

This Old House

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features

Getting All Your Ducts in a Row House

It's time to put the heating and cooling system in at the Charleston project. By JEFFREY KOSKE

80

Rate Expectations

Mortgages come with so many options as an SUV that you don't get taken for a ride. By MARCO MARAS

90

Betting the Ranch

A Connecticut couple took a gamble on restoring a 1930s home—and it paid off. By JILL KROCHER-SIMPSON

98

Homeowner's Handbook: Installing a Pedestal Sink

Plumbing expert Richard Trevelyan makes a challenging bathroom renovation task look easy. By THOMAS KAPPA

109

Rock of Ages

A look at the craftsmen who live to do ancient art—building stone walls without mortar. By ADAM LEVINE

116

High Style

A hand-painted ceiling elevates the stature of a modest beach house. By JENNIFER HERRIN

124

Poster: Ceramic Floor Tiles

This elegant floor covering comes in myriad styles and does everything stone does, and more. By JENNIFER HERRIN

133



A LOT ABOUT IT, P. 116



RED ALERT, P. 90



ROCK MAY BE A GOOD BETTING, P. 116

cover

This family room with its large central hearth is one of many improvements artificial One Direction made during the renovation of a mid-century French provincial-style ranch house in Connecticut. When he realized the existing fireplace was a relic of an old building, French architect-turned-homeowner decided to build a new one and gained almost 2000 square feet. See "Betting the Ranch" p. 98. PHOTOGRAPH BY ANDRE RABANOWSKI

NOVEMBER 2010

This month's *Poster* features a dazzling array of floor tiles and practical information on choosing the right type for each room. See "Ceramic Floor Tiles," page 133. By JENNIFER HERRIN

'56 vintage Fender Stratocaster: sorry, wrong password

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BOAT LIFTING, P. 10

TENTS

"I'll never worry about winter in Maine again."

—Cheryl Watson,
homeowner, on her new master tent



WORKS IN STORAGE, P. 14

departments

Outtakes *Tom Slick's trailers come up Dumpsters*

House Calls With Steve *A country kitchen goes new-chest*

Ask Norm *Not a word, heating cables, and shelf help*

Letter From T.O.H. *T.O.H.'s editor is chief inside some features*

10

22

30

37

columns

Toolversations **Bigger House on the Prairie**

A little Texas farmhouse grows up By JOHN DANIELSON

Garages **Floor Show**

The sweeping method adds years to a wood floor By ALEXANDER RANDOLPH

By Design **Hot Under the Covers**

Radiator enclosures increase heat efficiency and look "great" By JOHN BELL

Landscapes **Keeper of the Flame**

Masonry stoves turn a small fire into a house heater By MAX ANDERSON

Working Tools **Stowaways**

Probing the life of your tools by storing them properly By JORDAN KELLY

Owner's Manual **Pocket Change**

Shedding those tool carry pains well By THOMAS FRIEDL-MAYER

36

42

48

59

64

72



NE OUTTAKE, P. 16

FIND UNCLE MAURIE'S HERETOFORE UNDISCOVERED INNER BEAUTY



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The new N95

plus

Centurion 18 Lullaby 54 The File M Discovery 100 Where to Find It 140
TV Listings 145 Classic Program Guide 146 Save This Old House 149

WHERE TO FIND IT • THE BARNES & NOBLE

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(a) $\mathcal{L}_{\text{reg}}(\mathbf{w}) = \frac{1}{2} \|\mathbf{w}\|^2$ and $\mathcal{L}_{\text{data}}(\mathbf{w}) = \frac{1}{2} \sum_{i=1}^n (\mathbf{w}^T \mathbf{x}_i - y_i)^2$ are convex functions.



Male income



Leveler the Second Time Around

As a regular reader of *This Old House*, I read "Vintage TV" (March/April, June 2008) with great appreciation. Here is a glimpse of a table I made of wood recycled from farm buildings in northwest Montana. The combination of red fir, ash, cherry, and elm makes for a delightful collage of textures, color, and feel, while giving a second, more refined life to some beautiful woods.

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Philip Pappas

I'm a high-school honor student who would like to become an architect who works on historic renovations—a dream that your *Magnum* and *Illustration Series* helped inspire. (I can't wait to time to see what happens with the Cheltenham project.) I hope one day to achieve my goal of compensation work in subway downtown areas. As we begin a new century I think the best thing we can do is to preserve great old buildings, as they often tell better stories than anything we could read in a history text. It's high time we all worked together to keep them in good shape so they can live to see another century. Please let me hear back. Thanks for doing yours.

James C. Gorman, *University of Illinois*

Between You, Me, and the Power Boat . . .

After reading "Order Control," and the contributor's note about the writer, Adam Lerner, in your September 2008 issue, I would like to share an effective way to protect a garden against cats using the garden as a litter box. Rather than "scent and spray water at the cat," which is only a temporary deterring at best, there is a safer, more medically sound in many countries that is cost-free, nontoxic and environmentally friendly: periodically scattering human waste urine around the edge of your garden. This method has saved the marijuana buds of our neighbors' cat.

Wholeheartedly recommend trying it!
Susan Edwards, West Haver, Conn.
10/1/2005

Though some sources believe this method works with dogs and other animals, wildlife biologist Bryon Shuster says that there is no scientific study to prove its effectiveness. *It's a waste for you, as for us.*

Pharmacokinetics

Your article "A Question From the Floor" (October, September 1990), about the southern yellow pine flooring found in the Chacoetrova house, is astounding. While you are correct in stating that longleaf pine is rare, most southern yellow pine varieties—including short leaf tabulae, and slash pine—are not.

Владимир Басовичев, 40 лет, 5/10, из Москвы

What's News With This Feature



rope and the hook back of the device safely away from the climber's feet. But thanks to the usual electric offenders,

Gene Hargrove, Tennessee State Rep.

Good eye! We did miss the schedule in an early morning, and an apology for our oversight. Fortunately, if you followed our example, the Quik-Clack gear shown is easy to detach and replace correctly.

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Modelled on the *Journal of the American Medical Association*, the *Journal of the American Veterinary Medical Association* is a peer-reviewed journal of research and clinical practice in the field of veterinary medicine. The journal is published by the American Veterinary Medical Association, 1931 North Lincoln Street, Suite 200, Chicago, IL 60614, USA. The journal is published quarterly, with the first issue appearing in January. The journal is published by the American Veterinary Medical Association, 1931 North Lincoln Street, Suite 200, Chicago, IL 60614, USA. The journal is published quarterly, with the first issue appearing in January. The journal is published by the American Veterinary Medical Association, 1931 North Lincoln Street, Suite 200, Chicago, IL 60614, USA. The journal is published quarterly, with the first issue appearing in January.

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OUTTAKES

BEHIND THE SCENES AT THIS OLD HOUSE

BY JORDAN REED



Happy Trailers

The piles of smaggly debris generated by a renovation can incense project homeowners and neighbor alike, and a typical 16-foot-long Dumpster, parked on the street for weeks at a time, can rub salt into the eyesore. Tom Silva owns the handsome dump trailers. His two operations are less imposing—one measures 7 by 11 by 4 feet, the other 6½ by 12 by 3 feet—cost less than a dump truck, and can be taken away daily. A Dumpster has to be rented, which can cost more than \$350, plus additional fees for going over the weight allowance, and in urban areas like Charlestown, there's the added expense of the parking permit and bond for the space it occupies. Tom's trailers only cost his clients

the dumpyard fee, which is dependent on the weight of the load. And because it's on wheels (he latches it to the back of his truck), his crew can not only move it from one side of the job site to another, facilitating demolition work, but also haul it to the dump when it's full, where it empties by means of a hydraulic tilting system. At day's end, Tom drives the trailer away, leaving the street free and clear. Maintenance is a snap, all he has to do is make sure the brakes and brake lights work and change the occasional worn-out tire. With all these positives, Tom never only one downside: "With the size of the jobs I do," he says, "sometimes I wish they held more trash." ▶



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OUTTAKES



Tripping Over Our Tongues

Can someone help us get a grip? We wanted to tell you how and where book togs—the metal pieces that make it easy to carry a heavy load of books—originated, but we hit a wall. Obviously it was a book one. Books and periodicals came up easy, and appeals to the National Concrete Masonry Association and the International Masonry Institute were fruitless. We turned to lesser-known groups like the Book Industry Association and the Book Collectors Organization, and folks there suggested calling madonnas. But when we did, booktogs book scots and returned—including one with colorful book togs—were unable to illuminate us. Even the Mercer Museum, a preindustrial tool and artifact center in Bucks County, Pennsylvania, left us awestruck. We're hoping a good scholar out there can shed some light on the subject. The first reader to provide us with correct historical information on the subject that is the book togs will get a free Silva Brothers T-Shirt. E-mail your answers to TDH_Jessica@att.net, or send mail them to Book Togs, The Old Market Magazine, 1185 Avenue of the Americas, New York, NY 10036.

LETTING THE CAT OUT OF THE BAG



Extra-interactive viewers of T.O.M.'s first Chas lessonary episode may have opened an odd feline canon. When housewife Dan Beltrami opened the door to a closet in his parent's apartment to show it to Irene Thomas, a cat stared out serenely at the camera. No one on camera acknowledged the feline presence, but his name is Jake, and he's the Beltramis' 4-year-old Persian. "When the crew first saw him in there, every body started laughing," says Dan. "We had to be careful 'cause if we didn't, the Beltramis could've been in trouble." Less we think the Beltramis could've been in trouble, he was done: bowed only for the taping, because Steve is allergic to cats. "Seeing uncontrollably much to make a hard to shoot a scene," he says. Jake now spends his days in our coordinated comfort with Dan, on the third floor of the Chas lessonary house. So far, there haven't been any run-ins between feline and crew. ("No ladders have been swung," says Tim Schaefer, and Jake stays clear of the renovation chaos. "He confuses very easily," says Dan. "And he just loves having people around.")

November 2000 Calendar

STEVE THOMAS
November 14: EXPO Design Center Grand Opening, 1461 Concord Avenue, Concord, CA 94520. 10:00 a.m. to 4:00 p.m.

November 19: EXPO Design Center Grand Opening, 1771 East Bayshore Road, East Palo Alto, CA 94303. 10:00 a.m. to 4:00 p.m.

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HOUSE CALLS WITH STEVE

Vintage Country

A revamped Sonoma County kitchen retains a period appeal

BY RHODA MURPHY

When Megan and Nicholas Drzon bought a two-of-its-kind cottage in northern California's wine country, they never imagined how it would change their lives.

At the time, 1987, both worked in San Francisco—she as a graphic designer and he as an engineer—and they only got to go up there on weekends. But they fell so hopelessly in love with the location that when Megan discovered she was pregnant with the second of their two children, the couple sold their home in the city and moved to their second.

The good news was that within a year, Nicholas was able to quit commuting when he found a job only 30 minutes away. The bad news was that the house's short commute became major hassles when they had to live with them every day. The kitchen, for instance, though serviceable, was far too cramped.

The couple made do for two years, then called in architect James McCalligan, from nearby Sonoma County, to reconfigure the 1,100-square-foot dwelling, with the kitchen area as the top priority. "The Drzons approached their home exactly the right way," says The Old House host Steve Thomas. "If you can want to live with your next new place long enough to learn its strengths and weaknesses, you're in a better position to engage in the renovation process with your architect or kitchen designer."



PROBLEM

"This was never meant to be a fancy house," says Megan. "People say it had been built originally for one of the winos on the land as a sturdy retreat." Over the years, the place had been added onto in a way that "made no sense," says McCalligan. A small, 7-by-8-foot mudroom and a narrow winter-houser closet that included a toilet were tacked onto the back of the kitchen. A shelf



MTA

Although charming, the Drzons' former kitchen (previous, left), was cramped and inefficient. With its hard-board walls and 1950s range, the very narrow space takes its cue from old-fashioned farmhouse. It isn't tucked in the past, though, the range hood, refrigerator and microwave are all up-to-date.



PHOTOGRAPHS BY TODD HIGG



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lined extension of the living room doubled as a passageway between that space and the bedrooms and as a sunny breakfast nook. The kitchen could hold no dishwasher and no storage space other than one L-shaped bank of cabinets. "There was really nothing worth saving," says Megan.

SOLUTION

The kitchen was part of a massive overhaul that involved gutting most of the house. One lesson that affected the design and construction of the new kitchen was the addition of a fireplace pond composed at the back of the house. This gave the room a focus by allowing the architect to open it up to the backyard via glass doors. "The courtyard really expands the outdoor living possibilities," says Steve. "It's ideally located for grilling, cocktails, and dining." To expand the kitchen itself—from just over 80 square feet to 286 square feet—McColligan claimed part of a bedroom, plus the windows and closets, he also turned the old passageway space into a hallway to a guest room beyond.

In terms of design, "it was important to the Dornas that we stay true to the original spirit of the house," explains McColligan. "That was our biggest fear about the renovation," Megan adds. "We didn't want the new rooms to look out of sync with the rest of the place." To inspire their architect, the Dornas chose a restored coastal bungalow dating from the 1930s with the carefree pickles of a vintage Cadillac, which McColligan made the showpiece of the kitchen. To meet building requirements, he installed a new load-carrying beam that wouldn't detract from the gleaming apple-core bannister. "When good design is done right, it's like a good haicai: You shouldn't notice it," says Steve.

McColligan, who had the cabinets built locally, designed them to appear as old-fashioned as possible. "We wanted white cabinets



LIFE: Claiming a former bedroom and adding a glass-enclosed courtyard gave the architect a chance to create a modern dining area at the back of the kitchen. The fireplace, built on precast concrete, is seen **ABOVE**. Glass cabinets behind new cabinets allow light to filter through Megan Dornas's vintage glassware collection.

that looked as if they might have always been there," says Megan. To add natural light, he installed windows behind the wall cabinets that flank the range hood. These backlit Megan's collection of 1930-era glassware. In lieu of an island, the Dornas opted for an antique iron table that they left in the condition in which they found it. The pot rack, made of old wood, was chosen for a similar reason. A new maple-veneer floor matches others in the house.

FINISHING TOUCHES

A pale color palette and a stainless-steel-faced refrigerator tucked into its own alcove keep the space from looking like it emerged from a time capsule. "The fridge goes with the classic accents on the stove," says Megan. For the walk-in to the cooking area, she chose a soft sage green paint; the ceiling was in better shape and is covered by a gas-powered fireplace. "That was my big indulgence," Megan says (the original plan had simply called for a bench). "It makes the kitchen an even easier place to eat," she says. Now that their home is truly livable, the family has no regrets about their move. "We'd never go back to the city," Megan says. ▶



PLAN: The redesign of rooms that stretched a 31-day 19th floor cooking area never felt right in the Dornas. Architect McColligan opened up the space to create an airy 13-by-22-foot room, then ran out a deck and replaced it with a courtyard as the kitchen has easy access to the outdoors, too.

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HOUSE CALLS WITH STEVE

IDEAS NOTEBOOK



HANG IT UP

"If you're a serious cook, it's much easier and speedier to pluck a pot from an overhead rack than to stoop down and pull it out of a cabinet."

—STEVE THOMAS



TOP LEFT: Made of hand-oxidized aluminum, this 20 by 40-inch rack features five sliding hooks of a patented design. **TOP RIGHT:** Accented with simple dovetail full-finger corner posts, this 30 by 24-inch brushed-steel rack is perfect for holding pots and pans. **BOTTOM LEFT:** The four-pointed stainless steel chef's rack measures 41 by 28 inches and comes with 32 40-inch-long pot hooks.

PHOTO: STEVE THOMAS

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Right: Single Bed with Bedside, Dress Chest and Dresser Night Stand

Below: Timeless Sofa, coordinating Chair, Left and Right Posing Pine Lefthand, Centerwood Table, Storage Cabinet Table, Dress End Table, Broyhill® Canada and Dress Mirror



★ **The City Dwellers**, living in the European way, wanted decoratively to enlighten the new New World with all the intricacy and elegance of their method. They appreciated and reproduced, with great attention to detail, the fine carvings, veneers and exquisite craftsmanship of their forefathers' furnishings.

Right: Curved Poster Bed, Dress Night Stand and Armoire



Left: Double Traditional Dining Table, Curved Queen Armoire, Side Chair, Curved Queen Armoire, Dress Chair and Bench, Dress Chair

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✿ **The Coastal Neighbors** lived by the rules, but for their livelihood and learned the refinement of a simple and unadorned exterior. Techniques used in their building were reflected in their furnishings: glassed work tables, heavy mortise and tenon construction. Even the weathered, seaworn finishes had a unique beauty.

Right: Timeless Sofa, coordinating Chair, Broyhill® Curved Table, End Table and Entertainment Center



ASK NORM

Fixes for drywall pops, ceiling cracks, and undersized sills

CLAIMANT'S TRUE ACTS

The previous owner of our house installed blown-in insulation in the attic, but all that blowing resulted primarily as them putting their valuable space to good use. What is the best way to remove all the insulation so that we can replace it with something more compact?

FRANK A. FERNANDEZ, *Executive Director, IOWA*

Assembling you want to use the attic only for storage, not as a living space, I think you'll be better off leaving the insulation in place, as either job saving or. Scooping it out would be a chore, it's not a dirt job, and the only more compact replacement with the same R-value is spray-on polyurethane foam, which will cost as much as a bag. If there's enough headroom, I'd recommend building a platform over the insulation blown in insulation. If headroom isn't sufficient, leave the attic, and as insulation, above.

COOL AIR FOR OLD HOUSES

We have a two-story, five-bedroom house in Brookridge, Mass., that dates to 1912. It's heated with a hot-water heating system. Can we add central air conditioning?

Bangana Park, New York, NY.

Sure, heat might not be easy and a probably won't be cheap. The problem is that standard central-air systems require a blower and a system of ducts to distribute the cooled air throughout the house, and a hot-water baseboard system has neither of those. That means, in addition to the air conditioner,

condenser (mounted outside the house), you'll have to install an air handler (containing a blower and air filter) somewhere inside the house, and some sort of ducting throughout the house for supply and return air. If the ducts can be routed from the attic to the first floor through attics, you can get by with a single condenser outside and an air handler in the attic. But if there's no path for the ductwork, you might need separate systems for the first and second floors.

Richard Treshaw, The Old House's expert on plumbing and heating, says that there are two other systems better suited to cooling old houses: the ductless mini-split, and high-velocity forced air. (See "The Duct Splits Here," June 2000, p. 35, and "Comfort Corroded," January/February 1996, p. 68.) With a mini-split, affix-



noise and drum noise run from a small condenser outside the house to three or four unguipied wall-hangers and then to fan runners on a wall. These units are quietest and have greater capacity than a few slow-impaired air conditioners, but they're best used in the cooling and dehumidifying rooms. To run condition on entire house, you'll want to consider a high velocity system, which has a network of 2 inch flexible ducts that run easily snaked through ceilings and floors. High velocity units, like the one shown installed in the Solaire project, are more expensive than regular forced air but not more than two or three times as much. I installed one such system in the Solaire

Two mice spent the first floor of a house I once owned. They worked great, and the basement ceiling wasn't cluttered with droppings.

