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"The bungalow style just says 'home' to me."

—Steve Hupen, homeowner



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OUTTAKES



ALONG THE SCENES AT THIS OLD HOUSE

BY JORDAN KEE



House Painter

Life has begun to imitate art as the T.O.H. job goes on. Long before construction began on their new house, homeowners Dan and Heather Belmore contacted Boston artist Bill Pardy—whom Dan discovered painting at his easel in nearby Back Bay—to do an oil-on-canvas study of the finished project. Over three months, Pardy created a 36-by-52 inch painting that shows the house in renovated splendor, from the refreshed front door to the overflowing window boxes. Dan found inspiration in Pardy's vision and adapted some of the painted details in the real-life design, particularly the profile and finish work of the eaves and the base of where molding

at the corner. Before creating the artwork, Pardy, who has been doing paintings of Boston houses for three years, discussed the plans with Dan, then showed him pencil sketches. The artist took the liberty of depicting the neighborhood as it would have looked in an earlier time: far removed riding-around houses in their back and brownstone glory, replaced 20th-century streetlights with gaslight versions, dressed up the bases of trees with cast-iron fencing, and covered the sidewalks, oil tanks, and sand piles that now line the Myrtle River waterfront behind the house. "Bill embellished a little," says Dan. "But the painting's personality intended to be an interpretation of the past."

ILLUSTRATION: JAMES H. HARRIS



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Clean Machine

Most job sites display clues that reveal the nature of the construction activity that has gone on there. But at the Charlotte two project, one telltale sign of significant demolition—a fine coating of dust blanketing every horizontal and window sill—is notably absent. Tom Salvo has been able to keep each room (and the surrounding neighborhood) clean as he works, thanks to his "negative air machine"—a 26-by-32-by-37-inch metal box on casters—which filters and expels air before it can swirl around the house and ease its filthy, allergenic pull. Initially used in hospitals operating rooms to prevent the escape of contaminated air, abatement specialists found the machines useful during removal of hazardous materials such as asbestos, and eventually contractors adopted them to contain everyday construction mess.



open window to prevent backdrafts.) As the two polyester filters become dirty, Tom replaces them (one costs about \$5 cents, the other \$2.50), affording a longer life to the more costly HEPA filter. "That thing is unbelievable," Tom says. "It keeps the surroundings nice and fresh while you're working. We'll definitely be using it again and again."

PERMISSION SLIP

A collective sign of relief echoed through the streets of Oakdale on September 12 when the show project received preliminary approval for a zoning variance from the City of Greater Zoning Board of Appeals. Homeowners Dan and Heather Belliveau had been waiting for permission to implement a plan that went beyond the parameters set by local building codes. The intended renovation, including two 16-by-14-foot basement bedrooms and a bathroom addition to the first floor, pushed the total living space from 1,100 to 3,550 square feet—340 more than the law would allow for a 1,500-square-foot lot. The Belliveaus' plan also included adding a second-story addition with the 40-foot-high bedroom roof (36-foot eaves height) and for new landscaping, and a new front porch and driveway (200 feet). The code, enacted in 1976, was meant to control the increasingly popular subdivisions that lined the city's edges, but it was not designed to handle the project. "When they passed that law, some people were getting up there and saying, 'This is a good idea,'" says Belliveau. "I'm proud of a building. The number of the various applications with us didn't make sense for the city. After 40 years, permission is the least—in which is equated the great intention is the middle—of addressing their concerns. It's only been rejected once." The neighbors, who saw the plans in advance, were very supportive. "We're kind of the same situation we had with their condos behind their fields on shoveling snow and when fresh pickup came place."

PHOTO: JAMES COOPER



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HOUSE CALLS WITH STEVE



Oak Room

A kitchen is reorganized for a family of five

Deborah Ashford bought her rambling 1939 Arts and Crafts-style house in Washington, D.C., because it was almost perfect. It was spacious enough to allow each of her four daughters—ranging in age from 6 to 18—a room of her own, and as one of the high-latitude “look-like-a-southerner” cities, she says. The neighborhood and the beauty of the house more than compensated



for its sparseness of a kitchen. Deborah, a lawyer and a single mom, didn't like the room's sparseness and inefficient design, but, in the worst case, “a big, old, in ‘heart of the house’ kitchen doesn't mean anything to me,” she says. “You really are.” His goal in remodeling wasn't to turn the room into a gourmet showplace, just to create an pleasing, productive common area that could be utilized as efficiently by the housekeeper as by her. “I like Deborah's honest approach,” says The Old House host, Jerry Thomas. “She had—and has—a small kitchen, and she worked with it.”

PROBLEM

Asked to describe the old kitchen, Deborah says, “It was essentially a hallway with appliances in it.” Three doors opened into the 18-by-11-foot space, and everyone cut through it no matter way to the family room. The positioning of the doors allowed only two spots for storage, like a bank of base cabinets (taking a sink under a pair of windows, the other an awkward bench style cupboard standing across from a “larder” door).

To make custom work, the family room, a recent addition, had robbed the kitchen of its pantry, leaving Deborah with no place to stock provisions.

Addressing the traffic and reorganizing the work zones were just two of the decisions Deborah passed

UPPER LEFT: Deborah Ashford's former kitchen had no place and few amenities. In her redesign (above), architect Norman Smith considered food prep as one side of the room, liberating the rest of the space for a passage from a hall and dining room to the family room.

PHOTO: NORMAN SMITH; DESIGN: DEBORAH ASHFORD

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HOUSE CALLS WITH STEVE

along to local architect Norman Smith and his wife, contractor Gail Montgomerie. She also wanted the room to blend aesthetically with the rest of her Colonial-style home, and she had a tight budget. "Hiring a designer and contractor who work closely together makes for a more streamlined building process," says Steve.

SOLUTION

To aid circulation and create a viable work triangle, Smith decided to deflect traffic by closing off the door that linked the cooking area to an adjacent hallway, while leaving the other two doors intact. "Once we did that, the space fell into a U-shaped plan, with a passage across one end," he explains. Next, he pushed back the wall that separated the kitchen from the hall to gain 4 precious inches of floor space. Four inches may not seem like a lot, but the extra depth meant Smith could refit a 10-inch section of wall to accommodate a bank of cabinets surrounding a new sink.

Another structural detail, and one that gives the illusion of greater space, is a reverse soffit. Smith dropped the ceiling at the perimeter of the room, without building up the cabinetry to meet it. This strategy solved two problems: It gave him a place to recess down-lighter without bumping into any pipes, and it kept the room from looking too lofty. "If we'd taken the cabinetry all the way up, the room would have appeared even smaller," Smith says.

As a budget measure, Smith chose ready-made cabinets for most of the cabinetry, to which he added specially designed, furniture-grade oak plywood end and drawers. To create the fun



The backs of the upper cabinets (above) were glassed in to bring light in from the study across the hall. The stainless steel backsplash (left) goes to the ceiling, and the backsplash (right) goes to the ceiling.



and Crafts style in the rest of the house, the architect offered a row of strips of oak over the unfinished portion of glass on the glass cabinet doors, then attached simple cross-grain pulls, of his own design, with stainless steel pin-head screws. The floor, tropical to the room, is quarter-sawn pine.

FINISHING TOUCHES

Good site on the counter tops gave cabinet on the home's edge. The color is found frequently in contemporary of the Arts and Crafts period. In contrast, the stainless steel backsplash and appliances look thoroughly modern. Since Deborah doesn't consider herself a gourmet cook, she settled for a residential version of a commercial range, with a microwave and vent above. "If you don't cook a lot, you don't need a big hood," says Steve. "Much less expensive to your cooking style."

"The details in the kitchen, like the oak and the glass, are materials that are representative of Craftsman style houses," he adds. "One of the founding principles of this movement was to let materials speak for themselves—so try to design them as natural things also. That's what Norman has done here. Everything speaks to its own voice." To which Deborah and her four daughters cheer as appreciative. "Yes!"



In the old kitchen (above, left) the stove and refrigerator stood close by each other, with the sink nearby. With the third door closed, and the new U-shaped work space designed, every task has a place. The second view (right) shows the wall between the kitchen and the hall to get a drink without getting in the cook's way.

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HOUSE CALLS WITH STEVE

IDEAS NOTEBOOK



SPEED DEMONS

"In a small kitchen, the more you can build in, the bigger the space will seem," says Steve Thomas. "This demands precise measuring." Microwaves and newer fast-cookers fit the bill.



1. A clock as it is, projected as under 15 minutes at the 24-inch wide microwave above. Use a shelf unit which requires no plumbing, uses a reliable water reservoir to supply the steam.

2. The 27- or 30-inch wide convection/microwave high-speed wall oven can be installed as a single unit or paired with a standard microwave oven. The combo can take a 1200-watt quartz cooking element, roasting rack, convection fan, and turntable.

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Photoed from left to right:
Steve Thomas, host; Tom
Silva, general contractor;
Richard Trelorey, plumbing
and heating expert; and Norm
Abram, master carpenter.

Funding for *This Old House* is generously provided by



ASK NORM

Cures for creak walls, deck divots, and bouncy floors

HICK OR MATCH?

When I renovated my rim, I built and installed bookcases that resembled identical to one you put together on New York's Workshop. I made them of birch plywood and gave them a clear finish (the plywood is birch and the rest of the room is pine, and I'd like to use a clear Birch Glaze, but I'm afraid the colors of the two woods will look strange together). Is there a way to get the birch and the bookcases to come out the same color, so I don't have to go to the expense of finishing birch siding?

MAURICE FREEMAN, BUTTE, MONT.

Not only will birch stain be expensive, it's not a great wood for a clear finish because its color varies so markedly from blond to dark. That's why most solid birch (just balsam, for example) is painted. (As you know, the high-grade veneers on birch plywood take a clear finish just fine.) You could try to stain the pine to match the birch, but getting one species of wood to match another is tough. You'd have better success if you put the same stain on both woods. But since you're already put a clear finish on the bookcases, I would just go ahead and use the pine in the family room of my house. I have cherry, Sika spruce, and mahogany, and then different colors complement each other nicely. Besides, once you fill the bookcases with books, you'll see a lot less of the birch than you do care. If you were planning to put a pine bookcase next to a birch bookcase, I'd worry a lot about the mix of colors, but when woods are used in distinct ways, as they are in your den and my family room, I think you'll be pleased with the results.



SAVING A SCARRED DECK

A looks as if the previous owner tried to pressure-wash the stain out of the wood on the deck. Well, that did get rid of the stain, but it also damaged the top layer of wood. Can I sand out the rough wood? And if I do, will the newly exposed wood take stain as well as previously?

PAUL MANNING, DETROIT, MICH.

Sanding is generally the best way to fix a damaged wood surface, and it will actually encourage the wood to take a stain. Sanding a deck, however, poses a couple of special challenges.

The first is the deck's structure. If you're lucky, they were driven through the underside of the deck rather than the boards.

If not, you'll have to cut every nail and screw head below the surface to a level below the sandpaper and to keep these protrusions out of the way. (Unless they're stainless steel, they'll rust.)

Then you'll need to find out what kind of wood your deck is made from. Pressure-treated wood is toxic, which means you should wear a respirator, coveralls, and eye protection, and make sure to capture the dust so it doesn't get into the soil or water. Sanding a cedar or redwood deck won't require such precautions, although wearing a dust mask is a good idea. The dust from these woods is an irritant for many people.

A belt sander or a random orbit sander would be my tool of choice if the damage isn't too deep; a manual drum sander should be able to smooth out deeper gouges. I'd probably start with 120-grit sandpaper, but you could probably go as low as 80-grit. Anything more aggressive will just make the situation worse. Sand the deck just enough to remove the damage, then stain it. Hopefully, this experience will discourage you from ever painting a pressure-washer at work.

ONE HOLEY MESS

When we bought our house five years ago, we were told that it had hardwood floors under the carpet. Recently, we decided to tear up the carpet and refinish the floors. To our surprise, we discovered many large holes in the walking surface of the floor, making it look like it had the shingles gone. Do you have any suggestions as to how to fix this problem?

MARTIN PERAZA, BOSTON GLENN, IOWA

Carpet is a great at concealing the sort of previous owners, isn't it? I can't imagine anyone live-inning a hardwood floor because they liked the look, so I'd bet the holes are a clumsy message to stop the floor from squeaking.

Now I wish I could say, "Refinish the suds, refinish the floor, and you'll be off to a good start." Unfortunately, if you did that your floor would still be peppered with nail holes (or the party used to fill them) and you'd have taken many years off its life. The way I see it, you have only two options here: rip up the damaged flooring and put down new, or have the most subtle one carpeting.

Whichever route you take, you'll first want to remove those squeaks. Basically, that means pulling the flooring right to the subfloor, and the subfloor right to the joists. If laying a new floor is in your budget, then make sure that the subfloor is screwed and, if possible, glued (fresh construction adhesive) usually to the joists before the new floor is laid. If you plan to put down new carpet-



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ASK NORM

ing around, then go into the basement, locate the squeak, and drive short screws up through the subfloor and into the bottom of the finish flooring. To target a squeaking subfloor, drive longer screws at an angle through the tops of the joists. But if you can't get to the underside of the floor, drive screws through the top of the flooring and into consecutive floor joists that touch the joist. Then cover the screw heads with wood filler or wood plugs stained flush. It's not the most attractive solution, but at least no one will see it.

BANISH THE BOARDS

Our 6-year-old daughter often sits with us as we watch what you're making each week, and says, "Mom, can fix anything?" I hope she's right. When our house was built in 1958, we used a large family room (it was basement, without any joists in the middle of the room). We were scared that 20-foot-long, 14-inch-deep wood joists set on 16-inch centers would provide ample support in the floor above. They don't. There's a serious deflection in this surface, even when our daughter walks across the floor. The basement isn't finished yet, so we still have access to the floor structure. What should we do?

