

OCTOBER 2001

This Old House

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**Plus: Putting Up
Crown Molding**

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This month's *Puzzle* features 11 types of anagrams, such as the adjustably ayle chosen here, as well as tips on how best to use them. See "Puzzles," page 121.

By JEFFREY CHASMAN

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DEBATE WITH CAROL F. BOW



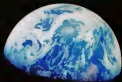
DOI: 10.1002/for



Journal of Law & Health 1998, 13:103-118

cover

Preparing for the winter ahead, T.D.A. 44-11394 shows Thomas (second) standing behind storm windows on the exterior of his 1430 Oakwood Avenue in Boston, Mass. This was just one stop to look for help out the cold after his home was blown through on camp "42B" that September 4th (note: 00000401/00000404), and two weeks before landing systems. For more information see "Kassirer in the Rain" p. 110. PHOTOGRAPH BY PASCAL BLANCO



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DISCUSSION



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"The house was in 'finished' condition at least four different times, but there's always something you want to tinker with."

—JOHN BRALLFIELD, HOMEWELL

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OUTTAKES



BEHIND THE SCENES AT THIS OLD HOUSE

BY JORDAN REED



Tuning in With Tom

This year, the real-time Webcast of work at the TV project (shown at some townhouse sites) is offering up some new perspectives. Along with found-the-check stages of the front, back, and west side of the Manchester, Massachusetts house that load every two seconds, and in new corners outside that users at home can control for two minutes at a stretch, the site now offers the "JeremyCarr" (TDH) general contractor Tom Ellis, shows this Webcast around the job site of will, featuring it in an exposed stud or mounted but to provide a rare glimpse of the tasks that most struggle the rest in charge of the renovation, day-to-day. "There's plenty of interesting stuff the show

just doesn't have the time to cover," says Tom. "This way, Web site users get to see as much as possible."

Since the site started broadcasting from the camera in June, the Web audience has been able to log on and watch Tom raise the ceiling in the family room, level the floor in the game room and the master bath (jazz), take down the entire back wall of the house, and shore up the second floor with engineered lumber, laminated joists, and steel beams. To give cyberusers the best chance at catching all the action, Tom lets the camera stay in one place for a couple of days. "That way, you can really see progress being made," he says.

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Cool 'Cat

When a major landscaping job requires moving earth and fens, it doesn't always mean calling in heavy hands. To reposition some large trees that were in the way of the new addition of the TV show project in Manchester, Mass., T.O.H. landscaping contractor Roger Cook brought in a Bobcat compact track loader—and, vehicle aficionado that he is, host Steve Thomas couldn't wait to take the little powerhouse for a test drive. With various attachments, the small-scale bulldozer can dig holes, move gravel, bore post holes, transport trees, and mulch branches with speed and ease, and its treadle tracks are gentle on lawns, gliding across the earth with a mere 3.8 pounds of pressure per square inch. The machines can be rented for about \$250 to \$300 a day; it comes standard with a bucket, but can also be outfitted for different jobs. It has more than 35 interchangeable attachments—including an auger, forks, and a chipper—which could add, with delivery and pickup charges, around \$300 to the cost. Roger's so enamored of it he's thinking of buying one for his business. "This thing'll dig a six-foot hole, clear a tree over to a, and refill it with soil in a matter of two hours," Roger says. "It's the ultimate landscaper's multi tool."

Survey Says...



Recently, TV project homeowners David and Janet McGuire commissioned a property survey which informed them that the shape of their 3.1-acre lot was slightly different from what they originally thought. This more exact depiction of their lot's boundaries will ensure that their investment doesn't crowd the neighbor. Municipalities actually require such a survey before changes are made to a house's footprint or septic system, or before landscaping plans are implemented, so that minimum zoning setbacks are met. Violating such requirements or improperly placing service lines can result in legal battles with neighbors and costly fines or work.

After choosing whether their town requires such reconnaissance, homeowners can hire a surveyor from a private firm for \$50 to \$150 an hour. Then the surveyor collects deeds, plat drawings from previous surveys, and zoning information from local government offices, using them to sketch out a composite. With that in hand, he heads to the site and surveys the landscape with sighting equipment. Once he'll sum of the property lines, he stakes the boundaries and files a copy of the new lot survey, which puts the measurements and degree notations of the sighting in paragraph form, with the county government office.

October 2001 Calendar

NOVEMBER 15th SATURDAY
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HOUSE CALLS WITH STEVE



Family Friendly

A storage-starved kitchen becomes a multipurpose "great room"

A

couple of attorneys living in a small two-bedroom house in Seattle, Washington, Steven Wilson and Kerry Richardson Wilson knew it was time to pull up stakes when their boys, William and Ian, both 15 months apart, came along. So with lowly earnings, they drew up a list of requirements they sought in their dream house, including at least three bedrooms, a big yard, and access to parks and good schools. In 1992 the couple found just what they were looking for in a 12-year-old, 4,000-square-foot, brick-and-shingle modelled Cape in the suburban town of Issaquah. "The house had been commissioned by a dining club as a wedding present for his daughter. It was so well built that every wall was plumb and true," says Kerry, obviously "in luck," she adds, "it had everything we wanted."