Incidentally, now is a good time to start thinking about central air-conditioning. If you want cool air all spring to get into, you might find that installers are booked up through the summer.

尹錫卿 呂海晏 丁惟寧 韓鼎熙

I know that a lot of builders these days install drywall using screws, but my home dealer is an one who calls water the most common fastener. Unfortunately, there are no pine throughout the house, in varying degrees of severity. As I moved into the house, I used down the traps so that they're flush with the wall surface, but no matter what saw-people I use, it seem gets clogged with pine. This work is getting pretty tedious. Can you offer any free-motion solution?

PETER J. TOWERS, *Trumbull, Conn.*

My first guess of advice is to stop smoking—that's no way to repair a bad lung. Instead, push on the diaphragm as hard it against the back, and then deliver a diaphragm squeeze. Diaphragm should be squeezed and released. Now give the back a shock to drive it right again. If the head is exposed, pull the neck out (the jaw is composed to fill the diaphragm created by the screws to wait for the change driven by the last pop—two cents of compressed air) and then the neck (the last few before nothing else second). You'll find these and find your important joints compressed smooth as a baby (the last coming without bumps). If you have a lot of pain to repair, use a different choice reading across. The open source of the essential diaphragm choice is usually

The reason rock pop is the first place is often due to family



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shrinkage. That creates a space between the drywall and lathing, so that the nails pull out if any stress is put on the drywall. Hanging drywall needs hold faster than smooth sheetrock, but embedding lath drywall screws for holding power.

UNSETTLING DISCOVERY

We are remodeling a four-story townhouse built in the late 1870s. Shortly after the 1900s, a three-story brick addition was added. The walls of the addition were attached to the original house with mortar only. It has cracked quite a bit, for reasons we discovered in the middle of our renovation. The foundation under the addition doesn't extend below the frost line, leading it susceptible to soil movement. Apparently that was fairly common for homes, but the settling damage proves it wasn't a good idea. Our architect and our building contractor, however, are giving us mixed messages about how to solve the problem. What do you think?

JOHN DUNN, BRIDGE, N.Y.

Wherever there's a difference of opinion between a contractor and an architect regarding structural issues, there's only one person to turn to: a structural engineer. Architects and many builders may be knowledgeable about a structure's design, but only structural engineers have the competence to quantify the forces acting in the addition and calculate a response that will counteract them. Some of the critical issues I'd expect the engineer to examine in your project would be the poor connection between the addition and the house, the bearing capacity of the soil, and the weight

of the addition and its contents.

When the engineer speaks exactly what should be done, your architect and contractors can holdle up to figure out how to do it. For instance, there are ways to anchor masonry walls to each other using epoxy and rebar, the way we did in the recent Santa Barbara project (see "Beating Out the Big One," May 2000, p. 91). But nothing will keep that joint together if the addition continues to settle.

ALL DINED UP

I live in a home with forced-air heating. The air gets very dry in the house during the winter, so I'm thinking about installing a humidifier on the furnace. What are the advantages and disadvantages of such a system, and are mine better than others?

PAUL BLOOM, DUNELAND, N.J.

On matters such as these, I defer to The Old House's heating and cooling expert, Richard Trethewey.

"Humidity—the amount of moisture in the air—has a huge impact on people's comfort. A relative humidity of 30 to 40 percent is considered ideal, but any time you heat or cool the air inside a house, you change humidity levels as well. The air passing through a forced-air furnace is heated to as much as 300 degrees Fahrenheit, so it's no wonder that the air feels bone dry after the furnace has been operating for a few weeks. Portable units in individual rooms can replace some of the moisture lost out by the furnace, but to humidify the whole house, you'll have to install a humidifier in the

furnace's hot-air supply duct. Furnace-based humidifiers work well, but they can turn into a maintenance headache if the house's water supply contains lots of dissolved minerals, which collect on the humidifier when the water evaporates. If not cleaned regularly throughout the heating season, the unit will eventually clog up and stop working. Once that happens, there's not much you can do except replace it. To avoid such an outcome, check the mineral content of your water with a local testing service; it may have to be treated with a reverse osmosis filter."

BULKING UP THE BILL

We are remodeling the exterior of an 1870 Colonial house on Lake Umbagog, Maine. The original single-pane windows had a thick sill, which nicely anchored the decorative trim at the top. But when we replaced some of the



windows with double-glazed units, we noticed that the new sills have considerably thinner sides than the old ones do. We've gone through one window without siding because we couldn't agree on how to increase the thickness of the original sills. But we do agree on this: We'll leave your advice.

PAUL AND JENNIFER DODD, BRIDG, N.H.

It would have been easier to do this work before the windows were installed, but you can still get the job done by fastening wood extensions to

the underside of your existing sills. This may create a perfect match with the old sills, but it will replace these most prominent features, then checkers. (See "Four Briefs," March/April 1999, p. 43.)

Once a table saw, rip strips of sills, run across it wood such as cedar or redwood. Then run a digiplex in 3/8-by-1/2-inch groove on the bottom edge of each strip to discourage water from seeping along the bottom of the sill. Attach the strips with a

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polyurethane adhesive and wood-screw nails or screws. Set or compress them slightly below the wood surface, and cover them with putty. Then fill the joint on the left face with epoxy, sand it smooth, and seal all the wood surfaces with an oil-based sealer.

The bond that monograde polycarbonate adhesive makes with wood is incredible. I used it to assemble the roof benches at the Nantuxuck project in 1996, and Tom Silver used a fast-curing version to glue down the deck at the Biltmore project in 1999 (see "A Door in Nantuxuck," *Nov./Dec. 1996*, p. 122, and "Hands-On Deck," November 1999, p. 58).

CEILING REPAIR SECRETS

On the ceilings of our house, we have a textured "popcorn" surface which is cracking in the drywall tape underneath crown base. This is happening around the edges of some repairs, but in some cases the tape is cracking loose in the middle of a ceiling. What is the best

method of measuring this problem)

Source: Finance, Germany 14, Year.

If the damage were limited to one room, Ed figure that a leak had soaked the drywall enough to loosen the tape. But because other rooms are involved, I suspect either a fire in the original installation, such as joint compound and tape applied too thick, or too much moisture inside the house. Unfortunately, since they're damaged, new joint ceilings are noticeably sticky on repairs. (In fact, ceilings put up before 1980 may contain asbestos and should not be disturbed. If that's the case here, skip ahead to the last renovation.)

The original surface was probably sprayed on using a special hopper gun attached to an airless sprayer pump. If you have a lot of repairs or patches bigger than 2 square feet, I'd have a pro to redo your ceiling with the same equipment, so doing it by hand won't be easy. But small areas, however, were an important touch-up.

probably look a lot better than what you see now, so here's what to do:

Put off the loose parts, then let the rats eat the lower portion and press new tape into it. After it dries, brush on a coat of oil-based primer. Now for the assembly. Lay on another coat of composition, then push perforated adhesive onto the wet surface with your hands, doing your best to mimic the surrounding tissue. While it's lightweight, adhesive derived from volcanic rock, and looks something like concrete and like a granite one that approximates the texture, you're trying to match. When the patch dries, it will surely be a different color from the surrounding tissue, but don't grab your paintbrush. "You're not supposed to paint anything," the prime person at a face-shaping studio and their staff will probably pull off in a few days anyway. To simulate other variations, close the end of the ending with an underlying character made for the purpose.

If you're not too happy with the results, or you have no coloring that was installed when asbestos was still being used, buy the problem under a new layer of Scotch drywall. It'll be the first to admit that drywalling a ceiling isn't much fun, but at least you'll end up with a fresh, problem-free surface (See "Rock 'N' Roll," November 1999, p. 61.) Given molding installed around the perimeter will conceal the ceiling/wall joint. And this time, pass the compliments to the mason for the mason.

ROCK-GOLDEN EMBROID

I'd like to build a set of shelves in my dining room, and I'm thinking about using marble or granite. How should I go about this?

Steve Aschauer, *University of York, UK*

Very carefully. Crouch to and make the back great on a floor, but stand in a hip problematic on the thigh. It's heavy and it will crush if not properly supported. (And even then, I wouldn't put much weight on it.) The longer the distance between supports, the thicker the spine has to be. Your best bet is to compress a local spine connection—there should be a lot of them on your spine—to get some engagement on supports that can handle the weight, and make sure they are loaded in the bending. Actually, I'd bet her sex was a lot less than yours.



ASK NORM

a more violent material than stone, which is riddled with imperfections. Of course, I prefer wood shelves, but if you settle on stone, let me know how it works.

SETTING

A mason recently replaced the wood joists supporting the weathered porch roof with brick columns to stretch out his life. He used brick that's over 100 years old, and that lasted quite a bit in size, so the mason there was quite

insulate. Now I'm making screens for each of the openings, and I've been unable to find a way to seal the gaps between the brick and the 2x4 framing of the porch screens. Some of the gaps are five inches wide. Any suggestions?

John Davidson,
University of Illinois

Whether I have to make a straight piece of wood to an even or irregular surface, I use a technique called *verging*. It can be used to fit the back edge of a shelf against a bowed wall, the bottom of a cabinet to a sloping floor, and wood trim against a rough stone

foundation. Anyone who works on old houses needs to know how to do it. All you need is a compass and a saw. A coping saw will work on that molding, but on chucker stock, a jig saw fitted with a narrow scroll blade is the best bet anywhere.

Start by inserting a piece of wire no much the height of the column. The wire should be as wide as the widest gap you have in your plot (12 inch (the thickness of the 2nd section) here). In your next, a 1/4" should do it. Place the wire as close to the column as you can while still keeping it square, then tack it in place temporarily with a couple of finishing nails. Next, hold the compass horizontally and spread its legs to match the the widest gap between the columns and run it. Starting at the top of the column, and working clockwise the compass' spread is in horizontal, vertical, and the opposite



penal leg on the trim and hold the other leg against the back face nearest the trim. Draw the compass downward. At the point at the compass follows the irregular surface of the brick, the pencil will trace a matching contour on the wood. When you've traced the entire length of the masonry, remove the 2x6 and cut along the pencil line with the saw.

When you put the first back in place against the brick, the cut edge should match the column's profile fairly well, though you'll probably have to fasten it with the fit to make it perfect. And when you're ready for installation, run a bead of siliconized acrylic latex caulk on the cut edge, slip the trim into place against the brick, and sand it to the framing. I think you'll be proud of the results.

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Some time ago, I had a new garage door installed, along with a 110-volt electric door opener. That was before the Internet came

were required) as a safety feature. Can I have this feature added to my existing door opener?
MARGARET PROBYNS, BURLY, MASS.

It's possible, but the job involves a significant retooling of the operator's mind and controls. That's no job for a novice and it won't be cheap. You'll be better off replacing the existing operator with a more-capable unit.

I think having the sensors is definitely a good idea. They prevent the door from closing on anything—object or person—that intrudes the available beam across the garage door opening. And as long as you keep debris or leaves from obstructing the line of the units are trouble-free. ■

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HARDER CLUMPING



TIDY CATS SCOOP



Bigger House on the Prairie

A Texas family saves an abandoned farmhouse from suburban sprawl

BY JOHN DAVIDSON

"It is an old-timey kind of person," Budie Capp explains as a lacrosse Texas accent. "When I first saw the house, I knew that I wanted to live there." Budie, who describes herself as "country and outdoorsy," recognized her own aesthetic in the small, beautiful house in Lucas, Texas, north of Dallas. It resonated with the past and all-but-depleted traditions of life on the prairie. It was the sort of house in which cotton farmers endured blue northern and scorching southern and died out a living during the Great Depression. With an front porch, two front doors, and two small rooms, "It reminded me of the country," Budie recalls. "I liked the weather and the hardwood floors and the high ceilings. You could open the front door and the back door and get a breeze. I just fell in love with it."



Setting up on blocks, fresh off the women's truck, and several of porch, Budie and Budie Capp's rescued farmhouse (bottom) looks like a live option in the city. Texas dirt. The two front doors saving the dirt road of women are still visible. The A look down, an extra story, some porch seating, and a few flowers bring the full style house into a living, Arts and Crafts feel.

PHOTOGRAPHS BY REID KORN



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They had removed the roof to make room for the second story, an addition the Capps kids' pleased on until they realized the family simply wouldn't fit elsewhere. They did all of their own design work, spending night after night at their kitchen table making plans. Downstairs, they created a large living room/dining room/entertainment area out of one half of the space and added 15 feet to the back of the house on the other half to extend the new master bed room. The rest of the floor housed a game room, master bath, powder room, staircase, utility closet, and pergola.

To ease the need for furniture and keep the house accident-proof, Jeremy built cabinets for the master bath and bedrooms, kitchen, and living room, including a floor-to-ceiling cabinet to separate the living and dining areas. With squared-off wood panels and cupboard handles, the oak-pane cabinets bring to mind period antiques. They stained the cabinets with four coats of a dark brown color, matching the hue of Jeremy's 3-inch core crown molding. The couple even looked for someone who could hang wallpaper on

Jeremy's first staircase design extended 1 foot less far into the front room. He was shocked on how to measure and the new stairs to fit (left) would be found a stair-building formula in Carpenter and Building Construction, a 25-year-old illustrated how-to book.

grout in the old-fashioned way, discovering that it was a lost art, they ordered to drywall, which, in the long run, saved Beckie's time.

Upstairs they built three 10-by-13-foot bedrooms and a small living area for

the boys. "We spent hours at the kitchen table, making drawings, trying to give every one what they wanted," says Beckie. "Each of them wanted their own room, and they wanted a small living area that they would share, but we couldn't make it fit. We finally decided to build a small room behind the garage for Bobby Joe."

For the aptly named and vaulted ceiling, they used short, irregular lengths of 1-inch batts, salvaged from old railroad warehouses, that they found in a wrecking yard in Dallas. Beckie and her sons spent days preparing the batts, pulling weeds, sawing each piece through a plane. They stained the floor smooth and finished it with a high-gloss polyurethane, but they left the ceiling with a pleasant irregular war-torn look. "We couldn't get a ladder on the ceiling," explains Beckie.

The Capps hoped that the house would be a way for them to get out of debt—another old-fashioned idea. They borrowed \$40,000 and estimate that they worked at least another \$30,000, not to mention their own labor. Beckie did much of the backbreaking work herself. Her sons not only helped, they mowed their lawns. When the Capps told the house they had been living in, they were able to pay off their loans and are now free of house payments.

The remodel took a year and a half, but they're all pleased with the home they've created. They not only got the house of Beckie's dreams but, in the process, saved a bit of local history that otherwise would have been lost to the onslaught of suburban, never-reward-come to the town of the cry council member who stopped by to say he thought it turned out well. "I was just glad and exhausted when we finished," says Beckie. "I love it, but I wouldn't do it again." ■

Beckie and her sons made the floor and ceiling (above) in the aptly named room from salvaged batts. They had to leave the ceiling rough, a stark contrast with the smoothly stained and finished floor.



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Works on handi-cap (17)
Takes up baking
Starts alone, re-creates
Sells company to the son
Works on handi-cap (17)



Refuses
Works on handi-cap (17)
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FOUR STEPS TO A PERFECT SHINE



► Egan guides his buffer and its abrasive polyester screen across the floor, moving it in the direction of the grain. "Do have to keep moving, always moving," he says. "If you stop too long, it will spit, you'll take the finish right off." He stops only to flip the 100-grit mesh side or to replace it when there's no dust left, but he goes through both sides of a screen once on five 10-by-20-foot areas. An Egan screen, he says, roughens the floor's surface with a hand-held sanding screen.



► "Many times, people only buff the floor two spots after they've sanded it, before the dust has settled," Egan says. "Once dust is in the finish, that's it. You have a rough surface." Korda agrees, one of Egan's crew, waits 10 minutes for dust to settle before he starts sanding lines up with a backpack vacuum. Afterward, one worker, Tommy Perle, gets down on his hands and knees, a look cloth in each hand, and wipes up the last of the worst particles.



► In the high spots on old, uneven floors, the screen can skip the finish away, leaving bare wood. Egan maps them with stain. Then, using a lambswool mop that's been soaked in a bucket of white-thin polyurethane, he lightly coats the wood on Perle's side to smooth the edges with a brush. Finally, with a further touch of his mop, Egan pulls the screen just off the wet surface, switching to its reflected light for dust and streaks. After curing for 24 hours, the floor is ready for furniture again.

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U P K E E P

Like a leafy sprig on a gray cloth, buffer and screen are among the first of this doing-over floor's thorough scrubbing in order to make a beautiful space. This is what Egan and his crew from Ideal Floor Inc., in Yonkers, New York, call a "screen-and-poly job," a simple three-step maintenance

"If you do a screen-and-poly every four to five years, depending on traffic, you'll never have to refinish a wood floor again," Egan says.

For this technique to work, however, the floor's protective coating needs to be in reasonably good condition. "If the damage has gone too far and there are scratches in the wood, a screen and poly won't fix it," Egan says. "You have to refinish"—gated off all the old floor with a drum or belt sander. In his view, that's no way to care for a floor. "Every time you sand, you're taking off one-sixteenth of an inch of wood and at least ten years of the floor's life," he says. Refinishing is also more expensive

\$1 per square foot versus \$2 for screening.

Then, during room floor, wait by month of renovation, in a perfect world, done for Egan's crew. First, Egan gives the spots where paint has dropped a light scrubbing with #00 steel wool dipped in denatured alcohol.

Next comes the buffer and screen, a dusty but necessary step. Each polyurethane will only stick to an old finish that's been roughed up enough to give it some "tooth." Egan screens everywhere the buffer can reach, a 15-minute process, while his crew runs a hand-held random screen anywhere it can't. They follow with a diligent vacuuming and tack-

ragging to rid the room of dust. Only then is the floor ready for its fresh finish, an oil-based polyurethane topped on with a leaf's wood applicator.

After just four hours of work, the job steps glow in the afternoon sunlight. "Lovely," says Egan. "Just drop mop regularly with a little oil soap, and we won't have to be back for another five years." ■

—Peter Evans,
IDEAL FLOOR

WAX OFF, WAX ON

Wax, the other time-tested material for protecting a floor's finish, is far less toxic than polyurethane, and can be removed and reapplied much more easily. Yet it would floor demands frequent maintenance—once a year, at least, says Peter Egan.