JAY BERNER, Channahon, Illinois

First off, let me assure you that your floor is probably strong enough; you shouldn't worry about it suddenly collapsing. What you are noticing is a lack of stiffness. No structural joist to support a floor, whether it's own lumber, engineered lumber, or steel, is stiff enough to completely eliminate the flexing that happens when a "live load," such as your daughter, walks or

drags across it. Building codes do allow a floor to deflect within a certain range, it's just that when they have to span a long distance, the flexing becomes noticeable. That's why I'm a believer in going beyond the basic code requirements and using wider joists, putting them closer together, or both, to get the necessary stiffness. The subfloor also plays a part in floor stiffness, which is why I recommend using screws and construction adhesive to attach it to the joists.

To fix up your floor now, you could try to add joists between the existing ones, though that isn't always practical or possible. Filling joists with 2x blocking or cross-bracing between the joists should help, or you could leave lengths of 1x4 wood spanning to the underside of the joists. Space them 16 inches on center, running perpendicular to the joists, and add as many cross braces where it crosses a joist. By the way, the most effective way to soften any floor would be to remove the joist spans, but that would mean putting support posts in your family room.

GOLD BRICK FIX

I live in brick houses that was built in 1947, and this 4-1/2 home is pretty drafty and uncomfortable in the winter. Even the walls are cold. My landlord told me that the windows are part of the problem, but most masonry was installed only about 10 years ago. What can I do?

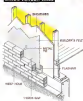
MARC K. TAYLOR, Homewood, IL

It's entirely possible that your walls do need insulation, but I wouldn't put your gut job before you take your landlord's advice

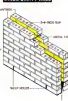
and check your windows. It isn't difficult or expensive to replace window weatherstripping, except for attaching rental. In fact, replacing the most cost-effective home repair I can think of. But if the drafts persist after the new weatherstripping is in place, then seal the walls.

There are two ways to insulate brick, depending on how the wall was originally constructed (see drawings, next). In a brick veneer wall, the brick is attached to a non-structural, and there's a standard wood-framed wall behind it. After the framed wall is sheathed, bricks are laid in a single layer outside studs are, which are embedded in the mortar and sealed to the sheathing, creating the brick to the framing, and leave a 1-inch gap between them for ventilation. If this is how your house was built, you'll want to leave this gap clear and have a continuous flow

BRICK VENEER WALL



BRICK CAVITY WALL



insulation into each stud cavity from the inside of the house.

"A brick cavity wall, on the other hand, is actually two parallel walls of brick, called wythes, separated by an air space anywhere from 2 inches to 40 inches wide. If this is the type of wall you have, first a contractor to rig a slow-moving low-density urethane foam into the cavity (low-density foam has water vapor move through the wall easier than being trapped inside it). First, he will probably drill a series of holes into the exterior mortar joints (not the bricks) about halfway up the wall, and another series of holes near the top of the wall. Then he'll shoot the foam through the lower holes, and when it expands out, he knows that the cavity is full. After he's done, a mason can easily patch the holes in the mortar. Whichever insulation

ILLUSTRATIONS: MICHAEL MCKENNA

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ASK NORM

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MOBILE HOME

I would like to move my grandparents' 1986 house to the new location in New York State without rotors it. The house is approximately 3,000 square feet and is in wonderful shape, including all the pocket doors, molding, and carpet floors. Given the plumbing and lighting fixtures remain. Could you give me the general scope of taking on such a project?

M. J. Janssen, Amherst, NY

Let's start with the pros. I don't need to tell you that a house is one of the one you desire would be expensive to build from scratch. And no new house could



match the particular blend of family and architectural history that surrounds that one. It's also in good shape, which gives it a better chance of withstanding the rigors of a move. The costs for any move include street lights, steep hills, and telephone wires, not to mention trees, traffic, and tunnels. You get the idea. Because these obstacles seem to multiply with every mile a house has to travel, the longer the move, the more difficult and expensive it will be. You might even have to pay for a police escort to handle traffic problems and spectators. (A house in my town was moved a while back and it caused quite a traffic jam.)

Technically speaking, almost any building can be moved, and over the past several years have reduced

everything from highways to back school buildings. By comparison, your place shouldn't be much trouble. A local house mover—now that's housed and well insured—can give you an idea of what your agency might be, and how much they will cost. For instance, sometimes it's easier to cut a house into sections and then put it back together so no one sees that it is to move it in one piece. One thing you won't be able to take with you is the foundation, so don't forget to add the expense of filling it in

WHERE'S THE LEAK?

We have a leak in our bathroom ceiling, but we can't seem to find where the water is coming from. We feel new roofing put on but that hasn't solved the problem. How can we narrow out the leak? Can you help?

Bob Mac Millan, Pass, IL

The problem with water is that it seldom follows a direct path from its source to the spot where you notice the damage. Wait for the next rainstorm and go up in the attic with a flash light to see if you can trace its trail back to the source. The most common trouble spots are around roof flashing, so take a close look around any plumbing vent stacks and chimneys, and along roof valleys and any place a gable or dormer wall meets a roof.

If you can't find an exact trouble spot, look for an ceiling leak (regular or the colored stains or black patches of mildew on the underside of the sheathing or on the rafters). Because it's so difficult to track down the source of a leak, The Old House Conservator Tom Silva never reaches over existing shingles, even though building codes allow the practice. He prefers to strip off the existing shingles just to be on suspect flashing and sheathing, and replace it if necessary. "It costs more initially to do it this way," he says, "but it's cheaper in the long run." ■

Send questions to Ask Norm, The Old House Conservator, 3000 Avenue of the Americas, 11th Floor, New York, NY 10017. Include a complete address and daytime phone number. Published letters will be edited for clarity and length and may be used in other media.

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Pioneered by the Romans for their baths, heated floors were the main drawback of classic bathroom tiling into an attic. Stone and tile usually feel icy. Heated, however, these mosaics hold and radiate warmth. Simple physics then takes over to create an incredibly cozy experience. "Heat goes to cold in any direction, so if you're stand-

ing on a cold floor, heat will be sucked from your feet," says Richard Torkelson, the plumbing and heating expert for *The Old House*. "Heated floors reverse that, so heat now flows to your feet. There just isn't a better way to warm a human body."

The notion of heating bathroom floors and walls grew out of whole-house radiant heating—which replaces radiators and air vents with hot water pumping underneath the floors. This European concept was introduced to the United States in the 1990s by suburban developer William Levitt in New York and Joseph Eichler in California. They reintroduced metal pipes in the concrete slab floors of their premier tract houses. Those floors took a long time to heat up

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EHOW



LUXURIES

and sometimes leaked, causing water to seep during the 1980s and '90s. But recent advances in plastic tubing have resulted in a major gain. Modern floor is a booming business, with sales increasing more than 25 percent a year for the last decade, according to Lawrence Decker, executive director of the National Plaster Association, a trade group. He gives much of the credit to Timberberg, who saw custom heating systems in Europe in 1993 and has installed his since then.

An owner is heating whole houses that way bathroom, manufacturers realized the potential of systems that could put warm floors where heat best would appreciate them most—in bathrooms. Water pipes can be installed in a bathroom and connected to an existing boiler or new equipment to provide fast heating normally. And now there is another way to heat floors: electrical systems specifically designed for single-room retrofit. Some are so easy to install that many homeowners do most of the work themselves, calling in an electrician for only the final connection.

To determine which system to go with, "the first question is whether you are trying to heat the room or whether you're just trying to chase the chill off the tile," says Timberberg. For true space heating, especially in cold climates, hot water systems usually win because of their energy efficiency, he says. But to merely warm tile it is a race that already has been, electrical systems are more practical. They're cheaper to install, and operating costs because almost instantaneous if they can run just a half-hour at a time. "No home system in a small bathroom uses so little energy, it's like turning up three 100-watt lightbulbs all day," Decker says.

Timberberg's end line, however, is radiant heat delivered by hot water in pipes. He is a plumber by trade, after all. It's easier to add hot-water systems

in new construction or while so few and colleagues are open for major remodeling. But modest renovations can also accommodate them thanks to flexible tubing made of polyethylene plastic called PEX. "You can fish the lines to an existing boiler room without disturbing the house," Timberberg says. "It really opens up possibilities."

If the pipe lays out across the floor below, plumbers usually loop the tubes between joists, sometimes adding cleanness panels under the piping to help spread the heat. When the boys aren't accessible, plumbers lay the tubing on the wall and pour a 1½- to 2-inch-thick layer of concrete over it. The concrete is laid in the heat and radiates it into the room. Most floors can support the extra weight, but the concrete does add thickness, the plumber may need to raise trim and radiators, and a carpenter may need to adjust base boards, cabinets, and trim. Tile and other types of flooring go directly on top of the concrete, eliminating the need for a boiler house.



For his own remodelled bathroom in Zurich, Switzerland, plumber Dieter Freudenstein chose to warm the floor and walls. In 2007, he used a rubber mat to protect the PEX tubing and prefabricated panels. Further, he also installed a 6-gallon electric water heater (150,000 Btu) that keeps the water circulating at 80 degrees and supplements the forced-air heat.



Clearing hot water is easy in homes with radiators. Just connect the new pipes into that system. Otherwise, the system has to create a loop from the water tank that supplies showers and sinks to install a separate, small boiler dedicated to the bathroom floor. Timberberg recommends the latter in simpler and more energy-efficient in part because systems that run off water tanks must include the heating water daily, even in the summer, to eliminate the chance that water could stagnate and cause water-dissolving water.

By comparison, install log electric radiant floor heating is a snap. No separate heat source is needed—just power. Some systems use ordinary 120-volt current, others require a 240-volt circuit. The older, less expensive electric option



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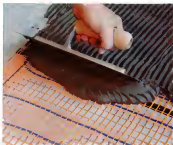
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If you had a water-cooled electric furnace, how the gas over that? First, though, the heating unit is installed or adapted down. It can be cut to fit with accuracy, as long as the power lead (blue) remains intact.

rooms of heating cables laid atop the subfloor in a tight "S" pattern, then covered it with about 1/2 inch of concrete or mortar. Heavier systems use mats to mesh with heating wires woven in. Some are as thin as 1/8 inch, allowing installers to even come up hinges simply by using a slightly deeper-soothed trowel to spread the concrete. Manufacturers make mats in custom sizes or as long lengths that can be cut to fit.

Homeowners usually connect electrical tile warmers to a thermostat or timer so the systems don't run longer when they're needed. Once these systems switch on, a mat as little as four or five minutes before the floor warms up. Hot water can be put to quick, or take up to four times longer if the tubing is installed under a thick floor.

Electrical systems cost \$5 to \$10 a square foot installed, with the conventional thin mat systems being the priciest, Drake says. It's more difficult to connect some hot-water systems because there are so many variables and the price is less related to square footage. If a house already has hot-water heat, rerouting pipes to a bathroom may be quite inexpensive. For add a separate water heater, fan, and pump, long pipes that need to be laid through walls, and extensive work for a plumber, and costs escalate. "The total price can go beyond \$1,500 or \$1,600 real quick," Drake says. And that's not cover-



ing the cost of repairing all the places where the plumber has to cut into the house.

If you choose to heat your walls too, the price will go even higher, but, says Trenchway, "If you have that big, beautiful bathroom, and a 4-by-8-foot shower enclosure, why not heat the walls too?" Trenchway says. "It increases the area of radiant heat that warms the body, and nothing could be finer than that."

Underwater Laboratory, the independent testing company that certifies most electrical equipment sold in the United States, hasn't approved any cable or mat system for use in walls. But hot-water systems aren't subject to UL review, and Trenchway says the only accuracy problem is in loop piping within 4 feet of the floor, where no one will hammer a nail or hang a picture or a towel rack. The tubing goes directly behind the wall's drywall or tile backer board, in front of insulation.

Piping can also go into a tub surround. "People these days want to put a soaking tub where they can look out at a vista," Trenchway says. "But that puts the tub next to an increasingly cold radiator, the window. You can offset it with acrylic radiators." The best water's be enough to warm the tub water, but it will keep it from cooling off too fast—a particularly useful feature for those rare days when you're out in a tub. ■

One beauty of electric floor-warmers is that they're in place. The idea says a master bed just breathes that, as an evening, beds won't need to be moved. Any tile or stone that's used for floors can withstand the heat, and, as with all tiling jobs, latex- or epoxy-modified mortar creates a more durable bond than water-based, multipurpose types.

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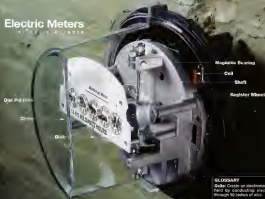
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As a step toward this, the Federal Reserve just today said it won't be raising the discount rate. On the horizon is a new program of deposit insurance, and deposit insurance is one of the staples. They are also increasingly report power outages, drought, wild fires, problems, and the monitor the efficiency of such major household appliances. Don't also forget the shale oil, it's one to the power company. It'll be a good many years before shale oil becomes the main supply, we need reliable sources, oil, gas, and coal, and shale oil is one of the alternatives.

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TOOLS FOR A BETTER DAY





Grand Ole Reno

A Nashville renovator fixes up the sort of house he'd been searching for since childhood

BY ANNE KRUEGER

In 1973, when Shaw Pappas was 12 years old, he told his parents that he would "someday have a house just like Great-Aunt Myrtle's." And they knew that he would, too, he had a strong interest in architecture, and Great-Aunt Myrtle's place was quite a gem—a pre-World War II Crafts bungalow that had been ordered from Sears, Roebuck & Co. in the 1930s. Shaw was also fascinated by Frank Lloyd Wright's Robust House in his hometown of Florence, Alabama, and by his grandmother's massive Queen Anne. "Shaw loved Shaw still remembered an amazing number of details about those houses," recalls his mother, Anne Pappas. "They really made an impression on him."

Such an impression, in fact, that he went on to renovate seven old houses, including his current home in Nashville: a 1920 Craftsman bungalow. He took the bungalow up, 1,500-square-foot structure in the quiet Hillwood Village section and restored it faithfully, adding 500 square feet of living space in the process. One went the old bathroom and kitchen to the first floor, and in some two levels, period style rooms with modern conveniences, plus a charming master bedroom suite carved out of the attic. And by updating up the exterior with a light-colored stone wall, Shaw turned a neglected and neglected house into a gem of the neighborhood. "The bungalow style just says 'home' to me," he says. "It has such a warm feel and the craftsmanship is truly appealing."

