevelt's wisdom: walk softly, and carry a fat wallet. We also discovered that the tradition and patina of wonderful old houses cannot be measured in material terms. ■



FARMSTEAD

TOP: Last painted a decade ago, Farmstead's facade is due for a face-lift this summer. Workers will scrape several layers of oil paint off the cedar siding and apply an oil-based taupe stain. **INSET:** Among the keepsakes Yates inherited from the previous owners is a rubber doormat of indeterminate age.



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LETTER

from *This Old House*

THE CHURCH OF THEIR DREAMS



T.O.H. host Steve Thomas, left, and plumbing and heating contractor Richard Trethewey discuss the plumbing blueprints for the San Francisco project house.

It's Monday, and we're shooting the last show of our San Francisco project. But the job is nowhere near done. Dodging El Niño, the crew has managed to paint the front facade tan with black trim. The sliver of bare ground next to the front steps has been landscaped with a few plants. Inside, finish carpenters work over plasterers, who work around electricians and plumbers. But it's too late. Tomorrow night, our tapes will fly to Boston for final editing. Not finishing the project by deadline has happened before. What bothers me is my fear that, although the purchase plus renovation costs of converting this church into a residence push \$900,000, Mark Dvorak and Laurie Ann Bishop may not be getting the house of their dreams. The problem, to me, is that the bedrooms, bathrooms and kitchen are jammed into the back of the building. The great space of the chapel, remodeled into a living room, dominates the front. But families tend to congregate in their kitchens—not in their living rooms—so what will motivate people to use the great space?

I put the question to Mark. He hadn't really "thought" about the design, he says. The layout popped into his head when he first saw the church. He'd hired architect Barbara Chambers in part to play devil's advocate but still resisted changing his original vision: master suite upstairs facing east, bistrolike kitchen in the old service area, great space reserved for reading, listening to music, watching TV, relaxing. The kitchen and the great space have different textures, Mark says. The kitchen is techno-industrial by design: all tile, stainless steel and billboard lighting. It's a place to stand at the bar, nibble hors d'oeuvres—not a place to relax. For that, guests will gravitate to the great room, where they will find easy chairs, a stereo, a fire. I'm intrigued but not convinced. When Tuesday comes, we shoot a few scenes, then furiously clean up for the wrap party. After guests arrive, they stand for a while in the kitchen, then move on to the great space. It beckons with its leather sofas and chairs, food and drink, the stereo playing "I left my heart in San Francisco...." Guest after guest follows this pattern. I realize I'm seeing what Mark envisioned when he bought the place—his vision was a good one.

A month of work remains on the project before Mark and Laurie Ann will be able to move in. At press time, they were eagerly anticipating that big day—and an even bigger day as well: their wedding in Charleston, South Carolina, in late April of this year. We're thrilled for them. Watch for the July/August issue to see how this project finishes up.

—Steve Thomas

PHOTOGRAPH BY STEFANO MASSEI



poured brass

In New York City, they still make doorknobs the old-fashioned way

With a hissing roar, an emerald-green flame flares from a smoky barrel-shaped blast furnace. Two sweat-soaked men in heavy leather aprons squint against the acrid air, waiting as the temperature in the furnace climbs to 2,300 degrees Fahrenheit, hot enough to melt a raw mixture of copper, tin, zinc and lead into brass. Maneuvering a steel rod with handlebars at each end, they muscle a red-hot crucible out of the furnace, rotate the rod and capsize the vessel. Molten brass pours out, the color of Nehi orange soda, rushing to fill the voids of a sand-cast mold. Within minutes, a machinist removes the mold, breaking out the rough-edged sand-caked hunk of metal. During the next few days, *(continued on page 70)*

BY JACK McCLINTOCK PHOTOGRAPHS BY BERND AUERS



THIS PAGE: A craftsman at P.E. Guerin, the last surviving commercial foundry in Manhattan, patinates a gold-plated Renaissance lever to give it an antique look. P.E. Guerin has been making brass doorknobs by hand since the 1850s. OPPOSITE: Many companies today make reproductions of period knobs. This brass knob by Omnia is based on an early 1800s French design.

(continued from page 68) by a process centuries old, a dozen craftsmen will tap, file, chisel and polish the brass lump into an elegantly fluted Louis XV-style doorknob.

Here, in an old brick building in New York City's Greenwich Village, workers at P.E. Guerin Inc. still cast ornamental hardware as their predecessors did 140 years ago when the foundry was established. Stored in worn wooden boxes and drawers on the company's first floor are hundreds of door-knobs—old world designs ranging from solid Gothic to delicate Louis XV—a testament to the history of an ornate object taken for granted today.

Nobody knows exactly when and where the modern knob arose. Forerunners were handles, bails and pulls, such as the primitive Egyptian pull in New York City's Metropolitan Museum of Art, dating from 2,000 B.C. Doors with mere pulls could be blown or yanked open by outsiders, so insiders devised the latch: a hinged bar that dropped into a slot. Then, to operate the latch bar from outdoors, someone tied it to a string and fed it through a hole in the door: The latchstring was out. Later came the clunky handle with spoon-shaped thumb-press, followed, finally, in the mid-1700s by the turn knob: a knob or lever with a shaft through the door attached to a cam that lifted the latch. (Levers made sense for tall double doors with narrow stiles, where using a knob could bark a knuckle.)

For more than 200 years, the doorknob has continued as a practical—and sometimes marvelously ornamental—object. Craftsmen have made doorknobs (spherical, ovoid, discoid, cuboid, elliptical) out of wood, bronze, brass, wrought iron, porcelain, ceramic, Bakelite, plastic, ivory, jade, stainless steel, rhinoceros hide, a Clydesdale horse's hoof, pressed glass, blown glass and solid gold.

From 1870 to 1930, the United States' heyday for producing elaborate decorative hardware, manufacturers created knob designs that employed patterns from foreign cultures, portraits of the famous, personal monograms, even animal heads. Louis Sullivan and other important architects of the era designed every hardware detail of their commercial buildings, including the doorknobs. Turn-of-the-century home owners picked decorative hardware from elaborately merchandised selections that rivaled the displays found in fine jewelry stores.


The pin-tumbler cylinder lock changed all that. Linus Yale Jr.



Suspended in a pouring tool operated by two foundrymen, a red-hot crucible is tipped over frames containing sand-cast doorknob molds. Molten brass rushes out, with a white-hot flame licking at the crucible's lip. "You can't stutter or stop, or the mold is ruined," says Martin Grubman, assistant to P.E. Guerin's president.



1. P.E. Guerin's Louis XVI-style lever features reed and ribbon details, classical motifs typical of the shift away from the ornateness of Louis XV. The brass knob is patinated in verdigris. **2.** This original mortise lockset—complete with detailed knob, escutcheon and face plate—was designed in the 1880s by P. & F. Corbin Co., one of America's leading decorative hardware makers at the turn of the century. **3.** A Gothic oval knob by P.E. Guerin, in gold-plated brass, features a stylized cross.



A chaser uses the tools of her trade, a hammer and tiny chisel, to delineate the scrollwork of a kidney-shaped Louis XV doorknob. When the knob first arrives at her worktable, its surface detail is obscured, a result of the filing needed to smooth the rough brass piece in earlier stages of its creation. When it leaves her station, its intricate design is palpable.

Installing Vintage Doorknobs



1 Tube latch for spindle set on the diamond

Tube latch for spindle set on the square or diamond



3 Rosette

2 Threaded spindle



Period doorknobs can transform a dull door or add a finishing touch to a renovated house. And while reproduction door hardware abounds, there's nothing quite like the charm of truly vintage doorknobs. A few caveats: Use antique knobs only for interior doors, where security is not a concern; buy old knobs only if they come with spindle and setscrews; avoid old mortise locksets if your doors have holes for cylindrical locksets. Because the installation may require a variety of fittings, take the knobs, any existing hardware on the door and a paper template of the door's holes to a hardware store. **1** Vintage knobs have spindles either set on the square or the diamond, and there are tube latch mechanisms (\$20 to \$50) that accommodate either type.

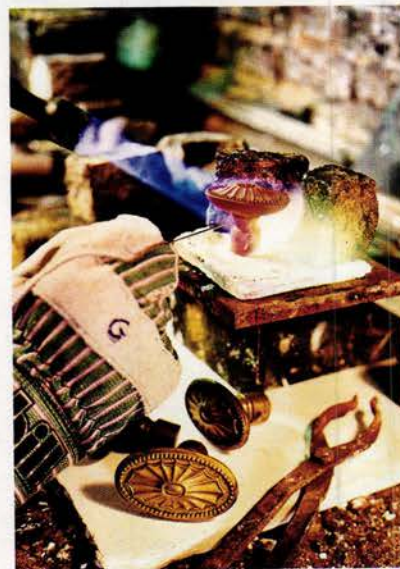
2 Threaded spindles (\$3), when combined with threaded knobs, make it simple to fit the knobs on a door of any thickness. If knobs are not threaded and the existing spindle has setscrew holes, consider a slide-on spindle (\$10). Also called a broached spindle, this piece is notched to allow a finer adjustment with the setscrews. (Holes in a spindle limit the adjustment that can be made.) **3** Rosettes (\$25 to \$100 per pair), available in a wide range of period styles and finishes, must fit the neck of the knobs and cover the existing hole in the door.

During the renovation of a 1940s house in Lexington, Massachusetts, *This Old House* contractor Tom Silva fit an existing door with vintage glass knobs.

4 Tom inserts the tube latch mechanism into the hole for the face plate. Next, he will test the length of the spindle by holding the knobs and rosettes in place. As is often the case, the spindle needs to be shortened. Tom uses a hacksaw. **5** He installs the knobs and spindle, secures the rosettes with screws and tests the fit.

invented it in 1865. It was not only cheap to manufacture (just stamp out the parts) but also simple to install: Drill a couple of holes and pop it in. By the 1950's, the cylinder lock had become the American standard, typically supplemented by a key-operated dead bolt. But the advent of cheaper locks meant cheaper, duller doorknobs, and that may explain the demand for antique and reproduction knobs today.

At P.E. Guerin, time swings back to another era: The beauty of the doorknob itself is what counts. A dozen P.E. Guerin craftsmen bend to their labors like medieval elves. A doorknob is made in two pieces: head and neck. Pouring the molten brass into the molds, the most dramatic part of the process, takes the least time. When the brass components emerge from the molds, their scraggly edges and rough surfaces bear little resemblance to a finished knob. A machinist wire-brushes the components and dips them in nitric acid to clean them. At a forge, a fitter brazes the two parts together. A craftsman files the knob and polishes it, then turns it over to a chaser, who taps definition into the piece by hand with tiny chisels, some for tracing the outline of the design, others for adding texture. One worker then polishes the knob, another cleans it and a third plates the object by dipping it in a vat of copper, brass, nickel, silver or gold. Finally, a craftsman patinates the piece, brushing on one of several finishes, from antique brass to verdigris. It's the labor—the human touch on the doorknob every step of the way—that doesn't come cheaply. The care taken in creating it is clear to the eye and, most important, palpable in the hand. ■



TOP: P.E. Guerin's foundry foreman, Louis Tamburi, massages sand into a mold for a doorknob. Nearly every P.E. Guerin doorknob requires a handmade sand-cast mold. When Tamburi finishes shaping the mold, he will bake it for several hours to harden the form. **BOTTOM:** At the forge, a fitter brazes the head of a knob to its neck. This brass doorknob's cobweb design is typical of architect Robert Adam's neoclassic style, popular in England during the mid to late 1700s.

SPINDLE, ROSETTE: MATTHEW BENSON; SIDEBAR PHOTOS: KELLER & KELLER




Knobs, levers and rosettes dangle from copper wires in preparation for a supercharged bath. A plating specialist will submerge the brass pieces in a potash solution, then secure the copper wires to the crossbar so that electricity will transmit through the bar, causing surface dirt on the brass to shed. The potash cleans the pieces so plating, applied next, will adhere.



RALLY 'ROUND THE FLAG, BOYS

A flagpole makes a great weekend project

A man in a tan t-shirt and shorts is lifting a long, light-colored wooden flagpole into place. He is standing on a green lawn, and a white picket fence is behind him. An American flag is draped over the fence. To the right, there is a wheelbarrow and some tools. The background is filled with lush green trees and foliage.

Norm Abram, left, and Mike Gilligan install a 20-foot wooden flagpole. Ideally, a pole should sit on a knoll in a prominent place by the front door. To choose a pole's height, Larry Bolander, a fourth-generation flagpole dealer in San Francisco, has time-tested guidelines: 18 to 25 feet for single-story buildings, 25 to 30 feet for two stories and 30 to 40 feet for three stories.

Long before fiberglass or extruded aluminum, craftsmen working in spar yards used lathes to turn wooden flagpoles—masts with landlubber destinies. Honoring this tradition, flagpole terminology still twists nautical: Flags are raised by sheaves (pulleys) and halyards (ropes) that are secured on cleats. Some poles even have double or step masts, yardarms (cross-bars) and gaffs (extra spars perpendicular to the yardarms). Mike Gilligan of Gilligan's

BY VICTORIA C. ROWAN PHOTOGRAPHS BY DAVID ALBANESE

PREPPING THE POLE



1. The day before installation, Norm digs a foundation hole 30 inches deep and 24 inches in diameter, using a post-hole digger and shovel. Because Paddison Farm's loamy soil drains extremely well, he doesn't need to add gravel or crushed rock before pouring the concrete. (The foundation consists of eight sacks of dry concrete mix.) The base should be high enough that the pole can swing up and down with ease. Norm shovels in 6 inches of concrete, lets it set for a few minutes and drops in the anchor. He checks the anchor's alignment using an 18-inch bubble level, then fills the hole with concrete and trowels it smooth.



2. After the concrete has set for 24 hours, Gilligan and Norm rest the pole on two padded sawhorses. In order to center the cleat on the pole's half-yard side, Norm measures 42 inches from the bottom. Gilligan uses an $\frac{11}{16}$ -inch bit to drill holes for two $\frac{5}{8}$ -inch bolts.



3. To affix the truck (the flanged top), Gilligan set the double sheave into a notch on the top of the pole, so a sheave with the halyard pulled through lined up with a cleat on the base. Before screwing on the truck, he coated the inside and edges with silicone caulking for a water-tight seal. He fits the finial, a gold sphere, into a $\frac{1}{2}$ -inch threaded hole in the center of the truck.



4. Finally, Norm adjusts the locking bolt to "finger" tightness. Gilligan once again checks to make sure the pole is plumb.

Flags and Poles in San Luis Obispo, California, still creates flagpoles the traditional way: from old-growth vertical-grain Douglas fir, which has enough tensile strength to withstand high winds. His custom-made poles taper up from a four-sided base to an octagonal transition piece and a spar on top.

Although 15 miles from the Pacific Ocean, Paddison Farm in Norwalk, California, invites authentically nautical treatment. Welsh immigrant John Paddison built the eastlake Victorian house in 1879 as the centerpiece of a 300-acre dairy farm. Today, his great-grandson Robert Paddison Scantlebury's family lives on the farm, a cluster of period buildings on 6 acres. The operation still survives by milking—not cows but rather the special-events and film industries, which have used the site for weddings, movies and television shows including *The Wonder Years* and *Picket Fences*. The main house sits on a velvety lawn with a small apple orchard, the ideal spot, the Scantleburys thought, for a 20-foot flagpole to serve as a beacon for cars on the highway just beyond the gazebo.

To install a flagpole, the first step is deciding where in the yard to put it. Tom Hennessy of Hennessy House, a distributor of Gilligan's poles, recommends assembling a mock-up with PVC pipe and couplers. One person should hold up the pole in various spots so a second person can judge the effect from afar. In the Scantleburys' case, however, there was no question that a grassy spot within view from the front porch was meant for a flagpole, especially since they already had another pole obscured by olive and palm trees off the driveway.

Gilligan and *This Old House* master carpenter Norm Abram began by digging a hole and pouring a concrete foundation to hold the painted steel anchor, which supports the pole and prevents ground moisture from wicking up and rotting the wood. The anchor's linchpin assembly allows the pole to be lowered easily for painting or major storms.

The concrete required 24 hours to set. In the meantime, Norm measured 20 inches from the butt of the pole—which rested on padded sawhorses—to drill a hole for the pivot bolt. Although Gilligan's poles come pre-rigged, Norm and Gilligan still had to attach the cleat and top truck, as they call the flange, through which the halyards were threaded. For a finial, which screws into the truck, they chose a gold-toned anodized aluminum sphere. (Eagles and state mascots are popular toppers but, in severe wind, a wildly flapping flag can pull off a wing or limb.)

Then the pole was ready for fitting in the anchor. The men took turns holding the pole steady and stepping back to eyeball it. "The alignment of the base really determines the alignment of the pole," says Norm, who coincidentally had flag-raising duty in grammar school. Using the anchor's predrilled holes as a guide, Gilligan traced holes near the bottom of the pole on two sides to hold another bolt, which would lock the pole in place upright. Norm and Gilligan transferred the pole back to the sawhorses and drilled the holes for the locking bolt. Finally, the flagpole was ready for active duty.

By now, the sun was setting. Although that's usually the time to lower a flag, Norm and Gilligan trotted the pole across the lawn and slipped it into place. After tightening the bolt, Norm attached the flag. Everyone watched breathlessly as he pulled on the halyards. The flag zipped to the top and shimmied in the Santa Ana breeze against the orange-streaked sky. ■

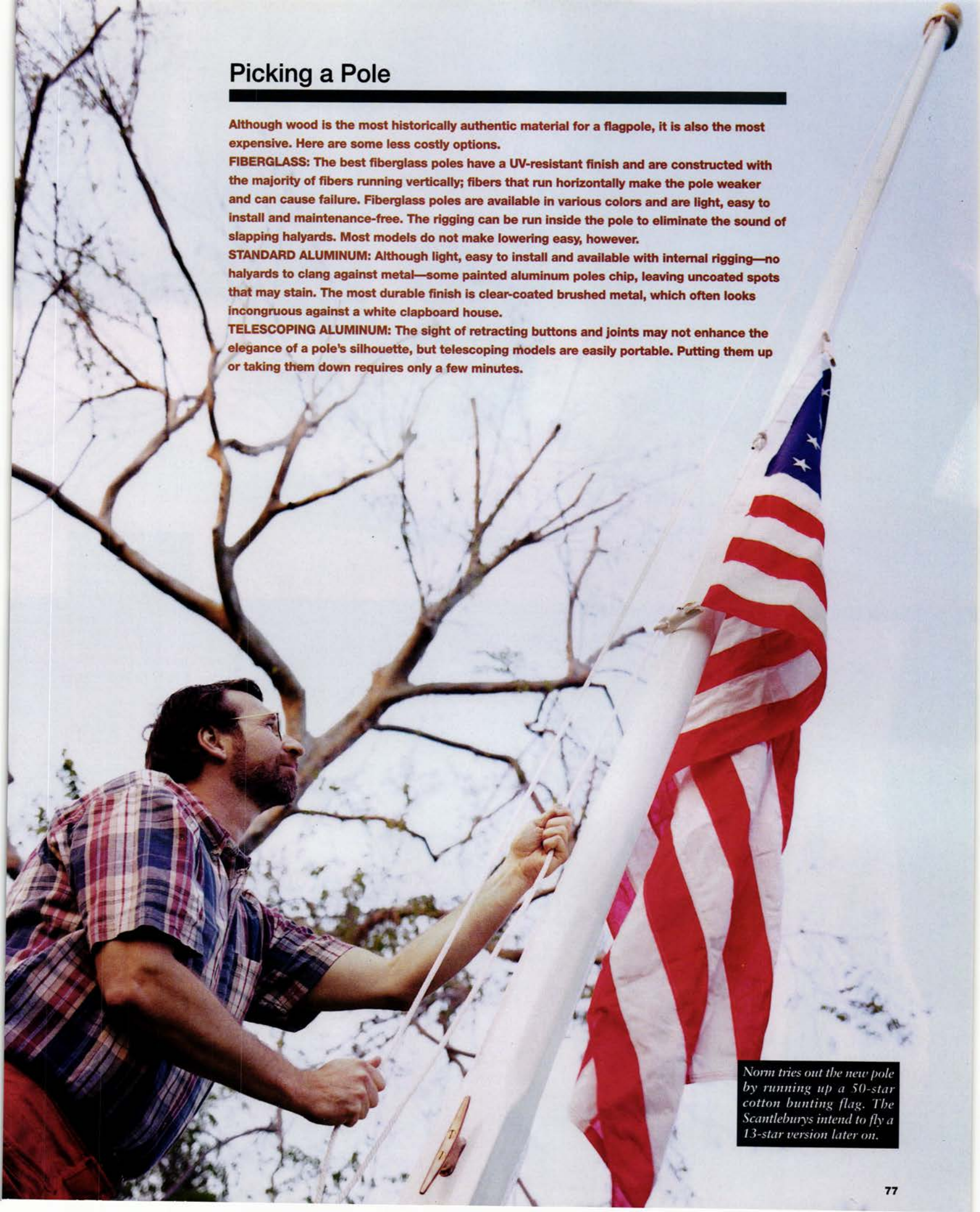
Picking a Pole

Although wood is the most historically authentic material for a flagpole, it is also the most expensive. Here are some less costly options.

FIBERGLASS: The best fiberglass poles have a UV-resistant finish and are constructed with the majority of fibers running vertically; fibers that run horizontally make the pole weaker and can cause failure. Fiberglass poles are available in various colors and are light, easy to install and maintenance-free. The rigging can be run inside the pole to eliminate the sound of slapping halyards. Most models do not make lowering easy, however.

STANDARD ALUMINUM: Although light, easy to install and available with internal rigging—no halyards to clang against metal—some painted aluminum poles chip, leaving uncoated spots that may stain. The most durable finish is clear-coated brushed metal, which often looks incongruous against a white clapboard house.

TELESCOPING ALUMINUM: The sight of retracting buttons and joints may not enhance the elegance of a pole's silhouette, but telescoping models are easily portable. Putting them up or taking them down requires only a few minutes.


A man with a beard and glasses, wearing a plaid shirt, is running up a white flagpole. An American flag is attached to the pole. The background shows bare tree branches against a light sky.

Norm tries out the new pole by running up a 50-star cotton bunting flag. The Scantleburys intend to fly a 13-star version later on.



TOP: Peter King pounds a thick slab of clay to form a base, which he likens to a painter's canvas. BOTTOM: Like a pizza crust, the clay must be stretched and softened for molding.





"Clay is the only material you physically form with the soft flesh of your hands and fingertips that—through fire—will last thousands of years," says King. He built a triangular ceramic sink using slabs of clay that he'd air-dried for a day. "The clay becomes more and more rigid until you can cut and shape it like wood," he says.

clay carpenter

Peter King's ceramic creations celebrate
mother earth and father fire

"Peter," says Katie Smead, "I'd like you to dedicate my kiln."