Except for the perfect location. While the country cottage-style, 6 by 14-foot room with breakfast cook and laundry pane cabinets may have charmed a young bride in the 1940s, the clunky range space and lean-and-sloak no doors only made it seem cramped in the couple's eyes. Because the Wilsons love to entertain (Kerry is known for her charity tea parties), they wanted two independent prep zones for team cooking. They envisioned an eating, open space where friends and family could gather, and where their boys, now 10 and 11, could do their homework and set projects.

"Many old kitchens suggested the cook, keeping her at a distance from other activities going on elsewhere in the room—and the house," says Tim Old House host Steve Thomas. "As a result, the overwhelming majority of remodels, like the Holmeses', involve adding space to create a 'great room kitchen' that can be used for multiple purposes."

PROBLEM

With her formal dinnerware stored in the linen closet and scattered serving pieces stacked throughout the house, wherever the cook had a spare space, Kerry definitely needed more storage. Apart from being small, the kitchen's layout was unflexible.



SOLUTION The Holmes' remodel yielded a large, open space that accommodates two cooks, casual entertaining, half-sessions, and plenty of cabinet storage. Combining the original cramped kitchen (bottom) with an adjoining guest room yielded enough square footage to meet all the homeowners' needs.

PHOTO: MICHAEL TUCKER/REDAUX



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HOUSE CALLS WITH STEVE

The room was narrow (only 8 feet wide), and the ceiling was squeaked between a wall oven and the refrigerator, with no storage space on either side. The table stood in front of the counter from the wall, an awkward distance from the work zone. Plus, with only a single ceiling fixture, the room was dim.

Before their thinking along the way, the Holmeses worried three years, and their new place was a place for a while before you remodel," says Steve Thomas. "Then you can really understand its limitations and imagine all the possibilities."

SOLUTION

With three rough sketches as the basis, the Holmeses turned for advice to Karen Lehtonen, a designer and interior designer with a local firm, Canyon Creek Cabinets. Since a newly used guest room abutted the kitchen and an unfinished attic lay overhead, they found they could add 156 square feet to the 127 square-foot space—and open up the ceiling—without encroaching the footprint or raising the roof. The only downside: "We had to truck away four tons of plaster and lath debris from the ceiling, and we walls that were taken down," Kerry recalls.

Next, she and Lehtonen created two work zones by placing a pull-out chopping block between the new sink and range, and a 3-foot-square island centered among the appliances. Then they addressed storage: A floor-to-ceiling array of gray cabinets surrounded the wall oven. Shallow drawers for bowls and pots, near work station. The cabinets beneath the island hold baking supplies.



Simple shaker and glass-front cabinets set the mood: panel doors, a kitchen island-topped island, and two glass-fronted islands crafted from custom cabinetry and topped with cream molding echo the traditional side of the Holmeses' modified Cape home.

HOUSE CALLS WITH STEVE



Before: The original 127 square-foot kitchen, by far the smallest room in the house, stayed the Holmeses' desire to entertain. After: Answering the Holmeses' desire to entertain more than doubled the size of the kitchen to 283 square feet. The new kitchen opens planning has been improved for both parties and various family activities.

To break up the total expense of 35 cabinets and 35 drawers that Kerry asked for—and to hold all the client's requests around the house—Lehtonen designed assemblies of cabinets on one face to resemble freestanding benches. Glass-front doors keep the pieces from looking too massive, while showing off decorative details. "The furniture-like pieces add old-world character and fit in with the rest of the house," says Lehtonen. Then, like all the cabinetry,

remains the existing one, on the ceiling lights and recessed, care in the ceiling focus storage ratings on prep areas, and wall scones on either side of the benches provide a flow, ambient light.

The expanded and reimagined space allows the Holmeses exactly what they were after: "Everything in the new kitchen not only looks great, but functions really nicely," says Kerry of the remodelers' job. "My whole family is happy in it!"



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HOUSE CALLS WITH STEVE

IDEAS NOTEBOOK

Left: A Rembrandt style maple chest with inset from Ethan Allen features special drawers for silver and trays. Right: For maximum storage, David Henrich's antique floral pine buffet and cupboard measures an impressive 47 inches high by 43 inches wide.

"Freestanding hutches give an 'unbuilt' look to a kitchen, and you can take them with you if you move."

—FOUR OLD MODES HOST STEVE TADMAN

center: Berkeley's quarter-sawn oak antebellum-style hutch has tapered and square pilasters, butterfly inlays, copper pulls, and leaded glass doors. Denver's light maple hutch has a built-in drawer cabinet on wheels, space. This painted maple hutch from Maine Cottage comes with a choice of clear or frosted glass panes or wood panels.

The Hennessey custom hutches were built in, but they could be assembled as freestanding units. To create this 64-inch-tall chest, Canyon Creek's designer used a light-stained cabinet. Two 18-inch-wide units are stacked on each end and two sets of stacked 22-inch units in the center. An arched cupola, top drawers, turned legs, and square molding complete the Rembrandt effect.



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ASK NORM

Advice on finding studs, reusing beadboard, and silencing a noisy air conditioner

REAPPEARING WALL CRACK

In 1989 I added a new wing to my 1930s house. Each winter when there, a crack opens up in the ceiling in the area where old meets new, and probably hasn't done the wall about 18 inches, with a maximum opening of about 1 inch. The crack shows up each summer. After three winters, I haven't been able to determine why this happens, so far not even how to repair it. What do you suggest?

Ken Janssens, Morristown, N.J.