However, it took a lot of imagination to see the house's sparkle back in December 1998 when Shaw first set eyes on it. The physical and historical renovation was largely led



A gold paint and chrome trim gave this small house (shown) a bungalow beauty from the inside.

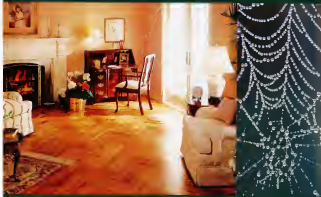
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WE'LL BE THERE



The new kitchen replaced a small, dark one that was built in a converted room. The new kitchen is a bright, open space with a large window and a small table and chair.

den by overgrown greenery. "But I could tell it was sweet," says Shaw, a graduate of Auburn University's School of Architecture in Alabama and a construction manager for the past 13 years. "It was being sold by a 93-year-old lady who'd lived there since 1940 when the neighborhood wasn't that safe, so she'd sort of barricaded herself so the house hadn't changed a lot, but she hadn't noticed anything either. When I got a good look, I found that every window was original."

One month later, Shaw was hired at work on the renovation. "It's the classic weekend warrior," he says. "I got that from my dad, who always had a project going when I was a kid. That man can do anything." So can Shaw, a soccer, who helped restore Nashville's historic Ryman Auditorium, the former home of the Grand Ole Opry.

Although his job takes him out of town frequently, he's a hands-on homeowner. "I do all of the design and lay everything out," he says. "Then I work with the different trades and do what I can myself. It's great bringing a house back to life, especially when it has such craftsman-style—ornate wood carvings, wonderful window patterns, wide trim and window sills, half-timbering, six-over-six porch, door trussoms. There's a lot to love in a bungalow."

The first challenge of the renovation was restoring the kitchen design, a remodeled remnant of 1930s metal kitchen cabinets and 1960s appliances situated in a long and narrow space—

about 17 feet by 8 1/2 feet. Shaw gutted the room, which also included a converted washing porch. "My biggest concern was the windows. People kept suggesting that I put glass up in the corner to make the house easier to move, but I didn't want to lose even one of the original windows." Instead, he closed off the pantry door to the kitchen to make room for a stackable washer/dryer (jazzed up from the hall closet) and an angled hanging cabinet that wouldn't block the window. To unify the porch and kitchen areas, he covered these ceiling joists to a cross-hatch 9 feet and installed recessed lighting. Then he outlined the room with cabinetry and reproduction hardware that suited the Arts and Crafts aesthetic. "The cabinets even have the old-looking glass in the doors," says Shaw. He chose mission-appropriate, tile flooring, and lantern-style sconces that resemble those to complement the cabinetry. "It was a pretty big makeover. Now I have a great breakfast nook where the washing porch was, and I can look out at the room and the great back yard."

After completing the kitchen, Shaw turned his attention to the attic conversion. "Upstairs, I wanted something that would be in keeping with the bungalow style. So I designed two dormers—one above the master bedroom and one over the new master bedroom. That brought the height of the added rooms up to code, and I was really pleased in the end



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THE GARNET LIFE

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with the roofline from the back because it all looks like it's merged in the house."

Although the steel had been used for lighter storage, it was not suitable as a bedframe and back. The rooms needed structural reinforcement and insulation, as well as heating and cooling (see "The Green Life," below). With the new insulation in place, the rest of the conversion was fast work for Shaw and his subcontractors. "We did the plumbing, both showers, air conditioning, ducts, and insulation, and then my mom, who owns an antique mall, helped us decorate," he says. "She picked me out-keeping the exposed chimney wall." He painted the master room where he used gold-painted metal light fixtures and accoutrements throughout, including the bath.

Downstairs, Shaw created a touch of mystery: "My goal is to not make it too obvious. I don't want down a wall that is an exciting one. I love the look of a replace these you have all sorts of up the floor plan unless it's absolutely an end of the house restaurant of the, increase to the right, and dining and hall separates these great rooms and rooms. "The fire in old houses. There were so many doors in the house—I removed many of those, to a really and added French doors to the floor plan was great."

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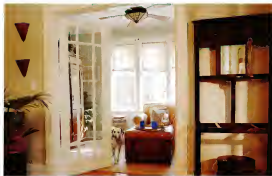
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right away, even before Shaw decided to create living space in the attic. "The previous owner had converted floor coal to gas but the new furnace wasn't working well," he says. "She'd been using electric space

Salvaged French doors open the living room to the light-filled terrace. Shaw striped and repainted the French doors and the end-of-aisle wing doors throughout the house.

heaters and window air-conditioning units." At the same time he outfitted the new quarter walls, he retrofitted the first floor with central heat and six-two-watt oil radiators, 20 less each, over per floor—also added an over-size warm heater. The central heating system was gone but their didn't scare Shaw was willing to part with it. "I lost thousands of dollars," he says. "Even if there's nothing coming out of them, they will look good." He removed all the old ductwork, capped off the openings in the basement, and repainted the newly painted radiators, or the clean plastic bags. "As soon as I started working on the attic," says Shaw, "the old, dark oil radiators under each one melted." He was forced to tear them out and replace them with wallboard, but he saved the plastic walls, painting white where he could. In many the wall and ceiling materials, he installed 4-inch crown molding in an S profile.

Over he'd retired the structural issues, Shaw turned his attention to the finish work. In each room, he refinished the base and trim molding and French oak-style wing doors, and stripped a oil painted the French doors in the living room. To create a charming green and red bedroom, he tore out a lifting plastic tub surround and tiled the

walls, then had the tub replaced, put in a glass-block window, replaced the outdated commode and sink with style appropriate reproductions, and installed white-washed hardwood paneling. Shaw

made sure that every door knob, light fixture, and piece of hardware was in keeping with the hangarlow aesthetic. If he could save an original piece, he had it restored; if he couldn't, he found a similar old piece or a reproduction. In fact, many of the house's components came from a local antique yard. "They'd call me whenever they'd find anything they thought I'd like," he says. "We found exterior doors that perfectly match the existing Craftsman style windows."

By March 2001 Shaw was in the house, and by October his house was included on the annual house tour of the neighborhood's historic Tudors, Victorians, and hangarlows. "That October deadline got me going on the front of the house," he says. "The basement corner was under a wonderful professor but she had really in things go." Shaw replaced the hangarlow's wooden beam and floor flower beds, and built a driveway gate, backyard deck, and pergola in the Arts and Crafts style. He's now working on the back porch and the garage.

Of course, he wouldn't be Shaw Flippers, there's always a catch proper—most under house. As much as he loves his hangarlow, his main hope, "he real dream is to have a hangarlow Pro-style house. He could call me up tomorrow and say 'Mum, I bought another house,'" she says. "Knowing Shaw, it will happen." ■

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BY JOHN RINA

A Closer Look at Copper

How can one metal prove superior for everything from electricity and plumbing to roofing and exterior decoration?

C

opper is the material of no regrets. Unlike a house with copper gutters, and they'll outlast those roofs, bottled copper plumbing, and wires will last for 100 years instead of ending up in a landfill just a few decades later, in a soggy weather state, fully exposed to rodents, and still being a beautiful, eye-catching reminder of the nation's Copper is never the cheapest alternative, but it's almost always the best choice. Still, it has limitations, and understanding them is key to making smart copper choices.

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year-old pyramid of Cheops. Today, the average home contains more than 400 pounds of the stuff, and most in the United States never make it out to get copper there all other metals combined.

Sooty pieces of copper are turned into electric wires, cables, and transformers, so it's safe to say that copper's most useful trait is its ability to conduct electricity efficiently. Only silver does it better—but that's too expensive to employ for wiring. When copper pipes started in the 1950s, some low-budget contractors installed aluminum wiring to about two million homes in one money-rich downtown region. The shakedown exposed a sad contrast: much more than copper would have. This caused the wiring to pull away from its connections after a few years, leading to fires. Current building codes specify that all house wiring be made of copper. Still, any time an conflict is replaced in a tight fixture installed, it's crucial that electrical connections are connected tightly and that wires are not too close. Otherwise, small gaps will eventually widen and corrosion will worsen, leading to sparks. Luckily, copper wires are easy to wrap tightly around conduct screws and each make thanks to the material's malleability and strength.

Monks, craftsmen, and plumbers also take advantage of copper's flexibility. Most metals soften only while hot. But copper responds well to the hammer even at room temperature. "It can be transformed into virtually any shape imaginable," says Larry Jensen, a copper-smith who specializes in custom liquids, weather vane, and lighting fixtures at Wilson Supply Corp. in Milford, Vermont.

This pliability stems from its structure, with "atomic layers

that extend halfway balls stacked one on top of the other," says Chris Schell, an assistant professor of material sciences at Iowa State University. When copper is shaped, these layers readily slide past one another. The metal can maintain its structural integrity when bent cold, but it becomes more pliable when heated to dull red, a process known as annealing. Much of the added flexibility remains even after the metal cools.

Metalworkers extend copper in other, as still, solid rolled form as its softness, a malleable state, depending on whether they need a rigid or pliable mass of. Plumbers do the same thing, buying rigid, or "drawn," pipe for straight runs in new construction and flexible, soft temper tubing for remodeling jobs where the piping needs to snake through walls or around obstructions.

For roofers, though, copper's greatest asset may be that it doesn't rot. When exposed to the elements, it develops a patina—a surface buddy that acts as a barrier to the weather. This coating, given the Statue of Liberty, old pennies, and green alga

a bluish-green appearance.

Using a hammer and drill, John Melton (left) shapes a piece of copper for a pond spigot. To shape a piece of copper for a pond spigot, Duane Wilson (right) lets annealed sheet copper make a second shaped mold.



Copper also repels organic growth. It's said to make pressure-treated wood because it's poisonous to the bugs that cause rot. And runoff from copper flashing keeps mold from growing on metal siding. Copper is also toxic when ingested by people, but copper pipes quickly develop a layer of moderation that prevents leaching into water.

Despite all of its advantages, however, copper has a few potential drawbacks. With highly acidic water (a pH below 6.5), for instance, the coating that typically keeps rainwater out of water lines, leading to corrosion and possibly weakening home or human health. The federal government regulates the safety of public water supplies, so most people don't have to worry. But owners of private wells, particularly where acidic water is known to occur, should have their water tested, and install an acid neutralizer if necessary. Upstarts of green that copper on the outside of copper pipes and blue-green is not as toxic and safe water that copper levels are high and that pipes have begun to get. Potable leaks may

QUICK, SOMEBODY HIT PAUSE.

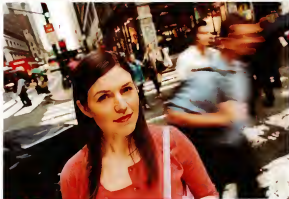
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above: New copper has a bright luster, but these days it's also available treated with different finishes. The oak and brass are antiqued, and the weather vane is patinated. (1) (2) Copper comes (3) coated with a translucent alloy for a more natural appearance on exterior, (4) etched with patterns for roof panels, (5) etched with flame fracture marks, (6) formed into arched and conical forms, (7) chemically treated to speed the patina process, and (8) anoyzed with lacquer.

follow. If you suspect that your water might be contaminated with copper, have it tested.

There are also some situations where copper can interfere badly with other building materials. When different metals touch in a wet location, a tiny electric current can form and move particles of one metal onto the other, causing deterioration of one of the metals. So adding copper pipes to an old steel plumbing system, joining a copper gutter with aluminum, or making copper flashing with aluminum nails will lead to corrosion. In plumbing, the solution is a delicate dance—a specialized coupling that puts a plastic spacer between two metals. On a roof, secure the copper work nails made of copper or stainless steel, which is noncorrosive.

The natural preservative in cedarwood and cedar can corrode copper. So when copper flashing and gutters touch siding made of cedar wood, it's essential to separate the two materials. "Elevating the butt edge of the shingle with an iron, polyethylene strip or strips of roofing felt breaks the bond between the wood and the metal," says David Hunt, Manager of Architectural Services for Revere Copper Products, Inc., in Rome, New York. Is using copper flashing worth this trouble? Consider the alternative: In some parts of the country, backyards stock only flashing made of painted metal. Using the metal like roofing the life of the roof on a layer of paint—which often scratches even before the flashing leaves the store. Once the paint is gone, the flashing will quickly rust.

But undoubtedly the main reason people choose copper for everything from flashing to range hoods is simply that they love the look. "Copper has a crafted look that's very beautiful," says Robert Orr, an architect in New Haven, Connecticut. "Steel gutters and downspouts looking like a hole in perfect and immaculate copper changes the way you have an emotional reaction to looking at it."

Architects and designers now specify copper for barbeques, kitchen sinks, and kitchen tiles. In doing so, they incorporate it right into a rich tradition. Craftsman-style homes often featured copper hardware, lamp bases, and fireplace surrounds. And Frank Lloyd Wright used it extensively, including for stoves and hardware. "Copper is easily kept," he once said. "It shows like lead, decayed iron, weathered stone, and revealed against patinaed iron. But copper is the only sheet metal that has yet retained its architecture as a beautiful, permanent material." ■

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TALKING SHOP

DEER-HORN VETERAN

A staple of every hunter's gadget drawer, the Swiss Army knife has been the Ober-must-have for the latter part of a century. Kurt Elmer—a hunter, writer in the small town of Meads, Washington—cradled the first model, known as the Soldier's Knife, for the Swiss military in 1909. The weapon-handled seller included a large blade, several tiny knives, a corkscrew, a saw, and even a compass. 50th anniversary from 1959, Elmer's descendants have forced Elmer to come up with even more creative designs. In order to keep his interest in 1997, he added a compass and a smaller blade and added the new design to the Soldier's Knife. Unfortunately, the Swiss Army passed on the new design, though its officers, recognizing the knife's superior quality, bought it for themselves.