The request takes Peter King by surprise. After a long day in his architectural ceramics workshop in Pensacola, Florida, he is exhausted from slaking, milling, pounding, rolling, laying out, scoring and sculpting 700 pounds of clay that will eventually become a glazed wall of rising and falling ocean waves. The last few days, King has been pondering why he is so obsessed, so in love with a craft that has paid him so little in money. Tonight, after a glass of wine, he has been thinking about this again, absently rubbing his tired eyes, tugging at his beard and stroking his ponytail as the 30 or so men and women who have come to celebrate the first batch of pottery fired in Smead's backyard

BY WALT HARRINGTON PHOTOGRAPHS BY KIT LATHAM

kiln mingle around him. Smead is a novice ceramicist who studied under King. So he feigns energy and laughs his quick Gatling-gun laugh: "Ha. Ha. Ha."

"Sure," he tells her. "Be glad to."

Soon, to oohs and aahs, people are removing a score of flame-hot handmade pots, bowls and cups from the kiln. Off by himself, King, a thin man in shorts and a casual shirt, has noticed that the points of the early evening's quarter moon are tilted to five minutes after 7:00. A cooling wind blows from the east. But when it stops, the muggy Florida air presses like an overcoat on his skin. The humidity reminds him of a scene from *One Hundred Years of Solitude* in which it has rained for four years and, Gabriel García Márquez writes, the "air was so damp that fish could have come in through the doors and swum out the windows." King would like to go home, read a few pages of García Márquez and fall asleep. Instead, he thinks: "What will I say to dedicate Katie's kiln?"

Peter King, 46 years old, has been making ceramics for 25 years, taking plain clay, shaping it with his hands and tools and firing it until it is as hard and strong as brick. Like Smead, King began with pots, but he then moved on to floor tiles, fireplaces, door frames, gateways, entire walls. In college, on his way to a philosophy degree, he and a friend wandered into a potter's studio. "I remember seeing that first pot being turned on a wheel," he says. "I became addicted." He finished his degree but abandoned plans for graduate school. Instead, he spent up to 20 hours a day in the studio. And once, at 4:00 in the morning as he massaged wet clay in his hands, he had a waking dream: "I envisioned these huge ceramic columns, and I went, 'You could really make anything out of this stuff.'"

It was an oddly prescient thought for a 21-year-old kid with no knowledge of architectural history, no idea that Babylon's Ishtar Gate was a ceramic mural, that the Incas of Peru decorated temples with ceramics, that—before the 20th century's stark industrial architecture—ceramic pillars, cornices and arches often adorned buildings in the United States and Europe. For years, King made coffee cups and flowerpots and sold them out of an old van at craft shows on the East Coast. Then one day in 1979, he was talking with a man for whom he was making a ceramic sink. The man said he was putting in a new fireplace—and King, on a whim, offered to build it out of clay: 10 feet high, 6 feet wide, in a simple art-deco seashell design. He laughs at the memory.

"It was an overnight conversion."

Since then, his StoneHaus studio in Pensacola has produced hundreds of one-of-a-kind ceramic architectural adornments. He calls his work "clay carpentry": Spanish, Pueblo and Gothic arches, ocean-wave wainscoting, Mayan baseboards, a fountain that mimics a pipe



TOP: Using an overlay pattern marked with a pen on a sheet of clear plastic, King etches a design on a wet slab of clay for a relief that will depict the lost city of Atlantis. He makes indentations in the clay with a chopstick. **INSET:** To shape a decorative column, King and his brother, John, use another unconventional tool: a piece of PVC pipe. John has worked as Peter's assistant for 16 years.

organ, a door protected by a giant African shield, multicolored garden gates 15 feet high and fireplaces with Aztec birds, Italianate shells, Jacobean columns, flamingos, great blue herons, dolphins, palm trees, every imaginable flying fish, Egyptian hieroglyphs, dragons, geometric concoctions, even human faces.

Someone pours King a glass of wine. So, what will he say tonight?

King has been moody lately, ruminating to himself about his work. "I'm well past 40, and I still haven't made any money," he says. "I owe \$30,000 on my credit card." He works seven days a week and lives in three rooms over his shop. He drives a '78 Ford van with an odometer turning 170,000 miles. King's yearning for affluence constantly collides with stubborn perfectionism. For instance, he once agreed to charge \$50,000 to build elaborate gates for a sculpture park in Maryland. When he belatedly realized his gates were too small for the setting, he made them 2 feet wider and 2 feet taller—and lost \$15,000.

"I couldn't put that piece out there and have it be less when it could be more. If I don't make money, that's all right. There is an ineffable thing about each piece of work when you know it's right no matter what anyone says." People so obsessed with excellence are often said to take pride in their work. That's too simple. Pride isn't the source of his excellence, King says. Pride is a product of doing something as close to perfectly as he can: "It is an indescribable feeling. It's not because others say it's great. It's internal. The Bible says man was made in the image of God. That doesn't mean He has two arms and two legs. It means that, like for God, the most important thing we do is create. It's deep in us, somewhere near

the brain stem. When I finally get a piece on the wall, it's there: a physical entity. It was once an idea, and now it won't go away. I made stone out of my fingertips. That kind of power is seductive. That's why God made man out of clay."

King creates entire fireplaces and walls of red clay in a cramped, dim garage workshop. He and two workers start with 100-pound clay slabs 48 inches long, 30 inches wide and 1 inch thick, laying the slabs on giant wheeled tables that creak and moan under the clay's weight like a house settling on its foundation. The men use blades, chopsticks, hair combs and the tips of their fingers to etch drawings and patterns into silky clay hand-dug from an abandoned pit nearby. When sculpting three-dimensional birds, fish, waves or abstract shapes, the men layer up to 5 inches of clay in relief.

While still soft, the huge sculptures are cut into pieces and numbered. They are left to dry for two to six weeks before being sanded with 60-grit paper and painted with chemical glazes. Melted in a walk-in kiln heated to 2,300 degrees Fahrenheit, the glazes create



King amassed 1,200 pounds of clay to sculpt a 10-by-6-foot ceramic fireplace resembling a banana thicket. He started with a 1-inch-thick base slab of clay and added smaller slabs to shape the leaves.



a flower garden of colors and textures. The fired pieces are hauled to the site and secured by industrial epoxy and hidden screws. King can make about 10 original architectural pieces in a year.

"Going full bore, that's all we can do."

King knows potters who find marketable lines of objects and then stick to them, build reputations, mass-produce and earn good livings. He respects them. He just can't do it that way. Some of his passion for work he learned from his dad, a milkman who could make anything with his hands. Some of it grows from the sensation of clay in his palms—the cool, lush softness that smooths fingerprints. And some of it comes from the glee he takes in knowing he has turned child's play into a job, while others must always beware the boss. But the passion goes deeper too.

"I can't stop," he says. "It's sheer compulsion. Any master craftsman is seeking something. In that sense, it's a religious quest: 'I have to do this myself.' Yes, you have to develop the skills to meet the challenges of material and environment, but a lot of people do that. Master craftsmen aren't making objects, not really. They are looking to find something in themselves. They will always want to do a little bit more." They don't measure accomplishment against the finished work, King says, but against the past intensity of feeling inside themselves each time they have created an object, whether a fireplace, a chair, a door or a house.

"That's the source, the wellspring."

The battle, King says, is balancing perfectionism with the eco-



TOP: The King brothers hoist a 100-pound slab for the Atlantis relief onto a grid base. **INSET:** While Peter smears slip, a clay adhesive, onto a small slab, John shapes a detail using a scrap of vinyl siding. "I hate vinyl siding, but it makes a great straightedge," Peter says.

nomics of getting the job done. "You can be so perfectionist that you can't make anything." He smiles and asks, "Why did God say, 'This is good' on Saturday after he made man? What he really meant was, 'This is good enough. I'm going home. Tomorrow is Sunday.'"

Tonight, as darkness falls on him and his friends, King is satisfied that an abstract fireplace he had finished last week is good enough. The 14-foot-tall fireplace is a collection of fragments: broken bricks and clay pots meant to look like archaeological remnants, Indian wood-block designs pressed helter-skelter into the clay, imprints from a scrap of burlap and a piece of lace, grout smoothed in seams, grout rough and sloppy in seams, glazed spots reflecting the sunlight, unglazed spots as dull as dry mud.

Already, King's obsession with doing a better job has kicked in. If he could remake the fireplace, he would go with a much drier-looking surface, less dancing light and more color—deep turquoise, matte lavender and the bright lavenders of a Florida sunset. "I always know what a piece could have been," he says, "and that haunts me." The indescribably good feeling he gets in the making must be topped in the next job, or he will be disappointed.

So, how to dedicate Katie's kiln?

Well, he certainly won't reveal the thoughts that have been swirling around in his head the last few days. Too dreary. It's a party not a philosophical retreat on how creativity and mastery of craft intertwine, not a spirit quest into the source of hard work and pride and inspiration, not a seminar on the modern craftsman zeitgeist. Hell, it's a party! A ring has appeared around the moon. To cool off, King has rolled his ponytail into a knob at the nape of his neck. Everyone is now pawing Smead's pottery, which has cooled enough to be lifted and turned and studied in the vague backyard light.

"Beautiful! Wonderful! Look at this!"

Smead stands before the empty open kiln and says loudly enough for all to hear, "I've asked Peter to dedicate my kiln." He stands next to her, caught in a pose with his weight on his right heel, holding his glass in his right hand at his waist, stroking his beard with his left hand. He looks at the ground, doesn't speak. People go quiet, then uncomfortably quiet. He finally looks up, his face and his eyes still tired, and decides, after all, to tell them something of what has been on his mind.

"People ask me why I do what I do. I make very little money. Why not create a line of pottery that I can mass-produce and make a decent living? Well, tonight is the reason why I don't. Each time I or Katie or anyone makes a piece of pottery, it's a reach for doing it more perfectly. Each piece is like Athena bursting from the head of Zeus—it is an idea coming forth from your own head. And it's that sensation that keeps us going.

"I know people who retire early with a lot of money. They think of their lives in distinct pieces—make money young and be really unhappy and then retire and play golf the rest of their lives. I can't understand those people. If I were to win the lottery tomorrow, I'd still do exactly what I do today. What I do is who I am. It's not a job. It's who I am.

"A friend once told me that making a ceramic piece is the work of mother earth and father fire and whoever is doing the making. It is that confluence of material and creativity that makes the object. So here, tonight, we celebrate mother earth, father fire—and Katie." Suddenly, King gulps down his wine like a shot of vodka, spins and, in a wide sweeping stroke, throws and smashes his glass inside the kiln.

"To mother earth, father fire and Katie!" ■



For his seaside house in Pensacola, builder Michael O'Donovan commissioned King to build a fireplace incorporating local pre-Columbian and European motifs. On the shelf directly above the mouth of the fireplace, O'Donovan displays pre-Columbian pottery shards he collects during walks on the beach.

Standing in the backyard naked? Not the first thing most people imagine as part of their morning ritual. But give it a try—shower outdoors for a week or two—and the open-air splash may become addictive. For a rinse after a hike or swim, the outdoor shower is certainly practical. But using one daily has aesthetic and sensuous dimensions. From the simple childlike bliss of a cold-water hose on a hot day to the rapture of a long, warm, wet bombardment, showering alfresco is one of life's great under-reported pleasures. It turns a duty into an adventure, the morning shower into an exclamation point of delight. Imagine clear rushing water, blue sky, a refreshing breeze,

OPPOSITE PAGE: *An outdoor shower is tucked under the balcony on the northwest side (left in photo) of a new stone house, located just a few hundred yards from the Gulf of Mexico. THIS PAGE:* *A 5-inch-diameter head, twice the size of most fittings, provides a generous spray for outdoor showering.*

perhaps a brilliantly blooming orchid, the sense of nature's embrace. Purely a summer delight in many parts of the country, outdoor showers are a year-round possibility in moderate climates.

At the Curt Meyer family's vacation house in Rosemary Beach, Florida, the attractively simple shower provides the basics. "It's a nice place to rinse off the sand before you go upstairs," says contractor Burrell Elliott, whose crew built it just steps from the wild-rosemary-scented dunes.

Architect Eric Watson designed the 3-by-5-foot shower on a deck at the house's northwest side. Shaded by an outdoor staircase, it has a view of the Gulf of Mexico. For the enclosure, he specified 3½-inch-wide pine pickets weatherized with a dark brown stain to match the exterior trim of the house.

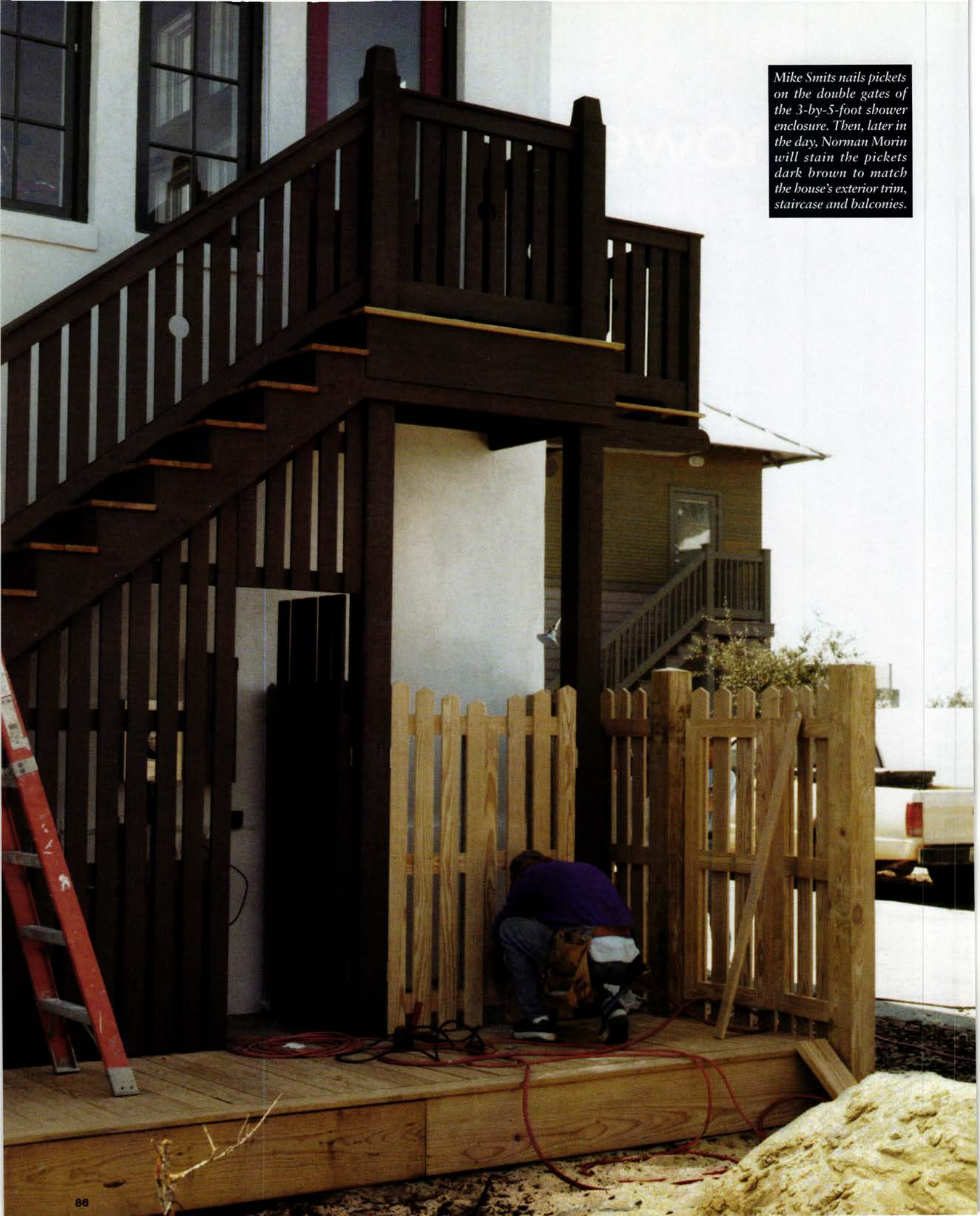
Before the wooden deck was built, plumber Carl DeLong laid underground copper supply pipes, installing shutoff and drain-down valves inside the house's garage, next to the water heater. (For outdoor showers that need *(continued on page 87)*



shower outdoors!

A little plumbing, an armful of boards, a day pounding nails,
and you, too, can enjoy one of life's great pleasures

BY JACK McCLINTOCK PHOTOGRAPHS BY KIT LATHAM



Mike Smits nails pickets on the double gates of the 3-by-5-foot shower enclosure. Then, later in the day, Norman Morin will stain the pickets dark brown to match the house's exterior trim, staircase and balconies.



1. The frames for the shower's 5-foot-3-inch-tall double gates are mounted with a 4-inch clearance above the deck, leaving room for pickets to extend to within 2 inches of the deck. The gates swing out. **2.** On the west-facing side of the enclosure, Smits lines up pickets, under a leveling stick as guide, at a height of 5-foot 9-inches. **3.** Carl DeLong installs a foot-wash spigot, perfect for ensuring sand-caked toes get a thorough rinse.

privacy for this shower, intended for rinsing sand off swimsuit-clad bathers after a visit to the beach. Morin swiped on more brown stain and the shower was complete, save the final test. Smits switched on the water, and it sprayed out beautifully, splashing across the deck and onto the hot sand. ■

(continued from page 84) to be winterized, Richard Trethewey, T.O.H.'s plumbing and heating contractor, recommends hot and cold shutoff valves inside the house, plus a drain-down valve outside in the shower. "That way, you turn the water off inside, turn it on outside and the pipes drain themselves," he says.)

Inside the little shower chamber at the Meyer house, DeLong and carpenter Mike Smits executed a complicated dance with each other and painter Norman Morin to do things in the right order. Smits built a narrow wooden box to house the piping and valves. DeLong fitted pipes together, ensuring they were the right distance apart to go unnoticed between the pickets. He installed a foot-wash faucet in the cold-water line 2 feet above the deck, used brackets to screw the pipes to the framework and sweated the joints.

Next, DeLong put in the single-lever shower valve. "That's the look everybody wants this year—industrial," he said. The valve is pressure-balanced, so that, if a toilet flushes somewhere in the house, the valve automatically adjusts to the pressure to avoid scalding the person showering. Richard Trethewey says every shower, indoors or out, should have such valves. DeLong agrees. He also concurs with Trethewey that, ideally, a showerhead should be placed at a height of about 6½ feet, as this one is.

Then the dance got really interesting. DeLong stepped back to let Smits install the housing box, and Smits retreated to let Morin apply a coat of dark-brown oil-based exterior stain. With Morin done, Smits sashayed in to screw the face onto the box to cover the pipes and valves, then stepped aside so DeLong could add the valve handles. By that time, Smits had returned with a pile of pickets under his arm and a nail gun in hand. He had belt-sanded the pickets smooth because, as Burrell Elliott said, "I like things to look pretty even though the grain'll pop some in the sun."

Elliott conceded that, despite the wood's smoothness and its two coats of mildew-retardant stain, traces of mold might have to be scrubbed off periodically. There was no concern about clogs; the shower would drain into the sand.

DeLong's last chore was to screw on the showerhead, one of the sunflower types, as he calls them: big, round and shiny as a new hubcap.

Smits finished nailing the pickets on all three sides of the shower. Spaced 1½ inches apart, they let the pleasing breeze pass through, a much higher priority than



The completed outdoor shower, ready to douse a salty, sandy beachcomber.

Shower talk

For the past 23 years every day—and many nights—rain or shine, hot or cold, Kris Pellegrini has walked into her Florida backyard wrapped in a towel. She strolls under the palms and fruit trees to a ferny coral grotto, where she removes the towel and steps into the shower. "The breeze through the palm fronds is a wonderful sound while you shower," she says with a sigh. "Fresh air, the sun to dry you and at night the moonlight—it doesn't get any better!"

She and her cinematographer husband, Bob, built the shower themselves, starting with a hose hung from a tree and making improvements every year. Here, the tips Bob Pellegrini learned from experience:

DRAINAGE. "It's numero uno," Pellegrini says. "Standing water breeds mosquitoes and starts to smell." If the soil doesn't drain well naturally, dig some out and backfill with gravel.

MOISTURE. Build the shower far enough from the house to keep moisture away, especially if the house is wood. (The inevitable downside of this necessity is that, on cold mornings, one shivers under the showerhead while waiting for the hot water to flow from the house.)

VENTILATION. "Make sure the breeze can pass and enough sunlight shines through to dry out the stall. Otherwise you get algae and mold," says Pellegrini. Rather than building solid walls, use plants and louvered walls for visual screening.

SPACE. Allow enough so "you don't clip your elbows on the towel racks or the walls like you do indoors," says Pellegrini.

EXTRAS. Provide a mirror for shaving, a stool for sitting—or propping up a foot for an underwater pedicure. And consider installing an adjustable showerhead. "I like big gulps of water. Other people like stinging nettles of spray," says Pellegrini.

One last word of advice: Try showering in the rain. "It's really a great experience."



BY CURTIS RIST PHOTOGRAPHS BY MICHAEL LLEWELYN

BULLETPROOFING

A HOUSE

AN INCREASING NUMBER OF HOME OWNERS, OVERREACTING TO CRIME

AND VIOLENCE THEY SEE ON TV, ARE BUILDING FORTRESSLIKE SAFE ROOMS



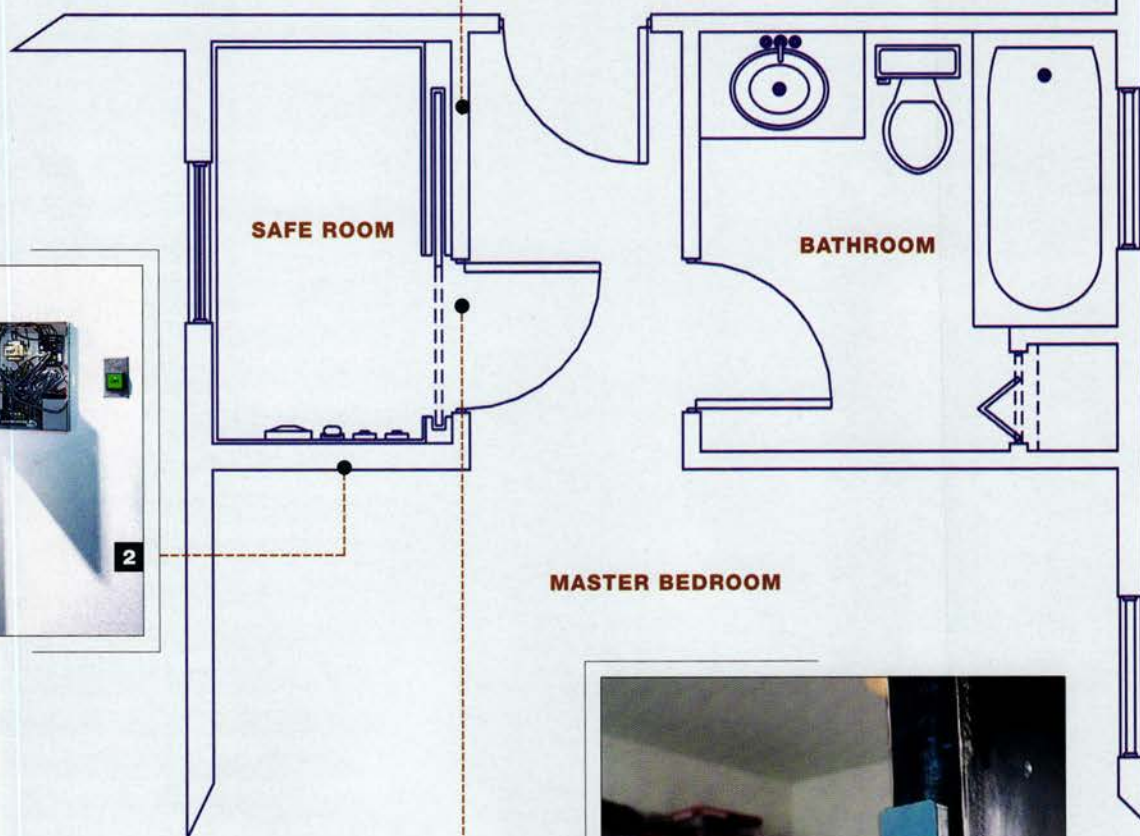
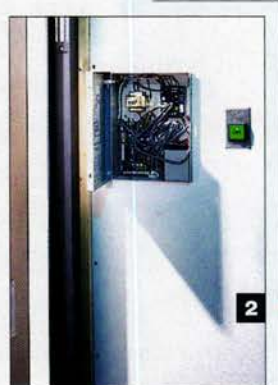
A house window with a dense pane of polycarbonate plastic would easily absorb the impact of multiple bullets fired from a Colt .38. Polycarbonate is the same completely transparent material used in shatterproof eyeglasses.