To clean and wax wood, Egan mops on a mineral spirits-based cleaning agent, letting it stand for 10 to 15 minutes. He then fills the buffer with a #2 steel-wool pad and moves it with the grain of the wood in 10-ft off the wetted wax. A second pass using a #2 pad drives the surface. Next, he spreads fresh Butcher's wax on a #00 steel wool pad and rubs it into the floor with the buffer, and by hand where it can't reach.

When Egan has finished buffing out the wax, the floor has a deep satin gleam that no other finish can match. But as Dennis Doyle, a manager at Ideal Floors, notes, "Once you wax a floor, you're married to it." A polyurethane finish, even over several shaggy of wax, would come right off at the first scrub. To make matters worse, says Doyle, "Unless you know the history of that floor, there's no way to be sure if wax is present or not." So, whenever Ideal Floors is hired to put poly over a suspect floor, they'll first sand it down to bare wood, rather than run the risk of leaving wax in the grain and leaving the polyurethane peeling.

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As a source of warmth, an enclosed radiator heats a room more efficiently. (continued on p. 32)

For The Manhattan Radiator Cabinet, made by Jeff Design Studio of French-Island African style, has a fixed top and movable frosted glass doors. A custom design, which easily over the radiator, but it is not the usual way to access the radiators.

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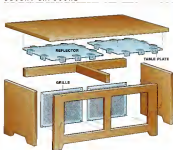
(continued from p.45) draw into left window in the upper. The window is simple. Air is drawn by an unobstructed vertical space in a narrow column up the surface of the wall behind it, then collects at the ceiling; on the air coils, the warm air behind it pushes it across the ceiling, where it falls along the opposite wall. By contrast, the lid on an enclosure encloses that ring column of warm air and reflects it through openings on the floor (and sides, if any) and into the room. Many manufacturers affix a reflective material such as foil to the interior of the back panel to facilitate the process. In addition, an enclosure typically features two openings in the bottom—one 3 to 6 inches high in front and the other 5 to 10 inches high in the rear panel—to draw in the cool air that migrates along the floor and baseboards.

According to Ed Hinton, president of Arco Manufacturing Company, which makes steel enclosures, there's no such thing as a standard radiator in an older home, so it can be difficult to find a ready-made that fits exactly. "In a big old house you'll find many radiators made in as many different sizes," he says. "When people designed heating systems years ago, they'd install larger radiators in the colder northeast corner of the house and in the public rooms downstairs, where they spent most of their time. They tucked in place smaller ones in the bedrooms, because people often preferred sleeping in a cooler room."

Because of this variance in size, manufacturers coat every enclosure as if it were custom made. Before placing an order, they ask for three basic radiator measurements: height, length, and depth—plus extra for any obstructions such as a baseboard or window sill. Many old radiators stand slightly higher at one end, so they suggest the homeowner measure the height at both ends, then add 1 inch to the larger figure for clearance. The length of the radiator must factor in the valves, and the depth requires an extra inch for clearance, too. Although enclosures are designed to be freestanding, many can be customized to be well-matched (with no back) to the radiator stands too close to the wall, is caulked into an alcove, or has other special requirements.

Metal enclosures typically are fabricated of 20-gauge cold-rolled or hot-dipped galvanized steel coated with lead-free, baked-on enamel, in the color chosen by the consumer. One manufacturer to make enclosures with over 50 years' experience is John—14-gauge metal—as people can set on them," says Rice King, of Burke Manufacturing, in Chicago. Grilles of punched metal, in patterns such as octagonal cones, cloverleaf, or a popular, ornate one called Grecian stand out, comprise about 45 percent of the surface area, to promote maximum air flow. When air is trapped through trapped tape or locking, the proof is on the floor. (Because of the bare build-up made

DECENT EXPOSURE

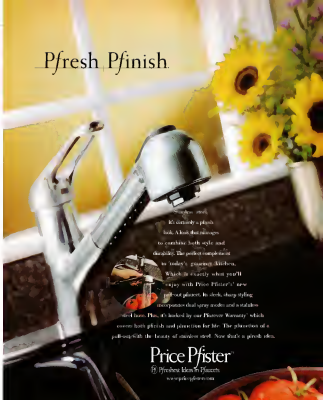


The radiator cabinet that Lynn Lane and David French, of Brooklyn, New York-based Full Design Studio, made for a dining room in Short Hills, New Jersey, measures 80 by 14 inches, it stands 28 inches high. The shell, including a rear support, is 16-inch 21-inch thick plywood. The top, which is fixed in place with 30 white plates, is a 1-inch-thick 1-inch-thick slab of solid African teak, fitted with a pair of custom-cut 1-inch-thick reflectors made of full-covered foamcore. These insulate the top and reflect heat at set two 1-inch-thick, perforated anti-flick aluminum grilles, which are attached with 3-inch 14-paw-hand screws. Lane and French joined the second piece, installing a similar support, with plate primer size 30 brackets. They attached the white plates to draw out the color of the wood, then added a coat of gel polyurethane to protect their handiwork from dirt and scratches.

the enclosure—and to ensure a more accurate reading of the temperature in the room—manufacturers recommend that a thermostat-style valve remain outside the unit. The cost of a metal cover is based on the height and length of the unit, an average size, one should range from \$138 to \$230, including delivery.

Manufacturers of wood enclosure designs range from "as good-looking as any home shop," says Paul Perella, owner of Perella Woodworking, in Oak Park, Illinois. Details count: Corners, for example, are joined with biscuits. Depending on size and complexity of design, a cover made of solid oak, cherry, mahogany, or birch will run between \$600 and \$2,000. Old models use heavy grainers all surfaces and seal the interior corners in the wood so it will not warp or crack. Homeowners, Perella notes, needn't be concerned about covering a hot radiator with wood, especially if the lid is caulked. The cover's protection ensures that the enclosure will be one for time—but in no way a hot one.

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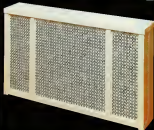
BY DESIGN

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ABOVE: Building the stove requires careful planning because everything is assembled from the ground up. Alex, Alvin Barden, left, and an apprentice lay concrete floor joists onto which he built a warm bench wrapping around the perimeter of the stove. (LEFT) The 18-by-24-inch fluebox, back of heat-resistant brick and concrete, is designed for just a few logs at a time.

fireplace. But the real appeal of these stoves is their delicious nooks, which radiate into the house for hours after the fire goes out. In northern Europe, where rustic country stoves date back to the late 16th century, they're sometimes built with built-in cupboards to provide toasty sleeping quarters. Often, they incorporate flat-topped easel-style benches. "The master I heard about the warm benches, I was told," says Wixson.

Such comfort doesn't come cheap. Masonry stoves cost from \$30,000 for a half-built stove to over \$10,000 for the high-end custom models featuring such options as leaded and soapstone carvings. Perhaps the good part is what has kept masonry stoves somewhat of a cult item since they were introduced here about 20 years ago. The Masonry Heater Association of North America estimates that only about 1,200 are installed in North America every year, but sales are growing, according to Hilda Vuokko at Finnish manufacturing Tekkari. He says U.S. sales of its soapstone masonry stoves have increased 25 percent annually since 1995.

Other than price, the challenge most people face is finding a place to put a masonry mass of bricks or stone, says mason Alvin Barden, who built the Wixson unit and helped pioneer the introduction of Finnish-style masonry stoves in North America. "In most old houses, you don't have enough space for a 160-square-foot floor-to-ceiling stove," Wixson and McFarland had the space—an 870-square-foot renovated barn—and they even had a hexagonal design in mind, which they created using a Lego model. But the location contained a support wall beneath a critical junction of ceiling beams, so Barden installed a brick pillar in the back of the stove to support the ceiling.

Construction began in the basement where Barden poured a 12-inch-thick pad of other reinforced concrete to support the stove's 10,320-pounds of brick and concrete. On that, Barden built a concrete block foundation up to the level of the first floor. Next, he laid the stove's three concentric layers of bricks—"like Swiss cheese nesting dolls," he says—each of which

can expand and contract independently. He filled the spaces between them with rock wool, a 1-inch-thick, heat-conducting mat.

The stove's firebricks—those that actually contact flames—are made from a cream-colored, iron-free clay and laid in special decorative herringbone patterns. But for the rest of the stove, he chose a red-brown red brick, hand-made in Maine. "They're less available than machine-made brick and harder to lay," says Barden, "but they give you a wonderful play of light and shadow across the surface." Then details were cut from Virginia soapstone, and the kitchen and oven came from Barden's workshop in Maine. Barden and three other apprentices took four weeks to build the stove. After being seasoned by a small handling fire, it was ready for a Maine winter.

Now on cold evenings, Wixson loads the firebox with 16-inch lengths of hardwood. Then she raises a lever to get a good draft going directly up the chimney, and lights the kindling. Once the fire is going, she adjusts the lever again to slow the smoke through the stove's 18 feet of vertical and horizontal flues. For a couple of hours, she lets the fire burn unassisted, which ensures the building of soot and creosote—a flammable by-product of low-temperature wood-burning. When the coals are reduced to embers, she inserts a gold-colored metal damper as a six in the chimney, trapping the remaining heat inside the fireplace.

By then the oven has reached about 550 degrees, perfect for baking pizza. "I lay apple or cherry wood, which really warms it, and the flavors really get into the food," says Wixson, a former restaurant owner who teaches cooking classes in her home. She also roasts chickens and small cutters in the oven, but her favorite wood-fired dish is that Maine staple, lobster.

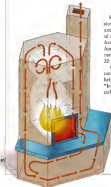
Even on lobster nights, though, the benches are the star attraction. "That's where everyone gravitates," especially her three daughters, who dash to the warm seats to remove ice skates after a day on the frozen backpond pond, says Wixson. "It's become the favorite place in the house." She now burns only about two cords of wood in the course of the winter, and it provides the only heat for the kitchen wing. (The rest of the house is now heated with an oil-burning furnace.) "I'll never worry about winter in Maine again," she says. ■



Masonry stoves can take the form of large stone fireplaces with exposed chimneys (above), or as open custom designs like this soapstone heater with a flat roof (below).



ABOVE: The warm soapstone bench in a Sonoma bungalow for Joanne (top photo) and Emily McFarland. BELOW: The oven, mounted on the kitchen side of the 180-square-foot brick heater, reaches 550 degrees, perfect for pizza baking.



Smaller flues directly from the firebox pass the cook area, where Wixson likes to roast Maine lobsters, then move into the 12-foot flue that snakes through the stove before finally reaching the chimney.

PHOTOS: TERRY HUBBARD; ILLUSTRATION: TERRY HUBBARD

PHOTOS: TERRY HUBBARD; ILLUSTRATION: TERRY HUBBARD

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This large workbench shows a homeowner in reality alone a shop full of tools in one location. The eight 150-inch-long full-extension drawers fit everything from claw-ham tools to belt sanders and large saws. Built-in fluorescent lights illuminate the preboard for hanging frequently used tools.

TALKING SHOP

A Place for Everything



BY JORDAN REED

T

HE'S OLD FASHIONED, master carpenter Norm Nelson and contractor Tom Silva would no more mistake a tool than tooth. Perhaps would come his tools into his reality. And just as Perkins always must be prepared inasmuch as a case when the owner's own, woodworking and construction master Norm and Tom treat their tools with similar respect at day's end. "Knowing tools are on top of the other isn't good for them," Norm says. "They get banged up. Cords get frayed. They suffer wear and tear that's not necessary."

As the New Mexico Workshop, Norm recently constructed an 8-by-70-foot-a-way store with room, full-extension drawers that provide easy access to everything he needs. "I don't have to guess a lot of stuff out of the way to find what I want, and that means I'm more productive." Tom, on the other hand, is always driving from job to job, so his tools rely with him. "I have all that I need in my van," he says, enough to handle almost any job—frame a house, install a kitchen, or build a dock. His tool stuffed refuge is a far cry from the days when he and his father served as job men carrying all their hand tools in simple boxes made of plumber's tape and plywood scraps. "Why would I go out and buy one when I could hammer one together in half an hour?"

PHOTOGRAPHS BY BENJAMIN OLIVER

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TALKING SHOP



When a tool collection grows too big and heavy for a single box, take a tip from airport baggage and get a set of wheels. This rolling metal-and-plastic storage unit just includes a toolbox, two drawers for fasteners, a one-million-foot storage bin for hand and power tools, and bumper wheels for dragging things around.



"The real trick to maintaining tools is storing them right."

—Tom Ichni



People still prefer the utility and strength of a traditional steel box for protecting their precious implements. The 20-inch by 20-inch toolbox will comfortably accommodate levels, saws, and pipe wrenches and its removable handle bag. A lightweight 16-inch by 6-inch pad gets in to just the right size for a packed-down collection of often-used hand tools.



Tom uses soft-closure bags like this 16-inch model, which won't sustain up a floor or drag a wall like a steel box. The built-in foam bag is ideal for a small odd-shaped item, such as a small plane, wrench, chisel, and screwdriver.



So D.R.—good old reliable pegboard jacks—in the way of shop or shed storage and easily adapted for everything in the place organization. For a more streamlined hanging surface, a narrow steel peg bar board supports up to 250 pounds, and accommodates 1/2- and 3/4-inch hooks.



Draped over my leftover 5-gallon bucket, a polymer tool organizer holds much more than a tool belt and keeps things organized better than a box. The entire sports 66 exterior pockets—including those for a power drill and saw bits—as well as a hammer holder and 11 inside pockets.

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TALKING SHOP

Maintenance, Man

Even tools stored in Fort Knox won't be worth their weight in gold until it does its job properly, creed he. At the end of each work day, Sam Sides closes his store off power tools such as saws and hand saws with compressed air while wearing safety goggles. Then he has each tool run a few short strokes to keep them in good shape. "If you pull the cord right and swing it around the body, the cord's wires will eventually break, just like a shirt hinge that's been bent too many times."

He's as keen as blazes to his hand tools. Chisels are clipped into holders in plastic aprons, and hand planes go on their sides to keep their chisel faces being dulled.

A dab of vasoline removes sticky pitch from saw blades and blades, and a silicone lubricant keeps rust at bay and moving parts working smoothly. Then comes silicone-free lubrication (Sidel's concentrate metal outflow and cause problems with the final finish. But he warns against oily lubricants. "If you use too much, it'll collect around like a magnet and clog the tool."

Should a tool or the blade develop a bit of rust, he rubs it away with steel wool, fine sandpaper, or an abrasive kitchen pad, then sprays on a coat of the same silicone-free lubricant. "But the idea is to not let tools get to that point," Tom says. "Keep them dry and don't store them in a damp place."

"Easy accessibility to tools is vital. The less time it takes to find the one you need, the better."

—Tom Sides



Have Tools, Will Travel

You know the only guy we know with a one-lux, diesel-powered, fully air-conditioned toolbox, which he refers to fondly as "the van." The 160-foot work-shop on wheels is packed from head to back with enough stuff to stock a small hardware store. Most tools—everything from a sledgehammer to a table saw—find a home in the five 4-foot-long drawers that slide out the back (and smaller bins attached to the two back doors and one side door have locking, hinged covers to prevent screws and other items rattling out when he hits a bump in the road. And even though there's a removable deck seat in the back to transport his crew, he still has enough room to haul lumber and bagged concrete. This is a hard-working vehicle. "It's not something you'd want to take to the gym," he says. Thanks to the diesel engine, the van gets about 18 miles per gallon. It's also a little fast, but Tommy can't remember. He just cracks up the driver to take out the tires.



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The Pro File

WOODSTOVE RESTORER

BY JENNIFER PIRTLE PHOTOGRAPHS BY KINDRA BLINEFF



From the 18th and 19th centuries, Richard Richardson repairs the ornate metal stoves. A 19th-century stove is in the background, and a 19th-century stove is in the foreground. A 19th-century stove is in the background.

NAME: Richard "Stove Black" Richardson

COMPANY: Founded in 1973, the Good Time Stove Co. specializes in the restoration and refurbishment of woodstoves and cookstoves dating from 1840 through the 1930s. Richardson, 51, runs the business with daughter Sara, 23.

WORKSHOP: Over 5,500 square feet of showrooms, three woodshops, and a cow barn, sited on eight acres of land in Gosham, Massachusetts, where the Richardsons live. The shop maintains an inventory of 300 wood- and coal-burning stoves in a number of styles, including potbellies, Yorks, and potbellies, and another 30 or so outdoors in an adjacent field.

OPINION: Self-crafted, Richardson's business grew out of his attempts to locate an antique wood stove for the home he bought at age 24.

THE PROCESS: After being dismantled (some stoves have over 250 parts), each piece is sandblasted to remove rust, then cleaned. Working parts—including grates, front and back doors (where wood is inserted), and dampers—are evaluated to see if they need to be repaired or replaced. The unit is then reassembled with new stove bolts and sealed with heat-resistant gasket sealer to make the stove airtight. To finish off the unit, decorative elements, such as a foot rail, cast-iron cracker's legs, and top-mounted flues, are refinished with new metal paint. Surrounding surfaces are given three coats of a heat-resistant paint to prevent staining, then sealed again for air-tightness. Once draft controls are reset, the unit is ready to heat a room—or house. "Stoves just aren't made like that any more," Richardson says.

SOURCES: Richardson sources the stoves he currently repairs "anywhere imaginable," such as antique shops, online, and old-school houses. "This is Yankee country," he says. "Fellas would betta cover their arses with a pike awny."

BEST PART OF THE JOB: "The thrill of working a reward back of a stove come alive."

PHOTOGRAPH BY JENNIFER PIRTLE



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Disappearing Act

Pocket doors slide away elegantly into walls when you don't need them.

It's a performance for a stage performance, pocket doors don't disappear; they simply disappear. Perhaps such theater is the Victorian era's answer to the modern stage. The Victorian era's answer to the modern stage was the pocket door. The pocket door is a kind of dramatic stage set that can be moved out of the way when it's not needed. The pocket door is a kind of dramatic stage set that can be moved out of the way when it's not needed. The pocket door is a kind of dramatic stage set that can be moved out of the way when it's not needed.

The reason it's pocket doors, though, have always been hanging on the wall. In the 19th century, builders were always looking for ways to design a room that could be used in many different ways.

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lently shake the door out of sight. There were accordionlike metal strips set alongside the door and, more successfully, a bar of cast-iron-encased "tracks" that rode wood tracks above the pocket. But into the last hardware of the times—usually bronze or polished nickel—under the heavy doors, which were then extended inside their pockets or removed altogether.



Until recently, poor hardware was the Achilles' heel of modern pocket doors too, according to This Old House contractor Tom Silva. "Often, a screw falls out or the door comes off the track," he says. "You get all kinds of grinding and scraping noises, if you can move it at all." But a new type of hardware, developed in Germany, has overcome those drawbacks, Tom says. Its nylon-wheeled tracks, which glide smoothly and almost silently in a track of anodized aluminum, have a capacity of up to 350 pounds, enough to hold even the heaviest of doors.