Drywall doesn't move around much by itself, so the culprit is

probably the wood framing behind it. Cracks in a wall or ceiling are generally caused by one of two things: one-time shrinkage in the framing during wet, or air seasonal expansion and contraction. Since the crack is a recurring problem, I suspect the latter. There's one crack you can do to eliminate it, but the crack is small enough that you might be able to fill it with a paintable caulk. I like siliconized acrylic latex because it's easy to spread and not too stiff; you can finish it into some really nice corner spaces. Once you put it in, the crack will probably disappear. The advantage of this caulk is that it's flexible enough to keep up with any future wall movement. Spackle or joint compound would just crack at the same place.



HUFFLING CONDENSER NOISE

I have a new central air-conditioning condenser outside my house. It works beautifully, but my neighbors have complained about its being noisy. I was thinking about building some kind of baffle around the unit, but I am sure there should I know about it?

BETH HANLEY, ALBANY, N.Y.

Decisions about air conditioning can get downright heated. The first thing I would do is stand next to the machine and listen for any vibrations or humming noises. If the noise stops when you put your hand on the blowing area, you'll know you're doing the house part. Before doing any work on the machine, find its power source and

turn off the breaker at the electrical panel. Sometimes noise can be fixed by simply tightening a screw or two, or replacing missing washers. You might also try removing the screws and slipping a rubber weather between the parts before tightening them.

Although this might quiet some of the noisier sounds, I suspect your neighbor is bothered by the sound of the condenser fan motor itself. Some manufacturers will send you extra mounting brackets that fit over their condensers. Putting that, the best way to buffer the noise is to enclose the condenser unit with a solid board fence at least 3 feet high that has no gaps through which

sound could travel. Leave at least a 24-inch space on all sides of the condenser to let air circulate and to allow access for future maintenance. I'd also recommend making the fence to one or more of the sections is reasonable, in case the owner requires any maintenance or removal. Fall is actually a great time to do this work because the unit won't be cycling on and off as you work around it.

HOT-WATER HEATING DOWN SOUTH

I'm at my wit's end with heating contractors. We lived in Massachusetts for many years, where we had hot-water, beadboard heat, but when we relocated to Georgia, we had to switch to a forced-air system. Now that we're able to be built again down here, we still want hot-

water beadboard heat. Can you direct us to a local heating and cooling contractor who knows how to do this work?

HELEN MARKLIN, BAY BRIDGE, Ga.

Whenever you move between climates, you can expect changes in a lot more than the weather. Radiant barriers, central air conditioning, heat pumps, fireplace—they all may behave in some ways and a culture in others. So it should be surprising that local contractors may have experience with some products you have never seen before. Try to find a trades contractor on Mass or you'll see what I mean. If you can't see a source on down your way for good reason. People used air conditioning to survive the long, hot



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ASK NORM

summers, and air-conditioning systems need ducts. Once those ducts are in place, you might as well use them to draw heat here too, rather than install a separate network of pipes. I'm not saying that your local contractors don't learn how to put on hydronic (hot water) systems, but I don't imagine you'd want them to use your boiler to practice on.

If you stick on hydronic, you'll probably have to import both the specialized products and the most far-out expertise. But that's not the whole story; your space will eventually need service. If you think regular service calls are expensive, wait until you bring in a guy from out of state.

By the way, you might be pleasantly surprised by how far forced-air heating and cooling has come in recent years. Check out the efficient, maintenance-free longstroke convection system that was installed in last year's Charleston proper house. (See "Getting All Your Ducks in a Row House," November 2008, page 58.)

REPAIRING BRADBOARD

My house dates to 1915, and all of the interior walls and ceilings are covered with tongue-and-groove bradboard secured with nail nails. I'm planning a renovation, and most of the bradboard will have to be removed so that I can strengthen some of the framing, run new wiring, and add insulation. After reinstalling the bradboard, I'm worried, because bradboards with a flat pry bar, I seem to be applying all most of the tongue. Is there a better way?

—Suzanne Guay, East City, Fla.

Leaving the boards in situ would be, but prying them off is a lot easier. Tongue-and-groove boards are held in place with "blind" nails driven at roughly a 45-degree angle through the tongue and into a stud or joist. The nails are then covered by the next board's groove, which helps hold that edge in place. If the tongue or the sides of a groove are broken off a board, the only way to remove them would be to drive a nail through the face at back edge—no longer a solution.

The best way to remove the bradboard is to use a hammer

DRIVE NAILS THROUGH TONGUE

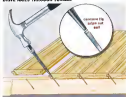


ILLUSTRATION: ANDREW LEE

ASK NORM

and a broad new nailer. (After lots of use, the nail self-removes, but they grip the nail head when you hit the other end of the set with a hammer, gets flattened and won't work as well as when new.) Holding the nail set at the same angle as the nail, drive it through the tongue and you can lift the board free. You'll want to wear safety glasses for this. After the boards are off, drive my post rafter nails into the framing—you'd have a rough time removing them all. Because the wood is probably hard and beat it with a pry, the best way to avoid splintering during removal would be to drill holes through the tongue and then drive them with 6d galvanized finish nails, which hold better than bright nails.

REPAIRING ROOF TILES

Our 1930s Tudor house has a canted tile roof. The tiles are gray now, but they were originally a deep green, so I discovered when I researched remnants of the original roof while digging next to the foundation. Is there a long-lasting product I can use to make my roof green again? I don't want to be on the roof every couple of years to replace the color.