As targets for assassination, the elderly couple from Las Vegas cut unlikely figures. He's a retired auto mechanic; she's a former real estate agent. They own little worth stealing aside from some antique guns, a stamp collection and a Winnebago. They live in an adobe-style ranch house in one of the safest areas of the city—the sort of place where a neighbor might be seen walking the dog while motoring alongside in a golf cart. “Still,” says the former mechanic, “with all we hear about on the news, we thought we’d be better off safe than sorry.”

So the couple, who for security reasons asked that *This Old House* not publish their names, built a \$15,000 bulletproof safe room inside their house. If an intruder manages to sneak past the house alarm system and break in, the couple can dash into the plum-carpeted walk-in closet off the master bathroom. With a quick tug, a 400-pound steel door glides into place and locks magnetically. The transom light above the door has been glazed with bullet-resistant glass. The fiberglass wallboard inside the room is thick enough to block the explosive force of a .44 magnum bullet. The 2-inch-thick steel door can repel even more. “You could pound on it with a sledgehammer probably forever and never get through,” says Gary Paster, a contractor from Westlake Village, California, who rigged

HIDDEN FORTRESS

The most popular—and least expensive—way to bulletproof a house is to add a safe room. “In an emergency, it gives you a place to hide and wait for the police,” says Gary Paster, a contractor who specializes in safe-room construction. A common location for such a bunker is in an existing closet or bathroom. To build the safe room in Las Vegas (see main story), carpenters Michael Baltimore and Marcelino Carpio Jr. added a sliding metal door to the inside of a walk-in closet **(1)**. Considering that the retired home owners were not likely to be targeted by kidnappers, Paster chose a $\frac{3}{16}$ -inch steel casing over a $1\frac{3}{4}$ -inch solid core door—which offers protection from a .44 magnum but not a more powerful weapon, such as a deer rifle. Paster left the raw metal door exposed rather than covering it with a wood veneer, so that would-be intruders could clearly see what they’re up against—in hopes they’d flee. “They’re not going to be stupid enough to stand there and shoot at a steel plate. But if they were, the bullets would bounce back and kill them,” says Paster. “So, either way, you win.” **(2)** Inside, he fit the room with a panic button so the couple could contact police and trigger the alarm system in an emergency. When shut, the electronic lock **(3)** can’t be picked or pried open. “You’d have to be Superman to do it,” says Paster. “Make that a couple of Supermans.”



up the room. "You'd have to bring a truck in here and ram it—several times."

The Las Vegas couple are among a growing legion of home owners prepared to hunker down in bulletproof bunkers when danger lurks. Motivated by fear of threats both real and imagined, people ranging from Hollywood celebrities and international financiers to just plain folks are equipping their houses with bulletproof entryways, windows, walls and safe rooms. "The type of system you end up with depends on who you are, how much money you have and how many enemies you have," says Michael Baltimore, an installer for Paster. In California, for example, a wealthy and mysterious man spent \$225,000 to outfit an entire house with 1½-inch-thick fiberglass armor in the walls

and 2-inch-thick glass in the windows—materials designed to stop military assault rifles.

Of course few home owners are in danger of having military offensives launched against their houses. For that matter, few home owners need bulletproofing of any sort. F.B.I. statistics reveal that household burglaries—by far the most common form of home invasion—have been on the decline since 1992 and dropped by 9.3 percent in 1996, the most recent year for which figures are available. Of the burglaries that did occur—at a rate of about 1 per 64 households—few involved guns. "Burglars usually don't carry them," says Robert McCrie, a

security expert and professor at Manhattan's John Jay College of Criminal Justice. "They know that if they get caught, they will face more serious charges." Bullet-resistant materials have saved lives at convenience stores, fast-food restaurants and other businesses vulnerable to armed robbery, but residential use remains another matter. "I don't know of a single instance where these materials have saved anybody's life in a house," says Jeff Fryrear, acting director of the National Crime Prevention Institute in Louisville, Kentucky. While some people may have a valid concern about their safety and opt for bulletproofing anyway, says Fryrear, "for most of us, the threat really is just not there."

Still, bulletproofing materials are clearly finding their

way into new construction. "We wouldn't even think of building a high-end house without them," says one New York City-based architect, who insisted on anonymity out of concern he might compromise his clients' safety. And the materials are outrageously expensive. Gary Paster's stark, steel door runs about \$5,200, not including installation. A popular bullet-resistant fiberglass wallboard manufactured by Safeguard Security Services Inc. of San Antonio, Texas, goes for \$15 a square foot, says company president Javier Trevino. A single bullet-resistant window—such as the sort Trevino

sold to the owner of a Texas beachfront house occasionally used for target practice by locals—might go for \$2,000. "The average family that makes \$50,000 a year can't afford any of this," says Trevino. "It's not even an option." Instead, these materials are destined for a clientele that, in most cases, goes beyond the mere well-to-do. "For these people, it's worth the \$10,000 or \$20,000 or \$100,000 just to buy some peace of mind," says Paster.

The choice of bulletproofing materials typically boils down to guessing what type of gun an attacker is likely to use. In New York City, says Thomas Gaffney, a Manhattan security consultant, the weapon of choice is a .44 magnum, the largest handgun avail-

able. That calls for 1¼-inch-thick windows, and ½-inch-thick wallboard. But in California, the likely firearm is the even more penetrating AK-47 assault rifle, requiring thicker protection. "Don't ask me why the AK-47," says Gaffney. "Everyone walks around wearing shorts in the West, so where are they going to hide an assault rifle?" Concerns may be more realistic overseas, he says: "In Russia, they'll come at you with shoulder-launched rockets."

The extent of a home owner's paranoia, as well as the depth of his pockets, dictates how much of a house gets bulletproofed. Surprisingly, experts say, the least effective protection is simply to rig a house with a bullet-resistant front door. "Nobody's going to shoot at you through the front door," says Carlo Caci,

Going Ballistic

Most manufacturers of bullet-resistant materials send them to Underwriters Laboratories for independent testing. Based in Northbrook, Illinois, the not-for-profit organization—known for its ubiquitous UL listing, on everything from electric coffeemakers to fire-retardant pajamas—has its own firing range. "No matter what it is," says Dave Oravec, a lab supervisor, "if they send it to us, we'll put it up and shoot it." UL testers shoot samples of the material three times each from a distance of 10 feet. The material not only has to block the bullet from passing through; there also can be no spalling—a shattering of glass or other substance that could cause injuries to people on the opposite side.

Underwriters Laboratories certifies four levels of bullet-resistant protection. Level I covers items that can block a 9 mm copper-jacketed bullet; Level II the more powerful .357 magnum. Moving up still higher, Level III can block a .44 magnum, and Level IV a 30.06 rifle. These ratings are rarely printed on the products themselves. "If they were, you might have a robber walk up to a bank window, look at the listing and say, 'Hey, hand over the money: You've only got Level I protection, and this is a Level II gun.'"

"The safe room is like insurance," says the Las Vegas home owner, happy with the ballistically correct renovation of his bathroom closet. "You hope you never have to use it, but it's there if you really need it."



STOPPERS



BULLETPROOF GLASS

If it's thick enough, ordinary window glass can stop a bullet—but not spalling. The top sample in the stack at left contains seven layers of glass interlaced with layers of PVC that prevent shattering. At 2 inches thick, it can stop a .44 magnum bullet fired at point-blank range. The cost for a 3-by-3-foot window: \$1,500. A still more expensive type of window material is solid polycarbonate, a plastic that absorbs bullets without cracking and is slightly thinner than layered glass. The cost for the same size window: \$2,000.



GLASS DOOR

An ugly steel door might send the right message to burglars about a safe room, but that same look would be depressing for the front of a house. One alternative: Build a door with wood veneer around a bullet-resistant fiberglass core. This door, popular in federal buildings but also available for home use, comes in maple, cherry and walnut.



WINDOW AND DOOR FRAMES

A bullet-resistant door or window won't offer much protection if its frame can be shot through easily. "Once you have the door or the window properly designed, the frame becomes the weak link," says Thomas Gaffney, a New York City security consultant. He and other experts line the frame with ballistic material (fiberglass, steel or ceramic armor), which overlaps the door or window to provide an unbroken wall of protection.



JURY-RIGGED WALLBOARD

Following a rash of jury room shootouts in the 1980s, the federal government went shopping for a bullet-resistant paneling. They toyed with the idea of using steel plates, "but if a bullet hits that, it ricochets," says Javier Trevino of Safeguard Security Services Inc. in San Antonio, Texas. So Safeguard created Armortex: fiberglass woven on a loom (above) and stacked in sheets (right), then held together with a pink-colored resin. The fiberglass fibers separate on impact to absorb the velocity of a bullet and prevent it from penetrating or ricocheting. Although bullet-resistant, finished sheets of Armortex can be easily sawed, drilled and screwed into place on site. "Carpenters just love it," says Trevino.



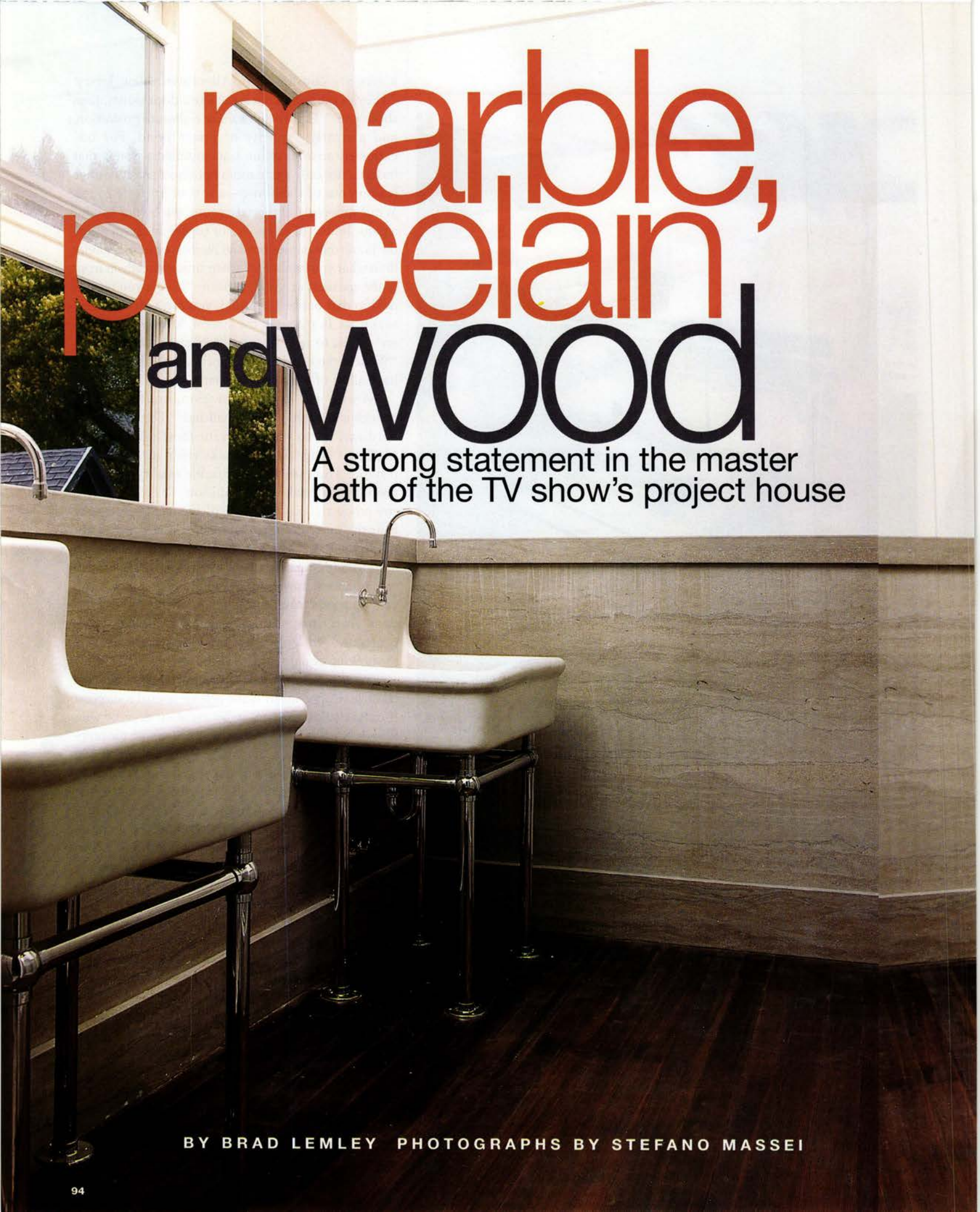
a security consultant in Allentown, New Jersey. "They're going to knock the front door down, then shoot you." That requires more elaborate protection, and a strategy worthy of James Bond. For one extremely anxious client, Caci installed a system that includes not only a safe room but also a secret passage leading out of the house—a sort of fail-safe room. While quivering in the safe room, the owner can hit a panic button to call police or trigger an alarm inside the house that pumps out 126 decibels of sound, louder than what you might hear when sitting directly in front of the speakers at a rock concert. "Unless you're tone deaf to that particular sound, you can't go in there," says Caci. In planning the system, he nixed the owners' request to add an internal tear-gas launcher as well: "What if the maid inadvertently dumped it? They'd have a hell of a lawsuit on their hands."

As with any home renovation, knowing when enough is enough can be a challenge. "There's no standardization, no single plan for these things," says McCrie. "And that can make them a problem to install." The variety and variable quality of bullet-proofing materials adds confusion. The more expensive products, such as wallboard and windows, usually bear the mark of approval from Underwriters Laboratories. But cheaper products are also in use, such as $\frac{3}{4}$ -inch fire-retardant plywood. Although not specifically manufactured for blocking bullets, it can prevent attackers from smashing into a safe room—and costs $\frac{1}{10}$ the price of fiberglass. Most bullets won't penetrate $\frac{3}{4}$ -inch plywood, and intruders are unlikely to show up equipped with a Skilsaw.

Unless they know what to expect. By far, the most effective weapon in any home-defense arsenal is surprise: If intruders know that a bullet-resistant door or window or safe room is in place, they'll arrive with the proper equipment to get around it. So home owners should keep their bulletproofing measures a secret. "Your plumber or carpenter could end up being your biggest threat," says Paster. "Who else has blueprints to your house, and how do you know they're not going to pass them off to friends who might be robbers?" When a house is built or renovated, Paster typically shows up after all the other work is done so no one else, other than his own crew and the home owners, knows what's going on. "Surprise, secrecy and stealth," says Caci. "Without those, you might as well have nothing."

With their closet makeover complete, the Las Vegas couple—for whom evil at large is the perceived enemy—feel safe knowing that if they hear a noise, they can hole up in their little fortress. "We've tried it out, and it's quite a comforting feeling, I'll tell you," says the husband. Still, the couple rely first on another, far older layer of defense to get them through a crisis: their little bichon frise (a dog whose name, for security reasons, is being withheld).

"Granted, she only weighs about 20 pounds," says the husband. "But what a bark!" ■



marble, porcelain, and wood

A strong statement in the master
bath of the TV show's project house

BY BRAD LEMLEY PHOTOGRAPHS BY STEFANO MASSEI



One and a half tons of marble wainscoting and trim give a 10-by-10-foot bathroom the sober, weighty presence of a 1920s bank lobby. "With the details, we insisted everything be straight and square—no cove molding, no ogee trim," says owner Mark Dvorak. "We really wanted the unadorned institutional look."

Mark Dvorak steps on a floor pedal, and cold water from a spigot above gushes into a gigantic sink. Grinning, he starts to stomp out a bass-drum backbeat, shooting liquid dots and dashes down the drain. "Isn't this great?" he says.

Dvorak's water-pedal Buddy Rich routine provides a hint that this master bathroom, at *This Old House's* winter project in San Francisco, veers exuberantly from the quotidian. Features from the industrial world abound. Pedal fittings like these are common for hospital sinks so that surgeons need not touch a tap. The two humongous sinks were designed to accommodate janitors' mops and buckets. The marble wainscot once lined the hallways of corporate offices.

"We keep using the term institutional to describe what we are going for here. To some people, that sounds like 'mental institution,' and sometimes I think they have a point. But it really means that we want the lines clean, the details massive," says Dvorak. A successful store designer, he selected most of the colors, fixtures and details for this house.

The design aesthetic works—in the master bathroom and throughout the 1906 church that Dvorak and his fiancée, Laurie Ann Bishop, are converting to a house. "Our guiding patterns are train stations and old schoolhouses. Those are the kinds of spaces we love," Bishop says. That explains



Installing a commercial-grade chrome shower fitting, This Old House plumbing and heating contractor Richard Trethewey, left, and master plumber Jeff Deehan also demonstrate one of the shower's charms: It's big enough for two. The shower's handheld sprayer is actually a rinser designed for restaurant dishwashers.

the preponderance, extending from the nave to the guest bedroom, of brushed steel, dark wood and meat-locker-sized door hinges.

Dvorak says the 10-by-10-foot master bathroom occupied much of his and Bishop's attention from the start: "We have definitely spent a lot of time on that room." The extra effort shows in the bathroom's inventive design—its outsized fixtures, gleaming steel appurtenances and bold slabs of stone and tile.

All of which surprised the TV crew. "We generally advocate—and do—a conservative design," says host Steve Thomas, meaning one that stays reasonably faithful to the era when the house was built. "Usually, that's wise from a resale standpoint. But although this design is different, it really succeeds. Particularly in an area like San Francisco, where you have design freedom, lifestyle freedom, it can make sense."

Understanding the master bathroom requires getting a grasp on the layout of the whole building. It is, in fact, two: the one-story church, built just a few months after the 1906 earthquake, and a boxy, artless, two-story addition that trundles off its back. "We think it was added in the 1940s," says general contractor Dan Plummer. "But there's no record of a building permit, so we just don't know."

Dvorak and architect Barbara Chambers sited the bathroom on the east side of the addition's second floor. There, an existing bank of three double-hung windows offered a particularly fine view: the spires of the San Francisco-Oakland Bay Bridge, often swaddled in mist. "We used the existing framed opening and put in new glass, trim and sashes," says Chambers. The three windows, comprising about 30 square feet of glass, exploit the vista and flood the room with daylight. Privacy, says Bishop, isn't a concern: "We'll have blinds, but we're not really in anyone's line of sight."

Morning light cascades onto the room's twin showpieces: 200-pound-plus rectangular janitors sinks. "I'd never seen sinks like these before," says Steve Drobinsky, owner of Ohmega Salvage, the yard in Berkeley where Dvorak bought the pair. "They are solid porcelain from about 1900. I found them in a salvage yard in Lafayette, Louisiana, still in their crates. They had never been used." When Dvorak spied them in Drobinsky's warehouse, he immediately expressed interest. "We turned them over and found they were stamped 'Douglass vitreous china,'" says Drobinsky. The name of that Cincinnati manufacturer resonates in the antique-sink world. "The John Douglass company was a famous maker of high-end sinks. Untouched sinks like these are very rare."

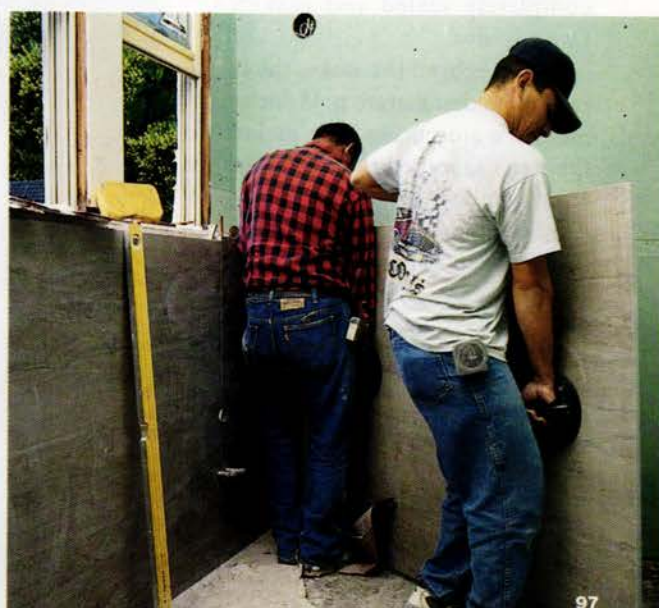
"The scale is so enormous," says Dvorak with a smile. "We knew these would be really fun."

But the sinks presented a challenge. Each has only one fitting hole, located in the backsplash. Mounting the sinks flush with the marble wainscoting would leave only ½ inch between backsplash and wainscot, not enough room for the 4-inch brass tee that mixes hot and cold water before they flow through the spigot. The plumber, Jeff Deehan, suggested an innovative solution: installing foot pedals for the hot and cold water lines so the tee could be placed below the sink, and the mixed water would get sent up a single ¾-inch feed tube to the spigot. Dvorak embraced the plan.

Further obstacles



ABOVE: Ruben Moreno screws green-board (a water-resistant type of dry-wall) to the bathroom studs. BELOW LEFT: Piloting a water-cooled track saw mounted with an 8¼-inch diamond-impregnated blade, two workers slice a ¾-inch marble slab to length. BELOW RIGHT: In the bathroom, they urge a 300-pound section of marble wainscoting into position.





PLUMBER KNOWS BEST

Antique sinks, tubs and fittings have endless character and charm compared to modern, soulless, shiny-bright bathroom accoutrements. Small wonder that San Francisco Bay Area remodelers comb the Ohmega Salvage yard in Berkeley for elegant Victorian claw-foot tubs and snazzy jazz-age faucets.

But Jeff Deehan, master plumber for *This Old House*'s project in San Francisco, offers a caveat: Go ahead and fall for that old porcelain sink or tub, but stick with modern fittings.