The only prerequisite is that there be room for the pocket, a space equivalent to the door's width plus 6 inch, without any electrical wiring, ductwork, or plumbing in the way. Above the doorway, you'll need 6 to 8 inches of clearance for the hardware. Beyond those limitations, though, pocket doors will work for interior applications in almost any way imaginable. For a set of double doors, there's an optional pulley mechanism under the track that makes them move in unison when only one is being pushed or pulled. And special hardware even allows for curved units. Neither the hardware nor the doors require special maintenance or care.

Contractor Jim Vary, of Gold Coast Custom Builders, in Glen Head, New York, attaches an aluminum track to a stud with a special mounting plate. The pocket door will provide easy access to a bathroom for a disabled person on Long Island.

or wallboard and pulls out the existing framing where the pocket will go, Tom puts in a header—a beam—across the top of the opening and supports it with 2x4s at each end. "You may need to consult an engineer to give you the header's dimensions," Tom says. Next, he cuts the track to length with a backsaw, lays a pair of wheeled tracks per door into it, and drives screws



Very easy to attach to the bottom of the door to accept a guide that prevents swinging, wobbling, and those bangs the door makes up & for itself. OK, all that's left to do is install drywall and trim over the pocket and the track.

TRACK STARS

A pocket door is supported by two tracks: (1) that roll inside the track (2) above. The head of a built-in hanging track each track slides into a bracket (3) on the top edge of the door. Turning the bolt, which is threaded through the track, lifts, lowers, and levels the door.



IS THAT A DOOR IN YOUR POCKET?

Finding a set of original pocket doors hiding like buried treasure in your walls is "always a wonderful surprise," says Rick Serik, a contractor with Beyer Construction in New Berlin, Wisconsin. "It happens a lot. When the old owner or track breaks, people just throw the doors into the pocket and closed up the job."

Pocket doors were most common in houses built between about 1930 and 1940 that have a large opening between a living and dining room. The odds of finding a door increase if a wall is thicker than usual (up to 12 inches instead of 8 or 6 elsewhere in the house) and free of outlets or outlets. "Look for dry areas on the floor and a ceiling or floor piece covering the center of the job," says Serik.

The only way to know for sure, though, is to remove the joint, look price off the wall with a flat bar, being careful not to break them, and don't the same with the joint. If the wall is pulled away from the wall and appears loose, he takes them out by releasing a new track and wheels. "We just cut small holes in the plaster so we can reach up inside the pocket," he adds. Don't empty pockets are good news to Serik, though, because they make installing a new set of doors a simple job.

—Josh Gerschlager



Don Fennell and Robert Kautzhausen, carpenters with Beyer Construction, install a new aluminum track for pocket doors in an 1860 Milwaukee house. Each 350-pound door originally hung from wheels made entry of father.

it into the header or fascia it into the track on each end with brackets usually supplied by the manufacturer. Rubber bumpers at the end of the track prevent the doors from sliding too far inside. "When you close the door, you have to make sure it goes flush against the trim," says Tom.

To make the pocket, Tom places 8-inch steel "jamb stiffeners" every 16 inches on both sides of the pocket and fastens them to the header and floor. These stiffeners, which contain a wood strip for anchoring drywall, make possible a finished wall that's the standard 48 inches thick, just like one created by a stud's 2x4. "The key, as with any door, is to make sure everything's level and plumb," says Tom. "If you vary even a little bit, the door won't slide correctly."

On the door itself, Tom screws a bracket to each top corner. Then, as a helper holds the door in place, he attaches the brackets to the bolts hanging down from the tracks. He uses the bolts to adjust the door for height and level, then once he's satisfied that the door is operating properly, he mounts the pocket by screwing drywall and trim onto the jamb stiffeners. Finally, he mounts the opening hardware of the door and the push, but can struggle from a simple adjusted pulley to more sophisticated push button units that come with a hand pull to pop out. "Pocket doors take a little more work to install," says Tom. "But if you need the space, they're worth it." ■

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LETTER FROM THIS OLD HOUSE

Feathering the Nest

BY DENNA RAPPEL



On a morning last spring, as I was driving off to work, the contractor I had hired to paint my house called to me from his perch atop a ladder. "Denna, there's a bird's nest with some eggs in it under the eave at the back of the houseway," John said. "The mother's flying in and out. You want me to paint around it?"

The question seemed almost laughable to me. Here I was, the editor in chief of a home-on-magazine that's all about doing a job right. "John," I quickly answered him, "I no more want you to paint around that bird's nest than I want you to paint around the foundation piers!"

Like most homeowners, I've been seeking shelter within nature while waging war against her elements—from wind and water to sun and trees—and not the day I moved into my house 14 years ago. But on occasion I've had to bend my standards when fighting these battles, either to protect my budget or conserve scarce time. In fact, on this particular exterior facelift, I had already opted for an aggressive stopgap measure—a few well-placed screws and some epoxy wood filler—to deal with buckling soffits that actually needed replacing. It had been hard for me to reconcile myself to the gaudy work, even if it was just a temporary rep, so I knew I didn't want to compromise on the painting.

But John's remark stopped me in my tracks. "The mother won't come back if I touch the nest," he said. "For a bird lover, so if you want it moved, you've gotta have to do it yourself."

And there's when I knew I would have to make a decision on. Because I have birds, too. In fact, a couple of years ago, I sat out such an abundance of delectable bird seed that I unwittingly lured a family of Epig sparrows to my attic and was forced to hire a humane trapper to evict them. The only solution I could imagine to the nest dilemma was to leave it in place.

The fledglings flew away in midsummer. Not long after, I climbed a ladder to remove those perfectly formed beams and cover the small spot behind it with some leftover paint. Today, my house looks terrific, a testimony to the fact that you can do a job well even if you have to work around some limitations. You just need to know your priorities and use a few tricks of the trade. It's my hope that the team at *This Old House* magazine can show you how to strike that delicate balance between the often conflicting demands encountered in home renovations and repair to your leather all the parts of your nest. ■

For *TOH*, editor in chief Denna Rappele, counting a house as a house is meditation.



PHOTOGRAPH BY KOLIN SMITH



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Getting All Your Ducts in a Row House

New heating and cooling technology pushes a 19th-century building into the comfort zone

BY JEFFERSON HOLLE

Homeowner Don Bellevue and *This Old House* plumbing and heating expert Richard Trethewey stand in the basement of the Charlestown project, staring at the remnants of the 100-year-old boiler that once provided heat for all four floors of the house. The mammoth hunk of metal has been cut apart with an acetylene torch, and now the pieces sit in a corner—rusty pipes and steel plate tangled in a pile that looks like a cross between a train wreck and a Calder mobile. "I'd guess someone came in from the Charlestown Navy Yard and welded it together," says Richard. "It was probably state-of-the-art at the time."

"Well, at least the gas service coming into the house is pretty new," Dan says matter-of-factly. "Other than that, there's nothing here that we can use."

And as far as he's concerned, that's just fine. The demolition and removal of the old boiler, along with its iron pipes and radiators, has cleared the way for him to install a brand-new heating and air-conditioning system, one that is state-of-

Charlestown homeowner Don Bellevue, IFHC contractor John Ambrosini, and T.O.H.'s Richard Trethewey inspect rust-eating radiators left over from a 55,000-BTU gas furnace at Ambrosini's Tont-Tenepawson General Inc. showroom in Woburn, Massachusetts. The clean, energy-efficient unit, similar to the ones that will go into the Charlestown project house, runs on clean PVC pipe to supply the house with vents for heat and to exhaust air, substantially cut flow rates. (L/R) Dan says clean-run pipe is sold in one-inch thick fiberglass insulation around a length of basement ductwork. The fish-faced fiberglass insulation construction is the same as the one used in the summer months and heat loss in the winter.



Check out www.thisoldhouse.com for more details on the Charlestown project, and enjoy the challenges of the reconstruction.



100 Now ready for the scrap heap, the old oil-fired boiler once heated the whole house by means of a new-fangled system—two to each radiator—that needed clear any from the basement to the upper story. Here, Richard seals the waste and gas radiator taking beneath an old, creaky basement of the radiators to free up valuable floor space, and a trade with a salvage yard, enabled Don to get an old floor joist to fit his new master bathroom.

the air for our time. That is no simple undertaking. Due to the continuing advances in heating and cooling technology, there are now a multitude of ways to create a comfortable environment within a house. Sorting through these options—the type of fuel to use, the durability and efficiency of the mechanical systems, and the method of heat transfer (hot water? Forced air?), not to mention installation and operating costs—is no daunting task. Little wonder that most people, as Richard says, “spend more time checking about paint color than they do about their heating and cooling system. Then when they move in—surprise!—the house is always too hot or too cold or too expensive to run, much to their regret.”

Incorporating a new system within the fabric of Don's 135-year-old house makes matters even more difficult. But if the design and installation are done correctly, his payoff is clear: greater comfort and lower operating costs.

The first order of business is to decide what kind of system to use—forced air or hot water. Although Richard has long been a hot “wet-head,” a fan of hot water, Don made up his mind to go with forced air. One reason is cost. “A hot water system is going to cost about 30 percent more than a hot air,” says Richard. Another is familiarity; before Don started renovating houses in Boston, he worked in a business in the heating, ventilation, and air-conditioning (HVAC) industry, a fact that has Richard winning rhapsodes: “For the first time in my twenty-two years with The Old House, the sun, the moon, and all the stars have aligned and we have a homeowner

BIGGER ISN'T BETTER

“Most homeowners want immediate gratification when it comes to getting the right temperature in a house,” says Don Balloune, as Richard Testimony needs is appreciated. But increasing the power of a furnace or air conditioner is not the answer, either in terms of cost, comfort, or efficiency.

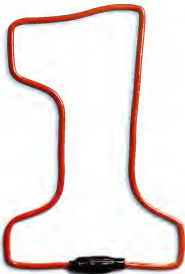
Dear and even, Richard says, the bigger-is-better scenario plays itself out like this: “Someone determines—accurately—that a house needs a 100,000-BTU furnace, but then, just to be on the safe side, orders a 170,000-BTU unit. The homeowner is pleased because he thinks he's getting more heat. But what he's actually getting is the equivalent of a 500-watt-power lamp versus, if he did the job, but it's going to cost a lot more to buy and to run.”

Comfort suffers because of a phenomenon known as cycling. Imagine a homeowner walking into his cold house; the first thing he does is crank up the thermostat to 72 degrees. The giant furnace goes to work and the next thing you know, the temperature might be pushing 70 to 80 degrees. That's because the released heat in the system continues pouring into the house after the thermostat has said stop. Naturally, the owners then stuff and try, and remain pretty much that way until the next time

the thermostat calls for heat. “It's as if your furnace is in a car at a stoplight,” says Richard. “The light turns green, you step down all the way on the gas and get up to 50 miles an hour, only to slam on the brakes at the next light 100 yards ahead. It's not good for you or your system.”

To get a system that's the right size to begin with, an HVAC pro calculates dozens of factors—the size of the house, the size and number of windows and exterior doors (which typically are less energy efficient than an insulated wall), the amount of insulation in the walls and ceiling, the number of exterior walls, and even identifying the local weather. All data is then plugged into formulas that basically calculate the amount of heat going out of the house, or in the case of air-conditioning, the amount of heat getting in. Based on these calculations, Richard says, a system should then be designed to supply only the amount of heat (or cooling) to make up for what is being lost to the outside on the coldest and hottest days of the year. In theory, at least, on these days the HVAC would run at its top capacity, without ever cycling on and off.

By, as Richard puts it, getting back to the car analogy, “It's much more efficient—and ultimately more comfortable—to accelerate slowly to the next light and get there just as it turns green.”



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...probably still
the art of the...
—Richard, Fall 1999

who knows more about HVAC than just how to operate a thermostat—I feel like I'm going to a vacation." Well, not entirely. Richard and Dan will work hand-in-hand, with Richard as the sole consultant, recommending courses of action and introducing new technology.

They are both working with John Ambrosio of Total Temperature Control Inc., an HVAC contractor in nearby Wakefield, Massachusetts, who is doing installation. Richard says, "I asked John to get the systems in here that he'd want in his own house."

Armed with calculations on how much heating and cooling the house needs, just "Bigger isn't Better" (p. 82) Ambrosio plus calls for two gas furnaces and two air conditioners. One 55,000 BTU furnace and a 2-ton air conditioner to serve the downstairs rental unit, and a separate 95,000 BTU furnace and 4-ton AC unit for the 2,000-sq-ft second floor in the Belvidere two-floor apartment space. To give the Belvidere even more control of their envi-

This corner of the basement, a veritable museum of outdated heating technology, will become a bedroom in the rental apartment. The electrical panel on the left once served as this far the area's need to fire the boiler heating behind the brick pillars once usually the boiler passed oil from the big tank at right down after the pattern was taken, the heavy metal was all heated away.

ron, Ambrosio is dividing each floor of their apartment into two zones—not in front and one in back—that will be controlled by separate thermostats.

Having separate radiators, with their own shut-off work and valves, works to Dan's advantage in a number of ways. The renters pay for and control their own utilities. And, in the apartment, at least, the rooms at the front of the building, which receives the heat of

the day's sun, can get the air conditioning they need without freezing the folks in the more shaded back rooms.

Using two sets of mechanicals also can down on their taxes. Gone are the days when a resource bank of wood taking up half a house meant bottled fire and belched smoke like Chimney. The new furnace for the rental unit will reside in a small entry closet in the basement, and the one serving Dan and Heather's quarters will be horizontally in the small attic crawl space.

These furnaces promise an amazing degree of fuel efficiency



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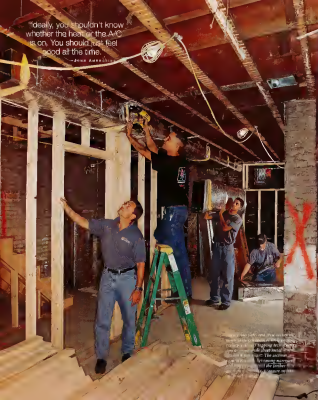
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"Ideally, you shouldn't know whether the heat or the A/C is on. You should just feel good at the time."

—Don Ambrosio



As indicated by their AFUE (Annual Fuel Utilization Efficiency) rating, more than 98 percent of the heat they generate goes into the house, as opposed to up the flue. In fact, so much heat is transferred from the flue gases that the moisture in them literally condenses into a slightly acidic liquid, which is why they are called condensing furnaces. The remaining gases are then cool enough to be vented through an ordinary PVC pipe—an expensive masonry chimney or gawky stainless steel flue required. Contributing to that high efficiency are the unit's on-stage burners and variable-speed fans. Unlike a furnace that is either full on or off, these units can operate at a quiet half-speed setting when only a small amount of heat is called for.

The air-conditioning units Ambrosio recommends feature similar dual settings. The compressors, which will be mounted on the roof, operate at a lower speed on moderately hot days and a higher speed on those fry-egg-on-the-sidewalk days of summer. Overall, their Seasonal Energy Efficiency Ratio (SEER) is more than 16, well above the Federally mandated minimum of 10. "They cost more to purchase," Don says, "but they cost a lot less to run."

All this smart heating and cooling technology has Richard pretty excited. "Ninety percent of the homes in this country have air-driven systems, yet seven out of 10 Americans say they hate what they've got because they are too noisy, drafty, or dusty. This forced-air system, with its sound-damp and dual speed furnaces and condensors, addresses these problems and delivers an extraordinary level of comfort."

With the mechanical side of the system sorted, the remaining challenge is to duct heat to the house or cooled air. In his office on the third floor of the house, Don has marked up a set of plans with the locations of the air registers and the routing of the ductwork. This duct-rail circulatory system consists of a supply system of ducts that convey the conditioned air throughout the house, and a simpler network of return lines that bring air back to the furnace.

Routing the lines for the rental apartment is fairly straightforward,

ward from one of all the exposed framing in the basement. "Most everything for the first floor goes in the basement ceiling joists, and we're moving the lines for the basement bedrooms in the new second walls," says Don. "It's very similar to new construction."

Peeling down into the top two floors is another matter entirely. Don has spent hours doing exploratory surgery in the upper floors, cutting two 6-inch holes in the plaster walls and ending with a reciprocating saw, looking for places to run ducts. The cavities around the chimneys for the old poker stoves prove to be a godsend. There is just enough room between the framing and the brick to run 7-inch insulated flexible supply pipe from the furnace in the attic.

When the four men crawl from Total Temperature Central across the house to start putting in the ducts, Ambrosio opens the back door of their huge white cube truck. Inside, it looks like a clinic for the Tin Man—lots of shiny, ready-to-install galvanized fittings, pipes, elbows, and brackets fabricated back at Ambrosio's shop. "The less we have to do on-site the better," he says. "It makes for a faster, safer job." The subcontractor will drill sections of pipe and duct with 2-inch thick hollowed fiberglass back as the sheetrock, and now the crew hangs the sections from the basement ceiling joists with 3-inch steel metal straps. After fitting the sections together with male-to-female



TO-H contractor Sam Selva helps Don fit a section of 24-inch-wide ductwork into the main basement trunk line. Don faced additional obstacles some of the framing sheet metal technicians that offers some options. A flexible collar on the plenum, where the ductwork connects to the furnace, effectively prevents noise from reverberating through the house.

connections, they fasten the joints with short metal screws and seal the seams with silicone caulk. At final protection against air leaks, every joint is wrapped with aluminum tape. Ambrosio's condenser duct is easy, despite its name, to be an unobtrusive product for the load of work.

In the cramped attic crawl space, another crew works on the runs of flex pipe for the second and third floors. Here, the idea is Don's though the wall probing, the crew attests the 20-foot long foil-faced tubes across the rafter space and down the chimney's chase into the rooms below. Compared to rigid ducts, the flex pipe is easy—nearly a matter of making sure it doesn't get crushed in a tight space, or crimped in a sharp turn. Neatly per-

one of the most effective ways. The complexity of different air flow paths, however, is also one of the main problems.

McLaren will be a member of the Charleston Fire, the Joint Tennessee-Carolina Fire Department, the regular grid, and top of the one last year as they go back to work on the next job. A hearing is set for the trial of the district, the hearing is set for the trial of the district, the hearing is set for the trial of the district.

"There are a lot of choices between a heating system and a cooling system, and that's the problem with a central system," says Buchanan. "Usually, you shouldn't know whether the house for the A/C is on. You should just feel good all day."

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rate expectations

Banks, brokers, and online lenders are competing for borrowers with an ever-growing array of mortgage products. Here's how to separate good deals from bad

SPECIAL SECTION: MORTGAGES



W

hen Alex and Linda Johansen began hunting for their first home, they knew exactly where they wanted to live in the suburban New York City neighborhood where they grew up. They had fond memories of its tree-lined streets and excellent elementary school. So the Johansens (which is not their real name) were delighted when they found a home in their old neighborhood—plus a mortgage that made the \$300,000 house affordable. They snagged a 30-year, fixed-rate loan at 7 percent interest—one percentage point below the national average at the time.