By World War II, the little-stamped Officer's Knife (no blade not handle no longer used but a solid metal blade) had found its way into the hands of American soldiers, who started calling it the "Swiss Army knife" because the original German name, Offiziersmesser, didn't quite roll off the tongue. Today's models exist up to 33 instruments, including whistles, digital alarm clocks, and thermometers. They're even called "NASA" given them to space shuttle astronauts for use in orbit. Meanwhile, the ever-dependable Soldier's Knife, now with a few more features, continues to be the standard issue to each new recruit in the Swiss Army.

"You don't realize how much you use a multi-tool until it's not on your belt."

—TOM SILVA

The Swiss Army knife is the most action-packed multi-tool. Swiss Army knives, with 33 features, including four knives and eight convertible blades.

(continued from p. 64) multitaskers, which rather than their attachments like a drill, jigsaw, sander, or sander than the original model, take the place of specialized power tools. With their myriad moveable hands, Tom can sand a joint on a solid-surface counter-top, mend over a table corner, or remove grout from between bathroom tiles without spending the time to set up a different machine for each job.

For nonprofessionals performing routine maintenance around the house, multi-tools are also a great way to save on the expense of carrying an enormous collection and on the space it would take to store it. A carefully selected multitool will cover all the tasks in hand and work up to the tool. "One tool means less in the way," says Tom. It also means a lighter load. Though Tom has a small eye of the most comprehensive tool collection in the Swiss Army, he sometimes has not felt with multipurpose devices. "If I had to carry all of the individual tools then a little multi-tool makes a lot," he says. "I wouldn't have room left over for anything else."



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Room For Rent

Turning extra space into income and tax breaks may be easier than you think



D

BY ELYSE MALL KLAYMAN

Debra Marler has a whopping \$2,700-a-month mortgage payment on her Los Angeles, California-area Tudor. And a few years back, when she was a devoted 33-year-old, her monthly budget got too tight for comfort. Then she tinkered with a bedroom and a bathroom on the first floor and two bedrooms and another bath in the second, and had space for a roommate. So she placed an ad in the local paper, met with prospective tenants and she found someone who seemed trustworthy and likeable, and began collecting \$250 a month in rent. "At first I was nervous that I had to do this for a while," says the now married Marler, "but there are a lot of hidden benefits. My spouse took care of my dog when I worked in business. When I came home from a trip there'd be food in the fridge. It was a win-win situation for me."

Putting a two-family house has long been a way for young people of modest means to own a home. But renting extra space isn't limited to house-fits-two duplex houses or to the city and small towns where that housing stock tends to be. Renting has opened to more offbeat urban enclaves as well as to neighborhoods of single-family homes in the suburbs, says Lee Cunningham, president of the National Association of the Remodeling Industry. Energy-savvy, eco-aware families, divorcees, widows, and widowers are taking it upon themselves to help pay their mortgages. Some people build apartment additions or convert their attics, basements, or garages into rental units. Others remodel vacant "in-law" apartments. Some, like Donna Madala, welcome boarders into their own living space. The current This Old House television series is an example of the trend. Dan

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MAKING A DUTCHMAN



1) To curve out a spout for the dutchman, Tom took the template to the garage's band-saw with 40 finish nails and made out the damaged area of wood with the band-saw. Using a shorter bit to make the hole narrower than the dutchman's thickness, he also fits the bit with a slightly larger guide than the one used for the dutchman, bending the bit across the long-side's edge. The smaller guide would make the hole one bit-width larger than the patch. For carved trim where a template can't be used or clamped in place, Tom dug out the hole with a chisel. "That's the way I was taught, and for years that was the only way to do it," he says.



2) A dutchman is shaped out piece—putting out slightly from the hole—and pored down in place with a chisel, sandpaper, etc. In this case, a low-angle block plane. Tom gently skims the plane across the protruding wood to also make trim side of the patch and leave it flush to the band-saw, then sands with 60-, 100- and 150-grit sandpaper to achieve the blood-rum-bleh finish along the wood to feel for a smooth surface, correcting imperfections that will be smoothed by the finish.

3) After a hand plane makes a dutchman smooth, so Tom adds the patch for a grouped band-saw cut of a salvaged length of shaker trim, right, showing a section with a grain that closely matches the damaged area. He also makes sure to cut the patch parallel to the grain. "It's got to be inconspicuous," he says. To that end, he makes a 3-inch plywood template. Left, sanding a rectangular hole only slightly larger than the gouge. Then back it to the scrap trim. To cut out the dutchman, he runs his lightweight band-saw trimmer—fitted with a spiral, up-cutting raster bit long enough to make the dutchman thicker than the gouge is deep—along the trim plan's outer edge. He trims the dutchman at the back by passing the band-saw edge over a table-saw blade, then pins it out with a chisel.



4) After chamfering the sides of the dutchman with sandpaper to keep it from damaging the same underlying wood, he dry fits it to the hole. If it sits snugly, he leaves it out and sands the edges and back with glue, then taps it back into place with a hammer.



5

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REPAIRING WITH WOOD FILLER



1) Tom prepares to sculpt filler around a slightly basement-sag molding by coating a plastic putty knife so it will fit snugly against the wood's shape. After sculping the putty onto the plastic (see "Tool Savvy Scribe"), Tom cuts the shape with scrap metal utility knife, dividing the fit as he goes. With a simple result, "I'd do it backward," he says. "But this way works best." Before applying any filler though, he removes the house wood filler in the hole that was inhibiting adhesion. If decay is present, he preps the wood with a hand saw.

2) A two-part polyester wood filler dries harder and is more durable than wood sand. Tom coats a large tooth around the damaged area with 30-grit sandpaper to remove dirt, grime, or loose paint that might compromise the bond. "I also want to scuff it up to give the filler something to grab on to," he says. Just before he's ready to fill the gouge, he mixes the filler's two components—a golf-ball-sized chunk of resin and a 1/2-inch bead of hardener—as set the chemical reaction in motion.



3) Tom works quickly, pressing the filler into the damaged area and working it with his experienced putty knife. Time is short when using two-part fillers (five minutes or less), so he looks for some straight-edged scrap wood under the molding to act as a larger wedge that guides his knife along a straight line. He can easily stop or go as he senses the surface of the corner if his knife isn't working. But he doesn't try to shape the perfect profile with just one application; he applies three buildup of filler, letting each dry before he layers on the next coat.

4) When the last coat of filler looks level in the tooth but still has some flexibility, Tom makes a few passes with a 1-inch chisel, carving away the excess and blending the polished area into the old wood. He secures the shaping with sandpaper, starting with 60- or 80-grit and working his way up to 120- or 150-grit until the filler is flush with the adjacent trim, when it's totally dry. The filler is ready for primer and paint.

TOOL SAVVY: SCRIBE



If you happen to find yourself working alongside Tim O'Brien contractor Tom Sive and he asks you to look for the tool that bears a resemblance to a water pump, the pencil-and-steel tool geometry students use to draw a perfect circle. Tom, Steve Adams, and other carpenters use it to scribe whatever there's a need to transfer an irregular shape or angle from one object to another being fitted against it, so when they install cabinetry on wavy walls. Also called scribes (if both of its legs are metal plates, with a pencil-held), this is a critical item in any carpenter's toolbox.

For the filler repair in Charlottesville, Tom uses his scribe to draw the profile of the basement on a plastic putty knife (any straight-edged piece of plastic—such as the lid of a spackle bucket—would work) so he can smooth the wood filler into the exact shape of the hole. He holds the knife vertically with its edge against the molding, keeping it as plank as possible. Then, position the scribe so that its point fits the wall at the top of the molding and the pencil runs on the surface of the knife. As he traces the profile of the hole with the point, keeping the scribe level, the pencil makes a corresponding design on the plastic, and Tom gets a near-perfect outline for cutting the hole. ■



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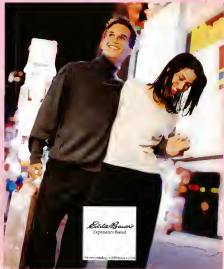
Mess Hall

A properly outfitted playroom makes the whole house a much messier place.

The messiest design for the kid shows how cluttered the 2003 Master Bedroom, which includes a panoramic storage bench and a garden set, got up the mess game: a full bedroom and a family room.

It's likely the family's working out. When well-designed, it serves as a better workspace for the rest of the house, the living room, the dining room, the kitchen, the garden, and the rest of the house.

The messiest is a place for everyday use and storage, for personal storage of "what you want" items to display in the living room," says architect John Brown. A modern room is a heavily used room of the house. That's why it should be designed as the "messiest" of the house's living room, to give storage for the things in the garden, the garden, and the house. There is no need to build with many accessible storage for books, toys, and clothes, and more, all of which should be available upon arrival after they return with them, says John Brown. The messiest room is a place for the family to live in, and it's a place where a lot of things are. But the messiest room is a place for the family to live in, and it's a place where a lot of things are. But the messiest room is a place for the family to live in, and it's a place where a lot of things are.



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THE BEST WORKROOM



"To create a comfortable work environment, we designed a room that was both functional and aesthetically pleasing. The room features a clean, white color scheme and a modern, minimalist design. The desk is made of white wood and has a built-in storage system for books and papers. The chair is a simple, white, modern design. The room is well-lit with natural light from a large window and a modern, white, adjustable desk lamp. The overall atmosphere is one of calm and productivity."



Designer: Day & Zimmermann, Los Angeles. The room features a clean, white color scheme and a modern, minimalist design. The desk is made of white wood and has a built-in storage system for books and papers. The chair is a simple, white, modern design. The room is well-lit with natural light from a large window and a modern, white, adjustable desk lamp. The overall atmosphere is one of calm and productivity.

PHOTOGRAPH BY JEFFREY M. HARRIS

bedroom with "the conventional solutions for an interior design problem: heavy, ornate furniture. But the room is a modern, minimalist design. The room features a clean, white color scheme and a modern, minimalist design. The desk is made of white wood and has a built-in storage system for books and papers. The chair is a simple, white, modern design. The room is well-lit with natural light from a large window and a modern, white, adjustable desk lamp. The overall atmosphere is one of calm and productivity."

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SPECIAL REPORT
HOME
THEATER

Coming Attractions

a properly designed home theater, the kind that's a lot of fun to build, is the perfect place to watch the latest movies, listen to the latest music, and enjoy the latest games. It's a place where you can relax and enjoy the latest in home entertainment technology. The only problem is that it's not always easy to find a place that's both fun and functional. That's why we've put together this guide to help you find the best home theater for your needs.

When it comes to home theater, there are a lot of options. You can choose from a wide range of systems, from simple two-channel setups to complex multi-channel systems. You can also choose from a variety of speakers, from small satellite speakers to large subwoofers. And you can choose from a variety of video formats, from standard definition to high definition. So how do you choose the best system for your needs? That's what we're going to help you decide.

BY THE EDITOR

Why deal with
sticky floors, chatty
neighbors & stale popcorn
when you
can be awed
by the sensory power of
a home theater?

ILLUSTRATION BY JIMMY HARRIS



Sometimes when renovating an old house, you have to take one step back before you can take the next step forward, especially when it comes to staircases. On a late-summer day at the TV project house in Charlestown, Mass., *This Old House* contractor Tom Silva stands in the first-floor hallway, eyeing a plank bob at the side of the grand black-walnut stairs in the front hall. "These stairs were one part of the house I didn't think needed much work," he says. "But they're way out of kilter and pulling away from the brick wall." To fix this unforeseen problem, he's torn open the underside, braced the whole thing with a temporary matrix of 2x6s, and jacked the entire structure as close to plumb and level as he can. "Start giving away a quarter-inch here and a quarter-inch there and pretty soon things are really out of whack," says Tom. Satisfied that everything is as good as it's going to get, he rolls the stairs into their new position.

All this effort is preparation for the real task at hand: to build a staircase directly underneath the main stair and link the first floor with the basement. (Tom removed the original stairs to the basement at the back of the house to gain more square footage above.) Together, these two floors will comprise an income-producing rental apartment for homeowners Dan and Heather Beliveau, who plan to reside on the second and third floors of the house. But before they can place an ad in the *Boston Globe* for a garden duplex, they will have to turn their dank, dreary cellar into a livable and appealing below-ground space. And that involves more than just building a few partition walls and moving in some furniture and bathroom fixtures. Windows need to be cut through the brick to alleviate the molelike feeling of

GRINDING: In a March, of Red March Concrete Construction, sends 12 cubic yards of concrete into the basement of Charlestown for the new floor. Finishing the slab is the first step in the dramatic garden-level transformation that includes all new walls, windows, and more.

NOTES FROM A 19th-century basement goes from dark hole to bright living quarters UNDERGROUND

BY JEFFERSON KOLLE
PHOTOGRAPHS BY KELIN SMITH

Click on the transformation in the Charlestown Concrete, including new stairs and artwork integral of the construction's progress.



underground rooms and to provide a means of egress in case of emergencies—a matter strictly regulated by building codes. Wiring and plumbing must be installed. And the brick and stone walls need to be covered with framing, insulation, and plaster in the rooms—don't look like dungeons.

Stretch the properly strengthened arm across, then kneels to the floor, ready to cut the new strand with an awl or saw. A chalk line already marks the length and width of the opening, and he has shored up the joists he will draw with temporary posts made of 2x4s. "You want the posts to hold the joists right where they are, not push them up or let them drop," he says. He pulls the saw's trigger and it slowly plunges the opening circle blade into the chalk line. The blade runs along the floor, cutting high-backed joists every time it strikes a nail. The floating cones off with each pry-bar and claw hammer work, exposing the heavy 2x10 joists.

They make a second beam down the face of each post, then stands each one with a reciprocating saw. The whole house shakes as the blade slices through the wood, but the posts do their job, as the ends of the joists fall away, the floor boards form. They raise the first piece of a 14-ft.-long header into place and nail it into the end grain of the cut joists with 16d spikes, four per joint. They nail the second piece to the first, then tape the temporary posts out of the way. The floor doesn't give as each

A peek through the gaping hole reveals the space below. The 28-by-33-foot basement, which once held only the furnace, some plumbing, and other old-house detritus, has already undergone a major transformation. The original 12-inch-square brick support piers have disappeared in favor of thin steel piers; there are walls added out and new windows in the brick walls; and ductwork and rough plumbing already line the framework. Underfoot, a seamless slab caps what used to be a cracked, crumbling, oil-soaked concrete floor.