"The fitting holes on these old sinks are a variety of sizes, but that's really not a problem," he says. For Mark Dvorak and Laurie Ann Bishop's master bathroom, Deehan used new fittings with a vintage sink, left. For their guest bathroom, he was able to dig out a chrome washer from his junk collection and make a too-small modern faucet fit the circa-1900 sink. "After you've been working at this for a while, you collect odd-sized pieces that can really help," he says.

"Check this out," he mutters, hefting a pair of chrome faucets 50-plus years old. Corrosion pits the faucets' interior, and he suspects that the valve assembly will leak. "Rebuilding old fittings like this is tough," he says, adding that many new fittings convincingly mimic their old-time counterparts. "Generally, if you can stay away from using old faucets, you are much better off."

arose. Mounting the sinks directly below the bank of windows made the typical mirror-and-light-over-sink configuration impossible. So Dvorak specified light fixtures that swivel out on steel arms attached to the wall. And his mirror solution is casually elegant. He simply propped a small antique mirror on the 8-inch-deep ledge above the sinks.

Light is Dvorak's passion. Any retail-space designer knows that bright spots move product, while goods in dim corners languish. So along with the swing-out fixtures, he specified no fewer than five overhead halogen lamps. Suggesting ships' lamps or Porsche headlights, the round lights ringed by brushed stainless-steel escutcheons don't just look industrial tough. "These are actually outdoor fixtures completely sealed and gasketed," Dvorak says.

Close behind the sinks, the bathroom's boldest feature is 48-inch-high marble wainscoting. The pickers at Ohmega salvaged the 3/4-inch slabs from a hallway on the 17th floor of San Francisco's Chevron Building during remodeling two years ago. Darin K. Collins installed them by zigzag-

ging a top-quality thin-set mortar onto green-board, pressing each slab into place and sealing the joints with epoxy tinted to match the marble's gray-white striations. "The wainscoting reminds me of a 1920s schoolhouse," Bishop says.

But no educational institution—of whatever decade—ever boasted a shower like the one here: 4 feet deep, 5 feet wide and, like the rest of the bathroom, blessed with an airy 10-foot ceiling. It's clearly big enough for two. ("We'll save water," says Bishop, laughing.) The stainless-steel door features a panel of light-diffusing half-round glass columns known as reeded glass—a look so arresting that finish contractor Mark Trillo says he'll steal the idea for future bathroom jobs.

The shower stall began as a green-board-lined enclosure with a cast-iron drain. In most modern American renovation and new construction projects, waste and vent pipes—and sometimes even supply pipes—are made of PVC. But every inch of pipe in this building is either copper or cast iron. "That's San Francisco code," explains Deehan. The law was pushed through in the 1970s by union leaders who feared that the use of plastic piping, less labor-intensive to install, would lead to layoffs. While the stricture may seem excessive, particularly for ventilation pipes, there is no denying that cast-iron drains are blessedly silent—a boon here as this bathroom sits directly above the kitchen.

"Everyone falls in love with this tile," says general contractor Dan Plummer. The translucent white glaze allows the underlying red clay to peek through so, fresh from the box, it already looks 100 years old. The shower's 18-inch-deep bench will accommodate a damp lounge after a tough day.



T.O.H. plumbing and heating contractor Richard Trethewey points out another mark of high quality: the pressure-balancing valve, a copper cylinder that links the shower's hot and cold supply lines. A small piston responds to a drop in pressure in one line by immediately dropping pressure in the other line proportionately. "At this site, we've got just 50 pounds of water pressure. Sixty is the norm," he explains. "So without this valve, you've got the *Eeeaaagghh!* factor. Whenever someone turns on the hot water anywhere in the house, the person in the shower would freeze." The valve averts that goosebumped, marriage-stressing scenario, Richard says: "The adjustments you've made stay true to each other."

To waterproof the shower stall, Collins tacked asphalt-impregnated paper to the green-board, then nailed and stapled steel diamond-mesh lath to the paper. Next, he troweled a mix of wallboard mud, lime, cement, sand and water on the lath. Once the mixture set, he smeared it with thin-set mortar and began affixing the white tile in the same tightly joined running-bond pattern that greets straphangers stepping onto New York City subway platforms.

Adjacent to the shower, the toilet occupies its own enclosure, separated from the rest of the bathroom by a door with another reeded-glass panel. "Putting the toilet in a separate room—in the water closet—was common in Victorian houses," Dvorak says. The fixture itself is the water-conserving 1.6-gallon version mandated by California code.

The final touch: Workers sanded and stained the 1x4 tongue-and-groove Douglas fir original floor to a burnished mahogany color. The radiant-heat system installed underneath will keep the floor gently warm for early morning bare feet.

Although the completed bathroom's look is clean, smooth and elegant, it evokes tortured nomenclature: Steve dubbed it "residentialized industrial, sort of upscale funk." But Bishop's assessment is most revealing: "It sounds weird, but I feel comfortable in New York subway stations. For me, this is just a comfortable place to be." And she doesn't even need a token to get in. ■



Bishop and Dvorak make a splash. The pedal-operated sinks are not only fun but also conserve water. Typical hand-operated faucet handles allow water to run unattended, but these pedals must be stomped and held down or the flow stops.



Feet planted, a burly arm extended, John Dee presses his paintbrush against the door and begins to bow. The action suggests obeisance at a Shinto shrine, but Dee picks a less reverent analogy: "I look like a figurine on a cuckoo clock." Sublime or ridiculous, he bends in service to his craft. "If you make the movement with the large muscles of the waist, instead of the arm, you get a truer vertical stroke," Dee says. Sure enough, the ocher swath he applies to the stile is as sharp and straight *(continued on page 102)*

the art of painting woodwork

Keep a wet edge, bend from the waist and sand, sand, sand

THIS PAGE: Painting balusters should be a job for two people, one on each side, to arrest any drips or lap marks. When John Dee works solo, he paints no more than six on one side, then goes back and tends to the other. He recommends sanding all surfaces before painting but, on these intricately turned pieces, he instead wipes de-glosser, a potent solvent that cleans and softens paint film so the new coat can bond. OPPOSITE: To prepare a door panel for paint, Dee removes poorly adhered layers with a razor scraper, then sands the surface smooth.

BY BRAD LEMLEY PHOTOGRAPHS BY MATTHEW BENSON

(continued from page 100) as the centerline of a new highway.

Among the construction arts, painting is the least likely to receive this kind of in-depth analysis. Plumbers, electricians and general contractors all hold licenses, so their skills command respect, Dee points out. Meanwhile, he observes with gentle forbearance, "Most people think they can paint."

But painting doesn't differ from finish carpentry: Only specific, exacting, time-tested techniques will yield a fine product. Dee says that's particularly true of repainting interior woodwork such as doors, windows and balusters, the most difficult challenges he faces. A full-time painter for 26 years, Dee has honed his brushwork to achieve what he half jokingly terms the obsessive-compulsive finish. "If you take a perfect, smooth, shop-sprayed lacquer job as your ideal—and aim for that—you won't achieve it," he concedes. "But if you shoot for perfect, you'll hit excellent. That's a good place to be." So why not take a door off its hinges and



Dusting with a tack cloth—the last step before wetting the brush—picks up the sanding residues that vacuums miss. Dee spends 50 cents on each cloth, which he says can cover the woodwork in a good-sized living room before losing its stick. You can make your own tack cloth by sprinkling a rag with a 50-50 mix of boiled linseed oil and turpentine, plus a splash of vanilla extract to mask the odor. Before disposing of a rag covered with linseed oil, soak the cloth in water to prevent spontaneous combustion.

spray paint it? "I'll do that," Dee says, "but it's almost too slick, especially in older houses. I like the hand-done look of brushed-out woodwork."

The most important, most tedious—and therefore most neglected—way station on the journey to painting excellence is proper preparation. First, Dee determines how well the existing layers of paint stick to one another and to the underlying wood. He probes peeling paint with a putty knife. If he finds a weak link between the second and third coats of a seven-layer finish, for example, he'll concentrate on stripping down to coat two.

Even an apparently pristine paint surface can hide weak adhesion below. Dee tests areas by mashing down a 4-inch-square section of duct tape, then jerking it away. At this particular job, a 1903 Georgian-style house in Concord, Mass-

achusetts, the tape peels up silver-dollar-sized chips of old paint. "See," he says. "The blue coat isn't adhering to the buff coat underneath."

Because this house, like many built before lead paint was banned



Dee gives a nine-paneled pocket door the same treatment as any paneled trim. He first paints the moldings surrounding the panels, then the panels and last of all the rails and stiles (the horizontal and vertical pieces, respectively). To prevent lumpy lap marks from drying on the rails and stiles, he carefully cleans up the panel edges before he proceeds. While applying paint to each area, he pulls the finish away from the edges and corners, where it might collect in drip-prone globs. Stroke

direction doesn't matter at this stage but, once the paint is evenly distributed, he uses just the tip of his brush to smooth it gently in the direction of the wood grain. Where the grain changes direction abruptly, as it does where rails meet stiles, Dee doesn't end his brushstrokes abruptly, because that would leave behind an ugly moraine of paint. Instead, he paints across any joints that fall in the path of his brush. He smooths out the overlap when he goes on to brush the second piece.



The bits of dried paint and grunge that collect in opened paint cans will ruin a finish. When Dee uses paint from previous jobs, he always filters it through a paper funnel with mesh at the bottom.



in 1978, undoubtedly contains strata of toxic finish, Dee dons a respirator and full-body coveralls. He seals the work area with plastic sheeting and duct tape before he starts scraping. On flat areas, he uses a razor blade in a wallpaper scraper and pushes it until he can no longer persuade paint to come up. With a pull scraper, he then digs out the grooves where the door panels meet the stiles and rails.

After shaving away most of the offending blue coat, Dee begins to sand. On the fun meter, sanding paint ranks somewhere between a tax audit and tattoo removal, so it's a fair bet that most weekend painters skip this step—a huge mistake, says Dee. Sanding, he adds, ensures that paint will adhere and eliminates the drips, runs and brush marks (called rope) left by less skilled predecessors. "If it's really bad, you can use a random-orbit sander on the flats and hand-sand the moldings." Dee is a felicitous combination of craftsman and hard worker, and he doesn't hesitate to use unalloyed muscle power. "When I bid a job," he says with a hint of pride, "I typically allot at least as much time to sanding and other prep as I do to painting."

Prep Tricks

1 It doesn't require fancy equipment to detect how well paint is adhering. Dee just squashes down a piece of duct tape, then pulls it back to see what, if anything, has stuck to the bottom. This test shows Dee how many layers he has to scrape off.

2 Dee push scrapes the flats with a wallpaper remover and pull scrapes along the panel's edges, where paint buildup is particularly acute. His pull scraper for detail work has a long-lived tungsten carbide blade with three cutting edges.

3 A scraped surface must also be sanded. Dee's favorite sanding tools include flexible foam sanding sponges (for the curves on molding) and open-coat silicon carbide sandpapers with no-clog bands of abrasive (for the flats). He folds half sheets of sandpaper in thirds so that the grit-coated faces don't abrade each other, a trick that can make papers last considerably longer.

over old paint. (On bare wood, he uses a primer-sealer.) "It's always a good idea to prime, especially if you've done all that sanding," says Dee. To top-coat woodwork, he prefers alkyd (oil-based) paint to water-based latex: "I find that it levels better. It dries more slowly and keeps a wet edge longer." He applies the alkyd with a \$10.50 nylon-polyester brush 2½ inches wide with a flat cut as opposed to an angled one. Synthetic filaments hold less paint than natural bristles do but, he says, "With bristles, I'm forever picking broken ends out of the paint."

Dee starts by painting the panels, working each one from the edge to the center. "I'm constantly pulling the paint out of the sides, where it wants to collect," he says. Unevenly distributed paint is a major cause of rope, as are overworked latex and underworked oil. Once he fills a panel with horizontal and diagonal strokes, he "tips off" with a relatively paint-free brush. Starting at the top of a panel, he pulls the brush down and back up once, gently leveling the surface.

As Dee finishes each panel, he reaches for the loop of his painters pants, where he keeps a cotton rag slightly dampened with thinner, and wipes the surrounding stiles and rails clean. He follows his fundamental painting rule: If he cannot keep a wet edge, he makes sure that wet and dry edges meet at a sharp corner. Otherwise,

In 45 minutes of steady, sweaty exertion, he grinds the door smooth with 100-grit sandpaper followed by an aggressive round of 150-grit stroking.

Dee fills gouges with vinyl spackling. Because the stuff shrinks as it dries, he saves time by mounding it slightly above the surface, then sanding it flush when it hardens. (If he knifed it flush, he'd have to go back and refill the sunken areas.)

Final prep steps: Dee thoroughly vacuums the door's surface, then wipes it down with a sticky, dust-collecting handkerchief known as a tack cloth.

Can we paint now?

Not quite. Dee gives unopened cans of paint and primer a vigorous shake before stirring. With previously opened cans, he fishes out any paint skin with his stir stick, then filters out the dirt, bugs and dried bits with a 17-cent disposable paint strainer. Used panty hose also work but don't hold a funnel shape as nicely.

For his first coat, Dee brushes on an enamel underbody primer, his favorite

slopped-over paint dries and forms unsightly raised areas.

When all the panels are done, he paints the stiles and rails. He begins at the door's top, spreading the paint in all directions, then tips off only in the direction of the wood grain. Adhering to the maintain-the-wet-edge rule, he paints and tips off all the way to the bottom, covering both stiles and rails as he goes. Dee takes care not to lap paint back onto the panels or the molded edges. "If you weren't that steady, you could let the panels dry first. Then if anything slopped on the panels, you could wipe it off."

The door done and glistening, Dee pauses to admire his work. The care he lavishes is



evident. Even from 10 feet away, the painted surfaces impress: smooth, clean, elegant.

But Dee's quest for perfection can backfire, as it did when he painted the front door for *This Old House*'s project in Salem, Massachusetts. "It was my first time working with the show, and I wanted to make a good impression." When he finished, visitors could almost see their reflections in the door's glassy black surface. Later, a member of Salem's historical commission reprimanded home owner Deborah Guinee for having a metal door in an area where only wood was allowed. Guinee had to set the misguided commissioner straight. "Making the door as smooth as metal wasn't my aim," says Dee with a grin. "I just wanted to show what we could do with paint." ■

The steps that apply to painting doors also hold true for double-hung windows, above: scrape, sand, vacuum, wipe down thoroughly and maintain the wet edge. But the unique topography of glass and muntins requires special techniques. "Always paint the upper sash first," Dee says. "That way, you can move the lower sash and not mess up the paint." Also, he deliberately leaves a thin line of paint on the glass as he works, but he doesn't wait for the paint to dry, because scraping dried paint leaves ragged, peel-prone edges. Instead, he places a straight-edged razor blade flat against the glass and plows the wet paint into the gap between wood and glass, left. In one step, he gets a clean edge and a good seal with the glass. "It's the best way to do it," he says.

stop those

A focused attack—indoors and out—can rid a house of cockroaches, ants and other persistent pests

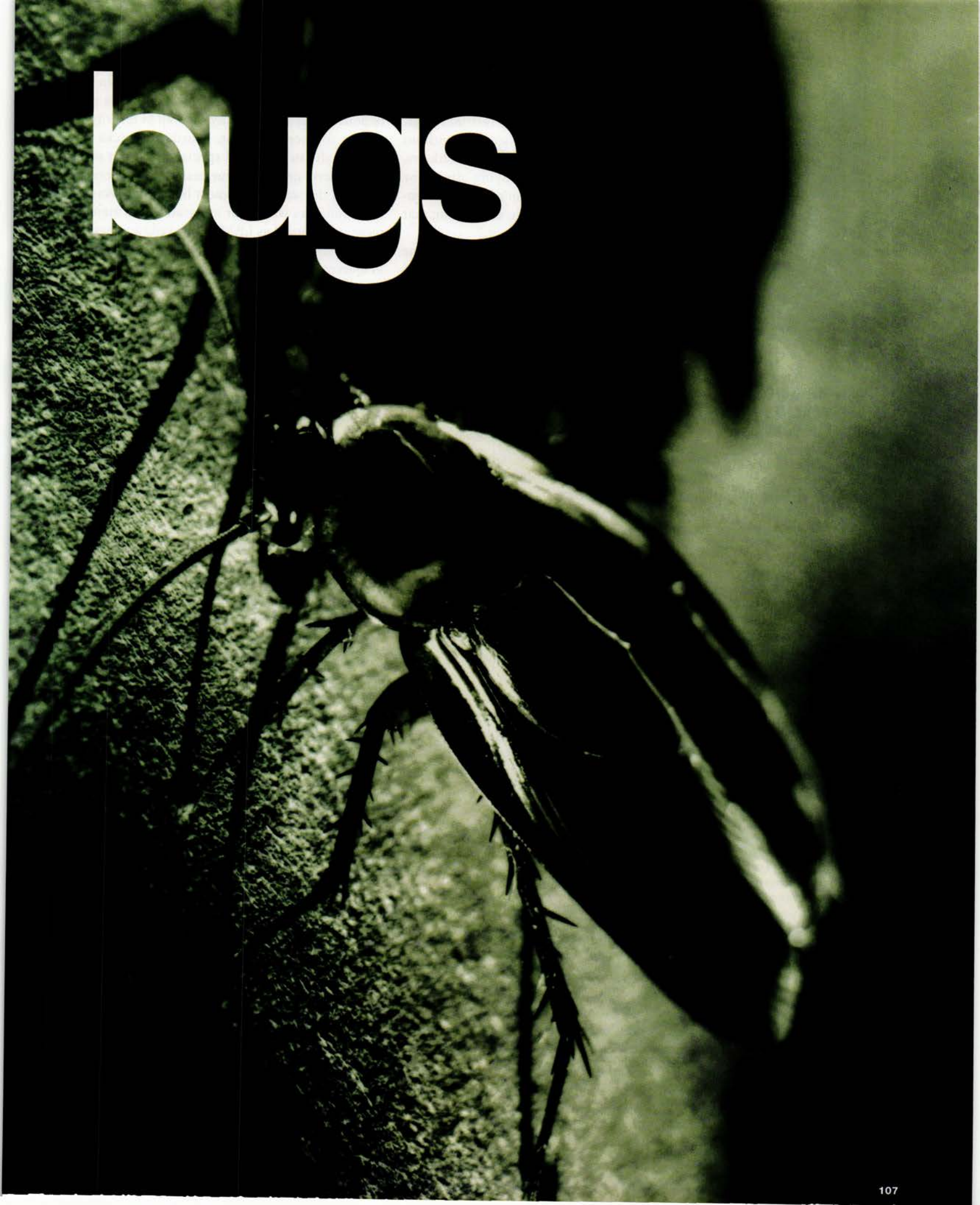
EVEN AFTER HIRING four pest-control companies in three years, a Florida family feared going into the kitchen at night. Switching on the light would reveal brazen cockroaches crawling everywhere. Baths were best avoided, as bugs were always piled in the tub. One day, a 1½-inch cockroach fell off the ceiling onto a visiting sister-in-law. The fourth pest-control company, acknowledging at last that sprays weren't going to work, turned to Richard J. Brenner, who hunts down pests the way a combat patrol carries out a search-and-destroy mission.

Brenner, a medical entomologist and research leader for the U.S. Department of Agriculture's imported fire ant and household insects unit, arrived at the house with an odd arsenal: 108 empty paint cans, powdered distillers' grain and a computer. He smeared petroleum jelly and mineral oil 1½ inches down the cans' inside rim, as if greasing a bread pan. He added the grain, placed the cans throughout the property and waited for cockroaches to fall in. Trapped by the slippery rims, the bugs were waiting when he went back to record his catches. He punched a few buttons on his computer, and out came a relief map with little mountains indicating roach concentrations. The four peaks corresponded to an oak tree with moist holes where branches had fallen off, to two big palms and, mysteriously, to the flat roof above a former carport enclosed to make a Florida room. "So we went up there at night with flashlights," Brenner says. "Sure enough, it turned out that the flashing was loose. The cockroaches were living behind it. It was the ecological equivalent of a tree hole." A dryer vent was their highway to the house. One application of poisoned bait, and the plague was nearly wiped out.

This precision targeting is far from the usual approach to fighting cockroaches, ants, silverfish, spiders and all other small hard-bodied household invaders. Usually there's a declaration of war—but no focused attack. Some people attempt to starve the insects out of the house, becoming fanatical about cleanliness. A worthy strategy, but it's rarely sufficient. Other people see a bug and reach for spray—an impulse that adds up to \$250 million to \$300 million in annual sales for companies that make aerosol insecticides, estimates Bill Robinson, an entomologist at Virginia Tech's urban pest-control research center. "We do take some pleasure in watching the little rascals die," he says. And the sprays go on killing for a while (two days on stainless steel but two weeks on bare wood, which is more absorbent). As a long-term strategy,

BY DAVID GEORGE GORDON PHOTOGRAPHS BY MICHAEL GRIMM

bugs





ONE WOMAN WHO BATTLED ROACHES AND FINALLY WON

Sandy Hayden shared her one-bedroom apartment in Portland, Oregon, with an extended family of American cockroaches. "I used to kill an average of 10 a day," she says, "mostly by hand, with my foot or, if I had an extra second to reach for one, a paper towel."

Then someone told Hayden about boric acid. For months, she put the powder in little containers, as if it were food for the roaches to eat. Meanwhile, they continued to multiply. "I wasn't using it right," she says.

Eventually, Hayden read that she should "pouf" the powder along baseboards, into the corners of cabinets and behind her stove, where the insects were certain to walk. She did this using a plastic ketchup bottle, and her cockroach problem diminished. She then discovered the survivors congregating at night in and around her kitchen sink. Now, she sprinkles boric acid in the basin before she goes to bed. "The roaches lick it off," she says, "and they're doomed."

Hayden still hasn't eliminated the roaches entirely. She probably can't without the full cooperation of everyone in the dozens of apartments in her complex. Nonetheless, she now sees only one bug every four or five days, a marked decline from two years ago, when roaches ruled her roost.

however, spraying isn't effective. First, pesticides tend to kill only the least hardy insects. A few survivors can multiply into a whole strain of resistant bugs. Also, sprays often kill only foot soldiers without reaching breeding places, either inside or outdoors. Even whole-house perimeter spraying offered by many pest-control companies isn't focused, Brenner says: "It's like firing a missile and hoping that one of your enemy planes runs into it."

He has never forgotten a point drilled in by one of his professors, University of Illinois mosquito expert William R. Horsfall: In any management program, intervention is most successful if directed while the targets are concentrated, immobile and accessible. This C.I.A. strategy works in many arenas, Brenner says: "If you're going to clean up air pollution, where are you going to do it? At the smokestacks. It's a military strategy—exactly what the Japanese did at Pearl Harbor."

Cockroach traps can be concocted from almost any container if the inside rim is greased. Brenner baits with powdered grain, a by-product of alcohol distilling, because it's not greasy. Dry dog food or raisins also work. Purchased traps can be used, but the cost adds up. Each bait station accurately detects cockroaches only within 4 feet, and traps are needed throughout a property to monitor for most types of the bugs. If German cockroaches are the target, there's no need to survey outdoors. These pests live only in heated structures—but sometimes in surprising places. Humid attics make prime habitats. Once, Brenner found 42 cockroaches in a nightstand's hollow legs.