—Raeann Stewart, Columbus, Ga.

I can imagine that your house was quite a showplace, what with the red walls and green tile roof, and you should appreciate your owner's taste. They are known for their lasting strength, sound and temperature insulation, and non-toxic nature. Well, they aren't really maintenance-free. In hot, humid areas, mold and mildew will grow on the roof, making periodic cleaning necessary—a job best left to a pro. And though there are companies that will paint or stain concrete tiles, the photo you sent shows that the original tiles had a glaze on them as well as a color, and I know of no way to make old concrete glossy again. In short, I think you should live with your gray tiles and let it come time to replace them. As that point, you'll be able to find ones with the color you're after. Look for ones made with a pigmented concrete mix, which makes the tiles more colorful.

DRIPPING FAUCET RELIEF

We have a government official friend that was installed three years ago. Last year, the cold-water valve started dripping from the spout—the hot-water valve is fine. The dripping has become more pronounced recently, and so we have to turn the handle a 1/2 turn to stop the drip. We thought this might be a problem with the work, but there are no leaks in the faucet. After calling several plumbers in this rural area, we're not having any of them show up, so we're hoping you can help. We've

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ASK NORM

Complete direction when it comes to plumbing.
PETERSON, TACONOMA, MINNESOTA, MINN.

The term "weatherless faucet" is a slight misnomer. There is always something in the weather's way, like a ring, ceramic disk, or cartridge—most to hold back water. Any of these can wear, split, or leak. Nothing lasts forever.

Your best bet is to check the faucet for any sign of dripping. Replacing a leaking seal isn't as easy as it appears to be from the marketplace or your local hardware or plumbing supply store. It's a matter of all the parts that typically wear out. The faucet is so simple that this shouldn't be a problem—provided it was designed to be repaired and not just replaced. (Some faucets do not have replacement parts available, so look at the plumbing store will be able to tell you if yours does.)

As a last resort, you may have to dismantle the cold-water side of the faucet. Most can be taken apart with a screwdriver and an adjustable wrench. It's a good idea to mark the parts in the order in which you removed them, or even make a small sketch. This will make it a lot easier to reassemble the faucet. Then drive the parts in a screw to find a match. (No more spending your time playing a guessing game with the clerk.) Two last of advice: Before you begin, make sure that the water is off—you'll probably find the shut-off valves under the sink—and that the drain is plugged. (You don't want to lose any parts.) And when ordering a replacement, be careful to specify which side you want—hot and cold may vary on different faucets.

FINDING STONE BEHIND PLASTER

The best advice type of "flatfishers," both the carpenter and the electrician, and nothing seems to work to the plastered walls of my old house. I've tried that prying through the plaster with the flatfisher, but to ship or crack the plaster. And I'm hoping the wall with a hammer and chisel for a change to see what's behind. What do you do?

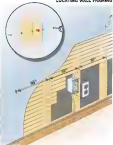
G.D. BAKER, LEXINGTON, N.Y.

If tapping on the wall doesn't work for you, try looking at the finished or ceiling area for signs of water—this is usually caused by the water. Here's another trick: Electrical boxes are often nailed to studs, and you can usually remove the cover plate and see which side of the box the stud is on, then you can usually measure across every 16 inches to find adjacent studs.

If all else fails, take a drill with a 3/8-inch bit and drill a series of horizontal holes, every inch or so,

ASK NORM

LOCATING WALL PLUMBING



starting about 1 foot from an inside corner, in an unobstructed location on the wall. With a hole puncher you'll be able to find continuous resistance when the bit hits a stud instead of the "give" when a bit punches through just plaster and lath. Another good clue is to look at the end of the bit when you pull it out of the wall; if you're bit a stud, the flares at the end of the bit should have fresh wood in them.

Once you're not paid, someone drilling a hole every 1 inch until you're no longer hitting the stud, meaning you've reached its edge. I'd bet the studs in your house are a full 2 inches thick, so measure back 1 inch to find the exact middle. From that point you can measure over 16 inches and be pretty sure of hitting the next stud. The wall holes are easy to fill with spackle.

In houses with drywall instead of plaster walls, try standing close to a wall and shining a strong light over the surface. It's usually possible to see where a drywall screw or nail has been covered with joint compound. Once you've found the location of one fastener, then you can use a stud—measure from there to find the others. Remember that in houses built since the late 1970s, the studs or exterior walls can be 24 inches on center, while those on the interior walls will still have 16-inch centers. ■

Norm Peterson is Ask Norm, the 200 magazine's regular columnist. He lives in New York City, N.Y. 10001. He is a complete amateur and writes about what he knows. Published letters will be edited for clarity and length and may be used in other media.