After they moved, though, the Johansens were dismayed to find that actual district boundaries had changed and their children rode a bus every morning to a school with lower educational standards. The Johansens decided to move. "That's when they found out their loan wasn't quite so perfect either," recalls Veronica Franciosa, a mortgage banker in White Plains, New York, who spotted the problem when the Johansens came to her for a new loan. If the Johansens were to move and pay off their mortgage anytime within the first 18 years, they would owe a \$10,000 prepayment penalty.

The Johansens's mortgage is a special loan underwritten by the State of New York Mortgage Agency (SONYMA) that's designed to help low-income families afford to buy homes. "SONYMA loans offer a great inter-

est rate, but there are strings attached," Franciosa warns. "They were sold about the time they sold the mortgage. The people don't pay attention. When you're getting married, you're not thinking about getting divorced—and when you're buying a house, you're not thinking about selling."

The Johansens found their loan's low interest rate so appealing that they ignored its onerous prepayment penalty. And focusing on just one feature of a mortgage as they did is a common mistake. Mortgage rates come with as many options as a fully loaded SUV. Thanks to a national underwriting system, lenders can compare rates a mortgage to your credit. You can get no money down, pay interest only for the first five years, choose a 15-year term (instead of 30), or finance home improvement with mortgage money. Rather than all appreciated assets to come with for a down payment? You can instead leave your investment portfolio intact and use it as collateral for a mortgage. All of this flexibility can be a boon for consumers, but the devil is in the details. Beware of loans that seem awfully tailored to suit your circumstances. They may end up fitting like a straitjacket.

Indeed so it is, you've got to read the fine print and ask the lenders who are vying for your business plenty of questions. Start by checking a loan's annual percent-

The market for home equity loans is white-hot—but, in fact, that's at the end of 1991. By the end of 1991, they amounted for \$400 billion in consumer debt in the United States. That's more than credit cards. It's not hard to understand the popularity of loans that turn your house into spendable cash. These days, lenders will let you borrow as much as 125 percent of the value of your house, and terms are flexible. You can take a lump-sum payment in the form of a 9- to 15-year loan at a fixed rate, for instance. Or, if you prefer, you can set up a revolving line of credit that lets you tap your home equity over an extended period, with monthly payments as low as 1 percent of the amount borrowed.

Moreover, "fixed-rate" is available at rates that should make credit card lenders blush. In mid-August, the average interest rate on a fixed-rate home equity loan was 10.62 percent. Variable-rate home equity loans of credit (HELOCs) were hovering around 8.68 percent—about one percentage point above the average rate for a 30-year, fixed-rate mortgage. Best of all, interest paid on loans or lines of credit up to \$100,000 is tax-deductible.

When Congress unveiled this tax break, lawmakers thought homeowners would like their equity to pay for home improvements. But you're allowed to use your home equity to finance anything from a week in Hawaii to a year at Harvard. Moreover, the most popular reason for taking a home equity loan is consolidating other debt, usually credit cards. (Home improvements come in at a close second.) According to a 1990 report by the Consumer Bankers Association, a trade group, 48 percent of all home equity borrowers use the cash to pay off other loans. At that glance, it seems sensible to "consolidate your debt and pay one low rate," as lenders say in TV commercials. However, it isn't sensible at all to take out a 30-year home equity loan to pay off credit card debt that you could have cleared in two years had you banked down and not just spending.

"People have to understand what they're getting into," says Rick Harper, director of housing at the Consumer Credit Counseling Service of San Francisco. You're pulling your house on the line. Also a line meaning payments on your credit cards and the latest mortgage. It's a payment on a home equity loan, and you could lose your house.

Further, lenders at home who will let you borrow more than your house is worth. Say you just bought a home appraised at \$100,000 and you're carrying an \$85,000 mortgage. You've



got \$15,000 in equity. In the past, a banker might have let you borrow 80 percent of that amount, or \$12,000. However, in these days of credit crunch, lenders offer no-equity loans that let you borrow up to 125 percent of your house's appraised value. So, if you can borrow 125 percent of \$100,000 and already have an \$85,000 mortgage, you can qualify for a \$40,000 home equity loan. It sounds good, but what happens if you need or want to sell? "You can't leave without paying off both your mortgage and your home equity loan," explains Harper. So, you either have to find a buyer willing to pay \$125,000 for your \$100,000 home, or come up with the extra \$25,000 yourself. Meanwhile, Harper observes, "you're lost part of the tax advantage" because the IRS will not allow homeowners to deduct interest on loans that exceed 105% of the borrower's net worth.

The bottom line: Home equity loans make sense only if you have plenty of equity in your house and use the cash to buy something that will increase your family's wealth. When you tap the savings you've invested in your house to finance new furniture, a vacation, or a car, you're taking money out of an appreciating asset to purchase a product or an experience that will lose value over time. On the other hand, if you borrow to invest in further education for yourself, a child, or a spouse, you're adding to your family's future wealth. Similarly, when you spend \$20,000 on a new kitchen, you could actually add \$40,000 to the value of your house. As Harper puts it, "you're not depleting your asset, you're sharing it up."

rate (APR). Some lenders include their application fee in the APR, but others don't. The APR never includes fees you pay for credit reports, title insurance, or the lender's attorney. Always ask for a good-faith estimate of all such closing costs in writing before you can put to a loan—don't wait for the documents you'll receive after you've applied.

If you're considering an adjustable-rate mortgage (ARM), be aware that the APRs don't reflect potential interest rate hikes. "Comparing the APRs of a three-year ARM and a 30-year fixed-rate loan is like comparing apples to oranges," warns Ray Brown, coauthor of *Mortgages For Dummies* (IDG Books, 1999). The introductory rate on an ARM is lower than on a fixed-rate loan, but it can climb after a set period of one to 30 years. Typically, ARMs that adjust annually can rise or fall by as much as two percentage points each year. The new rate tracks a benchmark, like the prime rate, plus one or two percentage points called the margin. Brown advises borrowers to ask lenders, "How much is the margin?" Also, ask how high the rate can rise over the life of the loan. "There should be a lifetime ceiling no higher than six percentage points above the initial rate," says Rick Harper, director of housing at the Consumer Credit Counseling Service of San Francisco. If there's no ceiling, find another mortgage.

Nevertheless, one important tip: A loan tied to the volatile six-month U.S. Treasury bill is likely to swing. "If you want low volatility, look for a mortgage pegged to the Cost of Funds Index," advises Blagov, who was a bank loan officer for 22 years before becoming a credit counselor. "It's the slowest-moving index because it tracks the rate that banks pay depositors—and, as we all know, banks are reluctant to raise those rates." Another relatively stable benchmark, says Brown, is the London benchmark Offered Rate (LIBOR).

Even with an extremely low teaser rate, however, an ARM isn't always the best choice. The most important factor to consider is how soon you're likely to move. If, like the average family, you sell in six to seven years, a five-year adjustable rate could be ideal. It will remain stable for the first five years you live in your house, then begin to rise or fall. A five-year adjustable is less expensive than a fixed-rate loan, yet carries far less risk than a one-year adjustable. Alternatively, if you're likely to stay in your home much beyond the fixed term of the adjustable loan, you may find that even well disciplined before you move, and a 30-year, fixed-rate mortgage may be your best bet. Today's fixed-rate loans may seem pricey, but only when compared to the shockingly low interest rates of the past few years (see "How Low Did They Go?" on page

56). In the '80s, homeowners paid 18 percent. "Anything less than 12 percent for a 30-year loan—that's very cheap money," says Harper.

Whatever type you choose, you can cut your interest rate (or lower, at the cost of an ARM) by paying "points" to your lender up front. (One point equals 1 percent of the loan.) Pay one point and you typically trim your interest rate by one-eighth to one-quarter of a percentage point. Home offers this formula: "Say you're taking out a \$100,000 mortgage, and your lender says that if you pay one point, your monthly payments will be \$519. Otherwise, they'll be \$579. Divide the cost of the point (\$1,000) by the difference in monthly payments (\$25) and the answer (40) is your break-even rate in months. Stay longer, and you save money over the life of the loan by paying a point up front."

Of course, the choice between a fixed- or adjustable-rate loan is only one decision that mortgage shoppers must make. You've also got to decide whether to go with a plain vanilla loan or a more specialized product. Here's a look at the pros and cons of some popular specialty loans available nationwide.

ZERO-COST-UP (ZCU) (MORTGAGE-VALUE-DETECT) (MVD) mortgages let you buy a house with little or nothing down in exchange for a higher interest rate. "If the rate isn't too high, it can be a great way for two young-high-income, well-angled couples to get into a house, even if they haven't had a chance to accumulate savings," says Harper. The trade-off: You draw less than 20 percent and you must buy private mortgage insurance (PMI) to protect the lender's investment. You'll pay about \$30 a month for PMI on a \$100,000 loan. You can drop it once you've paid off 32 percent of your mortgage.

Problem is, lenders often market these loans to low- and middle-income families who have trouble

wrapping their heads around the savings to make high monthly mortgage payments, especially since lenders are more leathan about high payments than they're more in the past. It used to be that you could's qualify for a home if the monthly payment plus property taxes and insurance averaged 28 to 33 percent of your gross income. "But in regions where real estate prices are high, lenders will now go up to 40 percent," says Harper. That's the line of your income is growing, but some lenders are "predatory," he says. "I contacted a lender or creditor whose total monthly income was \$145, and the lender offered her refinancing with a monthly payment of more than \$600. He was interested in her ability to pay because he knew he was covered by the equity she had in her house."

MONEYCLIP

Reversing the Mortgage

For income-rich, cash-poor couples, there's a better way to tap life home equity than with a loan.

"Reverse Mortgages" carry little risk and splendid advantages. They offer homeowners 62 and over a chance to cash out the equity in their home for living expenses, renovations, exotic vacations or any other long-deferred, much-desired luxury while avoiding the interest payments of a home equity loan. You use nothing until you call, cancel, or die, when the total of all payments, plus accrued interest, is subtracted from the sale proceeds, with the remainder going into your estate. (The only downside: Your heirs might object, but where money is H money!) Your lender will custom-tailor a package that lets you take a chunk of cash and then receive regular monthly payments that vary according to your age and net home equity. Thanks to the endorsement of AARP and the National Center for Home Equity Counseling, reverse mortgages come with hands-on-counseling and fierce consumer protection features.

INTERNET RATES

More than 120 lenders now offer mortgages online, and they supposedly offer lower rates than brick-and-mortar institutions. Truth is, though, that while online lenders make it easy for consumers to compare rates, they don't always offer the best rates and terms. Perhaps that's why 10 percent of all borrowers use the Web to Window-shop, but only 1 percent buy mortgages online, according to a report by Morgan Stanley Dean Wadell.

Nevertheless, "the Web often offers a great education," says Rick Harper, director of housing at the Consumer Credit Counseling Service of San Francisco. They make it easier for consumers to become familiar with a variety of mortgages. Armed with information, shoppers can then discuss options intelligently with loan officers and mortgage brokers. Harper warns first-time home buyers against getting a mortgage online, however. Even if inexperienced borrowers read carefully, they may miss some important details. When you deal with a lender or mortgage broker in person, however, you're more likely to find out if a loan carries a prepayment penalty, for example. After all, he doesn't want to risk his reputation—or future referrals—by neglecting to point out important features of the loan. Harper thinks it's prudent to visit a mortgage broker even if you believe you've found the mortgage of your dreams online. "Ask the broker if he can do better," Harper advises.

Whether or not you want to buy your mortgage online, the following Web sites are worth a visit.

WORKSHEET AND INFO

• FUNDRAID.COM — Features a glossary of mortgage terms, plus lots of FHA loans.

• MORTGAGE.COM — Offers a no-nonsense site, reading online lenders for "sense of wit," "overall costs," and "customer confidence."

• MORTGAGE.COM — Plug your numbers into this site's calculator to compare fixed vs. variable loans and more.

RATE SEARCH

• MORTGAGE.COM — Tracks interest rates of 4,000 financial institutions in more than 120 cities nationwide and lists

average rates by state.

• MORTGAGE.COM — Surveys thousands of lenders weekly. This guide also has no gimmicks with lenders and loans as advertising is a refer to postcode its proximity. It makes money by charging you \$50 for a list of lenders in your area and their rates.

ONLINE LENDERS

• MORTGAGE.COM — Lets you look in a rate without paying a fee or deposit when it approves your loan application. The site tracks 70 lenders in all 50 states, offers no excellent breakdown of closing costs, and loans are origination fees. Unlike many of its rivals, however, it doesn't guarantee that its rate is the lowest you'll find.

• MORTGAGE.COM — Works with 10 lenders in 10 states.

• MORTGAGE.COM — A direct lender that operates in all 50 states, and says it will beat any competitor's rate by \$500 and close on time, or pay you \$200.

FHA (FEDERAL HOUSING ADMINISTRATION) loans can be a safer alternative than zero-down or HELOC loans for low- and middle-income families. "These loans are designed for people who need a little extra help, but you won't see them advertised on late-night TV," says Fracassi. "The FHA accepts a lower credit rating, and you can put as little as 3 percent down." FHA loans won't be predatory, and Uncle Sam loans you risk by paying a \$23,549 cap on loans for single-family homes, adds Fracassi. However, you must carry PMI for the life of the loan. On the plus side, you don't have to be a first-time home buyer to qualify; there are no income limits, and unlike many mortgages, 100 percent of your down payment can be a gift. (The FHA's brokering agency program collects gifts toward a down payment in an

escrow-bearing account; for details call 800-325-3342.)

Both mortgages help homeowners who fall short of the 20 percent down needed to avoid PMI. "Because of a loophole in the PMI rules in many states, lenders look up all first mortgages to make sure that you're not borrowing more than 80 percent," says Fracassi. She offers this example: The house you want costs \$250,000 and you have only \$25,000, or 10 percent, to put down. So you get \$20,000 down on a \$200,000 first mortgage while borrowing the remaining \$25,000 as a second mortgage, with a down payment of \$1,000. The first mortgage is only \$200,000 on a \$250,000 house so you meet the 80 percent limit. The rate on the second will be one to five percentage points higher, but it's tax deductible while PMI isn't.

ILLUSTRATION: JEFFREY FRIEDMAN



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HOW LOW DID THEY GO?



Just in 30 years, fixed rate loans have actually risen over their recent low of 1995, but from a 21-year perspective, lenders are still doing pretty well. Over the years, *Finance Week* and *NAR* Associates include average points paid in their data. Over the years, these varied from 0 to 1 point; for consistency, we assumed six points were paid, and added it per-

centage point to the rate for each point that had been charged. For "zero" loans (more than \$212,700 in 2000; \$187,410 in 1990), and \$13,751 in 1985, figures typically paid an additional 0.5 percentage point over the average national rate. *Loan averages through July.

CONVERTIBLES are a worry of ARM that allow borrowers to switch to a fixed rate during a specified time window—typically one to five years after closing. For a nominal fee (often \$250), the loan then converts to a fixed rate for its duration. As with any ARM, the ARM that will change is calculated by adding a margin to one of the standard one-year indexes—the specifics of which are spelled out in the original loan documentation. Convertibles are appealing to many home buyers because they seem to offer the best of both the adjustable and fixed worlds, but you'll pay for this combination with a fixed rate that's 3 to 5 of a percentage point higher than a conventional 30-year, fixed rate loan taken at the time of conversion.

REHAB loans offered through Finance Week, a privately owned company operating under a congressional charter, include the cash needed for renovations as part of the mortgage. By holding renovations costs into a first mortgage, you pay a lower rate on that than you would on a separate home improvement loan. You can borrow as much as an appraisal shows that the house will be worth when renovated, up to Finance Week's limit of \$152,000 for a single-family home. Most improvements qualify as a rehab, even adding an in-ground swimming pool.

15-YEAR loans have two advantages. They feature lower rates on most than 30-year mortgages because banks like getting their money back faster. And because the term is shorter, you also pay less interest over the life of the loan. Of course, you could achieve the latter by prepaying a 30-year loan, ensuring it lacks

a prepayment penalty. If money is tight, you can stop making entire payments. You don't have that option with a 15-year mortgage, however. That could spell trouble if you ever lose your job.

INTEREST-ONLY loans don't require you to repay any principal for a set period, typically 5 to 7 years. They make sense if you have a cash flow problem and expect to move in less than seven years, says Harper. "In short sales, virtually your entire mortgage payment is interest anyway." Interest-only loans can be a good alternative to renting for young, cash-strapped buyers because mortgage interest is tax deductible and rent isn't. Trouble is, you don't build up any home equity. "If you plan to stay put, you should be paying down the principal," says Harper.

PLEDGED-ASSET mortgages are your checkbook as collateral. Let's be blunt: These loans are a truly terrible idea for all but the very, very rich. Brokerage houses pitch them as your opportunity to buy a house without cash in your pocket. That's true, but by borrowing from your broker and using your portfolio as collateral, you're buying a house on margin. If the stock market tumbles and the value of your portfolio shrinks, you'll have to add more assets (cash or stock) to the cash portfolio.

Like many hybrid mortgages, pledged asset loans look less appealing under scrutiny. Still, a hybrid might be right for you under certain circumstances. Just be sure to know exactly what you're getting into before locking yourself into any loan. ■

In the '80s, homeowners paid 18 percent. "Anything less than 10 percent for a 30-year loan—that's very cheap money."

—BOB HARPER
Senior Vice President, Finance Week

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betting the ranch

A Connecticut couple gambles on a 1920s tract house and hits the jackpot, turning it into a sophisticated shingle-style home

It takes a certain amount of vision to look at a mid-century French Provincial-style ranch house and see the dwelling of your dreams. But when these Connecticut homeowners were ready to downsize from the classic Colonial where they'd raised their family, the resourceful wife saw it as the perfect opportunity to, as she says, "create a house that really worked, with all of the things we wanted—and none of those we didn't."

The aesthetically challenged but well-positioned residence offered a beautiful location—a tree-ringed 2-acre hollow in an affluent area of Connecticut—and the ideal footprint for the dwelling they hoped to create. The asymmetrical arrangement of the house—two wings flanking a well-designed complement of formal rooms—was close to what they were looking for in terms of a floor plan, but it lacked the extra space they felt they needed to fulfill their wish list. The question they asked themselves was: Could they achieve the home they wanted on a single floor? In their vision, the house would incorporate features common to much new residential construction these days: his-and-hers offices, a first-floor master suite with dual walk-in closets and a spacious, compartmentalized bath, and a commodious and well-equipped



BEFORE



AFTER

Rampant up the roof of the ranch house, too, gave architect Sue Dickson the view needed to look out into several directions (AFTER).