It's often possible to get a moderate cockroach infestation under control without insecticides, merely by killing bugs trapped in the containers: "Leaving the cans in the sun is the easiest way," Brenner says. For bigger infestations, he recommends replacing successful traps with poison sold in child-resistant packages. Unlike sprays, bait stations don't contaminate their surroundings. The trap must suit the bug, however. "Don't buy something for the little roaches—German roaches—if you've got the big ones," Brenner says. "They can't get into the trap." If roaches are breeding in a tree hole, as he often finds, he places the bait at the tree's base.

With ants, Brenner changes protocol. "They send out foragers, who go back and tell everybody else where the food is," he says. "If you trap the forager, the message never gets back." So he lures the scouts with cotton balls soaked with sugar water and waits for nest mates to follow. If hordes gather, he replaces the cotton with ant bait stations.

This approach still requires

sealing off entries from the outside and eliminating the pests' food and water, but it should make these tedious chores more effective as well as identify the rooms to focus on first. Caulking cracks and crevices doesn't demand special skills, but many people never get to it. Some pest-control operators perform the service; the most likely prospects are exterminators who offer integrated pest management, often noted as I.P.M. in the yellow pages. Joe Entler, service director for Standard Exterminating in Queens, New York, charges \$90 to caulk crevices in an apartment and \$125 to \$150 for a house. He fills big gaps around pipes with copper wool, which rodents can't chew through.

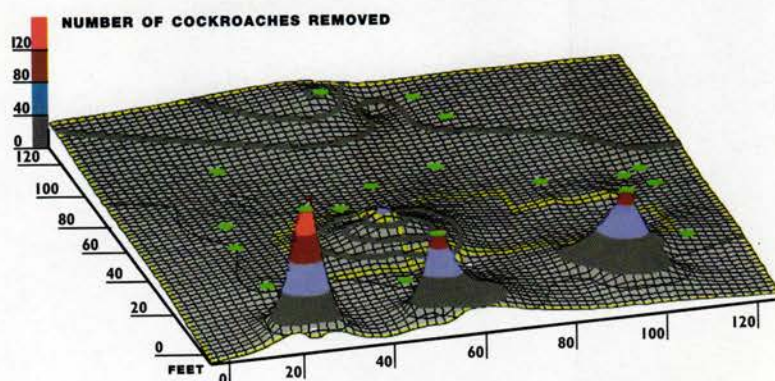
Caulking is most effective when the exterior perimeter of a house harbors few insects. Helpful measures include trimming back vegetation, removing wood-chip mulch, replacing washers in leaking faucets and choosing plants that tolerate dry soil, so there's no need to irrigate near the house.

Indoors, a light application of boric acid, crystals derived from mined borax, can thwart pests that do manage to enter. It can be dusted behind stoves or refrigerators or puffed from squeeze bottles into crevices. The powder, a stomach poison, is effective against cockroaches, ants and many other insects. Two other powders can also serve as barriers because they are desiccants. Silica aerogel absorbs the waxy coating on an insect's exoskeleton. Diatomaceous earth consists of rough-edged particles that scratch off the wax and cut into the shell. Even with all of these measures, however, at some point it might make sense to decide how many bugs are tolerable.

"Don't assume that every bug is bad," says Rod Crawford, curator of arachnids at the University of Washington's Burke Museum. Spiders, for example, dine on everything from cockroaches to bedbugs. "The larger the house spider, the more household pests it must have eaten to get that size," Crawford says. Keeping this thought in mind may make a little extra life in the house seem less awful. ■

Cockroach Havens at a House in Gainesville, Florida

On Richard J. Brenner's map, peaks indicate roach habitats: two palms, left, an oak and the roof of the house, outlined in yellow. Green dots represent trees.



BUG-PROOFING A KITCHEN

Hand-to-hand combat with insect pests is futile if they have all the necessities for survival within easy reach. Systematic changes can work wonders. First, as they say at the zoo, "Do Not Feed the Animals." Cut off access to moisture; cockroaches can survive on water alone for six weeks. And eliminate clutter. "The more hiding places, the greater the number of pests your home can support," says Patricia Zungoli, an entomologist at Clemson University in South Carolina.



COLD STORAGE

Freezing food for four days kills flour beetles and meal moths.



IMPENETRABLE CONTAINERS

Glass jars and plastic containers with snap-on lids keep unrefrigerated food safe.



SCENTED BAIT

A sticky-tape trap contains a sexually attractive scent for pantry pests.



SUDSY MOAT

Ants like to nest in moist soil, but they can't swim across soapy water.



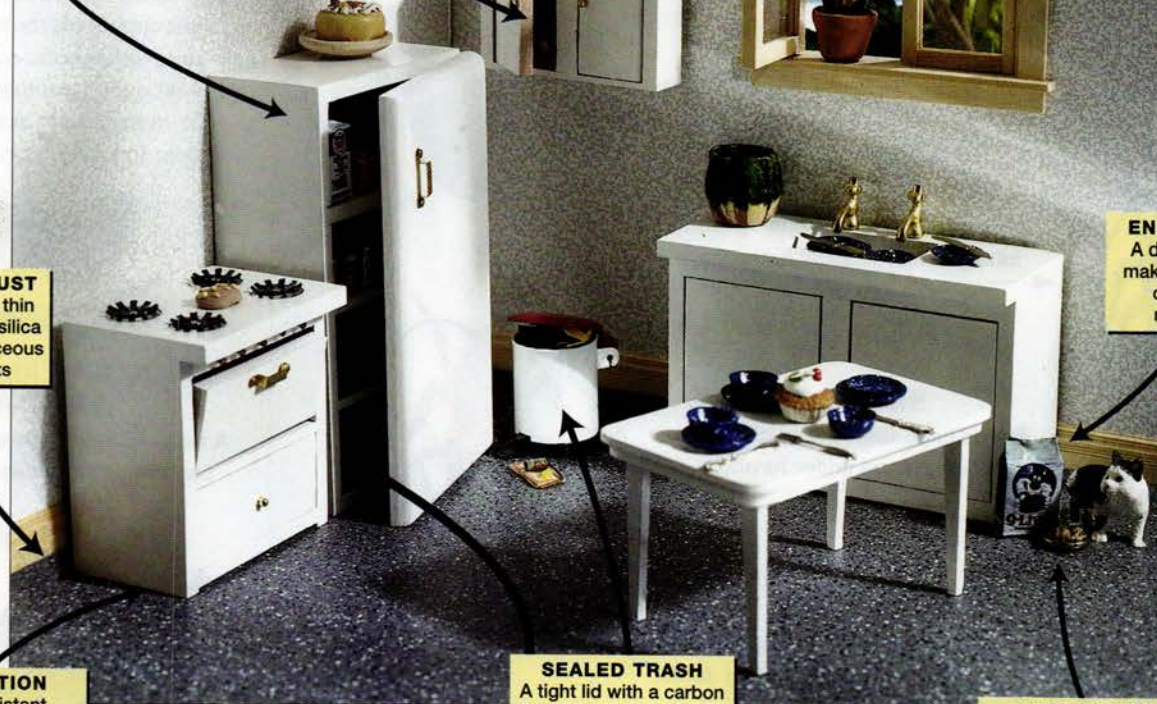
PROTECTIVE DUST

Under the stove, a thin layer of boric acid, silica aerogel or diatomaceous earth kills insects.



ENHANCED TRAP

A drop of banana oil makes a store-bought cockroach trap more effective.



BAIT STATION

Tamper-resistant packaging confines poison where only insects can reach it.



MOUSETRAP

Good for catching mice, but the bait can attract ants and cockroaches.



SEALED TRASH

A tight lid with a carbon filter blocks insects and keeps down smells.



SLIPPERY RIM

Teflon tape keeps pests out of pet food because their feet can't get a grip.



THE BUGS IN YOUR HOUSE

cockroaches

Cockroaches have been around for 350 million years. Yet instead of being revered, these insects are almost universally despised. Researchers believe they are a major cause of allergy. Last year, the *New England Journal of Medicine* published a study that found proteins in roach feces were the most common trigger of asthma among 476 inner-city children.

Effective controls include poisoned bait stations, boric acid and crushed, dried flowers of the pyrethrum plant, which is related to the common chrysanthemum. Synthetic pyrethroids can be quite potent, but small amounts of natural pyrethrum are relatively harmless to vertebrates. Asthma sufferers should keep in mind, however, that even a little pyrethrum can trigger allergic reactions.



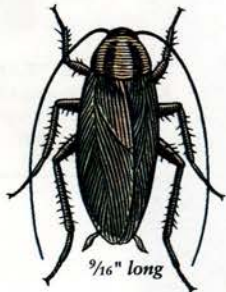
ORIENTAL

Needs more moisture than most.
Commonly found in basements.



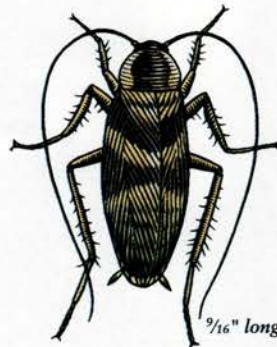
SMOKY BROWN

A Southern species. Usually lives outdoors but forages indoors.



GERMAN

Needs warmth, food and moisture.
Inhabits kitchens and bathrooms.



BROWN BANDED

Needs heat. Common in closets, in debris piles and under furniture.

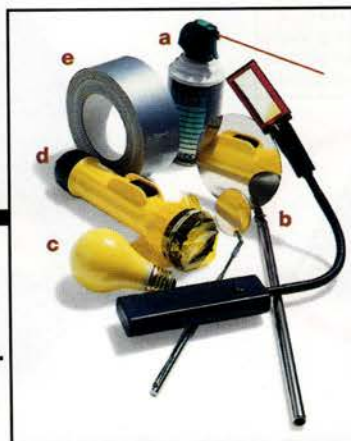


AMERICAN

Flies more often than others.
Congregates near heating ducts.

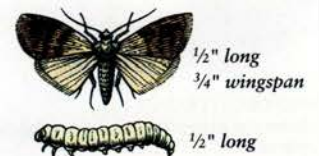
GEAR FOR A COCKROACH SAFARI

- Compressed air (a) to rout bugs out of hiding.
- Plumbers mirrors (b) for peering into crevices.
- A yellow light (c) or a flashlight with a yellow filter (d). Cockroaches, like most insects, can't see this part of the spectrum.
- Duct tape (e) to seal off pant legs.



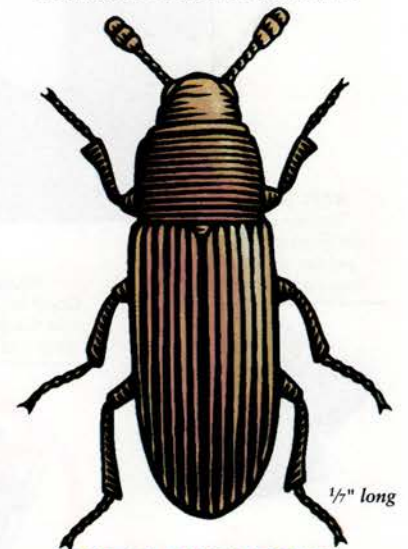
pantry pests

Weevils and pantry moths multiply wherever grain is processed or stored. Eliminating these bugs is nearly impossible. Some products sold in stores already contain eggs or larvae, says Dr. Phillip Glogoza, an entomology professor at North Dakota State University. The best strategy is to transfer food into tightly sealed containers, so no infestations can spread. If meal moth grubs appear, salvage the food by freezing it for four days at zero degrees Fahrenheit or by baking it at 150 degrees for half an hour. Any debris can then be sifted out. If moths or beetles show up outside containers, clean the cupboards thoroughly. It may help to sprinkle boric acid in crevices and to set out pheromone traps, which use the insects' own sexual scents to lure them to sticky tape.



INDIAN MEAL MOTH & LARVA

A common pantry pest, so named because it first infested maize.



RED FLOUR BEETLE

Sometimes secretes chemicals that turn infested food pink and make it taste and smell foul.

ants

Carpenter and sugar ants are the most common ants indoors. Imported fire ants, a scourge in the South because of their painful sting, occasionally show up inside too. All are drawn by food ranging from sweets to meats. Keeping the house squeaky-clean helps. Some types of sugar ants file inside in a line, which makes finding and sealing their entry point easy.



1/4-3/4" long

CARPENTER ANT

A serious structural pest. Chews into framing to build a nest, often in moist and rotting wood. Year-round presence indicates that the nest is probably within a house's structure. If ants are absent in winter, the nest may be in an unheated wall or outdoors.

ARGENTINE ANT

A sugar ant. Does not sting. Walks in lines.



1/8-1/2" long

IMPORTED FIRE ANT

Builds large mounds outdoors. Sting is painful, even dangerous to children. Needs protein, fat and carbohydrates.



1/8-1/4" long



HUNTING DOWN ANTS WHEN THERE'S NO TRAIL TO TRACE

Tanya Drlik is a pest-management specialist at the nonprofit Bio-Integral Resource Center in Berkeley, California, but the last time Argentine ants invaded her apartment she was as frustrated as anyone. "In the past, I'd follow an ant trail back to an out-of-the-way spot, then put out one of those tamper-proof bait stations. The ants take the poison back to their nest. This time, though, I couldn't even decide where to place the bait."

Drlik says she has learned from experience that ants can build nests inside a house, often in the soil of potted plants. So she took her house plants outside and submerged the pots in buckets of water. "The ants don't like wet soil," she says. "They'll actually make little bridges with their bodies to cross the water and escape back into the wild."

But Drlik kept finding ants around the house until, one day, she removed a metal curtain rod—and out poured hundreds of them. Apparently, the little sneaks had built a nest high up, where it was warm and out of the way.

"I took the rod over to the sink and dumped out half a cupful of ants," Drlik says. Turning on the tap, she washed them down the drain.

And she laughed. "You don't think of your house as a wildlife sanctuary until something like this happens."

spiders

The most effective control is exclusion: repairing screens and sealing crevices. Vacuuming works if the bag is emptied outdoors. Destroying spiderwebs has little long-term effect, says Seattle arachnologist Rod Crawford. The industrious house spider will simply spin another one, and dusty cobwebs mean the spinner is no longer in residence anyway. The fright factor aside, however, it's worth remembering that in North America only three spiders—the black widow, the brown recluse and the hobo—can really harm a human. These spiders mostly stay out of sight, biting only if poked or trapped under clothing. Other spiders are beneficial, helping to reduce the number of bugs in a house.

BLACK WIDOW

Found in most of the U.S. Less than 1 percent of bites to humans are fatal.



body 1/2"

HOBO

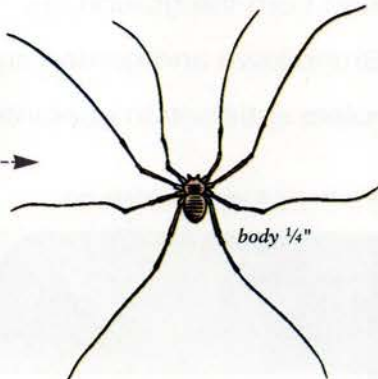
A Northwestern pest. Bites may become infected and take months to heal.



body 2 2/3"

DADDY LONGLEGS

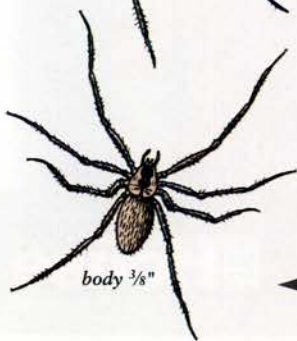
The one "spider" that many people love—but it's not technically a spider.



body 1/4"

BROWN RECLUSE

A Southern species, also called a fiddle-back. Bites cause persistent sores.



body 3/8"

**ACE**

When you
don't exactly
have a
green
thumb...

© 1997 Ace Hardware Corporation

see the
folks in the
red vest.

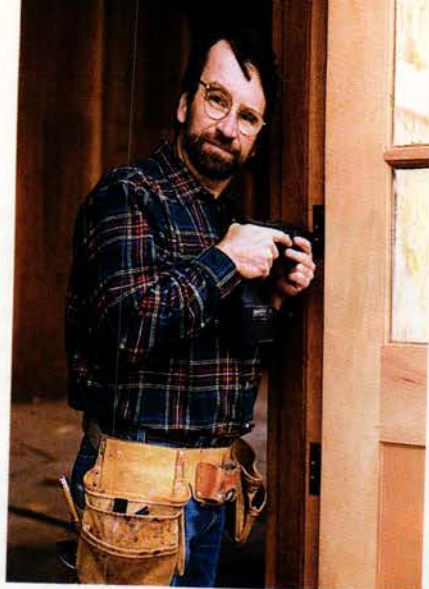
Margaret
Ace Peninsula Hardware

Whether you're trying to revive a patch of brown grass
or grow some yellow squash, your local Ace dealer
has all the advice and products you need to
get started from the ground up.
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ASK NORM

"Some spotting is inevitable whenever water dries on a wood floor, no matter what is used to protect it."

WATER MARKS

Three years ago we refinished our Douglas fir floors. We sanded to bare wood and applied mahogany oil-based stain, then three coats of a water-based finish. The results were absolutely beautiful. But not for long. Soon we noticed that drops of water left whitish marks. That's a problem, what with the rain we have in Oregon. You can't just walk behind people with a rag, wiping up after their every step. So we're starting over, but not before we hear from you.

DAVID AND MARY PLANK, Silverton, Ore.

I'm surprised you put a water-based finish over an oil-based stain. That's not to say it can't be done, but the oil stain requires a great deal of cure time first. Where floors are subject to a lot of water, you want the toughest protection you can find. I'd prefer an oil-based polyurethane finish over an oil-based stain. Oil-modified polyurethane might also be all right, but keep in mind that the stuff is extremely toxic. I've seen guys who applied it and were barely able to stand up afterward, so follow the manufacturer's warning labels to the letter. Finally, remember that some spotting is inevitable if water is allowed to dry on a wood floor, no matter what is used to protect it.

STANDUP GUY

I'd like to find out more about installing standing-seam steel roofing. I can get the material easily enough but can't seem to find literature on equipment and technique.

BOB LACOURSE, West Thornton, N.H.

Information on a product like this usually comes from a manufacturers' association rather than simple how-to books, and I say that as a warning. Installing this stuff is a job skill for professionals. It looks easy, but it's not.

MESSING UP

Do you ever screw up the way the rest of us do? And will you ever do a show that explains how and why people make mistakes and then demonstrates the proper way?

VINCENT J. FALINI III, Dunedin, Fla.

I don't think there's much value in a show about correcting mistakes. I always try to demonstrate how to do something right the first time. Over the years, I've learned that the best way to deal with a mistake is to figure it out yourself. That way you won't make the same mistake twice.

TILE SWITCH

We want to redo our bathroom floor, replacing the 1/2-inch underlayment and vinyl tile with cement board and ceramic. The new floor would be level with the hall carpeting. But contractors we've talked to want to tile right on top of the vinyl. That will raise the floor 1/2 inch and require a molding strip to meet the hall carpeting. What do you suggest?

BOB CUMMINGS, Hartland, Wis.

I'd go with your original idea of replacing the 1/2-inch underlayment. The booby trap—if you tile right on top of the vinyl—is that you'll also have to raise the flange for the toilet, which could be quite a job. You want to take the old floor out anyway, just to make sure there's no hidden damage. Old bathrooms often have rotting subfloors from years of seepage or condensation at the toilet.

ROUTER FENCE

For years I've seen you use a metal fence attached to your router. I've never come across one like it in a store or catalog. Can you tell me where I can get one?

PHILIP WATERMAN, Fort Myers, Fla.

The joke around the shop is that I have so many routers I never change bits; I just change routers. So which router are we talking about? Fences are available for most routers. But stay away from universal fences—I've yet to see a really good one. The people at your local tool outlet can look up your router in a catalog and order the fence made for it.

DESTRUCTIVE CARPENTERS

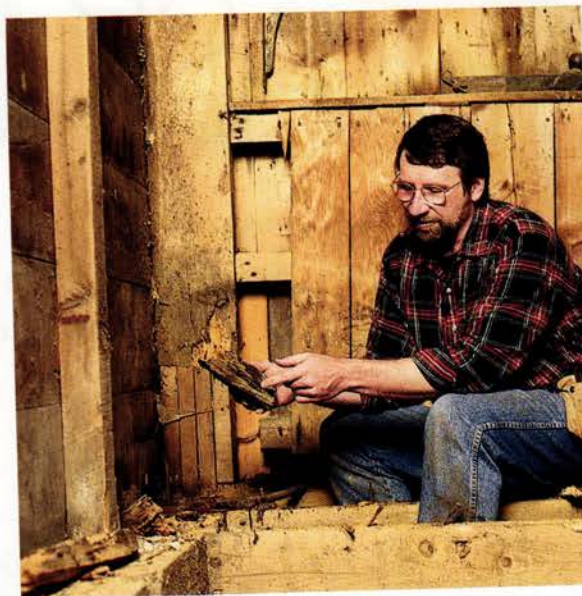
During spring and summer the last two or three years, large black carpenter bees have attacked fascia boards on my house. They bore perfect vertical holes up through the bottom

ASK NORM

edge of $\frac{3}{4}$ -inch fascia, eventually digging tunnels as long as 4 inches. Can I prevent this before damage becomes visible?

DENNIS ABRAHAM, Bridgeton, Mo.

Carpenter bees can cause considerable cosmetic damage, digging tunnels about $\frac{1}{2}$ inch in diameter. They rarely threaten a building's structural integrity with deep burrowing, as termites and carpenter ants do, but their tunnels invite rot and other problems. Consult an exterminator to get rid of the bees and their eggs, which will otherwise hatch a new generation of tunnelers. You may also need to replace the damaged wood with pre-primed lumber. Paint discourages these bees, but if you leave even a tiny area uncovered, they will find it. Bees and other insects need water and seek it out, so I suspect the root of your trouble is moisture. You should check carefully around the fascia boards for leaks or other sources of dampness that may have created an attractive microenvironment for the bees.



on the wall at the ceiling. We've been told that's because our house sits atop a large cave filled with water. Should we take down the cracked walls and rebuild them? Can we jack up the house and build a new foundation?

RUTH E. WISE, Bourbon, Mo.

When a geological feature like the one you describe is the cause, there's no quick fix. Putting in a new foundation may not stop your house from moving, because the ground itself is in motion. A civil engineer could advise you about how to make the foundation more rigid and spread its load over a wider area.

POWER WASHING

In a recent column, you said power washing can compress the fibers of wood siding and make it hard for the new paint to adhere. Is this true for stain used on rough-sawn cedar? What about grit blasting, using ground corncobs? We've been offered that recommendation, but it sounds a little harsh.

WILLIAM N. WOODWARD JR., Southbury, Conn.

I'm not opposed to power washing, but it has to be done correctly. Do not: hold the nozzle too close, use too much pressure or blast water inside the structure. And don't use a power washer for stripping. If you simply want to clean your siding before applying a new finish, gentle power-washing should be all right. But a bucket of bleach and water, applied with a stiff brush and rinsed off with a garden hose, cleans siding just as well. As for grit-blasting, you're right: It is a little harsh, and will remove pieces of wood.