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Homey Ranges

Whether vintage or brand-new, classic stoves are hot

The big red stove belonged to Rick Lefkowitz as a Manhattan teenager in 1955. With shiny chrome linings and glossy bright enamel, it gleamed like a vintage MG. There was one problem: He wasn't in the market for a stove. At the time, the ask was barely dry as a contract to buy the soon-to-be vintage car across Long Island that he and his partner, Jim Brander, had owned for 15 years. "We had no plans for making any major purchases for the house right away," says Rick. But when he stepped into the dealer's booth to take a closer look at the range—a beautiful

1933 Chambers—he found it to be in great condition. The stove's innards had been completely reworked to modern codes by its exhibitor, Dave Erickson, a movie camera brand in Littleton, Massachusetts (see "New Life for an Old Stove," January/February 1994, page 42). Originally from a summer home on the Maine coast, the Chambers, measuring an impressive 34 inches wide by 24 inches deep by 34 inches high, had been used infrequently over the years. Rick, the owner of a Manhattan-based design firm called Penati, knew a good thing when he saw it, and by the next spring, the old stove had found a new home.

While sleek, mega-size professional style ranges, by such makers as Garland, Wolf, and Viking, have been in high demand for the past decade, their similarly styled but conventional refrigerators—which include American models from the '30s to the '50s as well as new

The 1933 Chambers, or "Freedom Bell," freestanding electric range, a griddle, and two ovens, is a classic and a great eye-catcher in any kitchen.



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With its premium and multi-plated iron, this 48-inch model from Heartland's Classic Collection has the look of a vintage range but boasts up-to-the-minute features like a dual fuel option, digital timer, and oven power backwash and vent block. Made in Canada, it's also available in 36-inch widths.

more "Installation of one of these behemoths is anything to watch, each made-to-order appliance is an intricate flow made from 350 parts by a specialty trained Aga installer."

Le Corbusier, manufacturer of Frantz, is about as different as there is to you can get. Featuring a colorful enamel exterior and a little brass plaque on which the owner's name is engraved, each stove is built by hand and can be configured in any number of combinations, according to a client's specifications. In addition to traditional gas or electric burners and a sealed oven (its angled shape helps maintain an even heat), options include a hot plate and a cast-iron cooking plate (27 by 25 inches) that's especially useful for roasting meats or thickening sauces. The company also offers custom designed hoods, cabinets, sinks, and pot racks. The cost? The basic Le Corbusier model starts at \$12,500, while the top of the line Grande Pile model (measuring 71 inches wide by 36 inches deep by 34 inches high) will run about \$16,000.

Because some modern clients are custom built, they may have special ventilation requirements, so using a manufacturer's tested technique makes sense. All new ranges have code conforming insulation and fuel delivery systems. And twice a heavyweight like the Aga will not need

extra floor supports, except in the case of circumstances.

Rick Livingston observed his stove for far less than the cost of one of these European brands (\$4,500), but he still needed to finance his '53 Chambers. While old gas stoves were designed to be vented by a flue stack dropped through hole in the oven floor or hold to a gas pilot at the front of the oven, modern gas stoves require upgrading to an automatic safety pilot system.

Dave Erickson, who restored the Chambers, had noticed and installed the oven, replaced the gas supply lines so that burners and oven light when you turn them on, and converted it from natural to propane gas. Once it was shipped to Long Island, Rick knew

Richard Young, a liquid pigment and natural gas service technicians in Washington Beach, New York, to run a new gas line from the tank to the stove and do a pressure test to check for leaks. Young believes the fact that "many old appliances in good condition are taken out of service because they don't meet current codes, but my range stove can be retrofitted to meet modern specs." He adds, "It's a shame when these things wind up in the landfill."

The '53 Chambers has no chance of winding up in the local dump. Today, Rick and his wife have every major award earned up on the stove, pulled as the stove top, mounted in the hole in "The museum" show cooking, or listed in the recommended oven. When they close the house for the winter, they protect the appliance's glossy finish with a coat of lacquer oil—the same lacquer the owner's former owners used on the appliance when showing down their Maine cottage in the fall. The Chambers, as it Rick, was a win-win purchase that just keeps on giving. "This stove has it all," he says, "from good looks to perfect functionality." And, as content Dave Erickson agrees, "A vintage stove is the only antique in your house that works for you every day." ■



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Pool's Out 'Til Summer

Closing down the swimming hole when autumn's chill hits the air

W

hen a pool owner decides to keep the water warm, it's best to add the pool heater before the weather turns the water into a frozen blue slab. That's why the "winterizing" time—also called "closing"—is a key time for pool owners to get ready for the winter. "You can't just leave the pool open all winter," says Bob Brown, a pool expert at the National Swimming Pool Industry Association. "You have to close the pool properly." Brown says that the best time to close a pool is in the fall, when the weather is in the 50s or 60s. "If you close the pool too early, you'll have a problem with the pool heater," he says. "If you close it too late, you'll have a problem with the pool heater." Brown says that the best time to close a pool is in the fall, when the weather is in the 50s or 60s. "If you close the pool too early, you'll have a problem with the pool heater," he says. "If you close it too late, you'll have a problem with the pool heater."

When you're ready to close your pool, there are a few things you need to do. First, you need to make sure the pool is clean. "You need to make sure the pool is clean before you close it," says Brown. "You need to make sure the pool is clean before you close it." Brown says that the best time to close a pool is in the fall, when the weather is in the 50s or 60s. "If you close the pool too early, you'll have a problem with the pool heater," he says. "If you close it too late, you'll have a problem with the pool heater."

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BY EVAN ROBBINS PHOTOGRAPHED BY ERIN HARR

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1) The skimmer area gives the pool deck a sweeping effect of debris and leaves. It also allows for a quick and easy cleanup of debris and leaves. The skimmer is a great way to keep the pool water clean and clear. The skimmer is a great way to keep the pool water clean and clear. The skimmer is a great way to keep the pool water clean and clear.