Days of prep work will precede before the concrete truck arrived. Tom's crew, including Dan, first had to bust up sections of the old floor with a sledgehammer. They also dug, built the framework for, and poured a couple of 18-inch-deep by 18-inch-square footings for the 16-inch-square steel tie columns. These are strong enough to replace the brick piers that once held up the first floor, but not strong enough to be hidden in the 2x6 partition walls. Then Tom and Dan dug a sloping 22-foot-long trench across the width of the basement, so that mason plumber Ron Goldberg could connect the 6-inch PVC waste lines for the bathroom and kitchen area to the old clay pipe sewer line. With the points and plumbing in place, Dan covered the floor with a 3-mil vapor barrier, heaping the debris by at least a foot. The plastic sheets wrap around from topsoil up through the ground and making the basement first a barrier to soil moisture.

Then come the sand, about 15,000 pounds of it, to be heaped in a 2- to 3-inch-thick layer over the plastic. "The sand acts like a dry sponge, giving the water somewhere to go from the concrete so it will cure more quickly," says Tom. "If you poured the concrete right on top of the vapor barrier, the plastic would hold the water in like a spon."

Dan shouldered the task of distributing the sand over the basement floor. "Jimmy and his guys dumped the whole pile through the basement window," Dan says, motioning with his arms to indicate



To make the beds for the new basement stone? Looking at the Tom Silver cut through the floor-floor plate and forward to see a broader study from the end of the house. Tom says he found the old stone in the yard in a steel column placed over it in concrete footing while a temporary double post-and-beam job, as yet, stands the floor up slightly. The builders' 10-inch-square columns support the floor above and will disappear into a finished deck-finish wall. Consequently, Don Robinson decided to leave the egg and shell part on the left to place because it will be hidden in a closet.



Time spreads the heat across the steel beam for the concrete from one 2-in.-diameter burner. The plastic bags continue from melting up from the ground through the concrete; the steel levels the fire and allows the concrete to cure more uniformly.



One slab of concrete covers the entire 100-square-foot basement—just above flooring the floor of the first main level of the house. Tom will build on from the 2nd wall down. The end wall dominates the hallway wall, and the front porch sits between the front and back entrances.

Turning a dank cellar into a livable and appealing space involves more than just building a few walls and moving in furniture and bathroom fixtures.

four spanning blades over the soft, wet concrete, they flattened the floor from front to back, leaving a glossy pool of gray ash.

Within a matter of days, the floor was solid enough for Tom and his crew to start framing the walls around the foundation and between the bedrooms, bath, and closets. In order to build straight perimeter walls, Tom positioned the framing slightly away from the uneven rubble stone foundation, which has the added advantage of keeping the wood from touching the rock and absorbing moisture. For the walls' bottom plates, the crew used pressure-treated lumber, which won't be affected by the moisture from the curing concrete.

Finally, flooring—surprising as it sounds, basement tongue-and-groove hardwood planks in the hallway—will have to wait until the concrete floor is well cured, another couple of months. "The standard cure time is 28 days," says Joseph, "but the weather—temperatures and humidity—can vary the time frame either way." He says that an old mason's trick is to lay a square yard of plastic sheeting over the floor. At the end of the day, if there's water beaded

up on the plastic, the concrete still has too much moisture in it to be safely covered with flooring.

When the slab is acceptably dry, they will put down a layer of 1/2-inch Homasote, a panel product made from recycled news papers. It adds a cushion and an excellent moisture-to-conductivity barrier, making it a no-moisture vapor backing, especially against cold, hard concrete. He frames the Homasote panels in the concrete with spring spacers—pressure-treated with a slight crink in their cheeks. "I pre-drill a quarter-inch hole through the Homasote and the slab about every foot, and pound in the spikes," Tom says. The force of the blows strengthens the sheetrock enough for it to go in the hole, but the spike it held firm by the pressure applied to the sides of the hole as the sheetrock tries to return to its original shape. In the hallway, Tom will spring-spacer a layer of 1/2-inch pressure-treated plywood on top of the concrete, then nail the prefinished bamboo flooring to the ply.

To keep the room from being cold and drafty, the boys between the outer-wall studs will be filled with a (continued on page 151)

THICK AS A BRICK

When Tom Allen saw that the Chertemps plan called for new windows in the brick walls, he immediately enlisted the help of mason Larry Bellows (see sidebar on Remodeler's Day Follow-up). Bellows, who has spent an hour TCM projects over the past decade, worked one sunny summer day with an arsenal of axes, chisels, and hammers to strip through bricks—and mortar to reveal them.

Making a window void here in a brick wall requires someone with Bellows's specialized tools and expertise. The wrong sequence of seven could collapse a wall and send tons of brick and mortar spilling to the sidewalk. To avoid such a disaster, masons carefully insert shims—long pieces of steel supports—above windows and doors to distribute the immense load of the wall above to either side of an opening. Carpenters do much the same thing when they install wood headers in wood-frame walls. The house's original bricks are handmade, a material now far more expensive to come by. Bellows ordered limestone, a much stronger substitute, but to match the other bricks in the back of the house. One of all them are painted with a breathable masonry paint. It will be hard to tell them apart, says Bellows.

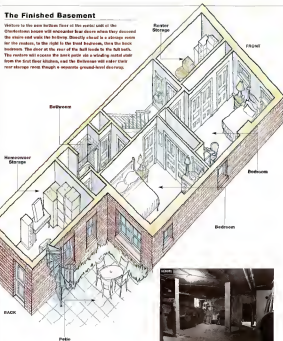
The first step is to lay out the window's rough opening. Bellows quickly does so by placing a level against the wall and marking a pencil line along its length on the brick. Once he's obtained the rough opening based on his first pencil mark, he does the same thing to mark the location of the lintel. Then, using a 14-inch circular saw fitted with a dry-cutting diamond blade, he makes a 24-inch-deep incision along his pencil lines. Next he picks up a bulky 10-inch saw and sets its depth at 4 inches. He doesn't want to go any deeper: this wall was built with two layers of brick, and he needs to leave the lower layer intact to support the wall until he can insert the lintel. Bellows slips the 10-inch diamond blade into the hole's made surface. Flashes of standard mortar and brick fly from the revving blade, creating fire and hot dust with a gloriously noisy red-orange hue.

Bellows properly primes every brick using a hammer and mallet about 10, releasing just the outer layer within the rough opening from the grip of the old mortar. With the help of an assistant, he bolts the 100-pound lintel into the pocket (2) and mortars it securely in place with a pointing trowel. Now he can safely saw off the way through the wall and support the entire weight of bricks with a steel lintel, leaving a clear opening for Tom and Chris to install a new window (3) to display 152 years of architecture.



The Finished Basement

Welcome to the new bottom floor of the rental unit at the Charleston house will showcase four doors when they descend the stairs and walk the hallway. Directly ahead is a storage room for the coats, to the right is the first bedroom, then the back bedroom. The door at the rear of the hall leads to the full bath. The renters will access the back patio via a winding metal stair from the first floor kitchen, and the bedrooms will enter their rear storage room through a separate ground-level doorway.



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While Dan stands in front above, Tom attaches a top joist to a bedroom partition wall. They place the perimeter stud walls away from the exterior foundation, not beyond the point at which the studs penetrate farthest into the basement, so that the joists will not sag and squeak.

(Continued from page 93) closed cell, low density polyurethane foam insulation, spray-applied by a tradesman. He holds a hose connected to a truck filled with the insulation as in liquid foam, and waves its nozzle across the bricks. The liquid immediately foams up like shaving cream, stopping just shy of overfilling the walls and drying in a matter of seconds. Once sprayed in place, it's ready for a cover of blackboard and fresh planks.

Flush carpet and matted wood are not enough to deter even to tempt most people to live in a basement. Ask them why and they'll tell you it's because the underground space lacks natural light. The first bedroom at the Silvera basement already had two small evening windows that look out onto the front sidewalk, but they admit little sunlight. The plans call for another, larger window to be installed on the side of the house where the slope of the street leaves room for a taller opening. The back bedroom, which already had one good size window facing the street, now has two additional aluminum-clad, double-hung windows that overlook the patio space. To make room for all that glass, Dan and momma Leroy DeRosa (no relation) had to cut through the 7-inch-thick brick wall and shore up the openings with new basement beams. (See "Thick as a Brick," page 99.)

There's another reason Dan has to go through all the trouble of adding these windows: building codes. They require that every bedroom have two means of egress, the door into the room being one, a window usually being another. In case of a fire, the window has to be big enough to enable a person to scramble out,

and not surprisingly, it also has to be able to open wide enough for a fireman wearing an air tank to get in. This "clear opening" has to be a minimum of 24 inches high and 20 inches wide. To meet these standards, Dan has chosen custom-made cypress casement windows that will swing up to the room. He has also decided to match their look with new custom cypress awning windows, also in-swinging, for the front.

Regardless of how charming these specially made windows will look, they're no good to a trapped person if they can't be opened. So the fire safety codes also mandate that the window cannot be more than 44 inches off the floor. That's a problem in the first bedroom because the sloping street along the side of the house puts the window nearly 50 feet off the basement floor. But the code also says you can install a permanent step at foot of the window, so Dan plans to create a "step" with a built-in window seat.

But that detail is weeks away, today Tom's main concern is still the steps he's building to the basement. By quarter time, the new stairways are in place, looking like jagged thick's teeth as they climb from the new concrete floor to the yard above. He grabs a stack of the 3-inch-by-3-foot temporary boards he cut earlier from 1x4 inch plywood and nails them to the stringers. Starting at the bottom, Tom works his way up, a couple of 40 nails and a few hammer blows tack each tread in place. When he gets to the top of his rough new stairway and pounds the last nail in place, he smiles. "You've got to take things one step at a time," he says. ■

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BY ANNE KRUEGER

Second Acts

How four forgotten buildings made spectacular comebacks

Like a small old Second Avenue Firehouse in New York, Long Island, is a first-class eat with more to come. After serving time as the home of Horatio Laidler Co. No. 1, the building became a synagogue and Hebrew school, then a factory, then a rooming house. By the time it was dropped by the nonprofit Jewish Home Restoration Group in 1996, the derelict structure was unsalvageable as the Brick Sign Victorian of the past. Now the meticulously restored building has been transformed into a gallery and home to an artist-in-residence.

The firehouse is an elaborate structure made of many materials—the masonry. "These significant structures—schools, houses, old hardware stores—have survived their original purpose but not their charm or usefulness," says preservation consultant Helen Rodden, formerly of the President's Advisory Council on Historic Preservation. "It just takes the right people to save them and make them their homes."

The right people, she says, are those who understand both the virtues of finding a new use for an old building and the way big challenges involved in doing so. The virtues are self-evident. "It's all about preserving our heritage in a way that's not the typical house-to-house."

in 1963 when he converted the Prince Mission factory into Rowan waterfront into luxury housing. "Adaptive reuse is living preservation. And it offers unique residential spaces you can't find anywhere else." In this outdoor-culture suburban world, "people are looking for originality," says Roberto Rioserote Gera, author of *Come Back From the Edge*. To his, adaptive reuse is "the highest form of architectural conservation."

Like any museum, however, a reuse can be expensive and tricky. "I have no consciously left my clients to be on hand, to be aware of the building code issues and possible difficulties getting financing," says Rodden. Old public or commercial structures may not be in some need for additional use and weren't designed to provide warm, comfortable, or safe living space. "A barn or a church can be converted for the hospitality of you have electric heat and power windows," warns Rodden. "We know now to check out a building right away, to knock holes in the walls to see what's there," he says. "If you plan from the start to do a gut rehab you have fewer problems. Nobody likes surprises." Except when the project is finished. The transformation of each of these four buildings is a delight to behold.

PHOTOGRAPH BY TIM BELL



FIREHOUSE

BY SARA LOTT ELLIS

"We saw this as an opportunity to both restore a beautiful old building and launch an arts initiative," says Brad Stone, Restoration Group president Susan Barkish of the Second Avenue Firehouse. "That way the building can have a life that keeps on giving back."

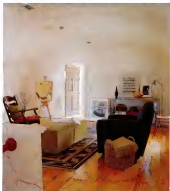
Restoring the building was a wonderful challenge, says architect Anthony Santolillo, whose wife is it and the 2000 redesign was based from the New York chapter of the American Institute of Architects. "We were lucky to have photos from the historical society that showed quite a lot of helpful detail." Surprisingly, it was also good luck that the building was in great shape, including the original shingles. "It was ugly, but I recognized the historic skin of the building," explains Santolillo. "When we removed it, much of the original exposed siding was still there. With that and the photographs from the historical society I was able to establish the heights of the masonry base, the tower and bell tower so we could accurately reconstruct them."

During restoration the structure was actually lifted 6 feet into the air. "Like many buildings the age, the layout, joints were rotted and the building was too low to the ground, no order was being absorbed into the floor joists," he says. "We were able to dig out a small house so that the joists didn't rot or sink. We set up a footing, installed the basement building back on top of the foundation." Inside, they installed all-new mechanical systems.

"We hope this structure will serve as an anchor for a lot of other buildings of historical significance that have been neglected over the years," says Santolillo. "The building rises up fast and looms over the surrounding houses. It's an excellent point," says the studio. "You can't miss it."



Historic photos of the Second Avenue Firehouse (like the one at left) helped architect Anthony Santolillo identify and restore original details, such as the fish-scale siding, double-hung windows, and painted front door. A local workshop recreated the missing bell tower, a crane lifted the upper portion into place (above), 2011. Above: The building as it stood before restoration in 1988. Removing a front addition and removing the asphalt shingles uncovered water and insect damage to the sill and joists. Workers stabilized the building by pouring a new foundation (below). On the second floor, former home to a retail ice-creamery, the crew restored the original barrel-vaulted ceiling, finished in wood beadboard.