VAPOR BARRIER

I've always read that the purpose of a vapor barrier is to prevent condensation inside walls by separating warm, moist air from cold, dry air. My father-in-law, a drywall finisher, swears otherwise, saying the barrier traps moisture and ruins the plasterboard. I've never heard anyone else take that position. But we want to build this year, so I'd like your opinion.

BOB PETERSON, Shambaugh, Iowa

The layers of construction should follow this sequence, working from the outside in: siding, sheathing, insulation, vapor barrier, drywall. If they do, condensation won't be a problem. Your father-in-law's objection is valid only if the moisture barrier is close to the outside of the building—the cold side—or if the building is badly insulated.

STAINED LOGS

My half-log house was built in 1988. A year later, I applied a coat of log oil-stain and, four years after that, I added another coat. Two sides of the house now look much darker than the other sides. Cleaning solution applied with a power washer doesn't help. Can you suggest a brush-on or spray-on cleaner to remove the existing stain? After the cleaning, I want to apply a stain—in as light a color as possible—that can be redone every two years or so. Any suggestions?

JOHN P. HOLTZ, 3 LAKES, Wis.

The problem isn't dirt but aging. You've got two different colors because your house has two different exposures, one sunny and one dark. So I can't give you a solution. That may not seem very satisfying, but look on the bright side: The color difference is natural. By the way, this is happening with the paint on my house, too, just as it happens to sunbathers who forget to turn over.

CRACK UP

We have a beautiful brick house on 8 acres in rural Missouri, but we also have a crack that starts low on the front wall, then extends to the corner and up one side to the roof. At first it's just a little crack, but it eventually widens to about $1\frac{1}{2}$ inches. Our house moves so much we can't keep drywall tape

DIRECTORY

A resource guide for the house and garden

ALABAMA

Birmingham
WBIQ-TV
Thu. 8:30 pm, Sat. 8 pm
• WCFT/WJSU-TV
Sat. 6:30 am

Demopolis
WIIQ-TV
Thu. 8:30 pm, Sat. 8 pm

Dozier
WDIQ-TV
Thu. 8:30 pm, Sat. 8 pm

Florence
WFIQ-TV
Thu. 8:30 pm, Sat. 8 pm

Huntsville
WHIQ-TV
Thu. 8:30 pm, Sat. 8 pm
• WZDX-TV
Sun. 7 am

Louisville
WGIQ-TV
Thu. 8:30 pm, Sat. 8:30 pm

Mobile
WALA-TV*
WEIQ-TV
Thu. 8:30 pm, Sat. 8 pm

Montgomery
WAIQ-TV
Thu. 8:30 pm, Sat. 8 pm

Mount Cheaha
WCIIQ-TV
Thu. 8:30 pm, Sat. 8 pm

ALASKA

Anchorage
KAKM-TV
Sat. 9:30 am
• KIMO-TV
Sat. 4:30 pm

Bethel
KYUK-TV
Fri. 8 pm, Sat. 8 am

Fairbanks
KUAC-TV
Fri. 8 pm, Sat. 8 am
• KATN-TV
Sat. 4:30 pm

Juneau
KTOO-TV
Fri. 8 pm, Sat. 8 am
• KJUD-TV
Sat. 4:30 pm

ARIZONA

Phoenix
KAET-TV
Thu. 2 pm and 7:30 pm
Sat. 5 pm
• KNXV-TV
Sun. 10 am

Tucson
KUAS-TV
Sat. 6:30 pm
KUAT-TV
Sat. 6:30 pm
• KTTU-TV
Sat. 9 am

ARKANSAS

Arkadelphia
KETG-TV
Sat. 12:30 pm

Fayetteville
KAFT-TV
Sat. 12:30 pm

Jonesboro
KTEJ-TV
Sat. 12:30 pm

Little Rock
KETS-TV
Sat. 12:30 pm
• KTHV-TV
Sat. 11 am

Mountain View
KEMV-TV
Sat. 12:30 pm

CALIFORNIA

Chico
• KRCR-TV
Sun. 5 pm

Eureka
KEET-TV
Wed. 7:30 pm
Sat. 10:30 am
• KAEF-TV
Sun. 5 pm

Fresno
KVPT-TV
Sat. 9:30 am, Sun. 7 pm
Tues. 9 pm

Huntington Beach
KOCE-TV
Sat. 4:30 pm, Tues. 8 pm

Los Angeles
KCET-TV
Sat. 5:30 pm
• KABC-TV
Sun. 6:30 am

Redding
KIXE-TV
Sat. 10:30 am

Rohnert Park
KRCB-TV
Sun. 7:30 pm, Wed. noon

Sacramento
KVIE-TV
Thu. 8 pm, Sat. 8:30 am
• KPWB-TV
Sat. 6 am

San Bernardino
KVCR-TV
Thu. 7 pm

San Diego
KPBS-TV
Sat. 11:30 am
• KGTV-TV
Sun. noon

San Francisco
KQED-TV
Sat. 5:30 pm
• KPIX-TV
Sun. 10:30 am

San Jose
KTEH-TV
Wed. 9 pm, Sat. 3 pm
Sun. 4:30 pm

San Mateo
KCSM-TV
Tues. 6:30 pm, Sun. 10 am

Santa Barbara
• KSBY-TV*

COLORADO

Boulder
KBDI-TV
Wed. 3:30 am and 5:30 pm
Sat. 5:30 pm, Sun. 4 pm

Colorado Springs
• KRDO-TV
Sun. 11:30 am

Denver
KRMA-TV
Sat. 2 pm, Sun. 5:30 pm
• KCNC-TV
Sat. 4 pm

Grand Junction
• KJCT-TV
Sun. 11:30 am

Pueblo
KTSC-TV
Thu. 8:30 pm

CONNECTICUT

Fairfield
WEDW-TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm, Sun. 10:30 am

Hartford
WEDH-TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm, Sun. 10:30 am
• WFSB-TV
Sat. 9:30 am

New Haven
WEDY-TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm, Sun. 10:30 am

Norwich
WEDN-TV
Thu. 11:30 pm, Fri. noon
Sat. 7 pm, Sun. 10:30 am

DISTRICT OF COLUMBIA

WETA-TV
Sat. 9:30 am
• WRC-TV
Sun. 5 am

FLORIDA

Bonita Springs
WGPU-TV
Sat. 1:30 pm, Sun. 5 pm

Daytona Beach
WCEU-TV
Tue. 8 pm and 11 pm
Sat. 5:30 pm

Fort Myers
• WTVK-TV
Sat. 5:30 am

Gainesville
WUFT-TV
Sat. 9:30 am and 1:30 pm
• WCJB-TV
Sun. 1:30 pm

Jacksonville
WJCT-TV
Sat. noon

Miami
WLRN-TV
Sun. 10 am
WPBT-TV
Sat. 11 am
• WPLG-TV
Sun. 8 am

Orlando
WMFE-TV
Sat. 9 am and 1 pm
Sun. 9 am

Pensacola
WSRE-TV
Sat. 12:30 pm and 6:30 pm

Sarasota
• WWSB-TV
Sun. 11:30 am

Tallahassee
WFSU-TV
Sat. 1:30 pm and 6:30 pm

Tampa
WEDU-TV
Sat. 11:30 am, Sun. 7:30 pm
WUSF-TV
Wed. 9 pm, Sun. 5:30 pm
• WTVT-TV
Sat. 9:30 am

West Palm Beach
• WPTV-TV
Sun. 6 am

GEORGIA

Albany
• WGVP-TV
Sun. 2:30 pm

Atlanta
WGTV-TV
Thurs. 8:30 pm,
Sat. 5:30 pm, Sun. 7 pm
WPBA-TV
Mon. 8 pm, Wed. 2 pm
Sat. 6 pm
• WXIA-TV
Sat. 5:30 am

Chatsworth
WCLP-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

Cochran
WDCO-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

Columbus
WJSP-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

Dawson
WACS-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

Macon
• WMAZ-TV
Sat. 11 am

Pelham
WABW-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 8 pm

Savannah
WVAN-TV
Thurs. 8:30 pm,
Sat. 5:30 pm, Sun. 7 pm
• WTOG-TV
Sun. 5 pm

Waycross
WXGA-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

Wrens
WCES-TV
Thurs. 8:30 pm
Sat. 5:30 pm, Sun. 7 pm

HAWAII

Honolulu
KHET-TV
Thu. 7:30 pm, Sat. 4:30 pm
• KHNL-TV
Sun. 3 pm

Wailuku
KMEB-TV
Thu. 7:30 pm, Sat. 4:30 pm

IDAHO

Boise
KAID-TV
Sun. 4:30 pm
• KIVI-TV
Sun. 6:30 am

Coeur d'Alene
KCDT-TV
Sun. 3:30 pm

Moscow
KUID-TV
Sun. 3:30 pm

Pocatello
KISU-TV
Sun. 4:30 pm

Twin Falls
KIPT-TV
Sun. 4:30 pm

ILLINOIS

Carbondale
WSIU-TV
Thu. 7 pm, Fri. 12:30 pm
Sat. 12:30 pm

Champaign/Urbana
• WAND-TV
Sat. 5:30 am
WILL-TV
Thu. 7:30 pm, Sun. 3:30 pm

Charleston
WEIU-TV
Sat. 8:30 pm

Chicago
WTTW-TV
Tue. 7:30 pm, Sat. 5 pm
• WFLD-TV*

Jacksonville
WSEC-TV
Thu. 10 pm, Sun. 1:30 pm

Macomb
WMEC-TV
Thu. 10 pm, Sun. 1:30 pm

Moline
WQPT-TV
Tue. 7 pm, Sat. 5:30 pm

Olney
WUSI-TV
Thu. 7 pm, Fri. 12:30 pm
Sat. 12:30 pm

Peoria
WTVP-TV
Sat. 12:30 pm
• WHOI-TV*

Quincy
WQEC-TV
Thu. 10 pm, Sun. 1:30 pm

Rockford
• WTVO-TV
Sat. 6:30 pm

Springfield
• WICS-TV
Sat. 7:30 am

INDIANA

Bloomington
WTIU-TV
Thu. 11 pm, Sat. 1:30 pm

Evansville
WNIN-TV
Sat. 12:30 pm and 6 pm
Sun. 4:30 pm
• WFIE-TV
Sun. 6 am

Fort Wayne
WFWA-TV
Sat. 10 am

Indianapolis
WFYI-TV
Sat. 10 am, Sun. 6 pm
• WTHR-TV*

Merrillville
WYIN-TV
Thu. 7 pm, Sun. 4:30 pm

Muncie
WIPB-TV
Sun. 4:30 pm

South Bend
WNIT-TV
Wed. 6 pm, Sat. 2 pm

Terre Haute
• WTWO-TV
Sun. 6 am

Vincennes
WVUT-TV
Sat. 1:30 pm

IOWA

Cedar Rapids
• KWWL-TV
Sat. 2:30 am

Council Bluffs
KBIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

Davenport
KQCT
Tue. 7 pm, Sat. 5:30 pm
• WQAD-TV
Sun. 11 am

Des Moines
KDIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

Fort Dodge
KTIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

Iowa City
KIIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

Mason City
KYIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

Red Oak
KHIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

Sioux City
KSIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

Waterloo
KRIN-TV
Fri. 6:30 pm, Sat. 1:30 pm

KANSAS

Bunker Hill
KODD-TV
Thu. 7 pm, Sat. 12:30 pm

Lakin
KSWK-TV
Thu. 7 pm, Sat. 12:30 pm

Topeka
KTWU-TV
Sat. 9:30 am

Wichita
KPTS-TV
Sun. 11:30 am
• KSNW-TV
Sun. 6:30 am

KENTUCKY

Ashland
WKAS-TV
Sun. 5 pm

Bowling Green
WKGB-TV
Sun. 4 pm
WKYU-TV
Tue. 1 pm and 6:30 pm
• WBKO-TV
Sun. 6:30 am

Covington
WCVN-TV
Sun. 5 pm

Elizabethtown
WKZT-TV
Sun. 5 pm

Hazard
WKHA-TV
Sun. 5 pm

*Check your local listings.

Lexington
WKLE-TV
Sun. 5 pm
● WTVQ-TV
Sat. 6 a.m.

Louisville
WKMJ-TV
Sun. 5 pm
WKPC-TV
Sun. 5 pm
● WAVE-TV*

Madisonville
WKMA-TV
Sun. 4 pm

Morehead
WKMR-TV
Sun. 5 pm

Murray
WKMU-TV
Sun. 4 pm

Owensboro
WKOH-TV
Sun. 4 pm

Owenton
WKON-TV
Sun. 5 pm

Paducah
WKPD-TV
Sun. 4 pm
● KBSI-TV
Sun. 10:30 pm

Pikeville
WKPI-TV
Sun. 5 pm

Somerset
WKSO-TV
Sun. 5 pm

LOUISIANA

Alexandria
KLPA-TV
Sun. 10 am

Baton Rouge
WLPB-TV
Sun. 10 am
● KWBj-TV
Sun. noon

Lafayette
KLPB-TV
Sun. 10 am

Lake Charles
KLTL-TV
Sun. 10 am

Monroe
KLTM-TV
Sun. 10 am

New Orleans
WYES-TV
Sat. 8:30 am
● WVUE
Sun. 6 pm

Shreveport
KLTS-TV
Sun. 10 am
● KTBS*

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Portland
WMEA-TV
Sat. 1:30 pm
● WPXT-TV
Sun. 11 am

Presque Isle
WMEM-TV
Sat. 1:30 pm

MARYLAND

Annapolis
WMPT-TV
Sat. 4 pm, Sun. 6:30 pm

Baltimore
WMPB-TV
Sat. 4 pm, Sun. 6:30 pm
● WMAR-TV*

Frederick
WFPT-TV
Sat. 4 pm, Sun. 6:30 pm

Hagerstown
WHPB-TV
Sat. 4 pm, Sun. 6:30 pm

Oakland
WGPT-TV
Sat. 4 pm, Sun. 6:30 pm

Salisbury
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Sat. 4 pm, Sun. 6:30 pm

Marquette
WNMU-TV
Sat. 1:30 pm

Mount Pleasant
WCMU-TV
Sat. 2:30 pm

University Center
WUCM-TV
Tue. 12:30 pm, Sun. 5 pm

MINNESOTA

Appleton
KSMN
Sat. 12:30 pm, Thu. 9 pm

Austin
KSMQ-TV
Thu. 7 pm, Sat. 12:30 pm

Bemidji
KAWE-TV
Thu. 7:30 pm
Sat. 12:30 pm

Brainerd
KAWB-TV
Thu. 7:30 pm
Sat. 12:30 pm

Duluth
WDSE-TV
Sat. 6:30 pm, Sun. 9:30 am

Rochester
KAAL-TV
Sat. 6 am

St. Paul/Minneapolis
KTCA-TV
Wed. 7:30 pm, Sat. 6:30 pm
● KSTP-TV
Sun. 11:30 am

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● KSTP-TV
Sun. 11:30 am

St. Louis
KETC-TV
Wed. 12:30 pm
Sat. 6:30 pm
● KTVI-TV*

Sedalia
KMOS-TV
Sat. 12:30 pm

Springfield
KOZK-TV
Sat. 12:30 pm
● KSPR-TV
Sun. 11 am

MONTANA

Bozeman
KUMS-TV
Wed. 11:26 pm
Sat. 11:30 am

Missoula
KUFM-TV
Wed. 11:26 pm
Sat. 11:30 am

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Wed. 11:26 pm
Sat. 11:30 am

NEW JERSEY

Camden
WNJS-TV
Thu. 8 pm, Sat. 8 pm
Sun. 5:30 pm

Montclair
WNJN-TV
Thu. 8 pm, Sat. 8 pm
Sun. 5:30 pm

New Brunswick
WNJB-TV
Thu. 8 pm, Sat. 8 pm
Sun. 5:30 pm

Trenton
WNJT-TV
Thu. 8 pm, Sat. 8 pm
Sun. 5:30 pm

NEW MEXICO

Albuquerque
KNME-TV
Thu. 7 pm, Sun. 10 am

Las Cruces
KRWG-TV
Sat. 11:30 am

Portales
KENW-TV
Wed. 10:30 pm, Sat. 4 pm

NEW YORK

Albany
● WXXA-TV
Sun. 10 am

Binghamton
WSKG-TV
Sat. 8 am, 1:30 pm
and 6:30 pm, Sun. 7 pm
● WBNG-TV
Sat. 7:30 am

Buffalo
WNED-TV
Sat. 10:30 am
WNEQ-TV
Sun. 7 pm
● WIVB-TV
Sun. 8:30 am

Elmira
● WYDC-TV*

Long Island
WLIW-TV
Sat. 10:30 am, Sun. 8 pm

New York City
WNET-TV
Sat. 5:30 pm
● WCBS-TV
Sun. 7:30 am

Norwood
WNPI-TV
Sat. 10:30 am

Plattsburgh
WCCE-TV
Sun. 11:30 am

Rochester
WXXI-TV
Sat. 10:30 am, Sun. 5:30 pm
● WHEC-TV
Sun. 6 am

Schenectady
WMHT-TV
Sat. 10:30 am
WMHQ-TV
Sun. 9:30

Syracuse
WCNY-TV
Sat. 10:30 am
● WSTM-TV
Sun. 6 am

Watertown
WNPE-TV
Sat. 10:30 am

NORTH CAROLINA

Asheville
WUNF-TV
Sat. 5:30 pm, Sun. 9 am

Chapel Hill
WUNC-TV
Sat. 5:30 pm, Sun. 9 am

Charlotte
WTVI-TV
Thu. 8 pm, Sat. 5 pm
Sun. 11 am
WUNG-TV
Sat. 5:30 pm, Sun. 9 am
● WBT-TV
Sat. 2:30 pm, Sun. 1:30 pm

Columbia
WUND-TV
Sat. 5:30 pm, Thurs. 8 pm

Greensboro
● WGHP-TV
Sat. 6:30 am

Greenville
WUNK-TV
Sat. 5:30 pm, Sun. 9 am
● WLOS/WFBC-TV
Sat. 10 am

Jacksonville
WUNM-TV
Sat. 5:30 pm, Sun. 9 am

Linville
WUNE-TV
Sat. 5:30 pm, Sun. 9 am

Lumberton
WUNU-TV
Sat. 5:30 pm, Sun. 9 am

Raleigh
● WTVB-TV
Sun. 11:30 am

Roanoke Rapids
WUNP-TV
Sat. 5:30 pm, Sun. 9 am

Wilmington
WUNJ-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
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WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
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Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Winston-Salem
WUNL-TV
Sat. 5:30 pm, Sun. 9 am

Upward Mobility

A 1950s ranch gets a second floor, a mudroom and a remodeled kitchen



Still a ranch, but not for long: The crew prepares for construction of a second story that will house a library and a new master bedroom with a bath.

Week 12 (June 6-7)

A light snow has fallen in Lexington, Massachusetts, but outdoor work continues at the project. Steve Thomas and mason Roger Hopkins talk about using a new backing system to rebuild stone walls suffering from weather-induced expansion and contraction. Landscape architect Tom Wirth discusses plans for the new entryway, and home owner Brian Igoe back-primers exterior siding for the house. Norm Abram introduces Steve to the new clapboards. Then it's off to Iowa for a lesson in building top-

quality windows incorporating old-world craftsmanship combined with 20th-century technology. **Watch and learn:** Mitering clapboards in lieu of using corner boards.

Week 13 (June 13-14)

In the front yard, Tom Wirth explains the business of grading and beautifying the winding path to the front door. Mason Roger Hopkins shows Steve the

outdoor steps, made of pinkish granite quarried along the coast of Connecticut. Meanwhile, concrete supplier George Neuman mixes up a batch on-site for the driveway. Next, Steve visits the set of *The New Yankee Workshop*, where Norm shows off a southern pine Victorian kitchen table he has made. Finally, Steve takes another side trip, to explore two completed creations by project architect Graham Gund. One, a huge gray house with double octagonal towers, features whimsically shaped

fireplaces and a carved sun-and-moon motif. **Watch and learn:** Building plywood columns.

Week 14 (June 20-21)

A month away from the completion of the house, Graham Gund and home owner Jan Igoe talk about details that will lend an extra touch of coziness: a sofa-length window seat and a newel cap for the foot of the stairs. In the kitchen, Igoe and designer Glenn Berger reveal plans for configuring the countertops and seating area to achieve a "sense of community." Next, she installs fiberglass insulation along with tough vapor-barrier sheathing. Finally, Norm visits the U.S.D.A. Forest Products Laboratory to learn how the government tests wood for strength and flammability. **Watch and learn:** Installing a whirlpool bath.

Week 15 (June 27-28)

With the Lexington deadline approaching, the crew digs into the remaining heavy work. In

the great room, subcontractor Jim Larsen installs 12-foot-long 100-pound pieces of blue-board. Electrical contractor Paul J. Kennedy wires the house using the "home run" system—separately connecting each room to a central power source; if one connection is compromised, it will not affect the rest of the house. In the front yard, Steve and landscaper Roger Cook talk trees. Still on-site at the Forest Products Laboratory, Norm learns how recyclable plastic mingles with demolition wood to make new building materials. **Watch and learn:** Hanging a front door.

Metamorphosis: The property gains a new roof and sheds its dark brown skin. Once expanded, the exterior will be painted a light gray.