2) Because water expands as it freezes and can rupture pipes, the area that completely encloses the pool's plumbing. A 3 horsepower electric blower attached to the pool's filter (and just) clears the system, either by using the water level, into the pool—creating it to pump like a giant hot tub—or shooting it out of the bottom. With the power blower clear, the pool's filter, heater, and pump to unblocking their obstructions.

3) And putting the return that winter precipitation will add to the pool water. The cover is designed to be porous, the cover allows the pool to just below its life barrier—in this case about 8 inches—making a 1.5 horsepower submersible electric pump. The pump creates a low level of water level, more than 10 inches. "Without enough water supporting the pool from the inside, the pressure of the expanding frozen water may cause the pool to be in danger of being," he says. "Plus, the pool owner has no way to keep the pool from being lifted up by swelling groundwater. I've seen people in the pool in the past that at the ground line or low cube from a trap."



4) To maintain the pool over the next several months, there need only be two components: a submersible pump and a submersible electric blower, which both freeze and reduce water levels. The blower is one of the integrated plastic, built-in the blower basket (also), which is located in the end. The blower that collects inside the hole and begins to freeze will crush the blower instead of shattering the rigid surrounding plastic.



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RESERVE THIS BOOTH

The Kitzperle's booth seating was custom-built by a local woodworker, Shiree Elger, who admired the couple's Arts and Crafts preferences from previous design work he'd done in the house, such as the coffered ceiling and painted doors. In the family's great room, the booth is a small space, the booth is very compact, measuring only 24 inches deep. Elger says a week's worth of seating for adults comfortably might be about 80 inches.

Elger first put together a plywood mock-up of one of the benches, angling the seating surface back slightly for comfort. When he and his clients were satisfied with the ergonomics of the design, he ordered 2-inch-thick Brazilian cherry (or jatoba) wood for the benches and 1-inch Brazilian cherry for the supporting cabinet—plus enough 2-inch maple for the butcher block table and the counters that run above the benches and in front of the windows. He milled the rough-sawn cherry with his lathe and planer, then glued the cherry boards into wide panels, using an epoxy formulated for oily tropical hardwoods. The bench's seats are attached to the backs at a 60-degree angle with 2-inch screws, predrilled and lubricated with wax so the fasteners "wouldn't creep when driven into the extremely hard South American wood. Next Elger built the bases for each bench seat by butt-joining the 4-inch-wide seat supports to the end panels.

The office and table of the box cabinet behind the seat backs were joined by mortise and tenon, and they supported a floating panel. Elger fitted the lower boxes with 126-inch-deep drawers (with a 48-inch track), and the upper ones with Euro-pull hidden hinge doors. To finish the butcher block table and the millwork table and bench tops, he glued together 2-by-2-inch strips of maple and sealed the wood with several coats of food-safe mineral oil. The 30-inch-wide table is supported by a steel sawhorse in the web and by a diagonally braced cast-iron support bracket. Both the tabletop and the counters are secured in place with wedges and screws driven through sliding holes. During seasonal changes in temperature and humidity, the screws will slide back and forth in the holes, allowing the wood to expand and contract freely. As a final flourish, Elger installed three recessed panels with diamond-shaped maple inlays between the tabletop and windowsill. —Don D'Arcy



efficient use of space, similar built-in booths for the home kitchen soon began appearing in architectural pattern books of the era, notes Zelle.

When his daughter the Kitzperle's compact booth, she faced several challenges: to maintain the house's Arts and Crafts flavor and to create a functional space for a family of three.

Her solution was to design long benches of the same red-tinted Brazilian cherry, or jatoba, that appears elsewhere in the house. Then she specified maple butcher block to run along the tops of the benches, the windowsills, and the tabletop, which she considered because a base would have warped too much in time. "I chose butcher block as a reaction to the rest of the kitchen, which has counter tops in that material," Zelle explains. The choice had a practical side that pleased the wife. "I love butcher block because it can take heat and spills. It's a great surface for drinks, serving dishes, and jointed plates," she says.

To create maximum comfort, woodworker Charles Ring of Chester's Curious Woodworks in Lucy's living, tilted the front of each seat up slightly and rotated each back a bit. "Charles brought over a plywood mock-up of a bench and kept changing the angles until we said what felt right," says the wife (see "Reserve This Booth," this page).

The booth also has some hidden assets: The two columns behind the backs of the benches conceal storage (for space behind the seat wasn't open for foot rest). What appears to be decorative box panels on the lower half slide out to reveal drawers, similar panels on the upper halves pull open to reveal doors. "You wouldn't believe what we fit in those drawers and cabinets," she wife says, mentioning a list of items as disparate as cookbooks and flashlights. "We gave one drawer to our son," she continues. "It holds a whole year's worth of his school papers."

The Kitzperle's snug breakfast nook seats the family in a T. When all three eat here, the dad pulls a chair up to the end of the table. The family has found that an otherwise scale offers another advantage—it encourages conversation. Says the wife: "It's a great place to talk." ■



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Common Ground

What you need to know about easements that give others use of your property

Larry Laker's troubles began three years ago when he bought his dream house in Glyndon, Maryland, 20 miles north of Baltimore. While there were any number of reasons to purchase the four-bedroom Colonial on 15 acres, it was an ability to use the most-strewned Laker. His real estate agent told him about an existing property use agreement—known as an easement—that let the state maintain a 11-acre stand of century-old dogwoods, maples, and oaks separating Laker's lawn from his neighbor's. "We were thrilled when they said we couldn't touch them," Laker says. "That meant no one else could either."