Delicious connection: formal dining and living rooms—note a gently undulating hall that also features in a powerful look in the new second story.

BY JILL KIRCHNER SIMPSON
PHOTOGRAPHS BY ANDRZEJ NABANDSKI STYLING BY ANITA GARDIEL



HOT TOPIC

Appended to the house as a bump-out, the chimney is self-supporting. To carry the load of the massive fireplace and hearth, the crew sank four tie-in concrete foundation pilasters with steel rebar. Blomco constructed the chimney of copper-kiln brick (left), built the interior of firebrick (above, over), then faced the entire unit, both inside the family room (above) and outdoors, with fieldstone outlined with a thick mortar joint. Architect Bruce Dickinson designed the fireplace "as an especially large, central hearth," he says, "because it not only serves the family room and the kitchen, but acts as a focal point when seen from the dining room and entry."

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kitchen open to the family room. Even though they are empty-nesters, the couple also wanted to maximize a parent suite of rooms for their children, who maintain visit.

When the couple presented they lot to architect Don Dickenson, whose practice is based in nearby Madison, Conn., he recommended they add up rather than cut—adding the 1,200-square-foot first floor to their personal needs while dedicating a new, 2,000-square-foot second story to their kids. This floor—comprising two bedrooms linked by a shared bath, plus a large landing off the stairs that would function as a “garaging room”—would, he said, offer privacy as well as efficiency. The couple could close off the upstairs when you the two old dogs were home. The plan sounded good to the owners, but, even though they understood they’d dramatically increase in size, they feared the idea that the house might end up looking too imposing. “When you walk up to it, we wanted it to feel like a home, not a castle,” says the wife.

Meeting the challenge head-on, Dickenson came up with an elegant scheme. To give the homeowners the space they needed without causing a moment in the process, he used the available rough to “make the house feel like a one-story with an im-

posed attic.” He adjusted the roof to a 6-in-12 pitch (the best compromise angle for shedding rain and snow), then propped its face up and out at two places along the ridge beam to make room for a pair of large steel doors framed by casement windows. He recessed the edge of the eaves over the windows, painting them and the trim where to suggest the impression that the doors were “temporarily slipped in, mortised on,” Dickenson says. To enhance his daylight haul, he also replaced the eaves with the eaves’ wings with more simply pitched gables, dry—and a dormer, smaller gable increased by custom designed brackets over the entry—rather than the sweep of the roof. In elevation, the house then indeed look as if it has a large attic, not a second story.

Dickenson’s decision to add up and not out had a practical consequence. The house, he found, was still over a modest swimming pool. This pool had been so well constructed that former owners had simply appropriated its walls for their landscaping. Because they were so solid, Dickenson realized right away that he ought to reuse them. “We brought into the existing footprint because the pool walls were a couple of feet thick,” he says, “so they could easily bear the weight of the core of the house—and a new second floor.”

(Continued on p. 180)



Last year, home fires caused over \$44 billion in property damage.

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MAKING A BRACKET



At left, architect David H. Smith, Jr., designs the brackets for the new house. At right, the brackets are being made.



PHOTO BY DAVID H. SMITH, JR. FOR ENR; PHOTO BY DAVID H. SMITH, JR. FOR ENR; PHOTO BY DAVID H. SMITH, JR. FOR ENR

On these occasions when David Smith, Jr., is in the details, architect says it's their duty to try to provide them. On the front of the first house, David Smith designed large, curved brackets to support the rest of the entrance gables. Brackets have that any architectural detail the inventors must have practical merit. In this case, while traditional columns deteriorate because of exposure to the sun and contact with the ground, brackets are shielded from both influences, making them a perfect low-maintenance alternative. In addition, Brackets estimate that custom brackets cost 25 percent less than custom columns designed to do the same job.

1. A draftsman at Brackets Woodworks in Guilford, Conn., adjusts the measurements of Brackets' bracket design to match those taken at the job site. He then enters the data into a computer-aided drafting (CAD) program.

2. Guided by the CAD program, a computer numerical-control (CNC) machine—a robotic router—cuts two curved body pieces for each bracket, which will be used to cover the framework between the horizontal and vertical areas of the bracket. The pieces are made of 3/4-inch medium-density fiberboard (MDF)—the same plywood material used to make highway signs. Chisel in waterproof paper, MDF takes paint well and resists cracking and chipping.

3. Woodworkers glue and clamp together six 8-foot-long 2x10 boards of South American mahogany to form a laminate. Brackets being less expensive than a single, solid piece of wood, this method offers other advantages, says Bob Reid, vice president of Brackets Woodworks. "The laminated timbers are lighter and there's less movement in the laminate." Proceed to find a disadvantage, Reid notes that the 160 square feet of the manufactured timbers is half that of solid wood. "Through the brackets will probably suit the house." From the laminate, members of Reid's crew cut two end and beams, 8 inches wide from face to face, tapering one end of each to a point. The beams will become the horizontal arms of the brackets.

4. The glue, finished joints required advance planning: Workers at the shop predrilled holes for four half-inch threaded rod connections in the vertical arms, which are made of mahogany 2x10s, and painted the completed brackets with white exterior primer. At the site, the crew laminated the gables to the brackets, then attached the entire assembly to the exterior wall framing around the doorway. To support the gable structure, the framing is reinforced with multiple studs spaced together and oriented to the head and side plates with steel angles. Because the brackets are bolted from the inside before the drywall is put up, no attachment points are visible.

—Ryan Robbins

Building Up

The plans incorporate how much space the homeowners gained by ramping up the roof at the center of the structure. Decking's reconfiguration of its ground floor allows for direct access from the entry to all three of the main public rooms. The master suite occupies one of the wings. The new central stair satisfies the wife's request that the couple's children have their own private space.

FIRST FLOOR BEFORE



FIRST FLOOR AFTER



NEW SECOND FLOOR



Although the homeowners' wish list appeared to be modest, renovation changes in the eating floor plan, Dickinson's masterful revision left virtually every corner wall at the house intact. Only the family room required a bump-out, back to the rear 11 ft by the back wall of that kitchen and to make room for a gas oil new hearth the architect designed to warm both spaces. Dickinson also reamed the shapes of the living and dining rooms and their connecting foyer, doing the demolition, the removal of exterior wall that wasn't to be opened or reinforced for new downstays, as well as the floorboards in the living room, were left intact. Modifications to both rooms were modest. A bay window brings square light into the dining room, and French doors lead from the living room to the patio. To access the second floor, Dickinson took out a pair of old closets and used that space for the general staircase, enclosed by a slightly overcast arched post, then highlights the new double-height foyer.

Most of the remodeling of spaces occurred in the two wings, which required complete reframing of much of their interior walls. For the kitchen, which occupies the rear portion of one of the wings, the wife gave Dickinson a rundown of her cooking habits and a list of preferred materials and appliances. "I like to cook, but have been reluctant to the kitchen where everyone else is watching TV or talking," she says. Dickinson linked the two spaces with a peninsula that also serves as a bar, so that family and friends are always within earshot.

Appliances in the kitchen are professional quality, with extras such as an undercounter refrigerator and ice maker in the peninsula, a warming drawer, and a pot filler faucet over the stove. Tom between placing the sink beneath the windows on the island, the wife opted for the luxury of having back. Dickinson recommended a small bed-

room off the kitchen to make room for her office between the kitchen and the office has the laundry, relocated from the basement. This wing also contains a guest suite.

Dickinson designed the second wing as a mirror image. The master bedroom opens to the backyard while a home office for the husband, including an entrance, claims a larger bedroom at the front of the wing. Between these are two walk-in closets, a linen closet, and a master bath with a separate toilet alcove and shower stall. It was here that the wife, pressed into service as her own general contractor when the original one went bankrupt (see "D.I.Y. Contracting," see one of the greatest challenges of her new job. After installation, the wing's main theme and expanded, leaving holes. "I now know that you have to let a dry out first, and the back-prime," she says with the authority of a seasoned pro.

With the plan finalized and having completed, Dickinson forged a completely new identity for the interior of the house by drawing from "a palette of materials I often work with—wood, clay, stone and tile." While the back bedroom clonens from Shingle-style and Arts and Crafts architecture, both the architect and the homeowners felt it would be a mistake to try strict homage to the past. "We were fortunate to have room in the budget to design details specifically for this house," Dickinson says—such as the bookshelves that support the gabled eaves (see "Making a Reader").

While touches such as this are some like obvious signs for notes, "they can be disastrous if they're not carefully thought through," Dickinson says. In this case the intelligence of the design rose to the challenge, despite the narrow work with the contractor. The house, then, is a triumph of both style and skill. ■

D.I.Y. CONTRACTING

Despite the best intentions on the part of the homeowners and their contractor, "the worst possible thing happened at the worst possible time," Dickinson says. "Midway through the process, our general contractor suddenly went bankrupt." When this happened, the wife decided to assume the reins and, with absolutely no experience, serve as her own G.C. Dickinson stepped up his involvement. He had, after all, recommended the contractor, often meeting directly with the wife to help them beyond the working drawings.

The wife also hired a consulting contractor, Brian Peck, of B&P Construction, in Illinois, to act as her adviser. He provided her with resources and expertise as she needed it, on a fee basis. Several carpenters and tradespeople stayed on the project with her, too, including one, Carlos Gonzalez, who became her right hand man. "I have this philosophy that getting there should be at least half the fun," the wife explains. "I liked the learning process, and I think if you're not part of the process, you're missed a lot of what's going on. In the night, I'm glad I was my own G.C., because absolutely nothing gets past you. Also, I was able to make a lot of changes along the way—and know what they



would cost—without having to pay the additional fees to a contractor that change orders would have entailed."

Responsible for everything from procuring materials to scheduling and paying the bills, the wife also found herself handling drywall and the plaster and masonry up to the end of the day. She participated in every discussion between the carpenter and architect about details such as how a piece of tile should be finished, and she selected every stone used in the house (not only stone door stops. Along the way, she learned a lot about what can go wrong as well as

how to make it right. Besides having to relocate the watercooler in the master bath (joke), the shower door in the guest bath leaked and had to be replaced. In every instance, she persevered until the job corrected the problem in her satisfaction.

And she did all this while she and her husband camped out in the guest room, which became their six-person living, dining, kitchen, and bedroom during the entire renovation. As she succinctly explains, "This isn't for prima donnas. Just the amount of dirt involved necessitates a major change in your lifestyle."



"The fit between this house and its owners is one of the best I've seen."

—DAN DICKINSON

Dickinson added a bay window on the multipurpose dining room to draw more light into the space. Down the stairs from the family room and kitchen (not seen) enters the traffic flow throughout all areas.



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"The cardinal rule before starting any plumbing project: Turn off the water."

—BRIANNE TAYLOR

TIPS FROM THE EXPERT

- When soldering, in-angle stop, make sure it's open. "If it's not, the torch will heat up the air in the tube and cause it to pop right off."
- Never use a hacksaw to cut tubing. It may leave the tubing end rough or cracked and unsuitable for soldering. Use a tubing cutter instead. Take it slow on the first revolution to make sure the cutting wheel stays in its groove. Otherwise, the cut will be off the mark.
- Always thread nuts by hand before tightening with a wrench or pliers. Copper and brass are soft metals, so it's easy to cross or strip threads and run both the fitting and the nut.
- Hold the jaws of a wrench or water-pump pliers tight against the faces of the nut for a secure, "three-sided" grip. A flimsy two-sided grip with just the tips of the jaws will tear the nut and may cause more damage if the tool slips off.
- Stand to one side and place one hand over the spout when first turning on a newly installed faucet. In the few seconds it takes to purge the supply of air, the spout spouts water like a sputtering car. "It's just like burping a baby."
- Make sure to dry-fit PVC pipe before solvent-welding. "Once a solvent weld sets, the only way to loosen it is with a hacksaw."

- Hacksaw for cutting PVC and brass pipe
- Propane torch for soldering copper tubing joints
- 1-foot level for leveling basin
- Pipe slope: Written-based gauge for setting pipe threads
- Plumber's putty for sealing drain and faucet flanges against the sink
- Water pump pliers for gently tightening large nuts on drain pipes. (Take care, because toothed jaws can mar nut corners and finish)
- Greaseless wrench for tightening small nuts on compression fittings
- Snipe tubing cutter for cutting copper tubing in tight locations
- Tubing cutter (with rousing blade) for faster cutting on bigger, accessible tubing
- Tubing cutter (with quick release)
- Tip: Measure
- Wire brush for cleaning inside of copper tubing before soldering
- Lead-free solder
- PVC cleaner and solvent for joining PVC pipe
- Brass screws for tightening the nuts on faucet valves and spouts in the virtually inaccessible regions under the sink's basin
- Flux: Solder paste applied to copper before soldering
- Fine-grit sandpaper roll for polishing the outside of copper tubing before soldering

Also Needed

- Fender washers and 25-inch lag screws (two each) for attaching sink basin to wall
- Socket wrench for driving lag screws
- Drill and bit for drilling holes for lag screws
- Socket combination for attaching drain to sewer arm
- Camp shaver for cleaning and wiping up freshly soldered joints
- Spray bottle (with water) for preventing fires that may be ignited while soldering
- Bucket for collecting water drips



STEP 1: PREP THE ROUGH PLUMBING

- Shut off the main water supply and drain the hot and cold lines into a bucket.
- At the sink location, place a bracket under the copper supply tank and, with a compass tubing cutter, show them both off about 2 inches from the wall. Tighten the cutter slightly after each turn around the tube to avoid distorting the soft copper.
- Find the distance from the center of the basin's drain to the wall. (On new sinks, this dimension is supplied with the instructions.) Measure up from the wall and mark this distance on the PVC waste pipe.
- Slide the Plug, fitted with its sleeve, along the pipe, with the trap's vertical end centered on the mark (arrow). Now mark the pipe where the PVC shoulder (see the elbow) using a hacksaw, cut the waste pipe at this mark (arrow) to help ensure a square cut. Hold the saw parallel to the wall and do not apply downward pressure.



STEP 2: SOLDER THE SUPPLY LINES

- Gently move the inside edges of the copper supply lines with a pocket knife or the triangular blade on a tubing cutter. This creates the burr left by the tubing cutter.
- Push the ends of the supply lines with sandpaper until the copper is shiny. Coat liberally with flux. Polish and flux the inside of the angle stops and also them, with their escutcheons, over the supply lines.
- Light the propane torch and apply its bright blue inner flame to the stop, at the spot where the supply line ends. With your other hand, hold the tip of a length of lead-free solder against the copper tubing where it joins the stop (point), on the side opposite the flame.
- When the tip of the solder starts to melt, turn off the torch and run the solder around the joint. After a couple slightly wiper with a damp rag to smooth the exposed solder and remove any flux, which corrodes copper. (See "Soldering 101," see more, for.)



STEP 3: MOUNT THE FAUCET, CONNECT THE DRAIN

- Place Grings (if provided) or rings of plumber's putty under the flanges of the faucet's valves and spout, and insert them into their respective holes on the basin's deck. Slide a gasket and thread a nut onto the underside of each of the fittings. Tighten the nut by hand, then finish tightening with a double wrench (see 1). Carefully move the sink back against the wall.
- Line up the mounting holes in the back of the basin with the holes in the wall. Insert the lag screws with their fender washers through the mounting holes and tighten with a socket wrench while checking for level.
- Slide in the PVC waste pipe's cover and escutcheon, leaving the plastic exposed. Test-fit the elbow onto the waste pipe. If the elbow's slip cut through onto the Plug, proceed to the next step. If not, there is still some room for adjustment up and down (by loosening the Plug's nut on the plug's top) and front to back (by inserting the PVC waste pipe).
- When the elbow's nut threads easily onto the Plug, mark where the end of the elbow touches the waste pipe. Find the mating PVC surface with PVC cleaner, then coat them with welding solvent. Keeping the elbow parallel to the Plug's mouth, quickly slide the elbow onto the pipe so far as the mark. The weld sets, permanently, in three to five minutes.



STEP 3: INSTALL BODILUB DRAIN

- Roll most of pipeline's pvc into a 10-inch-wide sausage and wrap it around the pop-up drain, underneath its flange.
- When the basin's entire hole dries and it's dry, pop the pop-up drain through it.
- On the underside of the basin, slide a gasket and weather into the drain. Thread the nut and eye the drain and hand tighten (slight a wrench or water-pump pliers [just], finish tightening with a quarter-turn).
- Set the pedestal on its flange and it'll sit on top with the PVC waste pipe just its center is about the same distance from the wall as the center of the basin's drain (see STEP 1).
- Place the basin in the pedestal and against the wall. Position the pedestal placement and seal the basin (into-toe [just]).
- Make a mark on the wall through each of the mounting holes at the back of the basin. This shows where to drill later for the lag screws to hold the basin to the wall.



STEP 4: ATTACH THE TEAR

- Keeping the patchcord and leads together, move them away from the wall. Have a helper hold the stick steady as you move it up over the wall.
- Test if the P-trap sits flush against the PVC waste pipe, and measure the distance from the floor to the top of the trap-snap vent cut out. Mark the same distance up from the floor on the patchcord at the pop-up waste assembly.
- Remove the elbow and place the P-trap's slip nut and washer over the pop-up waste's tailpiece. Cover the P-trap's threads with pipe dope or plumber's tape and slide the trap up to the mark you just made on the tailpiece. Turn the nut on to the trap by hand.
- Tighten the nut with a wrench at water-pump-pipe (pvc), being sure not to twist the chrome finish.
- Drill into the wall at the top of the leg some locations marked in STEP 3.

STOP TO MAKE YOUR CONCLUSIONS

- Place a washer between the elbow and nut, dope the threads, and tighten the nut by hand. Finish tightening with water-pump pliers.
- Measure the distance between one angle stop and its faucet valve, add six inches, and cut a shower supply tube to length with a tubing cutter. Slip the compression nuts and a female over the cut end. First, tighten the nut to the stop with a wrench; pump, then hand (don't kink the supply tube anyway—first to the side, then up—as its arm lead fits into the valve's outlet). Tighten the head to the valve with the second nut. Repeat for the other angle stop and faucet.
- With the lift rod in the up, or open, position, adjust the pop-up stopper to the sculet arm, then secure the arm to the lift rod with the screw provided. Slide the sculet down and cover over the PWD waste pipe to hide it.
- Make sure the faucet valves are closed, then turn main water supply back on. Remove the spout's aerator and filter. Stand to one side and partially open the faucet valve. Let the water run for a minute to clear air and any debris. Repeat with the other valve.
- With the faucet shut off, check for leaks at all supply connections between the wall and the faucet's valve. Recheck the aerator and filter. Adjust the results of your handwork (see it).