Athens
WOUB-TV
Sat. 5 pm

Bowling Green
WBGU-TV
Sat. 1:30 pm, Mon. 3 pm

Cambridge
WUOC-TV
Sat. 5 pm

Cincinnati
WCET-TV
Thu. 8 pm
Sat. 9 am and 6 pm
● WCPO-TV
Sun. 6 am

Cleveland
WVIZ-TV
Tue. 7:30 pm, Sat. 1 pm
Sun. 12:30 pm
● WEWS-TV
Sun. 6 am

Columbus
WOSU-TV
Thu. 8 pm, Sat. 4:30 pm
● WSYX-TV
Sun. 9:30 am

Dayton
WPTD-TV
Thu. 8 pm, Sat. 9:30 am
● WRGT-TV
Sun. 10 am

Oxford
WPTO-TV
Mon. 7:30 pm
Sun. 12:30 pm

Portsmouth
WPBO-TV
Thu. 8 pm, Sat. 4:30 pm

Toledo
WGTE-TV
Thu. 8 pm, Sat. 1 pm
Sun. 1 pm
● WTVG-TV*

Wheeling
● WTRF-TV*

Youngstown
WNEO-TV
Sat. 10:30 am and 5 pm
Sun. 4 pm
● WFMJ-TV
Sun. 10 am

OKLAHOMA

Cheyenne
KWET-TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm

Eufaula
KOET-TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm

Oklahoma City
KETA-TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm
● KOCO-TV
Sat. noon

Tulsa
KOED-TV
Sat. 9:30 am and 12:30 pm
Sun. 3 pm
● KJRH-TV
Sun. 12:30 pm

OREGON

Bend
KOAB-TV
Thu. 8 pm, Sat. 5:30 pm

Corvallis
KOAC-TV
Thu. 8 pm, Sat. 5:30 pm

Eugene
KEPB-TV
Thu. 8 pm, Sat. 5:30 pm
● KEZI-TV
Sun. 12:30 pm

Klamath Falls
KFTS-TV
Sat. 10:30 am, Thu. 8 pm

La Grande
KTVR-TV
Thu. 8 pm, Sat. 5:30 pm

Medford
KSYS-TV
Sat. 10:30 am, Thu. 8 pm
● KOBI/KOTI-TV
Sun. 4 pm

Portland
KOPB-TV
Thu. 8 pm, Sat. 5:30 pm
● KATU-TV
Sun. 5:30 am

PENNSYLVANIA

Allentown
WLVT-TV
Fri. 7:30 pm, Sat. 12:30 pm

Erie
WQLN-TV
Sat. 6:30 pm
● WJET
Sat. 6:30 am

Harrisburg
WTFB-TV
Thu. 8 pm
Sat. 9 am and 6 pm
● WGAL-TV
Sun. 11 am

Johnstown
● WWCP/WATM-TV
Sun. 9 am

Philadelphia
WHYY-TV
Sat. 11 am and 5:30 pm
Sun. 7 pm
● WTXF-TV*

Pittsburgh
WQED-TV
Sat. 5 pm
WQEX-TV
Sat. 5 pm

Pittston
WVIA-TV
Thu. 8 pm
Sat. 5 pm and 5:30 pm

University Park
WPSX-TV
Sat. 9 am, Sun. 4:30 pm

Wilkes-Barre
● WYOU-TV*

RHODE ISLAND

Providence
WSBE-TV
Tue. 8:30 pm, Sun. 6 pm
● WLNE-TV
Sat. 6:30 am

SOUTH CAROLINA

Allendale
● WEBB-TV
Sat. 4 pm

Beaufort
● WJWJ-TV
Sat. 4 pm

Charleston
● WCSC-TV
Sun. 5:30 am
● WITV-TV
Sat. 4 pm

Columbia
● WLTX-TV
Sun. 6 am
● WRLK-TV
Sat. 4 pm

Conway
● WHMC-TV
Sat. 4 pm

Florence
● WJPM-TV
Sat. 4 pm

Greenville
● WNTV-TV
Sat. 4 pm

Greenwood
● WNEH-TV
Sat. 4 pm

Rock Hill
● WNSC-TV
Sat. 4 pm

Spartanburg
● WRET-TV
Sat. 4 pm

Sumter
● WRJA-TV
Sat. 4 pm

SOUTH DAKOTA

Aberdeen
KDSD-TV
Sat. 4 pm

Brookings
KESD-TV
Sat. 4 pm

Eagle Butte
KPSD-TV
Sat. 3 pm

Lowry
KQSD-TV
Sat. 4 pm

Martin
KZSD-TV
Sat. 3 pm

Pierre
KTSD-TV
Sat. 4 pm

Rapid City
KBHE-TV
Sat. 3 pm
● KCLO-TV
Sun. 10 am

Sioux Falls
KCSF-TV
Sat. 4 pm
● KELO-TV
Sun. 10 am

Vermillion
KUSD-TV
Sat. 4:30 pm

TENNESSEE

Chattanooga
WTCI-TV
Sat. 1:30 pm

Cookeville
WCTE-TV
Sat. 12:30 pm

Knoxville
WKOP-TV
Sat. 1:30 pm

*Check your local listings.

A Guide to Resources for the "Classics" TV Series

An updated list of suppliers and manufacturers featured in *This Old House's* 1992 Lexington, Massachusetts, project.



Designer Glenn Berger configured the kitchen, lower left, to open into the great room so as not to isolate the cook from the rest of the household.

Week 12

Stonemasons: Roger Hopkins, Naturalistic Gardens, 277 Concord Rd., Sudbury, MA 01776; 978-443-7572; www.rogerhopkins.com. Dave Clark Stone Masonry Inc., 8 Thomas St., Maynard, MA; 978-897-9525. **Landscape architect:** Thomas Wirth

Associates, 20 N. Main Street, Sherborn, Massachusetts 01770; 508-651-3643. **V-groove cedar siding:** Harvey Industries, 43 Emerson Road, Waltham, MA 02154; 800-882-8953. **Oil-based alkyd primer:** Sherwin-Williams; 216-566-2151. **Redwood clapboards:** California Redwood

Association, 405 Enfrete Dr., Suite 200, Novato, CA 94949; 415-382-0662. **Windows and doors:** Pella Corp.; 515-628-1000. **Standing-seam copper roof:** Harvey Industries.

Week 13

Landscape architect: Thomas Wirth (see week 12). **Stonemason:** Roger Hopkins (see week 12). **Granite:** Castellucci Stone Industries, 285 Smith St., N. Kingstown, RI 02852; 401-294-1200. **Concrete delivery service:** Concrete Express Inc., Natick, MA; 508-653-1512. **Plumbing and heating consultant:** Richard Trethewey, R.S.T. Inc.; 781-320-9910. **Whirlpool bath:** American Standard Inc.; 732-980-3000. **Water distribution manifold and PEX tubing:** Stadler Corp, Bedford, MA; 800-370-3122.

Week 14

Architect: Graham Gund Architects, Cambridge, MA; 617-577-9600. **Jetted tub:** American Standard Inc. (see week 13). **High-density cathedral batt insulation:** Owens Corning, 1 Owens Corning Pkwy., Toledo, OH 43659; 800-267-8787. **Cross-laminated vapor barrier:** Tu-Tuf by Sto-Cote Products Inc., 800-435-

2621. **Kitchen and bath designer:** Glenn Berger, Acton Woodworks Inc., 2 School St., Acton, MA 01720; 978-263-0222. **Kitchen tile:** Cerabati imitation French limestone, Tile Showcase Boston, Suite 639, 1 Design Center Place, Boston, MA 02210; 617-426-6515. Distributed by Tile Showcase, 291 Arsenal St., Watertown, MA 02172; 617-926-1100.

Week 15

Front doors: Morgan Manufacturing, 920-235-7170. Distributed by Brockway-Smith Co., 146 Dascomb Rd., Andover, MA 01810; 978-475-7100. **Self-tapping screws:** Fastap, by Faspac, 800-847-4714. Distributed in Boston area by Atlantic Marketing, 781-891-4455. **Electrician:** Paul J. Kennedy Jr., Methuen, MA; 978-686-5819. **Centralized wiring system:** Elan by Square D Co., 606-278-0308. **Wallboard supplies:** Gold Bond Building Products, National Gypsum; 704-635-7300. **Wallboard supplier:** Dana Wallboard Supply Inc., Tyngsboro, MA; 978-649-4000. **Wallboarders:** Larco Wallboard Supply Inc., Tewksbury, MA; 978-851-6440. **Landscape contractor:** Roger Cook, K.&R. Tree and Landscape, Burlington, MA; 781-272-6104.

WSJK-TV
Sat. 1:30 pm
● WATE-TV
Sun. 5:30 am

Lexington/Martin
WLJT-TV
Thu. 9:30 pm
Sat. 12:30 pm

Memphis
WKNO-TV
Thu. 7 pm, Sat. 9:30 am
Sun. 5:30 pm

Nashville
WDCN-TV
Sat. 4:30 pm
● WKRN-TV
Sun. 12:30 pm

Tri-Cities
● WKPT/WAPK-TV
Sat. 10:30 am

TEXAS

Amarillo
KACV-TV
Sat. 12:30 pm
● KFDD-TV
Sat. 5 pm

Austin
KLRU-TV
Sat. 5:30 pm
● KTBC-TV
Sat. 7 am

Beaumont
● KBMT-TV
Sun. 6:30 am

College Station
KAMU-TV
Sat. 12:30 pm, Mon. 10 pm
Wed. 2 pm

Corpus Christi
KEDT-TV
Sat. 12:30 pm, 9:30 pm
● KRIS/KDF-TV*

Dallas/Fort Worth
KERA-TV
Sat. 6:30 pm
● KXAS/KXTX-TV
Sat. 5 pm

El Paso
KCOS-TV
Sat. 5 pm

Harlingen
KMBH-TV
Sat. 12:30 pm
● KVEO-TV
Sun. 6 am

Houston
KUHT-TV
Sun. 11:30 am
● KTRK-TV
Sun. 11 am

Killeen
KNCT-TV
Sat. 12:30 pm, Sun. 9:30 am

Lubbock
KTXI-TV
Thu. 12 noon
Sat. 12:30 pm
● KLBK-TV
Sun. 5 pm

Odessa
KOCV-TV
Sun. 12:30 pm

San Antonio
KLRN-TV
Thu. 8 pm
Sat. 5 and 5:30 pm

Tyler
● KLNP-TV
Sat. 9 am

Waco
KCTF-TV
Mon. 12:30 pm
Sat. 6:30 pm
● KXXV-TV
Sun. 11 am

UTAH

Provo
KBYU-TV
Sat. 9:30 am and noon

Salt Lake City
KUED-TV
Sat. 5 pm
● KTVX-TV*

VERMONT

Burlington
WETK-TV
Fri. 4 am, Sat. 11 am
● WCAX-TV
Sun. 8:30 am

Rutland
WVER-TV
Fri. 4 am, Sat. 11 am

St. Johnsbury
WVTB-TV
Fri. 4 am, Sat. 11 am

Windsor
WVTA-TV
Fri. 4 am, Sat. 11 am

VIRGINIA

Charlottesville
WHTJ-TV
Sat. 8:30 am

Falls Church
WVFT-TV
Sun. 3 pm

Harrisonburg
WVPT-TV
Sat. 1:30 pm
WVPY-TV
Sat. 4 pm

Marion
WMSY-TV
Sat. 1:30 pm

Norfolk
WHRO-TV
Thu. 8 pm, Sat. 8:30 am

Norton
WSBN-TV
Sat. 1:30 pm

Richmond
WCVE-TV
Sat. 8:30 am
WCVW-TV
Fri. 8:30 pm
● WAWB-TV
Sun. 6 am

Roanoke
WBRA-TV
Sat. 1:30 pm
● WSLS-TV
Sun. 6:30 am

WASHINGTON

Centralia
KCKA-TV
Thu. 7 pm
Sat. 12:30 pm and 5:30 pm

Pullman
KWSU-TV
Mon. 7:30 pm
Wed. 7:30 am, Sat. 2 pm

Richland
KTNW-TV
Thu. 7 pm
Sat. 2 pm, Sun. 4:30 pm

Seattle
KCTS-TV
Sun. 5 pm
● KIRO-TV*

Spokane
KSPS-TV
Sat. 9:30 am, Sun. 5:30 pm
● KXLY-TV
Sun. 9:30 am

Tacoma
KBTC-TV
Thu. 7 pm
Sat. 12:30 pm and 5:30 pm

Yakima
KYVE-TV
Sun. 5 pm

WEST VIRGINIA

Beckley
WSWP-TV
Sat. 1:30 pm

Bluefield
● WOAY-TV*

Charleston
● WCHS-TV
Sun. 6 am

Huntington
WPBY-TV
Sat. 1:30 pm

Morgantown
WNPB-TV
Sat. 1:30 pm

Wheeling
● WTRF-TV*

WISCONSIN

Green Bay
WPNE-TV
Wed. 7:30 pm, Sun. 4 pm
● WGBA-TV
Sun. 7 am

La Crosse
WHLA-TV
Wed. 7:30 pm, Sun. 4 pm
● WEAU-TV
Sun. 9 am

Madison
WHA-TV
Wed. 7:30 pm, Sun. 4 pm
● WMTV-TV
Sat. 5 pm

Menomonic
WHWC-TV
Wed. 7:30 pm, Sun. 4 pm

Milwaukee
WMVS-TV
Thu. 7:30 pm, Sat. 8:30 am
● WTMJ-TV
Sun. 6 am

Park Falls
WLEF-TV
Wed. 7:30 pm, Sun. 4 pm

Wausau
WHRM-TV
Wed. 7:30 pm, Sun. 4 pm
● WJFW-TV
Sun. 10:30 am

WYOMING

Riverton
KCWC-TV
Sat. noon and 5 pm

*Check your local listings.

Stories of the century...told



A new obsession with spectator sports

"The hopes...of a group of people rode on his shoulders ...it was a new and great feeling. [Joe Louis] was the representative of all America – all America."

Eddie Futch, boxing trainer, commenting on the Joe Louis–Max Schmeling heavyweight championship contest in 1938, US

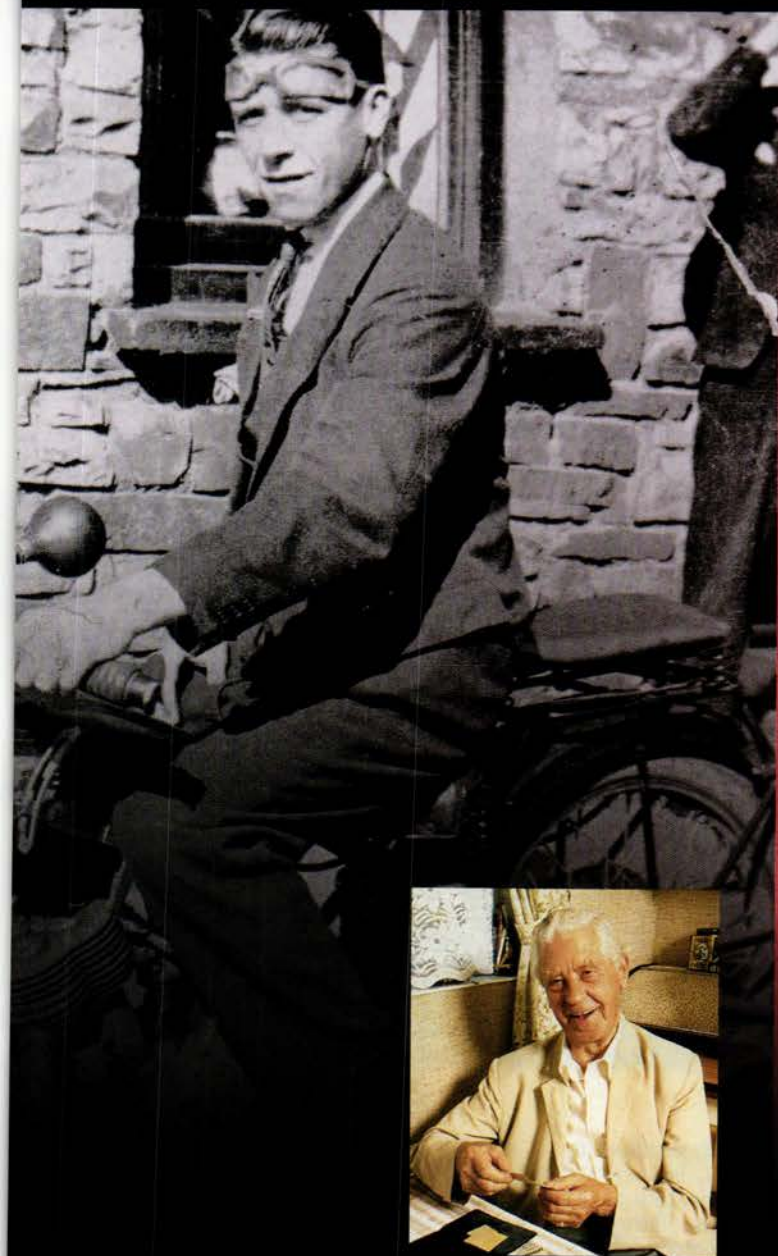


Civilians are drawn into World War II

"It was an inferno, pure chaos, there was an unbelievable firestorm...[people] were in despair, they were crying out for their families. It was a chaos of feelings and pain. Of course, we were broken."

Margarete Zettel, civil defense worker, awarded a medal for rescuing six children during Hamburg air raid, Germany

by the people who lived it.



PEOPLE'S CENTURY 1900-1999

The monumental series continues
Monday nights on PBS

Check local listings

Mass production revolutionizes industry
"My first impression was, what a terrible racket, what a terrible din. Gracious me, how can I possibly stick this? It was bang, bang, bang."
Haydn Evans, employee at Morris Car Works, UK

National corporate
sponsorship for
People's Century
is provided
by Conesco, Inc.



CONSECO

Major funding is provided by
public television viewers
and the Corporation for
Public Broadcasting

Additional funding is
provided by the Richard
Saltonstall Charitable
Foundation and
The Lowell Institute

www.pbs.org
History's Best on PBS

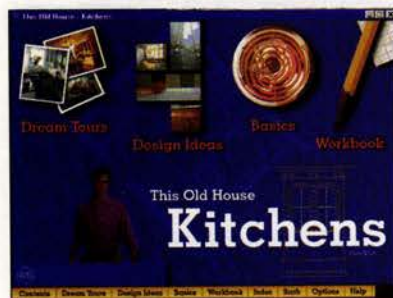


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How do you design the most important room in your home? Ask the experts from This Old House. This CD-ROM is a virtual encyclopedia of kitchen design and provides a step-by-step guide to take your remodeling project from concept to reality.



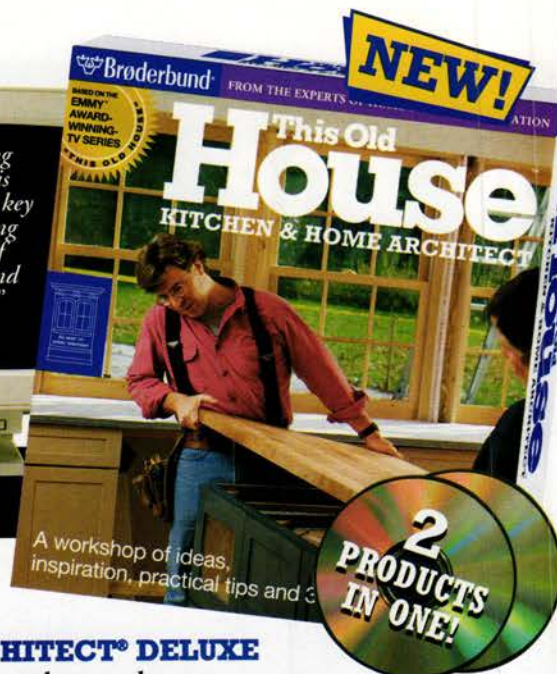
Tour the Best with Steve
Join Steve Thomas on a tour of stunning kitchens, from Victorian townhouses to modern suburbans. Along the way, learn about real challenges and solutions from actual kitchen renovations.

Zero in on Specifics

No matter what your taste, you're sure to find design ideas you like. Browse through over 1,000 photos to help make decisions on important details including style, storage, lighting, and more.



Experiment with Ease
Try different combinations of materials for your countertops, cabinets, walls, floors, and more – instantly, with a click. Then, use customized lists of materials and resources to get started.



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DIRECTORY

EXTRAS pp. 26-33



- p. 26—Fungus Among Us:** For more information, contact the Plastic Lumber Trade Association at 330-762-8989 or the American Wood Preservers Institute at 800-356-2974. *Reported by Jeanne Huber and Elena Kornbluth.* **Wundertools:** Circular saw: Wimatec Adamant Twinpower 1017. Patent holder: Nord 2000; www.adamant-twincutter.com. For information on \$1,800 10-in.-blade model, call Task Force Tips at 800-348-2686. Hammer drill SbE 808, \$359. Paint stripper: 6.4 amp., Lf714 S, \$599, with contact automatic shutoff technology, Metabo Corp.; 800-638-2264. *Reported by J.H. Quote:* "Your mind is like a tipi..." from *Everything Reverberates: Thoughts on Design*, 1998, 108 pp., \$12.95, Chronicle Books; 800-722-6657.
- p. 27—Ring of Fire:** Circa torch GP 70, \$175, Cedarberg Industries Inc.; 800-328-2279. Rigid RT-175 heavy-duty electric soldering gun, \$710; Ridge Tool Co.; 888-743-4333. *Reported by William Marsano.*
- p. 28—Stamp of Approval:** Celebrate the Century series 1900s available from the U.S. Postal Service until supplies run out. Vintage stamps courtesy of U.S. Postal Service. *Reported by Craig Kellogg.* **Beyond the Box:** Wedgits; 15-piece set, \$19.95; 30-piece set, \$29.95; R.C. Products; 510-846-1767. Not recommended for children under 3. *Reported by Sasha Nyary.* **Big Bad Bowl:** *American Woodworker*; 610-967-8315. The Highlander, Multico-Tyme Ltd., Paragon House, Flex Meadows, The Pinnacles, Harlow, Essex GM19 5TJ, U.K.; 011-44-1279 444212. *Reported by Nathaniel Reade.*
- p. 29—Damn the Mosquitoes:** Preserved bat supplied by Evolution; 212-343-1114.

WGBH Educational Foundation does not endorse any product or service mentioned or advertised in this magazine.