The 49-year-old CFRA employee donated considerably, though, a few months after he moved in, when

a truck arrived carrying about 210 saplings to be planted next to the existing stand of trees, creating for that area his lawn area. That's when Laker found out that the state's right to his property went well beyond just the existing trees. It also included an additional 30 percent of his lot. "The easement comes to within 35 feet of my house," Laker says.

Since then, Laker has spent thousands of dollars and countless hours in legal wrangling trying to make an acre of his lot, with no success. Meanwhile, as the trees and saplings and the lawn area diminish, the value of his house has dipped by at least 10 percent. "If only I'd known," Laker laments, "I would never have bought the house."

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BUYER BEWARE

The conservative movement plugging Laches is just one of many kinds of easements that homeowners have to worry about. Simply put, an easement grants someone besides the property owner the right to use or pass over a specified part of the land for a particular purpose.

Many residential properties in the United States have utility easements that were put in place decades ago. These typically run along property lines or encroach on lots by a few yards and are reserved for gas, electric, and telephone companies to install and maintain their cables, pipes, and poles. In some cases, they can mean Equinox runs by repair trucks and crews.

Even more intrusive can be easements for water supply, storm drainage, and sewer maintenance, because these sometimes can snipe through a yard. If a sewer pipe breaks, for instance, an owner backed up or even a driveway may be torn up to repair it. And perhaps the most potentially annoying easements are those that give a neighbor the right to use part of an adjacent property because his driveway crosses a—frequent occurrence on irregularly shaped properties and that too (which are separated from roads by surrounding lots).

Most utility and conservation easements exist in perpetuity and



are transferred from property owner to property owner. Other easements, such as a neighbor's access to a strip of your backyard to get to his own, may have a limited life and may be terminated or renegotiated at any time, he or she. Either way, experts say, home buyers should find out everything they can about easements on a property before agreeing to purchase it—or risk a raft of headaches (see "Cauterizing Ticks," page 32). If a homeowner unknowingly builds on, blocks access to, or improperly uses land on which an easement exists—however innocently—the risk can be costly fines and having to undo property improvements to the property. "We've seen one after one where long an easement problem after the fact is expensive or even impossible," says Alan Harnad, vice president of the Appraisal Institute, a trade group in Chicago.

UNCOVERING EASEMENTS

Buying homeowners' title insurance while negotiating the purchase of a house is a good first step in tracking down easement information and protecting yourself against future easement problems. This is what's sold as a "package deal" with lender's title insurance, which most major companies require home buyers to purchase in order to secure

a loan. On a \$200,000 house, for instance, lender's insurance alone might cost \$400, homeowner's title insurance about \$1,000, or a combined policy, \$1,850 (all amounts listed). The lender's title insurance covers the bank for the amount of the mortgage, while homeowner's title insurance protects the owner for the full value of a property.

Included in the fee is the insurer's title report, which carefully reviews the property deed to make sure it is in its original state and to change hands—and it will find out any easements attached to it. More easements come to light this way, but such homeowners' title insurance, if a problem exists, is overlaid during the title search and surfaces later, the homeowner can be allocated for the amount that the property is devalued. (Each state's rules will vary, however, over the ease of any work done that might need to be undone.)

If the title search indicates that easements are attached to the deed, the next step is to get a copy of the actual easement documents. The title insurance company may be able to provide them, for a fee, or they can be obtained from the local register or recorder of deeds for call town hall or county courthouse for the name of the municipal office that holds these documents.

Any time an easement on the title report raises concerns or is confusing, you may want to consult a real-estate attorney to clarify the language. One example of a "red flag" easement would be a shared driveway agreement with no easement problem. Depending

on the nature of your concern, you may then need to hire an appraiser or surveyor for order boundary questions, for instance, or a civil engineer for access a problem utility easement, or an environmental specialist for a conservation area or geological rights are at issue. Under poor conditions, these professionals can clearly explain public plot maps and geological surveys to find out more information.

But a title insurance report doesn't always live or answer every question, cautions Ellen Carofsky, general counsel for the New York History and Landmarks Foundation. In Wake, Texas, for instance, one of a lot owner brother Duane Wilson's claims had a check when the was about to further home up for sale. "It had a highway easement on it that the bank's knows about," Wilson says. The Texas Transportation Department had records of the easement, but nobody did. "We didn't discover it until they got makes at his yard," says Wilson. "And the found out they plan to use it to run a two-lane road into a backlot road."

In some states, and particularly in rural areas, the title report doesn't have to indicate underground sewers or storm drain systems, highway easements, or geological rights. "You may need to have a geological engineer with such easements as a separate search for that information," says Carofsky.

LEAVE NOTHING TO CHANCE

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FINANCES

ers and that the deed draws up by a court-appointed appraiser about the terms of the easement, a list of adverse that requires the easement frequently update. A drafted drawing, for instance, should clearly specify an easement, who maintains it, and to what degree and how it can be used. This is a useful addition, as the future of the site might be upped the original easement agreement to the house to increase the easement about parking below your kitchen window. "If the easement is specific enough and obviously being shared, the easement may be able to use the neighbor," says real estate attorney James V. Meyer Jr., who practices in Ohio and Kentucky.