SOLDERING 101

There are two ways to attach the angle stays to the supply lines with a compression nut, or by soldering. "A lot of homeowners use compression fittings because they don't know how to solder or are afraid doing it wrong," Richard says. "But if I had my druthers, I'd always use solder. There's always a chance that a compression fitting will come loose or that the threads on the nut may cross. With solder, if it's right and leaves a job satisfied that I won't come back to fix it, I'm done."

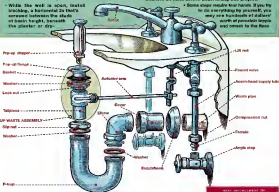
To solder successfully you can't take shortcuts (see STEP 2). Polishing the outside of the male fitting and the inside of the female fitting with sandpaper or a wire brush is a critical step because it removes any corrosion that will prevent a good bond between solder and copper. Flux ensures that the liquid solder will flow smoothly into the space between tube and fitting. Richard applies the torch where he wants the solder to go, not to its volatile joint. And he's always testing the joint with the tip of the solder: "You don't want the metal to get too hot," he says. "Otherwise the solder won't stay in the joint."

Clean-up is just as important as soldering technique. "Practice soldering a few times on some scrap taking hold by a vice," Richard advises. "Once you feel the heat of it, soldering with competition solder will seem a cakewalk."



PLANNING AHEAD

- First choose your sink, then the plumber is rough in a new waste pipe. "More often than not, the existing waste pipe is too low to install the trap, which the inside the pedestal," Richard says.
- While the wall is open, install flashing, a horizontal 2x that's screwed into the studs at least 6 inches high, beneath the plumber's apron.



HOMEOWNERS' HANDBOOK



rock of ages

After the craftsman is
done, an ancient dry-stone wall
will hold stones without mortar.

Two over one, one over two: Like a metronome, this mantra of dry stone construction sets the rhythm of work as stonemason Dan Snow heaves, tugs, and settles rocks into place on a long retaining wall. At this site, in front of a new house in Marlboro, Vermont, Snow works alone, with no conversation or blaring job site radio to distract him from the task at hand. The goal, as he puts it, is "to make order out of Nature's randomness." He has to determine how each stone in a given pile might best be used, place it in the wall, and move on without hesitation to the next choice, the next stone. After hundreds of such choices the pile disappears, and a new wall is born.

Building stone walls without mortar—called dry stone or dry-laid masonry—is endemic to New England, where the earth seems to grow rocks as readily as grass. Over the centuries, as farmers cleared the land, they transferred stones to the edges of their fields to remove them from the paths of their plows and, in the process, they built walls that delineated the borders of their property. Dan Snow grew up in southern Vermont, and knows these structures well. It was this introduction



A yard of wall three feet high takes roughly a ton of stone.

JOHN J. JACOB
JAMES, DRY STONE

to the beauty of stone walls that helped inspire his interest in the craft. After 25 years doing dry stone work, he's a firm believer in its advantages over mortar-based masonry, or so-called "wet" walls, where the mortar-filled joints are clearly visible, or "drylock" walls, in which mortar is recessed and hidden from view.

Once the material of choice for homes, bridges, dams, mills, ice houses, and a host of other structures, dry stone was superseded in the 20th century by materials such as concrete that, although not as long-lasting, were far easier—and faster—to work with. Many farmers abandoned their stone walls for low-cost wood or wire fencing. In areas rich in limestone walls, farmers demolished them and crushed their stones as fertilizer, elsewhere, stones retrieved from walls were crushed and spread on roadsides as a base for asphalt. Yet dry stone construction is still well worth using, especially for landscaping and retaining walls, and not just for its historical appeal. "Properly constructed," says Carolyn Murray-Woodley, an architectural historian and director of administration at the Dry Stone Conservancy (DSC) in Lexington, Kentucky, "a dry stone wall will last longer than masonry stone work, concrete, or other methods of construction."

Aspects of dry stone work are repetitive and difficult, for sure, Kling and Loring stress all day long might even be considered "grace work" by some. Richard Telford, an English born stonemason and consultant for the DSC, admits that few masons opt to meet this challenge these days. Snow is one who does. For him, every wall is unique; it is both a work of art and a structural solution, one that requires intense concentration and a facility for piecing together a puzzle—in this case, of rock.

Trained in art and design at the Pratt Institute in Brooklyn, New York, Snow, 49, spent a summer helping restore a fortified hilltop village in Tuscany and fell in love with the dry stone work he saw and worked on there. On returning home to Vermont, he spent several years in construction, real, in the process, learned mortar-based masonry. In 1976, Snow decided to go into dry stone work full time. But the craft had been on the decline for many years, and he could find no masons in the area so much less in acres. "By trial and error, I became a self-taught weller," Snow admits. "I made all the mistakes, went down all the dead ends, but things the hard way plenty of times." As he grew more confident in his skills, he took a combination course and engaged in a competition sponsored by the Dry Stone Walling Association of Great Britain, all of which confirmed the design principles he had derived on his own.

From what he learned, Snow decided that chipping and trimming each stone so that it would lay out evenly was not for him. Instead, he wanted to let the stones "speak to him," honoring the shape and texture of every one that he sets into place. Snow calls the look that developed from this philosophy the "vandalic rubble" style, and he believes the best way to achieve it is by using fieldstone, an ungrafted variety of rock. "For Mosaic can be composed of anything the glaciator carried south and dumped here," he says. "It has the greatest variety of shapes and sizes—fun happens when I'm working with infinite possibilities within a finite structure." Stone bidders in other areas may choose different types of rock depending on what is available, cheap, and most their building method. Limestone is widespread and can be split easily into slabs, resulting in a more uniform wall, a look



Like a house, a wall requires the steady support of a few supporting stones. Due Snow admits the rocks that form its foundation as dry construction with the strong lines he sets to establish the base of the wall, not mortar. Although he prefers to leave stones in their natural state, he will trim them for a tighter fit if necessary without losing Snow is just as careful when he sets stones at the center of the wall from far larger stones to prevent shifting, others fill in gaps.



BUILD Dan Snow constructs a completed segment of the Marlboro wall, which this night goes on at night, and covers it with one of Snow's important commitments is to create a number of walls and other structures on a property near his own, in Danversville, Vermont. Among them, a wall with decorative steps passed an entire village, finding the perfect stone for each row. The structure also contains the following for a completed step foundation. Some of the walls near the house display several segments of the house. One long wall shows a house on the property.



many builders prefer Kentucky mason Richard McAlister, who trained at the D.S.C., builds walls and other structures with the local limestone, while Tim Borowski, who sometimes builds dry walls as part of his garden construction business in suburban Philadelphia, prefers Pennsylvanian limestone. When he needs or chooses to work with slate of stone, Dan Snow likes local grey brown ones which or like grey Goshen stone, which comes from a quarry in Goshen, Massachusetts.

After 25 years, Snow can look at any stone and immediately visualize how it will fit in the wall he's working on. "But whether I have a place for it or that moment is another story," he says. As he searches through his rock piles, he sets aside the largest, heaviest stones for the foundation. Wide, flat stones are used for tie- or through-stones, which go in, crisscrossing, bulking up (and every 3 feet) through the wall structure to bind it together. In the traditional Kentucky stone wall that the D.S.C. teaches local masons to build, an stone covers p the face of the wall 2 to 3 inches, and the top of the wall, or coping, is formed by standing stones on end in a row. Snow's Marlboro wall uses a more conventional coping: wide, flat stones that a person can sit on, in his client requested. They also prevent rain and soil from seeping in between the stones below, which would encourage tree roots to spread and push out the face of the wall. Rocks with at least one 90-degree angle are used to lock corners and finish off wall ends.

While choice of stone and wall style varies from area to area, the goal of all good dry stone wall remains the same: to make a strong but flexible wall that will stand on itself, not topple over, as the ground beneath shifts in the freeze-thaw cycle. Friction and

gravity hold a dry stone wall together, Snow explains, "so the most surface of each stone you can get in contact with other stones, the better." Pieces used on the wall faces are positioned so that their greatest length running into the wall, for stability, although small "pinning" stones placed underneath them are crucial as well. "These little stones do the hard work," Snow says. "No rock is perfectly shaped, so it inevitably has to be wedged from underneath with small pieces to bring it to level." They also hold the larger rocks in place, and help prevent them from moving or toppling out of the wall.

Dan Snow believes that the stonewall walls are ones where each course of stones follows a taper, or "batter." As the wall nears the top, "the inward pressure of the batter creates the weight of the wall," he says. "As it goes up and settles, the wall won't slide its center of gravity as early as one with strictly vertical lines." The recommended batter for a wall is 1 to 6. That is, the face stones should taper inward, toward each other, 1 inch for every 6 inches of height.

At the Marlboro site, Snow collected the required rocks from a crumpled wall on the property. This ability to recycle dry-laid stones is another reason he finds the technique. "I don't want to express my regret," he says. "Once a stone is set in cement, you can forget about ever using it again. I don't mind at all that the walls I build may someday be raw material for another wall."

Snow relied on his Kabuto #423 articulating front end loader to transfer boulders from the old wall to the new location. He tries to protect his body by lifting stones directly out of the loader's bucket at waist height—thus saving the more accessible ones to place using a pry bar for leverage—instead of picking them straight off the ground. When placing a large stone on a high wall course, Snow will guide it in the bucket with a chain, let it mechanically settle, then have the Kabuto operator set it into position. As further assurance against injury, he wears safety glasses to fend off flying stone chips and tied topped work boots to protect his feet. For many jobs he wears heavy work



gloves, too. To keep himself limber, he practices yoga for 45 minutes every morning. "In the 25 years I've been doing this, I've never had an injury," he says.

Once he has enough piles of rocks to work with, Snow erects batter frames, exchanged like an E with sloped sides, to establish the taper of the wall. These are placed at either end of a straight run of the crutch, with lines strung tautly between them. (Because this wall uses corners, Snow erects an additional frame at each jog.)

Snow then sets about creating the bottom layer of the first segment of his wall. Unlike masonry work, which requires a solid concrete footing that extends below the frost line, a dry stone wall can be built on a fairly shallow foundation. The 6-foot-high Marlboro wall stands on a 3-foot-deep, 4-foot-wide crutch, which is packed with 10-inch gravel to within 6 inches of the finished grade. On top of the gravel base, Snow lays a foundation course that is two-thirds as wide as the wall's 6-foot height—or 48 inches—using the heaviest stones he has available.

Tybil's strategy is similar to Snow's, but he does not use gravel, instead he tamps the earth at the bottom of the crutch until its level and three joints in a row of base stones to support the foundation course. This course provides 4 inches beyond the edge of the foundation, which helps prevent settling. Both men also often use dials with prying stones to make their level with one another. "A good foundation should be like a park," says Tybil, "without the slightest wobble when it's walked on."

A crucial step in building a wall, and the one most often overlooked by the novice, is picking stones too

the gap below the center of the wall, between the two faces. Wilcox call this process "battering," because, as in a human being, a wall without a good heart will not survive long. "The temptation," says mason Richard McAlister, "is to pour loose rock or gravel into this space, instead of taking the time to do it right." Battering should be done in each course of the wall as construction (as course is as high as the tallest stone of the series) and each stone "should be carefully chosen and deliberately placed in any face stone," Tybil says. As gaps shrink, progressively smaller stones are wedged into the crevices until the fit is secure. "Leave the smallest bearing stones as sets—not just dropped—into place," Snow says. "These always will be holes, but they should be too small for any stones above them to slip out." If no outward-slanted rock will fill the gap, Snow will insert a hammer to refuse an edge to achieve a tighter fit.

All these steps—covering the joints, laying corner lengths into the wall, using tie-stones, and inserting proper battering—lead a wall together in spirit. "A wall needs to be knitted together from its back, top or bottom," Tybil says. "This makes the difference between a structure that lasts 5,000 years or one that will fall down tomorrow."

Making connections that will live for centuries, if not forever, and creating something beautiful and functional while nothing exists before are what Snow loves about working on walls. "I seldom hear so much a job," he adds, "because when I put in the last stone, it means I won't find out more about that that place." Perhaps. But he can find consolation in the fact that the character of that place has changed, sense by sense, for the better. ■



ROUGH AND TUMBLE

"Many factors contribute to the failure of a wall, as I've said it is, it was that," says Richard McAlister, a Dry Stone Conservancy-trained mason based in Lexington, Kentucky. Poor foundation and inadequate battering are common errors, as is human behavior—such as when a utility crewer, by its tunnel under a wall and end up undermining it. "There are the worst problem on masonry," says McAlister. "Any time grouting under a foot, depending on its own situation, can be the best idea of do it in a wall." In making repairs to a wall that has been pushed apart by tree roots, McAlister makes a hole in the wall with a long level stone. He wears a mask that they may have to repair the wall steps 15 or 20 years down the road as the tree's roots continue to grow.

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H I G H S T Y L E

A vaulted ceiling gives a new master bedroom visual drama, while an eyebrow window adds architectural appeal.

PHOTOGRAPH BY JOHN COHEN

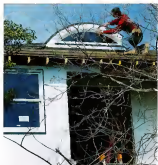
BY JEANNE HUBER

When architects proposed a barrel-vaulted ceiling for Laura Payne's new master bedroom, she had only a vague idea of what she and her husband, Perry Pappas, would be getting. "I remembered Renaissance examples from art history class, like Michelangelo's Sistine Chapel," she says. "But I really had no idea what one would look like in a home like this."

Months later, Payne watched with wonder as workmen made the architectural form take shape in her 1920s cottage, erecting arched ribs of wood and then heading wallboard into their curves. The remarkable result—a half-cylinder ceiling running down the middle of her new second-floor bedroom, accented by a semicircular "eyebrow" window at one end—draws light into the room and pulls the eye upward. The space makes Payne's spirits soar: "It's just fabulous."

Architects Tom Dignosa and Ed Ballentyne developed the design as part of an expansion of the couple's 2,035-square-foot home in the beach community of Bay Head, New Jersey. The story-and-a-half house had served them well as a weekend retreat when they lived in Manhattan. But after 40 years living there full-time with two growing children, 6-year-old Alex and 5-year-old Luca, it was simply too cramped. Payne and Pappas wanted to add a master bedroom with ample closets and a private

workers. With the ceiling's arched ribs of plywood sheathed, contractor David Thomas McGinnis adjusts the placement of the eyebrow window around which the barrel vault was designed. In 1919, Carpenter Ed Griffin built the window flange in the sheathing. The opening below him will soon hold French doors leading to a 3-by-9-foot balcony—just enough to provide nice views and breezes, says architect Tom Dignosa.



hatchways. They imagined high ceilings in a light-filled, airy space. And because they live on a busy street a block west of the Atlantic Ocean and a block east of Baltimore Bay, they longed for a balcony off the bedroom that would open onto their private backyard. With the doors open, they would be able to feel the ocean breeze and listen to the surf while falling asleep.

Still, they didn't want to wreck the existing small cottage feel of their house. Earlier remodeling had left the home looking a little more elegant as it shrank, but the architecture was in its facade was a balance of the Shingle style, which originated in Boston about 1880 and became popular for seaside houses along the Northeast coast. Payne and Pappas' house was shingled, and it had other features typical of the style, such as a composition front porch and dormers.

The architects found inspiration in the Shingle style while maintaining the home's existing footprint. Their solution was to rebuild the upper half-story, which was 39 inches out of level from one end to the other, in part due to unstandard framing. They would keep the roof ridge at the same height, maintaining the scale and appearance of the existing, but lift the eaves three feet and extend the roof over a one-story wing, thus adding 600-square feet of living space. Another Shingle-style element, a semicircular window backed by a shallow dormer, would be the key to a design for the homeowners' dream bedroom. During the 19th century, such "eyebrow" windows

served mostly to dress up exterior and to light staircases. But as the Payne-Pappas house, Dugan and Folliott say, saw the detail as a goal, they wanted to integrate a barrel-vaulted ceiling into the secondary addition. Most of the work would cover the lower story open, but a few feet of it would project out of the roof, shaping a curved dormer. Facing south, the window would admit light, as would French doors opening onto a narrow balcony defined by the roof overhang.

Once the homeowners approved the idea, contractor Daniel Thomas McCann took over. Working from 7 a.m. to 8 p.m., his crew managed to get the old second story off and the new one built and shingled in just eight days. In the interim of time, his crew finished out a shingled roof, the curved dormer would come later. Then, as they worked two paces down for three straight days, they prepared to construct the vault.

Building barrel vaults has gotten much easier since the ancients invented them as a way to enclose wide spaces. The robust ones are cast of wide arches made of wedge-shaped stones or bricks locked together by the pull of gravity. Toward the end of the first century, the Romans discovered they could create arches more easily by casting them in place using rudimentary concrete. Medieval builders used masonry vaults to span over larger areas.

McCann and subcontractor Fred Johnson Jr., of H&F Drywall, executed their version of the modern vault with wood and drywall.

ON A BRICKER

Thinking outside the box—on barrel-vaulted ceilings—usually pays off—in a lot easier than it used to be, thanks to technology that lends effortlessly to a curve. When the Cypress Association, a trade group, sponsors seminars for innovative uses of drywall, the barrel-type used to create Lauren Payne and Perry Pappas' vaulted ceiling features prominently in the entries. Columns, standing walls, ceilings that undulate in and out like waves—there's no limit to what builders come up with.

Flexible drywall, made by several companies since the 1980s, helps partly because it is so often—just 5 feet, but the material also has thicker bend and back paper, and the gypsum core has been thinned in it to make it more malleable, says Mike McGovern, regional manager at U.S. Gypsum. "The core stretches but the paper doesn't tear," he says. As a result, flexible drywall bends into a 20-inch radius (used drywall bends at minimum) about 20 to 40 percent lighter, and then are possible with standard 5-inch drywall. Flexible board costs about \$11.40 for a 4-foot by 12-foot sheet, up to 50 percent more than ordinary 5-inch-thick, up to 50 percent more than ordinary 5-inch-thick.



ABOVE: Using a gypsum flexible into a curved ceiling post and of 5-inch drywall. All from parts of these extruded ends by side with construction adhesive and screws to create 2-by-6-inch framing. Spacing construction adhesive into the joint, fill some carpenters in the case of the shingles and helps the drywall attached more securely than nailing alone. In some cases, using adhesive can also reduce the number of drywall features needed.



RIGHT: The drywall, especially flexible, is a great layer of barrel-type and information on the shingle board. The construction will need the shingle work, which requires a 12-inch-thick ceiling.



A decade ago, when Johnson needed to install drywall on curved surfaces, he had no precedent at the store. He'd seen a paint roller with worms apply it to the board's surface, and let it sink in for an hour or so. Then he'd hold one end in place with a clear rod to the floor and gently arch the sheet until the other end fit against another clear rod the proper distance away. After the panel dried, he would install it. Nowadays, he can use flexible drywall, which bends in place without needing long "On a Benday" (p. 127). Still, since the sheets have a tendency to spring out of the curve, McCann's first step in the "Pine-Poppy" house was to erect a support structure that would give Johnson plenty of wood to which he could fix the drywall.