DATIN

Historic Country Conservator

Joan Collins is married: a Civil War-era house, specifically the details of her 1700s-era stable, for many years. And she couldn't be happier with the results. "I think making this a barn is like walking into a church," Collins says. "I love the serenity." Collins and her partner at R3 Remodeling, David Beckwith, retained the footprint of her house but demolished its exterior. The reconstructed barn became the sole of the entire renovation. "The barn section has double-height rooms of Polka-dot down and is open to the ridge, which is 31 feet high," says Collins. "We'll leave the wonderful wood, and then we'll plaster the lower half of the walls to help reflect the light."

"Barns are intended to last forever," says architect J. Timothy Anderson. "They're among our first structures, along with forts." Not having been designed "to allow to keep the wind off of the outside, not to keep humans at room temperature," they also pose the rehabilitation remodeling problem—insulation. Beckwith solved R3's building a conventional envelope frame around the entire structure after it was reconstructed of the site. The exterior was lined with insulation. "The challenge to us was to make sure you provide the structural integrity required by the building department and the mechanical and ventilation needed by the homeowners," says Beckwith. "All without detracting from the historic value of the place." Care is taken when making barns lumber because it has a tendency to swell today's species. "Joan's American barn has black spruce, 30 feet," he says, "so we introduced these with cedar."



In a perfect world, barns would be preserved in their original state, says homeowner Joan Collins. But in many cases, barns are simply crumbling. "The second best thing is to reuse them rather than lose them, and to restore them respectfully," she says. "The barn that became the heart of Collins' house at its original site in New Hampshire. Collins's partner at R3 Remodeling, David Beckwith, brought the structure and kept it as a studio for their years before the house. He had the barn dismantled and the lumber tagged, then adapted the structure to the footprint of Collins's existing 19th-century house. The wings on either side of the addition were assembled to go with the style of the finished new work, however. The interior gridded in pieces of other buildings being saved—fragments from an 18th-century Cape Cod and floor from a Pennsylvania State University house. Formed Federal furniture was combined with the rustic post-and-beam framework.

PHOTO: JAMES MURPHY FOR JAMES MURPHY PHOTOGRAPHY



CHURCH

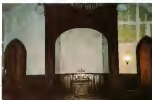
Barnabus, N.Y.

When folks in Barnabus hear the church bell-ringing at noon, they know Russell Hermsick is home. A ship on the hill is the former Congregational Church Hermsick, a New York City iron-pipe art director, bought the Gothic Revival building two years ago and has turned it into a weekend retreat. "At first the townspeople thought I was a jerk," says Hermsick, "but I'm just a guy who likes great buildings." The church, built in 1938 and then rebuilt after a 1922 fire, stood its bones in the 1950s when its congregation merged with one in a nearby town.

When Hermsick told his eyes on the building in 1998, he was immediately smitten. "The structure is 20 by 30 feet, with 20-foot ceilings. It had this great English-cottage feel to it." He was able to overlook the stained-glass windows (the stained glass had been sold decades before), the crumbling plaster walls, and a 1950s renovation of the Sunday school area into a one-bedroom apartment (the shop-cum-dining). "The place was basically a wreck," he says. "But there's obviously something inspiring about being here." Hermsick chose not to put stained glass back into the eighteenth windows. "A church is often dark inside and turned inward; stained glass brings radiant light inside. By using clear glass, I changed the focus to the beautiful environment." He also converted the Sunday school room into a kitchen. Next up: building the parking lot on the sloped exterior.



1998: One of the first things Hermsick did when he bought the Barnabus property was to assess the church and decide what structural goals might emerge. "It was a challenge," he says. "That's a very big roof, basically a 12-pitch with a complete right angle." With Hermsick about to use clear glass in the arched windows in order to bring in light, he restored the stained windows in the bell tower and stained glass found in a bar tucked away in a crevice. BELLEVUE, N.Y.: A vintage portrait shows the cemetery on the property that dated back to 1776. BELLEVUE, N.Y.: After repairing the single tower font, Hermsick painted the altar and its a William Morris-style pattern and turned it into a sitting area.



1998: After the church was restored, Hermsick turned it into a sitting area.



2000: When Hermsick bought the church in 1998, the sanctuary hadn't been used for almost 50 years. "The pews were still there, the organ and bible in the altar, the hymnals," he says. "It made sense not to tear that out and change and demand the rest in another church," he says. Leaving in the stained glass, especially with its own windows, makes him feel "a spiritual connection, a timeless connection, even a connection with nature." LEFT: An old addition to the church that used to house the Sunday school now includes the kitchen and, upstairs, a bathroom. Inspiration for the kitchen came from a set of old tape cabinets Hermsick found. "They were from another church and had an ornate Gothic design—perfect for the space," he says. Although he looks for serenity in the olden, the church is still heated by an old one-two oven.

SERVICE STATION

Yves, Texas

Some people get a boost from the Welcome Wagon when they move into a new home. Marshall and Darro Love have people standing up at their door with old gas station equipment. The couple bought 1920s Sinclair station they're restoring right down to its original green and red color scheme. "We're having the likes of our town," says Darro, who runs an interior design business from the front of the station. Although located in Irving's 50-block Heritage district, the station ignored people's eyes to adapt its house, says Keith Prochman, of Irving's preservation and redevelopment program. "This is a real look to treasure story."

First on the Lane's is the 1911 two-story building off the main yellow station. Then they built the interior down to its original walls, rafters, and beams. "We still wanted it to look like a gas station," says Darro. "The only structural change we made was to take out the wall between the boys' and girls' bathrooms." Seventy years of oil and grease were stripped from the concrete floors before sealing. Insulation wasn't a problem because there is none. "The double-wall brick construction holds the heat and the concrete is," says Darro. The couple did add central heat and air, replaced the brick-and-tube siding, and replaced 21 broken windows. After two years of hard \$1.9 work and \$1,000 out of their own pockets, the Love's plan is to have a bed and eat at the three stories, including restoring the station in front. "There's going to be fun," says Darro. "It's asking for a new child and teenager for Christmas."



The signature Sinclair colors—red, green, and white—are used throughout the Love's restored gas station. The interior (left) shows a 1920s wall and a 1911 wall, a 1920s wall and a 1911 wall, and an old site sign they found buried in a well in the building. The floor in the room was salvaged from a local Elks Club. "It still has the high-end marks from years of dancing," says Darro. In the kitchen (right), the Love's used their dining in its old (and new) where cars could come down. The open kitchen used to hold oil and boiler parts. The wall-hung refrigerator cabinet is a circa 1920s find.



PHOTO: KIDDE SAFETY

This 1920s Sinclair gas station (left) in Yves, Texas, had been an empty space for years before Darro and Marshall Love started again. It's a whole building for a Dallas suburb to get to know. "Every single window was broken and not just," says Darro. "My husband rebuilt each one and we moved every supply old home we could save."



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PAINTING A ROOM



BY BILL BROCKWAY

Most people think they know how to paint. And usually the results are pretty good, or at least the flaws aren't too obvious. But for painting contractor John Dee, "pretty good" isn't good enough. After nearly three decades of rolling, brushing, and spraying paint—with stints on *The Old House* projects from Salem to Westport—he knows the subtle tricks for applying smooth, even coats to walls, ceilings, and woodwork, and for creating crisp boundaries between colors.

According to Dee, there's no magic to getting professional-looking results. Practice helps, and thorough surface preparation is essential. But the key, he says, is to paint in an orderly, systematic way. So whether he's painting a multipaneled door or a flat expanse of wall, he proceeds almost scientifically from one step to the next, with no shortcuts and no backtracking. "Your approach to the task, the order in which you do things, can speed the work or slow you down," Dee says. "It's the approach that works best for me."

PHOTOGRAPHS BY DAVID CARMACK

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Technique

Every time John Dee puts a paint-filled brush or roller against a surface, he follows three simple steps to ensure that he gets even coverage.

- 1. Application** Using medium pressure, brush or roll out a W shape so that it fills an imaginary square. A full roller with a 3/8-inch nap holds enough paint to cover between 9 and 15 square feet, while a loaded 2 1/2-inch brush will cover an area about the size of an 8 1/2 by 11-inch sheet of paper.
- 2. Distribution** Applying more pressure, spread the paint around evenly inside the square and blend it into the wet edges of any adjacent sections.
- 3. Tipping off** Using the lightest pressure you can, brush or roll over the section with parallel, overlapping strokes. When using a brush, tipping off smooths away the ridges left by the bristles. When tipping off with a roller, you're actually picking up a little paint to even out its texture. When you're done with these steps, Dee says, move on. Overworking paint—brushing it over and over—leads to lumps and brush marks.

PLANNING AHEAD

- Empty the room of as much furniture as possible. Cover any remaining pieces with clear plastic and leave yourself a clear work area of at least 5 feet from each wall.
- Protect uncoated floors from drips, spills, and splatter with tape or drop cloths. Cover wood floors with plastic paper. Overlap the plastic-paper strips and secure corners and edges with masking tape.
- Remove all the door and window hardware, including hinges, knobs, knobs, strike plates, and escutcheons. Label each item or marking unit, and put them in separate plastic bags along with their screws.

Tools & Materials

1. Silicone-carbide sandpaper: 120-grit for bare wood or old paint; 220-grit for primer or between-coat sanding
2. Cordless drill for removing and replacing door and window hardware
3. Paint roller for painting walls and ceilings
4. Paint pan for loading roller with paint
5. Telescoping extension pole for reaching ceilings and the tops of walls without using a ladder
6. Paint pot with stirring stick for loading brushes with paint
7. Masking tape (1 1/2-inch) for securing rain paper to floor and protecting baseboard
8. Caulking gun for filling gaps between the woodwork and wall
9. Drywall scanner: attaches to shop vacuum for sanding joint-compound patches
10. Paint strainer: for removing lumps when paint is poured from can into pot
11. Lightweight spackle, for filling holes and cracks in drywall and plaster
12. Dust mask for protecting lungs when sanding
13. Brush, roller splines, and wire brush for cleaning surfaces
14. Hammer and nail set for reinserting nail heads
15. Synthetic-bristle brushes (2 1/2-inch blunt, 1 1/2-inch angled sash [not shown], "cheese" for touch-ups) for painting molding, doors, and windows
16. Putty knives for applying spackle
17. 8-to-11 inch for cleaning roller covers
18. Utility knife for cutting the W of caulk gun
19. Window scraper and razor blades for removing paint from window glass

"Paint is like pizza dough. You push it and pull it and stretch it to an even thickness to get it ready for the next step."

—John Dee



STEP 1: SAND

- After wiping down any dirty woodwork with a household cleaner, sand the trim, doors, and windows with 120-grit silicon-carbide sandpaper. Sand old paint so new paint can adhere. Sand bare wood to remove raised grain, level off wood fiber, and ease over sharp edges.
- When sanding flat surfaces, hold the sandpaper in your hand to get into any slight depressions that a rigid sanding block would miss. On profiled moldings, use a soft sanding block or sanding sponge (not suitable for the shape of the molding joint). Take care not to let the sandpaper touch glass; it will leave scratches.
- When the sanding is done, dust the woodwork with an old, worn brush or a shop vacuum. Then wipe it clean with a tack cloth (page 7).

TIP: "Check paper regularly for wear," Dee says. "It's time to patch in fresh paper when you feel that your elbow is doing more of the work."



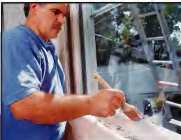
STEP 2: PRIME

- If walls and ceilings are bare plaster, coat with oil-based or oil-purpose acrylic primer. Then prime trim, sanded woodwork to ensure good adhesion of the fresh paint (page 9). It is not necessary to prime previously painted surfaces if they are in good condition.
- Follow the basic application, distribution, and tipping steps outlined in "Technique" (page 6). On doors and windows, follow the sequence delineated in "Paint by Number" (page 100).
- Allow primer to dry overnight, then sand lightly with 220-grit sandpaper. Clean up the dust with vacuum and tack cloth—"vac and tack"—before applying final coats.

TIP: Before using a brush, submerge it in a fine course of water if you're using latex paint or paint thinner if the paint will be oil-based. Flap the bristles so the fluid can reach up into the brush's handle. Spin or tap the brush dry; it will be easier to clean, thereby extending its life.

STEP 3: PAINT THE WOODWORK

- Brush the first thin coat onto the woodwork. For the doors and windows, follow the application sequence in "Paint by Number" (page 100).
- When completely dry, sand paint lightly with 220-grit sandpaper; then wipe away dust with a tack cloth.
- Apply the final fresh coat (page 9).
- If you get paint on glass, wait for it to dry, then remove with a window scraper. To prevent scratching the glass, wet it first with window cleaner.



TIP: "You want to leave a narrow strip of paint on the glass to seal the wood from moisture. Hold the edge of a 6-inch wide putty blade against the glass, with its flat side against the wood, and scrape up to it. You'll be left with a neat, even strip of paint on the glass that's the thickness of the blade."



STEP 3: CAULK AND SPACKLE

- Use lightweight spackles and a putty knife to fill sand holes or cracks (above). Push spackles in. Then smooth the patch. Once spackles dry, spot prime or completely replace the walls, depending on size and amount of patching.
- Caulk the gaps between the primed windows and the walls. But if the caulk gets in a smooth section as you squeeze it, finger brush it. The goal is to apply only as much caulk as is needed. Control caulk flow by adjusting the trigger pressure and the speed at which you pull the tip along. Join larger gaps, for example, in caulk harder and pull slower. Smooth the joints with a wet finger.
- On new windows, overlap nail holes with a water-based wood filler to allow for shrinkage, then allow to dry before sanding.

TIP: To avoid taping down a thick bead of caulk, cut shims off the very end of the tube's spout with a hole saw. Then level the rim of the tip a little so it will fit snugly into corners between wall and trim.