For more information on bat houses, call Bat Conservation at 512-327-9721. Mosquito-repellent coils: box of 12, \$3.99, Pic Corp.; 973-678-7300. Polyester-nylon netted clothing: head net, \$8; shirt with attached head net, \$35; pants, \$26; Bug Baffler Inc.; 800-662-8411. Bat house: medium, double-chambered, \$60; U-Spray Inc.; 800-877-7290. Herbal repellents: For recipes, contact Millie Fodor at 888-994-4857. *Gambusia affinis:* Mosquito fish are available at pet stores nationwide. Biological larvicides: Vectobac bacterial spore crystals, Abbott Laboratories; 800-323-9030; \$88 for 40 lbs. or \$85 per 100-briquette case from Clarke Mosquito Control Products; 800-323-5727. Altosid (methoprene), an insect-growth regulator, is usually used by professionals, so it is available only in large quantities. Some states regulate use. Check state environmental protection or conservation agencies. Deet-free repellents: Follow directions on label when using any insect repellent. Bite Blocker lotion, \$5.99 per 4 oz., Consep Inc.; 800-367-8727. Buzz Away spray, lotion, towelettes and stick-on patches, \$5 to \$7.50, Quantum Inc.; 800-448-1448. Natrapel (citronella) lotions and sprays, \$2.50 to \$5.30, Tender Corp.; 800-258-4696. Skin-So-Soft Bug Guard sprays and Moisturizing Sun Care Plus (s.p.f. 15 and 30) lotions available through an Avon representative, \$7.95 to \$11.95, Avon Products Inc.; 800-367-2866. Deet repellents: The U.S.D.A. and the Centers for Disease Control and Prevention consider deet the most effective mosquito repellent, with contents up to 30 percent for adults and 15 percent for children considered safe if products are used according to the label instructions. For more information, contact the National Pesticide Telecommunication Network; 800-858-7378. Or call the U.S. Environmental Protection Agency's office of pesticide programs at 703-305-5447.

p. 32—Current News: Indoor-outdoor G.F.C.I.s: Carol Plug-It G.F.C.I. and surge-protector plug, \$18, General Cable Corp.; 800-243-8020. G.F.C.I.-protected quad box: 14880-2-402, \$84.25, Technology Research Corp.; 813-535-0572. *Reported by Sarah Shey.* **Hipsters:** "T" holder, \$4.95; W.D. Holders; 541-923-3418. *Reported by Craig Kellogg.* **Pocket Power:** *Pocket Ref* compiled by Thomas J. Glover, Sequoia Publishing; 800-873-7126. *Audel Plumbers*

Maintenance Troubleshooting Pocket Manual by Charles N. McConnell, 1997, \$14.95, MacMillan Publishing Co. *Vest Pocket Guide for Builders and Contractors* by John E. Traister, out of print, 1988, Prentice Hall. *Powers Rawl 1998 Fastening Systems Handbook:* free catalog, Powers Fastening Inc.; 914-235-6300. *Good Wood Handbook* by Albert Jackson and David Day, 1996, \$20, Betterway Publications; 800-289-0963. *The Pocket Size Carpenter's Helper* by Robert F. Bailey, 1996, \$12.95, R.S. Wood & Co.; 207-338-0701. *Reported by John Banta.*

p. 33—Rubble Without Applause: The Anonymous Arts Museum is in Charlotteville, NY; free admission; open the third week of June through August on Sundays, 12 to 4 p.m. Further reading: *Irreplaceable Artifacts* by Evan and Leslie Blum with photographs by David Frazier, 1997, 208 pp., \$35, Clarkson N. Potter Inc.; 800-726-0600. Retail source for architectural ornaments: Irreplaceable Artifacts; 212-777-2900. *Reported by S.S. Quote:* "It wasn't just the house..." from *A Good House* by Richard Manning, 1993, out of print, Grove Press. **Heavenly Angles:** Angle Wiz, \$39.95, professional model, Perfect Angle Pro, cast aluminum, \$200, VersaTool Development Co.; 800-320-7765. *Reported by Mark Feirer.* **Unsung Tool:** Malco five-blade crimper, C5, \$19.73, Malco Tools; 320-274-8246. *Reported by Jeff Taylor.*

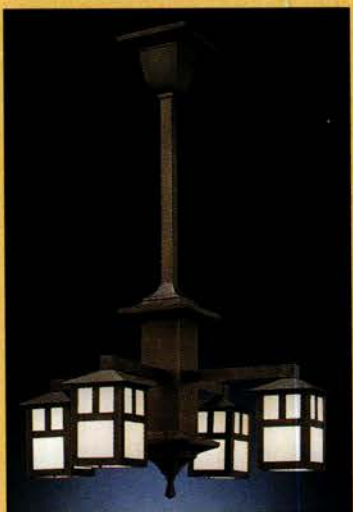
CUTS BOTH WAYS pp. 35-40



Opener: Bridgewood PBS 440, \$1,795, Wilke Machinery Co.; 717-764-5000. **Floor:** All-Metal Classic, Delta 28-303 14-in. multispeed, \$1,318; 800-438-2486. **No, It's Not Broken:** Craftsman 12-in. tilt-head, \$350, available at Sears stores throughout the U.S. **Bench-topper:** Three-Wheeler, Craftsman, \$210, Sears. **Full-featured midjet:** Delta 28-185 8 in., \$219.

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French twist: Inca 10½ in., \$595, Garrett Wade; 800-221-2942. Blades: Carbide, nickel and cobalt alloy (Stellite), Laguna Tools; 800-234-1976. Carbide and bimetal, Lenox, American Saw and Manufacturing Co.; 800-628-3030. Sanding belt: Delta. Further reading: *Mastering Woodworking Machines* by Mark Duginske, Taunton Press; 800-888-8286; www.taunton.com.

BRING ON THE BRUSH! pp. 41-43



Opener: Woodman's Pal, \$49.95, Skyline Technology Inc.; 800-736-4113. Polyethylene shin guard: \$20.55, A.M. Leonard; 800-543-8955. Gloves: \$21.79, A.M. Leonard. Left to right: 1) 18-in. Sawback machete, Ontario Knife Co.; 800-222-5233. 2) Cane knife with hook, Barteaux Machetes Inc.; 800-385-1142. 3) Woodman's Pal. 4) Beaver Tail, Ontario Knife Co. 5) Blackie Collins with 18-in. blade, Ontario Knife Co. 6) Spetzna survival knife, Sovietski Collection; 800-442-0002. 7) Beaver Tail with 12-in. blade, Ontario Knife Co. 8) Heavy-duty machete with 26-in. blade, Barteaux.

FIRE IN THE PIT pp. 45-50



Gotkins' BBQ: DCS27A-BQR, \$1,155; 800-433-8466. Installation: Fireplace & BBQ Center; 800-537-9415. Fire When Ready: DCS48A-BRQS, \$2,835. Milton BBQ: Weber 475, \$1,900; 847-934-5700.

MDF—FAKING IT WITH STYLE pp. 53-56



1) High density: MDF², Plum Creek, Columbia Falls, MT; 406-892-6200. 2) Plastic-laminated flooring: Formica, 513-786-3400. 3) Embossed: Georgia-Pacific, 800-727-9452. 4) Wood veneered: Willamette Industries Inc., 803-328-3848. 5) Factory primed: Pac Trim, Pacific MDF Products Inc.; 800-472-2874. 6) Formaldehyde free: Medite, 541-773-2522. 7) Plastic laminated: HDM, 404-842-0077. For more information: Call the Composite Panel Association at 301-670-0604.

IF IT FAILS, THEY WILL FIX IT pp. 59-61



Major Appliance Consumer Action Program: 312-984-5800. Further reading: *Everybody's Guide to Small-Claims Court* by Ralph E. Warner, Nolo Press, Berkeley, CA; 800-728-3555; www.nolo.com.

POURED BRASS pp. 68-73



Knob, p. 1: 260, custom verdigris finish,

\$200 and up, Omnia Industries Inc.; 973-239-7272. **Knobs, p. 3:** 1) Reed and ribbon lever, verdigris on brass, \$153, P.E. Guerin; 212-243-5270. 2) Antique mortise set. 3) Gothic oval in gold-plated brass, \$387.50, P.E. Guerin. **Tube latch mechanisms, p. 5:** Tubular latch, left, \$31, Omnia Industries Inc.; tubular latch, right, \$35, Baldwin Hardware; 800-566-1986. Latches, rosette and threaded spindle available from Simon's Hardware & Bath; 212-532-9220. **Vintage knobs, p. 5:** Circa 1900 glass knobs, \$45 pair, Olde Good Things; 212-989-8401. **Our thanks to:** Andrew Ward, P.E. Guerin Inc. Robert Grant, H.T. Sales Co. showroom; 212-265-0747. Jerry DeJesus, Simon's Hardware & Bath; 212-532-9220.

RALLY 'ROUND THE FLAG, BOYS pp. 74-77



Wooden flagpoles: Gilligan's Flags and Poles; 803-544-4328. Flagpole distributor: Hennessy House, Box 57, Sierra City, CA 96125; 800-285-2122. **Aluminum and fiberglass flagpoles:** L. Ph. Bolander & Sons, 415-648-5611. **Flags:** Air Fair, 805-962-1623. **Our thanks to:** Michi Okimoto, production and location scouting, 415-461-6315; Paddison Farm, 562-863-4567.

CLAY CARPENTER pp. 78-83



For more information on Peter King's work, call 850-438-3273 or write to StoneHaus, 2617 N. 12th Ave., Pensacola,

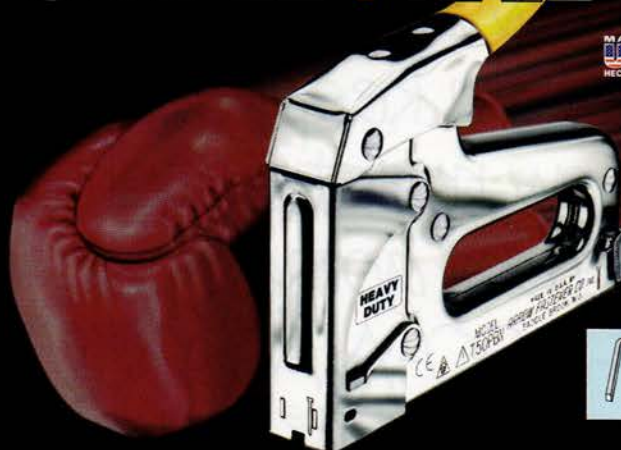
FL 32503. **Our thanks to:** Nancy Lauck, John King and John Donovan.

SHOWER OUTDOORS! pp. 84-87



Architect: Eric Watson, 813-253-3632. **Contractor:** Burrell Elliott, 850-231-1454. **Plumber:** Carl DeLong, Plumbing Consultants Inc., 850-231-5698. **Painter:** Norman Morin, 850-835-1860. **Pickets:** Pressure-treated pine. **Showerhead:** Strom Plumbing by Sign of the Crab Ltd., 916-638-2722. **Valves:** Speakman Co., 302-764-7100. **Our thanks to:** Rosemary Beach Land Company, 800-736-0877. Located on Florida's Gulf Coast, the traditional town plan of Rosemary Beach was designed by the same architects who designed Seaside, FL.

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BULLETPROOFING A HOUSE

pp. 88-93



Gaffco Inc., 212-967-8839. Safeguard Security Services Inc., 210-661-8306. Caci System Designs Inc., 609-259-5900. American Saferoom Door Co., 818-889-3291.

MARBLE, PORCELAIN AND WOOD

pp. 94-99



Tile and wainscot installation: Infinity Marble and Granite, 209-834-4704. Contractor: Plummer Construction, 415-313-2236. Plumber: Deehan Plumbing, 415-456-4650. Architect: Chambers + Chambers, 415-381-8326. Sinks, toilet, wainscot: Ohmega Salvage, 510-843-7368. Tile: Ann Sacks Tile & Stone Inc., 503-281-7751. Shower and sink fittings: Chicago Faucet Co., 847-803-5000.

THE ART OF PAINTING WOODWORK

pp. 100-105



Painting: John W. Dee Painting & Decorating, 978-369-8897. Brush: Purdy Corp., 800-547-0780. Our thanks to:

home owner Stacy Valhouli and her children, Buggy, Peter and Andreas, of Concord, MA.

STOP THOSE BUGS pp. 106-111



Compost pail: With carbon filter XG205, \$19.95, Lee Valley Garden Tools Ltd.; 800-267-8735. **Copper knitted mesh:** Stuff-It, \$6.95 per 20-ft. roll, Allen Special Products; 800-848-6805. **Diatomaceous earth:** Crawling Insect Killer, 00500, \$3.60 for a 7-oz. container, Consep Inc. **Boric acid:** Roach Killer III, Pic Corp.; 973-678-7300. **Further reading:** *The Compleat Cockroach* by David George Gordon, 177 pp., 1996, \$12.95, Ten Speed Press; 510-559-1600. *Common-Sense Pest Control* by William Olkowski, Sheila Daar and Helga Olkowski, 1991, \$39.95, Taunton Press; 800-243-7252. Our thanks to: Richard J. Brenner, Center for Medical, Agricultural and Veterinary Entomology, Imported Fire Ant & Household Insects Research Unit, 1600 S.W. 23rd Dr., Gainesville, FL 32608; 352-374-5855. Louis Sorkin and Randy Mercurio, American Museum of Natural History, New York, NY. Coby Schal, North Carolina State University, Raleigh.

THE POSTER: SPRINKLERS pp. 113-114



Spike: Nelson 1975 Rainswirl 50, \$17, L.R. Nelson Corp. **Tractor:** Nelson 1865 Rain Train 200, \$102. **Square-pattern**

whirler: Sears Craftsman Square-Spray, \$11.66. **Yellow whirler:** Nelson N-65 Rainswirl 50, \$22. **Yellow oscillator:** Nelson N055A Rain-shower 55, \$57. **Turtle:** made in China, available at Target. **Green ring:** Rain Bird R-42, \$4.76; 800-435-5672. **Orange-and-blue adjustable:** Uniflex six-in-one sprinkler 30-277, \$19.95; available through Gardener's Supply Co. catalog; 800-863-1700. **Oscillating green:** Gilmour advanced-variable oscillating sprinkler AVO4, \$39.99; 800-458-0107. **Yellow tubular base:** Nelson 1616R commercial-grade impact sprinkler, \$90. **Brass goo-**

goo eyes: Nelson 2142 Spot Rain 30, \$5. **Black impulse:** Sherman's Finest Pulsating Sprinkler PPS-101 352648, \$25 to \$30, H.B. Sherman Manufacturing Co.; 800-634-2639. **Timer:** Rain Bird electronic water timer WTD-1900, \$65.69. **Rain gauge:** 90107, \$2.99, Springfield Precision Instruments Inc.; 973-777-2900.

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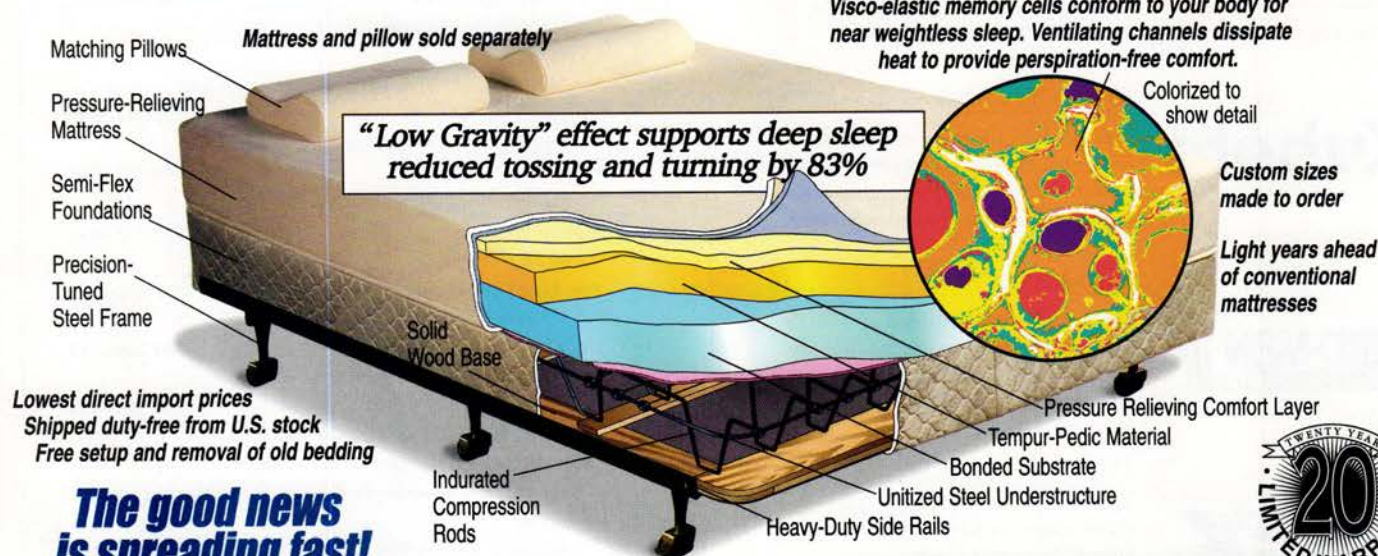
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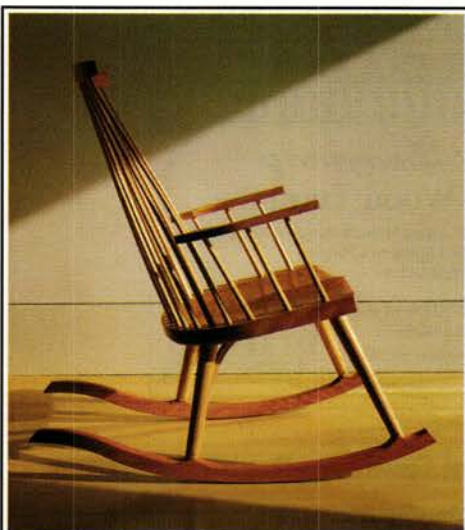
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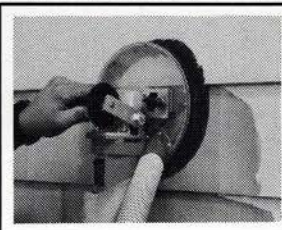
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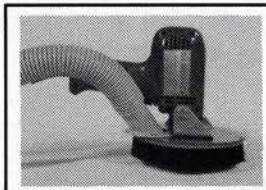
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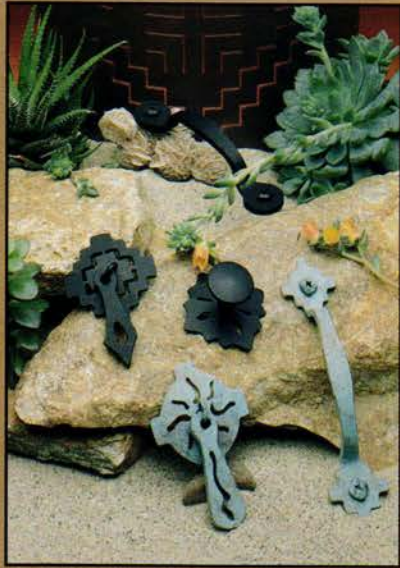
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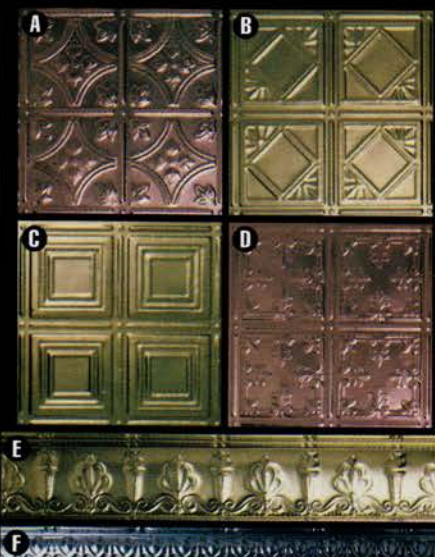


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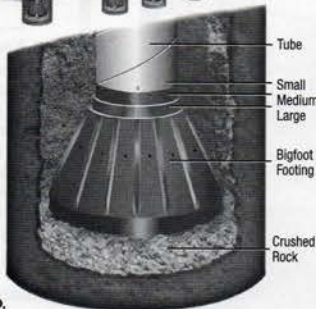
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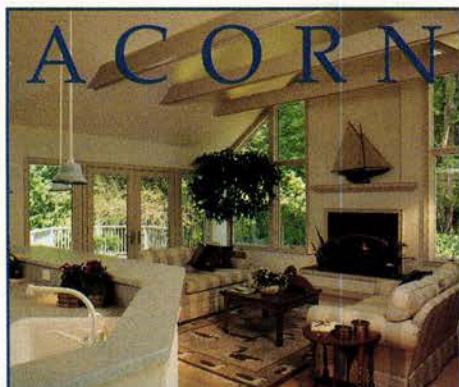
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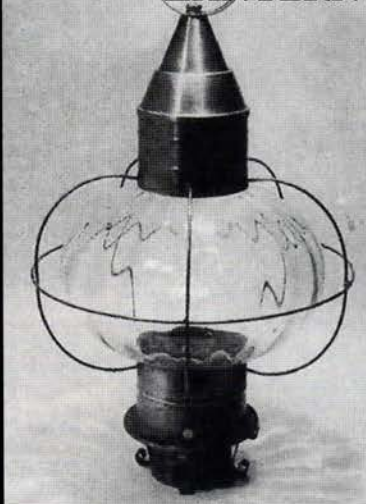


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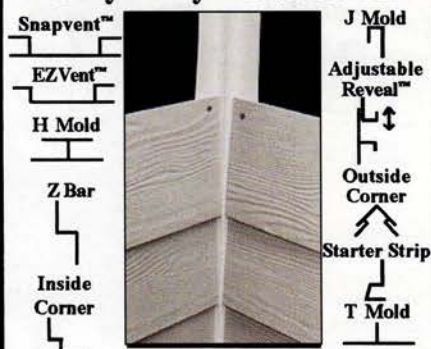
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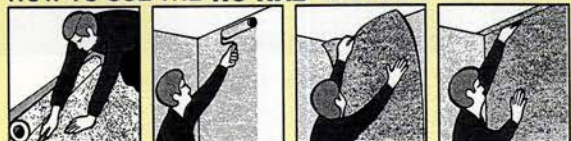
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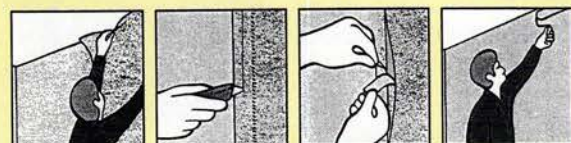
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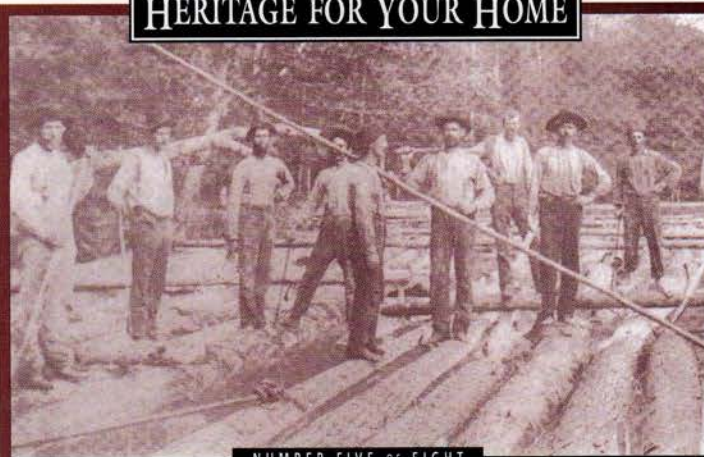
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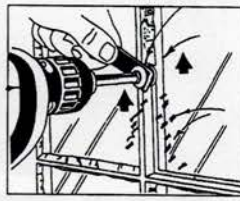
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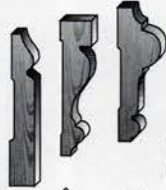
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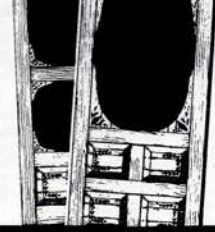
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The Bosworth House has done little besides rot since a bank foreclosed on it in 1992. With plywood on doors and windows to protect interior details—a black walnut banister, massive door casing, plaster ceiling medallions—the 4,500-square-foot Second Empire house is one of the last to be reclaimed in a neighborhood on the upswing.

The Armory District was a thriving cluster of modest Victorians until Interstate 95 sliced through Providence in the 1960s. Brown University, Rhode Island School of Design and the business district ended up on the “good” side while western communities such as the Armory District decayed. The real-estate slump meant, however, that period houses escaped the wrecking ball. By the mid-’80s, artists and social activists had begun to restore houses in the area, which is a 15-minute walk from downtown. Recently, three movie companies have expressed interest in buying the former National Guard armory from which the neighborhood takes its name and converting it into a production center.

Because federal money paid for repairs on the house—\$40,000 to fix rot and install a new roof and gutters—buyers’ annual income must not exceed \$43,000, depending on family size.

CONTACT

Clark Schoettle
Providence Preservation Society
Revolving Fund
24 Meeting Street
Providence, RI 02903
401-274-6503



The Bosworth House, top, was built in 1877 for textile designer Frederick Bosworth and now consists of three apartments. Interior details include a black walnut banister, left. Repairs on floors and windows, above, as well as work on the bath, kitchen, wiring and mechanicals will cost about \$100,000. Renovated houses in the neighborhood have been appraised at around \$125,000.