McCann needed to make the curve of the ceiling joints match that of the eyebrow window. When the last hole's screw on time, he was forced to rely on the manufacturer's promise that the shape would be equivalent to a 35-inch-deep slice off the top of a circle with an 80-inch radius. To create a template for the 6-inch-wide joints, he drew an arc based on this shape, then another, 6 inches beyond the first, using an improvised compass—a block of wood nailed to a sheet of plywood at one end, with a pencil at the other. Lead carpenter Ed Serafin cut along the lines with a jigsaw and traced the point onto other sheets of 5-inch plywood. By gluing pairs of the shapes together, he created 18-inch-thick joints. To support the arched joints, the team built two braces by nailing together three 2 by 10-inch timbers, at 12-foot-long they would extend from one end of the bedroom to the base of the eyebrow window.

When all the parts were ready, the carpenters pried off part of the roof drywall, built a few weeks earlier and removed seven rafters to make space for the 6 feet of the barrel vault that would penetrate the slope. They hoisted the beams into place, bolted them, and, using metal strap hangers, anchored the arched joints every 16 inches along the lengths of the beams. Bracing made of 2x6s was placed every 12 inches between the joints. In two days, the vault was in and the crew replaced the roof rafters with thinner ones that cut out on the curved joints of the barrel. McCann topped the new rafters and the dormer framed by the arched joints with a layer of 5-inch plywood. To bond it over the joints, he screwed the sheets in place from the top of the roof downward. He covered the sheathing with a rubber membrane, and then everything with heavy-weight asphalt shingles.

When the window arrived, it fit to within 1/8 inch—a carpenter's great relief. After it was installed, Sherran's heat insulation went between the joints, and the 5-inch flexible drywall arrived. To meet fire codes requiring a 5-inch thickness of drywall on ceilings, they glued and screwed one layer of the gypsum board to the framing, taped it with joint adhesive, and applied a second layer.

After the walls were taped and sanded, Payne had them painted the same pale yellow she had used elsewhere in the house. But in this magical room, the color was all wrong. "There is so much green from the trees reflecting in through the eyebrow that the walls look like a chartreuse haze," Payne says. "So I became one of those millions of people who repaint a freshly painted room." Now the walls are a soft beige—"kind of a sand color," Payne says, fitting for a room filled with the sounds and breezes of the sea. ■



There's an art to attaching drywall properly, too. The crew keeps it pressed against the first layer while drawing the screws. (Photo 127) Korman made one sure punt before the rollers that don't push through the paper, which provides the drywall's strength. The final point, at the opposite end of the ceiling from the eyebrow window, was cut with a homemade string compass, but instead of a pencil, a screw knife traced the arc. (Photo 128) The finish of a job will show within a few of inches and dimples that one might think it's lack of plaster. The room's light and sunny feel makes the homeowners happy.

"There was so much green from the trees reflecting in that the yellow walls took on a chartreuse tone.

So I changed it to beige and became one of those millions of people who've repainted a freshly painted room."

—LORRAN PAYNE



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ceramic floor tiles

One of the most fun parts of being a flirter may be the fun of playing with the tile. Today even the most fastidious specifiers group offer everything from intricate mosaics composed of brightly glazed 2-inch squares to large 2-foot slabs in earthy terra-cotta tones.

Some of the hottest colors resemble stone. Look the real thing, they make floor look elegant and clean and underfoot. Unlike most stones, though, ceramics are easy to clean and usually need no sealer. When the stone imitates, why not give the real thing a little more of its own look?

Offering rich patterns, colors, and textures, ceramic tiles transform floors into works of art. Whether they feature a swirl of surface cracks, ancient Italian designs, or simply striking visual interest through their shape, these clay pieces give the eye a tantalizing place to land.

With so many options available, you might want to apply a mix-and-match approach to the selection process. Alternate colors, insert decorative tiles into plain fields, or create occasional borders. The is made for creative minds.



Tile mosaic date back to at least 3000 B.C., when painted clay fragments were hand-laid into mud to create pictures. Today, though, mosaic—whether multidimensional or all-ideas-are-yes—can be purchased in prearranged sections for ease of installation.

1. Moroccan mosaic border set in a bed of mortar
2. Mosaic tile ivory comes with just a couple inches set on top
3. Individual tiles that are 4 inches square or smaller are also called mosaic
4. Some create border patterns or floorplan layouts

chips and slips

When it comes to floor, picking a tile requires an eye for more than just style. There are some practical issues to consider too.

What is the risk that people might slip and fall? Robin Gray, showroom manager at the Allen Scales tile store in Seattle, says that people tend to worry about slip resistance mostly for bathrooms, but kitchen floors special attention, too, as do mudrooms and entryways. "People certainly take small steps in a bathroom," Gray says. "Kitchens are larger. Kids are more likely to run in there." Glossy tile can be quite slippery, especially when wet. Matte finishes, places with sand in them,

and embossed decorations all add traction. And small tiles are inherently more slip-resistant than large ones because of the recessed joint lines.

Will the tile scratch? Ceramic is harder than most other flooring, but some tiles are tougher than others. The Porcelain Enamel Institute specifies six (3-1) categories of resistance to surface abrasion, with Group 1 surfaces limited to "light duty" on walls, Group 3 for use on floors, and Group 5 for heavy-duty areas. The American Society for Testing and Materials (ASTM) uses the Mohs scale, which ranks surfaces according to whether they can be scratched by 10 different minerals. Vinyl resists about

1 because it can be scratched by talc, the softest test mineral. Glass on wall tiles typically rank 5 or 6, floor tile glass should rank 7, the same as quartz—common in sand. Glazed tile chips shatters acrosses more than unglazed tile because the ceramic color underneath shows through.

Will the tile chip if something heavy drops on it? There's an industry measure for that, too, and it makes tiles in terms of the number of pounds of pressure they can withstand per square inch. The ASTM sets the bar at 50 pounds for wall tiles and 250 pounds for floor tiles. Porcelain tiles, made with finely ground clay baked at high temperatures, are especially tough.

THE TILE FILE

What type of tile do you want for your floor? Here's an overview of some of the types.

ECOTERRA: Made with the traditional process of firing wet clay, then glazing and firing again, sometimes repeatedly, before for kilns, and finished with acid washes. But because of multiple firings, the tiles can be too fragile for heavy traffic areas.

BOQUÉ: An enameled tile.

CRAZED: These contain fine cracks, either from age or as an intentional effect, doesn't compromise strength.

ENCAUSTIC: Patterns pressed into the clay and fired with glaze that contains the color of the unglazed tile around it, revealing the patterned pattern and color.

GLAZED: Tiles fired through a glaze, then cut in size, and covered with a shiny, translucent glaze.

HAND-MODED: Available by irregular surfaces and

irregularities. Tiles are hand-laid, then fired in kilns, and covered by multiple runs.

IMMAGI: Designed by local artists for the surface.

MONOCOTTURA: A modern process of firing wet clay and glaze simultaneously, resulting in a stronger glaze bond than traditional tiles.

PORCELAIN: A very powerful clay fired at temperatures above 1200°C. High temperatures, resulting in a very durable tile. Not always white, it's used to simulate stone, marble, and terrazzo.

RELIEF: Glazed elements project slightly from the surface.

ROBIN-PRINTS: Glazed glass allows for nearly permanent prints.

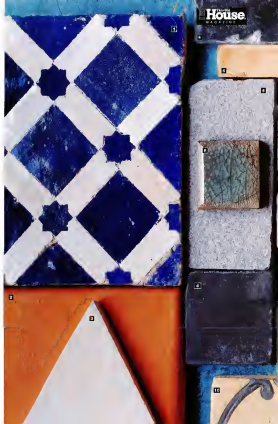
TRIPAL-COTTO: An unglazed, surface-red tile color surface.

THROUGH-GLAZED: Unglazed porcelain with uniform color throughout, assuring that the appearance doesn't change as the surface wears.

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Key to Type

1. Moroccan mosaic
2. Sun-dried turn-outs
3. Lino-washed distressed monochrome
4. Japanese brushbody porcelain
5. Hand-molded monochrome
6. Grille through-body porcelain
7. Italian screen-printed porcelain
8. Grille-plaid acetate
9. Monochrome banner
10. Plaid-body mosaic
11. Spinkhanged block print
12. Glossy monochrome
13. Multicolored block print
14. Baby block print
15. Plaid-body relief
16. Hand-molded monochrome
17. Stuffed block print
18. Intaglio screen banner
19. Porcelain mosaic
20. Stone monochrome
21. Antique isospond turn-outs
22. Footproof block print
23. Turn-outs blouse

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HOUSE CALLS WITH STEVE
pg. 82-86

Architect: James McCallum Architects, Santa Rosa, CA, 707-578-4513
Page 26: *placemats* from top left/
Academy aluminum and *pet rack*, Calphalon, 800-829-7267,
www.calphalon.com. *Stainless steel* *enck*,
water *Konrad*, 800-351-6190,
www.konrad.com. *Bloodwood* *base*,
pet rack, The Craft Art Company,
 Atlanta, GA, 404-446-7132, www.craftart.com. *TWIN* *coat* *shower*

regimens. J. A. Hruschka, Haverhill, NY, 914-742-6300. Chef uses stainless steel put made: Papa's Bars, Papayeville, NC, 910-485-4400; www.papabars.com. Cop R Chef copper cookware: All-Clad, 800-255-2523; www.allclad.com. Four Point oval cook in stainless steel. Excludes, 877-242-5843; www.enclave.com. Hard stainless cookware: Krusen Inc.

ASK NORA
pg. 39-40

Hearing reference: Dan Holzman Assoc

For information on popcorn ceilings/
Spaced Textured Coatings Product
Withdrawal, No. 712-631-1790.

TRANSFORMATIONS: BIGGER
HOUSE ON THE PRAIRIE
pp. 36-41

Calwestry J.C. & Co., Aliso, TX, 972
619-0700

UPKEEP: FLOOR SHOW
as 62-46

Floor resistance: Ideal Floors, Inc.
Yorktown, NY. 914-776-6861

Wax detailing agent: **Marwax** Dan
Kamowitz, 800-523-9299, www.marwax.com

Our thanks to Michele Prisco, Prentice
Harcourt, New York, NY

BY DESIGN: HOT UNDER THE
COVERS
pp. 48-54

Radiance converts ABC (Broadcast) Servers.
Savannah, MA: 800-668-8088, 3x1

WHERE TO FIND IT



*Getting All Your Ducks in a Row House," p. 30. At the fall TV project home, all cool jazz and a boiler room is removed to make way for a ball room. The basement will be next to a new floor rental and in the H&M back row house in Charlestown, Massachusetts.

Designs, Brooklyn, NY; 718-338-5468;
www.2nddesign.com. Prime Woodwork-
ing, Oak Park, IL; 708-936-0623;
AISC Manufacturing Co., Cicero, IL;
800-543-7063; assembly.com—
Eberle Metalsmith, Chicago, IL; 800-397-
6125; www.eberlemetalsmith.com.
Our thanks to: A-1 New and Used Plumbing
and Heating Supply, Somerville, MA,
617-625-6148.

LUXURIES: KEEPER OF THE FLAME
pg. 58-61

Stevens Marine Wood Heat Co., Newburgh, NY, 207 696-5442, www.stevens.com, Portland, OR, 503-227-8547, www.stevens.com, Trimp-Cox, Ottawa, Canada, 580-561-8594, www.trimpcox.com

For more information on Tulliver please contact Firmeas.

TALKING SHOP: STORAWAY
pg. 54-55

Page 46: Heavy-duty deluxe ball bearing 3-drawer steel workbenches #F014000, powered handrail system #F014000, Winco Industries, Waterloo, IA, 800-833-4851; www.wincoindustries.com

Page 86: 3-in-1 metal rolling workshop #20902, StanleyDAG USA Inc., Fort Lee, NJ, 888-628-4258; www.usa.coil

4-inch pegboard: Ernieco Fiber Carpentry, Corvallis, OR, 548-753-1211; www.ernecorp.com

FeigBAR broadband peripheral system Ken
ney Manufacturing Co., Warwick, RI,
800-753-6638; www.kenney.com.

Locker Boss 36 tool organizer #01056
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WI, 800-488-2672; www.lockerboss.com.

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www.kleintools.com

20-inch heavy-duty tool box #R-20HT,
13-inch gadget box #R-31F. Stack-On
Products Company, Waukegan, IL, 800-
523-5603, www.stack-on.com.
Slime-free lubricant, Slipit, Slipit lubri-
cants, Highland, NY, 800-303-0034;
www.slipit.com.

**CHARLESTOWN TV PROJECT:
GETTING ALL YOUR QUOTE IN A
ROW HOUSE**
pg. 80-88

EFW&C contractor, John Ambetomo, Total Temperature Control, Wakefield, MA, 781.224.1400, www.totaltempcontrol.com

Furnace and accessories: Smith outdoor condensing unit, Diamond Ultra Variable Speed natural gas furnace with matching

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"Peter Dink," p. 42. Dinkly pushing a 100-pound lugger. Peter Dink screws the final of an oil floor to the bottom of "Norma and John" maintenance.



From top left, Milton, The French Chef, Julie Child, made up kitchen design ideas for the project owner with Noreen, Monique Morrell, and Steve.

Week 6 (November 4-11)

11.1.1. *Interview* at www.fox.com that Martin Morrell is help plan the kitchen project design layout with designer Phil Mazzagueri. Mutual carpenter Norm Adams leads the newly installed workshop windows and installed French doors into exterior T.J. Gilk across the interior with a stain killing primer—perfect for eliminating product fog on the exterior. (Photo: Steve) Outside Norm helps general contractor Tom Busling a new, efficient, new shagging system 2 by 4 foot panel with factory attached shingles already attached. Steve built Steve Thomas is hired by security consultant Steve Russo who is busy wiring the state-of-the-art alarm system. (Photo: Steve) Steve's security system is installed with a battery powered radio transmitter capable of signaling during power or phone outages. In the middle room, Steve encounters more wires and another materials, surfaces and expert Steve helps him explore the digital satellite system (200) and then adjusts to dish from the rooftop. Steve wired the latest in satellite lighting control with lighting designer John Farnsworth.

Watch and Learn: creating perfect shingles. **Remember:** Advent speaker (Shogun Sony Inc. (Phoneline) 800, 612 553-3750. Daily after 10:00 AM. Anytime. (Photo: Steve) www.phoneline.com. Windows and doors. Milton Windows & Doors. www.miltonwindows.com. Shagging system. Cedar Valley Shingles Systems. Hudson, CA, 800 621 8022. Security system. First Alert Professional Security Systems. Syracuse, NY 800 854 5076. Dish satellite system. Sony Electronics

Inc. Woodcliff Lake, NJ 800-400-7632. www.sony.com. Audiovisual contractor. Steve Hayes. Custom Business Inc. (Phoneline) 800 207 3305.

Week 8 (Nov 21-22)

Steve investigates the newly laid underground-electrical service cables that will eliminate a tangle of overhead wires. Tom shows Steve a self-sealing waterproofing membrane (available in the local paint store) shingles in a single protection against sun-damage and shagging. Inside, Norm has removed the ceiling plaster and installed damaged paint and beams that will support the bathroom upstairs. He also ports out the chimney with a custom 8" stainless steel chimney system for the French doors is going in. Steve removes the chimney and a new exterior will be installed on the exterior. Steve removed the chimney and a new exterior will be installed on the exterior. Steve removed the chimney and a new exterior will be installed on the exterior.

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Week 10 (Nov 30-10) Steve and plumb and heating consultant Richard Trefenney visit the old deck to the basement being removed a job that funded by the city company as an incentive for homeowners to switch from gas lines are fed through a metal box and a gas line outside. Steve is clearing the area. They are cleared. Also the barn, Norm helps carpenter Larry Stevens install the decorative white. Installed with a copper roof and exterior wall. Steve and affected local for survey to storm damage to the property is now including two massive. Newly acquired. Tom and Steve work through the framed in master suite and made with the bathroom layout using a tub template. Norm leads to the exterior of the sleep where a custom 8" stainless steel chimney system for the French doors is going in. Steve removes the chimney and a new exterior will be installed on the exterior.

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Phoneline Systems, (Phoneline) 800 207 3305. (Photo: Steve)

Week 11 (Nov 20-20)

Norm inspects the new exterior garage door. Built to last the waterproofing damage done—especially with shagging—except for the new and blue strip hinges—just which appears to be outside. He then leads them through the kitchen a 16" cast iron window. Steve runs three outside water-hose compressor in the project house with water Susan Dugan. (Photo: Steve) Norm inspects the new exterior garage door. Built to last the waterproofing damage done—especially with shagging—except for the new and blue strip hinges—just which appears to be outside. He then leads them through the kitchen a 16" cast iron window. Steve runs three outside water-hose compressor in the project house with water Susan Dugan.

Watch and Learn: installing the new exterior garage door. (Photo: Steve)

Remember: Garage door. Steve's Woodworking Co. Inc. (Phoneline) 800 207 3305. (Photo: Steve)

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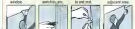
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save

THIS OLD HOUSE

新字 異字通用 簡要圖解 (附例)

P U B L I C A T I O N

¥8,500

主 办 单 位：中 国 人 民 解 放 军 总 参 谋 部

Fortias, Virginia

By 1862, with then five-year-old Victoria was already a Civil War veteran, having witnessed the Battle of Gettysburg. It is affirming the house was used as a hospital for wounded soldiers. In 1863, William Thompson, found less well. A member of Confederate John Mosley's Rangers, he was captured by Union troops, fell ill, and died in an army prison. Thompson's son Arthur, a prominent local contractor responsible for building Fairfield Town Hall, took over the property. He modified the original rectangular form with two bump-outs and an entry porch addition in 1898.

The 2,100-square-foot two-story structure includes an attic room (two in the finished attic), a living room and library—both with fireplace, a shaded 10-foot porch deck, and plaster-casting details—and wainscoted half a bedroom. The first generation of Thompson left the house in 1941. The five subsequent owners added two bathrooms, the top's glassed front door and surround, and slatwood siding, which hides intricate heart pine siding and scallop-shaped gables.

The house was occupied until 1997, when the Virginia Department of Transportation bought the nearly four-acre farmstead for use in a Fairfax County road expansion project. Moving the structure—including its red sandstone foundation—will cost an estimated additional \$35,000.

CONTACT

John N. White
Virginia Dept. of Transportation
704-260-3302



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If you know of a house that should be saved, please write to: Save This Old House, 1180 Avenue of the Americas, 37th floor, New York, NY 10036

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