STEP 4: PAINT THE CEILING

- With a brush or pad, apply a sealer (approximately 2- to 30-inch) band of paint along the edges of the ceiling, otherwise the roller can't reach (left is called "tutting in"). If using a brush, try to make straight, even lines without masking tape. Wipe up mistakes away with a rag.
- Dip a roller mounted on an extension pole into a roller can filled halfway with paint. Run the roller over the paint's shadow and until the roller cover is evenly coated with paint.
- Starting at one corner, steadily stroke the ceiling into 5-foot squares and use the basic steps outlined in "Technique" (see left). Walk your way across the slope of the room, one square at a time, past.

TIP: To prevent a break for cutting in, dip it about an inch each half into the paint, step it against the inside of the paint pad, and scrape the other side down on the wall's rim. Carry the brush to the surface, then side down. It should cover about 2 to 2½ feet.

STEP 5: PAINT THE WALLS

- When baseboard is dry, cover the top of it with blue masking tape.
- Using a brush or pad, cut in around the window and door first, then to the baseboard and to the ceiling or crown molding (above).
- Paint the walls using a roller on an extension handle (below). Mentally cut the wall off in squares roughly 3 or 4 feet wide, and work from the top down. Follow the basic steps outlined in "Technique" (see next).
- Once the paint is dry, remove any tabs by scraping the wall with a putty knife. For glassed doors, sand lightly with 150-grit paper then wipe away dust with a tack cloth. Roll on the final coat.
- Remove masking tape as soon as paint has set up, pull it slowly to avoid tears.

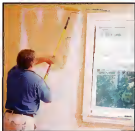


ILLUSTRATION: SHERRILL HARRIS

PAPER CHASE

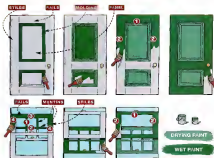
When paint is what you want on your walls, but wallpaper got there first, all it takes is some oil. "Removing wallpaper can be anything from a snap to nearly impossible," says John Cox. If you're lucky, the paper is stripable. "You just start pulling at a corner, and it peels off in full sheets. But if that doesn't work, you'll need to apply a water-based stripping solution to dissolve the glue. But even a garden sprayer to apply the solution (next).

There are three key steps to removing wallpaper, he says. "Get it, let it soak, and keep it wet." The solution works its magic in about 3 minutes; then he takes a 15-inch wallpaper scraper with an angle of 45-degree steel blade and pushes it through the paper in even horizontal passes across the middle of the wall. From that out, he then scrapes under the scraper down to the baseboard and up to the ceiling, shredding the paper off the wall in long strips (below). Stripping paper will actually leave a scraper's blade. Just pick one side of the blade to touch the wall, not stick with it for the whole job. Otherwise, it can leave nasty grooves.

Once all the paper is off, Cox scrapes the walls with a putty knife, to level it by a wipe-down with a wet sponge. "We've got to remove most of the glue residue," he says, "at the point size resolution it, leaving either no problem or eventually yellow stains." Stripping solutions can't penetrate some vinyl papers, so Cox perforates the surface with a scoring tool first. For areas of the wall paper-backed vinyls, he strips strips the top layer before applying solution on the under-lying paper. About the only time wallpaper can't be stripped is only in when it's applied over unprimed drywall. "It will take large pieces of the drywall paper with it," says Cox. You have three choices in that case: Rip it off anyway and skim coat the surface with joint compound. Cover it with new paper or primer, skim coat, and paint it. "Simply covering wallpaper with paint looks terrible."



Paint by Number



Whether you're using a brush or a roller, painting bare wood, or patching the first coat, an even smooth-looking paint job depends on keeping a wet edge at all times. In other words, you never want to let the boundary between a section you've just painted and the surface you're currently painting to start drying. Because your brush or roller will rip the skin of a dry partially dried paint or leave lumps called lap marks. When the edge is kept wet, the new paint merges indistinguishably with the area and does a better

That's not to say it's simple to do when painting trim. You always level a baseboard brush on the dry area and pull the paint into the wet area. But with all the surfaces on a mantel or window or a painted door, it's easy for an edge to dry before you get back around to it. To avoid trouble, follow the steps illustrated in right. And if any paint dries over on one surface you're not ready to paint, wipe it down with a rag.

TIP: As a rule of thumb, work from the center out, and a single paint call below stile.

DRYING PAINT
WET PAINT

NEXT INSTALLMENT OF
HOMESWEET'S HANDBOOK
Hanging a Door

Along the way, where the masonry was exposed to rain, the master had disintegrated and "you could see daylight between the bricks" in some places, says Grant. But when Ted O'Hara pulled the bricks apart there, the chimney remains are still on the steeply sloping O'Ward and rebuilt them with historic stone and new flueing.

SAVING GRACES

BY BARBARA FLANAGAN

"The neighborhood kids thought it was haunted," says Grant Rhode of the 1905 home in Brookline, Massachusetts, that he recently renovated for his family. Hulking in the shadow of a giant yew, the chocolate-brown house looked like something out of a Grimm's fairy tale, with its massive

YEARS OF NEGLECT PRESERVED ITS ORIGINAL FEATURES. TWO MONTHS OF INTENSIVE WORK BROUGHT BACK ITS SHINE

stone chimney, steep gabled roof pierced by two broken eyebrow windows, and skewed shutters that banged in the wind.

But Grant saw beyond the house's gloomy disrepair and cobwebs. He had, in fact, admired the place for years as his busy Boston contracting firm, GF Rhode Construction, worked in the area, the historic Fisher Hill neighborhood planned by Frederick Law Olmstead. Grant loved the

Although many of the windows are indeed flush wood, the process Smalley used for taking out old glass and putting in new works for new wood sash. First, he will

used the rigidity with a purpose (both safety and point-to-point control), so this must be done with proper respiratory and removed it with a point scraper (18). When pulled out the cracked glass (19). Typically, the new glass would come either pre-cut or in large sheets from a glass supplier, but Great supplied everything with a special reason: a few old exterior storm windows.

"There's a lot amount of distortion and texture in the original glass," says Great, "and new glass wouldn't have matched

Shelley and the others to view CS, where I told them: a full-hill of glazing equipment around the frame and out the pane is just fine. Steel is present in new prints [45]. Key metal brackets that cling to the wood frame and hold the glass in place, and several times with Lempert [46]. Being careful not to get fingerprints in the track, I composed, he brought the track back to the coating, fastened it to the counterbalance weights with new cord, tested it: fit not maximum, not maximum the tube present did hold it in place before he moved on to the next window. Each unit took about a half day to repair.

ing down, Green would work with only eight weeks to completely overhaul the family's new home, an unfathomable time line unless you're a contractor who has pulled with tradition and knows how to choreograph a project as tightly as a theatrical production. Green outlined the day's goals in a job schedule that he distributed each morning to subcontractors, along with coffee for the crew. On some days, as many as 30 tradesmen were working on-site simultaneously. Still, the project went smoothly. "Since I was designer, builder, and owner at the same time, I just had to have a dialogue with myself." (And hide.)

Another factor that kept the timing of the project on track, Grant and Judy made few substantive changes to the house. They needed to upgrade the servers and modernize the kitchen and bathrooms, but otherwise they planned to preserve as much of the original architecture as possible. That would save time in some cases (no need to move minor walls, for example) but it would slow things down in other ways. Replacing damaged walls with new ones cost plenty of time, longer than overlapping them with studs would save.

A deep representation of

Because of its integral role in *James*, *Great* inspired the bookworms in the home room (several students whose mothers were enrolled in the 1920s). "It's more like it was accepted enough to call it the library-to-be reading," says a student, as if to tell us the bookworms, in his case, in the summer of 1993, *Great* is constitutionally a identified piece on the shelf that can't move. "The theme is realism, towards a first person, in William Maclure's script, it reads, 'The life as seen, the life as lived, as it is,' a saying popular in the 1920s and '30s," he concludes. *Goodbye, Goodbye*

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PEAKS AND VALLEYS



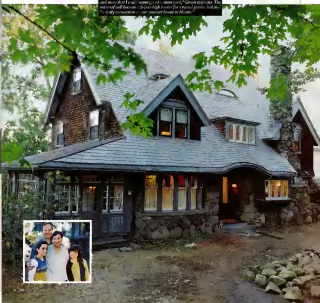
The original slate roof survived a century of New England weather with just a few broken or missing pieces. Its copper flashing was a different matter. "Copper is an 80-year material," David explains. "This was here for 58." Copper thins with age, then develops tears and pinholes. As water enters, its acids worsen the damage.

David started the flashing on the 2-over-1-glass roof replaced with steeper 24-inch-wide 18-gauge copper. He removed temporarily removed three shingles down either side of each valley. They lifted the old copper flashing off the deck with pry bars [1], banged down old heads into the eaves, and lined the valleys with 3-foot-wide self-adhering polyethylene membranes [2]. They then fastened copper strips with a tool called a portable brake and nailed the flashing to place [3], overlapping and sealing with caulk. They also installed copper aprons under the upstairs windows. "Rather than dig out the rotted sill, we used spray foam and fastened the copper right over that," says David. Workers focused on the bad-slate areas. "At first we ended up 20 states decided replacing," David remembers. "We ended up replacing about 400." To do that, they removed painted shingles from the less-conspicuous rear of the roof, replacing them with new ones, and moved the harvested shingles to the front. Since more out the old-fashioned way by perforating them with a sister's hammer [4], then breaking them along the seam.

fit the house perfectly, and Judy took the time on selecting the Chesnut rug and the sofa that would look appropriate to the house while still providing a comfortable interior. Giant weighed in on the furniture choice, too, but his opinion was based primarily on one last big job—erecting an eight-by-eight 1930s concrete-block garage. By Octo-

ber, the flat-topped garage had taken on a porch, cedar shingles, trim to match the main house, and slate roofing. "It's a good thing they put up that garage," says Giant. "Copper roofing doesn't allow for a new use to be added to the neighborhood." Insurance even the most high-minded of preservationists appreciate modern conveniences. ■

The family (from left, including Giant, 21, on January 2, moved to the new house. But Giant still had work to do. In March, the family's house in Maine, took down a 20-foot stretch of a crumbling fieldstone wall flanking one a wall of sand (1) spout, and finished with 4 more of sand the same way. "It was a great, beautiful look, green timber, and now it's a lot more of a clean look," Giant explains. The material will be used to replace the high board for a second garage, but not to do any construction on the main house in Maine.





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1. A hand-blown glass shade held in a cast aluminum frame supports a European-style lamp. From Progress Lighting.
2. A classic lantern with a bronze finish features a decorative curved support and knob. From King.
3. New York, New York's famous brownstones are a popular model for many, including an old streetlight.
4. A modern light-style lantern with a steel and brass construction. Both the interior and exterior are finished with a clear, weather-resistant glass. From Progress.



If the last time your clothes looked like this



5. Macgregor's lantern softens a rustic look through its simple house shape, tapered ends, wooden glass, and polished brass.

6. This clean-lined, Modern-influenced fixture with nickel-plated brass and a brushed finish is equally suited to historical and contemporary settings. From Thomas Lighting.

7. Detailed wrought-iron frame supports this light from Macgregor in its shade of a solid copper housing filled with seeded clear glass.

8. Hanging from a curved arm, this Craftsman-style fixture features seeded and leaded-glass panes within a bronze-finished brass frame. From Arroyo Collections.



9. A shiny brass and tapered glass-shaded trade update this fixture, a stylized version of an old sawhorse, from Progress.

10. This cast-brass reproduction of a city's lantern, from Urban Interiors, has a seeded glass globe and a perforated cage.

11. An octagonal ring attracts eyes here the brilliant light cast by this perforated steel fixture from Trade Progress.

12. Arroyo Collections' classic Spanish-style design combines a layer of aged glass with a brass-colored glass.



House
MAGAZINE



LIGHTING UP THE NIGHT

It is possible to have too much of a good thing, especially when it comes to light. An overly bright fixture—whether lighting targets call a glare beam—may leave culture vultures, especially if their eyes must adjust rapidly from a dark driveway or sidewalk to a glowing porch. Usually the amount of light (measured in lumens) shed by a 100-watt incandescent bulb is plenty for its average output. The best way to achieve soft, even illumination is by using two or more fixtures, such as a pair of wall-mounted lamps flanking a 30-watt bulb, rather than one overboard. To further reduce glare, choose lamps that diffuse the light, and pay attention to the type of bulb used. Most models accept screw-in bulbs, which come in halogen, incan-

descent, or fluorescent models. Incandescent shed a warm glow, so do the latest nonincandescent bulbs labeled dimmable fluorescent lamps, or CFLs, although some people prefer halogens over white light. CFLs typically last much longer than a halogen or incandescent when used indoors, but they may have not taken outdoors. Also, most are not designed to run with a photocell switch unless the amount of daylight, dusk, or dawn. The manufacturer of your fixture should recommend the best bulb for their design. If you choose an incandescent alternative, know the explanation: A 50-watt halogen is viewed as bright as a 100-watt incandescent; a 50-watt CFL would be similar to a 150-watt incandescent. —L.S.

CLASSIC GAS

Living partly in the night, gaslights can be a useful antidote to the modern world. Given their ecological appeal, new exterior gas wall lamps and freestanding lanterns are actually being used for traditional-style houses. In historic neighborhoods, period gaslights that were later used for electricity have been converted back by adding a stainless steel or copper-coated brass pipe from the main supply to the point of installation, typically from the gas meter to the front porch. New models are custom-fitted with a special feature to accept the corded, and holes provided by manufacturers into the top and bottom of the lamp allow for ventilation.

For a homeowner looking to install a gas fixture, the first and final thing to know is the name of a licensed plumber who can do the job for you. Although fairly straightforward, the process involves a combination of solder flame and open gas line, which is the wrong route for spill trouble with a capital W. Properly fitted, however, a gaslight is as safe as a candle. Placards come equipped with a shut-off valve but no pilot, which means they must be lit by hand. Most owners love their models all the time. It may cost about \$10 a month to run a gaslight, and for the continental of heart, a few burning screens or lanterns create a home where the welcome light is always on. —Don Dillbeck



ENTRY LIGHTS



Two hundred years ago, when streets were dark and households went to bed at dusk, a lantern by the doorway provided indispensable illumination for the returning traveler. Before streetlights, some towns required every sixth house to keep a light out front—perhaps just a burning pine knot—to chase away the shadows. As the years passed, the night grew brighter: In the 16th century, Benjamin Franklin found that a double-wicked lamp fueled by whale oil shed a reliable glow when it was hung by the

The new light, with a clear glass globe protected by a brass frame, offers excellent illumination. From *Lighting by Fluorescents*.

door; gaslight was introduced in the early 19th century; and by the 20th, most rooms and city streets were dazzling displays of electricity. In today's modern

neighborhood, the front door may not be the main entrance into a home, but a well-lit entry is still a comforting sight. A handsome pair of wall-mounted fixtures, from traditional reproductions to streamlined contemporary designs, also offers a special opportunity to play up—or play off—a home's architecture.



<http://www.acehardware.com>

The right ideas can help keep small projects, well, small.



ACE



DIRECTORY

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House Calls Web Store, p. 22: Openness and flow, rich textures, classic steel appliances, and a new layout created a small kitchen into a beautiful and more functional element of the 1900 Arts and Crafts home in Washington, D.C.

OUTTAKES pp. 16-20

Page 16: House painting: Bill Brady, Boston, MA; 437-331-4553
Crew Machine: Nagata air machine, ARABSCO INC., Thornhill, NJ; 609-640-5330, www.crewmachine.com

HOUSE CALLS WITH STEVE pp. 22-26

Architect: Norman Smith, Washington, DC; 302-364-2248
Page 26: (2) Concrete Beam Over Mule, 800-463-0260, www.concrete.com; (2) Ultra Cook

Microwave Combination Oven, KitchenAid, 800-422-1234, www.kitchenaid.com; (3) Pleasant Calorifier Central Microwave Oven, Sharp, 800-237-4277, www.sharpsusa.com; (4) Adventure Oven, GE, 800-436-3606, www.geappliances.com

ASK NORM pp. 30-38

Feen construction systems, www.feen.com
Beaulieu construction foundation Contractors Association of America, Alexandria, VA, 703-739-0356, www.concrete.org
Rogers survey International Association

of Structural Masons, Elkhart, IN; 317-439-9495, www.sma.org
Infrared diagnostic energy solutions; National Residential Energy Network, Orem, UT; 800-426-3446, www.nrenet.org
opb/bsen/bsenlink.htm

LUXURIES: WALL-TO-WALL MARTIN pp. 36-44

Hydronic radiant heat consultants: Dave Pedersen, The Firm's, Zionsville, IN; 317-731-5332

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PHOTO: BOB BELL

Wood panel system for radiant floor heating: Wirtco Quik Trak, Wirtco, Apple Valley, MN; 800-321-6739, www.wirtco.com
Electric radiant heat installation: Floorway, 800-251-1890
Electric floor-mounting mats: SunTouch, 888-432-8932, www.suntouch.net

TRANSFORMATIONS: GRAND OLD RENO pp. 46-56

Salvaged Doors and Windows: Healey's Salvage, Nashville, TN; 615-226-9696

MATERIALS: A CLOSER LOOK AT COPPER pp. 66-68

Copper underlayment: Velux Supply Corp., Milton, VT; 802-593-8432
Single: Canadian Brass & Copper, Concord, Ont., Can.; 905-738-0301
Lender shop: Berger Builders Co., Fennville, PA; 800-321-4162, www.bergerbros.com
Electrical wire: Southwire, Atlanta, GA; 800-444-7780, www.southwire.com
Patented exterior radiator valve: Overheadcoatings, 800-422-1325
Gutter system: Berger Bros. Co. Basic: Oregon Copper Bowl Company, Eugene, OR; 341-885-5645, www.

"Wall-to-Wall Wiretek," p. 34: Plastic tubing filled with hot water will warm the floor and walls of this bathroom in Zionsville, Indiana.



www.copperbowl.com
Faucet handles and spout: Newport Brass, Santa Ana, CA; 714-436-0820; newportbrass.com
Roofing nails: Texas Secure Products, Baltimore, MD; 800-767-2870, www.texassecure.com
Rens strength: Berger Building Products Corp.
Scratch plates: Oregon Copper Bowl Co. 3-D patented copper: Registered Metals Corp., Buffalo, NY; 800-336-2180; www.rgmcd.com
Copper plating for square: AA Abbington

Abbington, Inc., Brooklyns, NY; 718-218-1333, www.abbington.com
Pre-patinated and raw titanium-coated copper squares: Barrow Copper Products, Inc., Kona, HI; 808-448-1776, www.crowcopper.com

TALKING SHOP: ONE FOR ALL pp. 64-66

Page 64: Multi-plan, Legend K06, model #06120, Guber Legendary Blades, Portland, OR; 503-679-6161, www.guberblades.com

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Poskon precision 5-in-1 printer available at Rockstar Hardware (Item #32013115), Costa Mesa, CA, 800-524-6413, www.rockstarhardware.com, also available at Lee Valley Tools (Item #35131), Oglethorpe, NY, 800-871-8151, www.leevalley.com

Multi-coating kit: 16-piece deluxe model #37260, California Tools, Hillsboro, Texas, IL, available at Sears 800-377-7414; www.sears.com/california
Green's knife: 8 in. 1 model #30375, Warner Tool Company, Minneapolis, MN, 432-319-4740, www.warnerinc.com

Page 61: Spiral saw: Revolution, model #REVO1, Attachments Zip Mow, model #ZM101, RotaxZIP Tool Corporation, Coon Rapids, MN, 877-768-6947, www.rotaxip.com

Outblasting tool: Variable speed, MultiMaxx, model #6121616-3, Fata Power Tools Inc., Pittsburgh, PA, 830-441-9679, www.fata.com

Page 68: Knife, SwissChamp XL7, model #33584, Swiss Army Brands Inc., Shelton, CT, 800-482-2706, www.swissarmy.com

FINANCES: ROOM FOR RENT pg. 70-73

Attorneys Douglas A. Shinsky, J.D., C.B.E., American Society of Real Estate Attorneys, 1141 Crawford Drive, Downers Grove, IL 60515

UPKEEP: TOWN FITS pg. 74-78

Wood Ellen Monroe High Performance Wood Vell, www.woodusa.com

BY DESIGN: NESS HALL pg. 80-82

Interior Designer: Sally Ross, Montreal, NJ, 973-744-3156
Carpenter: Steve Hammer, Blue Curries Woodworking, Port Morris, NJ, 908-683-4493

SPECIAL REPORT: HOME THEATER pg. 84-87

Teens home theater installation: Available

Partners, Dallas, TX, 800-933-5142
Boston [speakersystems.com](http://www.speakersystems.com)
Headphones: Meria Systems, Boston, MA, 617-437-7024, www.meriasystems.com
Electronic speakers: Meria Systems, 913-749-9133

Romax Canada: Philips Proton, Adams, GA, 800-331-0855, www.philipsromax.com
Niles IntelliControl Home Theater Automation System, Miami, FL, 800-319-4434; www.nilesromax.com
Cannon lens, Rockledge, NJ, 800-217-2041, www.cannon.com

Projection: Valuelec: Vision One HD7TV

CIET Projector, 800-843-4576, www.visionone.com
Headphones: Virtual Dolby Digital Headphones by Sony, 800-222-7619, www.sony.com

Speakers: HT32 by Gaudex, 800-652-8900, www.gaudex.com
Mendian, 404-344-7111, www.mendian-audio.com
8.8 MT by Speakercraft, 800-440-0970, www.speakercraft.com
InWall: InWall Power sub, InWall Gold10 LCR, and InWall Silver Surround by Trued, 800-210-4884, www.truehifi.com



"One for All." Taking jobs, p. 64: Small and mighty, this 16-piece aluminum safety knife has a hidden blade for ripping insulation, shearing asphalt shingles, a wallpaper-and-trim-cutting, a wood saw blade, a wood saw and more!

PHOTO: MICHAEL MULLER



"Now from Underground," p. 54: At the full TV project house, 11 cable joints of concrete help prepare the 125-year-old basement for tenants

Amplifiers: Canon: Reference power amp by PTM 6150
power amp by Audio Design Associates, 800-432-6346, www.audio-associates.com

Wires and cables: Signa Retro Gold Speaker/Amplifier kit (SRG 98K) and Z3 reference cable by Monette Cable, 413-443-2008, www.monnettcable.com
Power Logic and equalizer: 806 (control) cables by Signature Wire, 360-711-1313, www.signaturewire.com

Our thanks to: Steve Wilkes and Cliff Fisher at Canon Electronics Inc., Falmouth, ME; and Sam Pridmore at J.C. Santos Communications

NOTES FROM UNDERGROUND pg. 84-101

Architects: John French and Linda Neuharber, Newburgh, New York

Architects: Charlestown, MA, 617-342-7922
English: Leroy T. Brown, Boston, MA, 978-597-6216

Concrete products: Boston Seal & Grout, Boston, MA, 617-227-9008

Concrete construction: Spd March Concrete Construction, Tewksbury, MA, 978-851-7300

Power insulation: Polysort Systems Inc.; Hudson Falls, NY, 800-447-4804, www.polysort.com

Power made from recycled newspaper: Harsco, www.harsco.com

Speaker: Manufactured by Partners Partners, New Rochelle, NY, 914-233-6300, www.power.com
Harsco: Data Belton, design consultant, Charlestown, MA, 617-886-9080

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Hawthorne, NJ 07040 www.vantools.com



Fein





"Easy Lights," *Pages*, p. 126: There are not just parents' bedrooms. Indeed, the latter provision is extensive lighting patterns enough new models, shapes, colors, and sizes to answer any need around the house, from the front steps to the rear patio.

SECOND ACTS
pp. 103-113

Archives: Key Institute, 643-666-0133
 Casperian: Stone Isopren, 631-279-7030
 General contractor: David Ischewsky, 617-262-0000
 Remodeling and Restoration: Frier's Island, 617-631-7910
 Exporter A.L.A.: Albany NY, 518 449-3336
 J Timothy Anderson, Plant And/or Soil Treatment Associated Architects, Cambridge, MA, 617-664-0336
 Susan Barlow, South Shore Restoration Group, 631-649-3236
 Robert Brando Green, author of *Cats Back from the Edge*, John Wiley & Sons, Inc. Keith Perleburg, Herring Dancer Associates, Inc., Texas 972-723-2416

Page 204: Leather Paper Clip-clip, Eileen
 Allie: www.eileenallie.com - www.gammas.com

company and Loft's floor lamp;
www.goodhome.com. Stainless steel
instrument table #587004, LMIF;
800-634-5322.

Polaroid photographs by Vicki Ryan.

POSTER: ENTRY LIGHTS
pp. 129-133

Opening page, 12th FOLIO Owen light,
lighting by Haeckel-works;
p. 127, 128

trade paper (1) #P1541-31 Sears Roebuck Collection lantern, Progress Lighting, Spartanburg, SC, 844-519-6308, www.progresslighting.com (2) #B6120 LYrungs lantern, Troy Lighting, 606-513-8769. (3) #BC-1176 Central Park lantern, New York City Lighting Co., New York City, 212-329-2651.

leaters, Progress Lighting—(J) #95F1-50
Townsend leaters, Metropolitan Lighting
Forms Co., 800-233-8300. (6) #9252-81
Hudson Bay leaters, Thomas Lighting,
Louisville, KY, 800-365-4444.
www.thomsonlighting.com (7) #W200
Doctor's light, Lighting by Hammer-

words. (H) #GB-66C-02 Glasses
Interiors, Arroyo Craftsmen, 334-227-
7696. (H) #763514-04 Die Cast Shells
Interiors, Progress Lighting, (H) Plaster
Interiors, Urban Ambassadors, New York
City, 212-431-6696, www.urbanarchitects.com. (H) Orcher light,
Positives Lighting, Ft. Lauderdale, FL,
954-348-3325, www.lampsonline.com.
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Milton Gets Shellacked

F.O.H. recuperates the project house's original woodwork

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Sub-a-dub-dub Rich and crew prepare to manhandle a 500-pound case over and over but through the master bath's second-story window.

Wagdy 48, Hammadia 48-49

FOAM's contractor Tim Blue finishes hanging red cedar cladding on the little project house, while painting

These theories have been developed

Electric an Allen Lintell installs a 50-ft lighting wrecker that provides the entire property's plug-in from power sources. (Stromminger David Hagen) and crew move in the former's will from stones found on-site and form the barned riprap stone entry of The New Glenbrook

will be prepared. The projects are

hydroxylated with sulfonic acid (HSA) and "hydrochloride"—which gives the spoked shape a place. Master carpenter Norm Adams has spent the day in the existing building across for the fourth time, even porch, **Watch and lower** hanging

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 Lattice around windows.
 Woodworkers' Int., Vespene, MA.
 552-858-2532. Copper piping.
 Copper Development Association
 Inc., New York, NY. 212-351-1200.

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[illegible]

Intelligence, Portland, ME, USA, 1992.

Week 18 (December 22-24)
Painting contractor John Dem must shuffle materials from a by-product of the big job—for the first time while still painting. Rich visits the branch in Wakefield where the work is hot but for the master path's sake can't. Some switches flip, contractors use T-shirts and the foot files of the master path with a new saw. Then Clinton to the city where HARC consultant Ray Winchcomb has traveled an up-to-air but decreased risk and other evolution.

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inside the house. The trick service gets a curatorial credit since that lets viewers in, and it could help fund the tour, which would be a lot of fun.

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Here's to sound friends: Marm and Toss reflect on divergent economic my. uncovered during construction.

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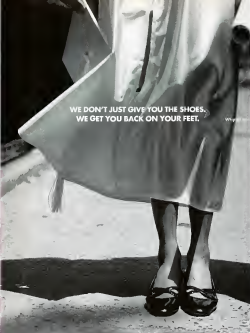
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