As with buying a house or having trouble with an easement, the best course for anyone negotiating or drafting an easement just "Clearly begin at home," says SJA as to have an appropriate expert to manage easement issues. That was Anthony Carap's approach when he sold an access easement to his neighbor for \$10,000 in 1995. Next door to his home at the end of a cul-de-sac in Knoxville, Tennessee, was the very

deep backside of a house that fronted on a neighboring street. The owner wanted to go to the back of the property by cutting across a corner of Carap's front yard. Access to this portion of his property didn't seem unreasonable to Carap, but he worried that his neighbor, or someone who owned the house later on, might build a new house on the back of the lot. "They said they just wanted an easier way to do yard work, but I didn't want to close house one day and see a foundation being poured," he says.

Carap paid an appraiser \$500 to estimate what the easement was worth to his neighbor, as well as the loss of value to his own property. The appraiser also provided the lawyer with the language to use in writing the easement, which included specifying the size of the access and its purpose. Because Carap handled this so conscientiously, when he put his house up for sale months later, the easement wasn't an issue. "I did I'd been a good neighbor, but I'd also protected my investment and the value of the property for future owners," says Carap. "And the \$10,000 wasn't bad either." ■

CAUTIONARY TALES

As the following homeowners' caution tales, not looking out the facts about any easements on your property can cost you.

• An easement may go back to 1926, and the homeowner will think, "Well, the deed company hasn't utilized under this house yet, so I'll take a chance," says Ellen Giveller of the Birmingham History and Landmarks Foundation. "That's just what they're doing, taking a chance." Her case is solid. After years of inactivity, a road company recently decided to widen its easement under a Pennsylvania farmhouse—one listed on the National Register of Historic Places.

• Landscaping or otherwise working with an easement area is risky, says real estate lawyer James V. Meyer. "I know of cases where trees have been cut and fences had to be pulled down during utility repairs, gardens were destroyed, and gas leaked. All at the owner's expense."

• One Pennsylvanian, Randy Don Dough Larson, president of a civil engineering and land surveying firm, worked with what was listed \$800,000 by Baltimore County—four times what their house was worth—for inadvertently building an underground pool house fast into a federal conservation easement. The lines were dropped, Larson says, but it cost the family several thousand dollars in surveying and litigation fees. "And they still had to move their pool."

• Another home owner had an idea he'd built a fence on an old easement. "That would be smart," says Steve Wilson, a real estate broker in Waco, Texas. "They'd be on the fence had a fence on the easement. The plot was never built. Still, he had to remove the fence in order for the buyer to get title insurance."

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Once started, leaves can serve as the fuel for their own composting heat. Powered by a 6-horsepower gas engine, the LeafCycler vacuums leaves on a blower and in a vacuum with a rotating blade that reduces leaves' volume 9 to 1; a chopper tube accepts tree and lawn trimmings up to 2½ inches in diameter.



As fall's brilliant canopy fades to brown, a thickening layer of leaves blankets the yard, signaling that there's work to be done. "Leaf cleanup can be a formidable task," says Tim Old House landscaping contractor Roger Cooke. "But if you don't do it, you may smother your trees."

Clearing leaves is easier when approached methodically. The first goal is to get all the leaves in the open, where they can be swept or blown onto a large tarp and dragged to a single location, he says. Cooke had an compost container (see "Building a Leaf Composting Bin," page 58), or begged for curbside pickup. "It's not necessary to gather every last leaf," says Cooke, if a few remain, they'll break down, and enrich the soil. "Just concentrate on gathering the masses that will keep needed air from getting to your lawn," he says.

He begins by clearing the leaves around the perimeter of the yard, and those tangled under shrubs and in beds. A combination of large and small nozzles works well for this task. A blower is faster—sifts leaves. "Manufacturers are trying to address the noise problem," says Cooke, who dons ear and eye protection when using a blower. "And there really is no more efficient tool for the job." He advises against making over long distances or using small vacuums, whose bags must be emptied often.

"The trick is to spend the least amount of energy moving the leaves around."

To collect leaves for disposal, Cooke typically sucks them up with a large, 16-horsepower vacuum that also grinds them, then he dumps the slush into a truck. Homeowners can buy or rent a smaller wheeled vacuum to do the same—or find an out-of-the-way place to pile the gathered leaves and prepare compost for next spring's beds.

BY SLAYTON DEKORRE

REPORTED BY JORDAN REED PHOTOGRAPHS BY DAVID PRINCE



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TALKING SHOP

"The trick to making quick work of leaf-clearing is to spend the least amount of energy moving everything around."

—GARY KERR

Slipped over the handle and smacking palms, these Garden leaf blowers enter the lists of pickup. The solid plastic permits scoops and pile needles from falling through the scoops, while the steel fins at the ends will send these leaf blowers out of a lawn. Making the leaves in heavy-duty paper bags is more environmentally friendly than using plastic and is often required by municipalities that offer curbside pickup.

Clearing water-fuge ponds adds for a gas-powered backpack blower, such as the 22-ounce Husqvarna 100E, which is capable of moving nearly 400 cubic feet of air at a speed of about 160 miles per hour. With its engine throttle mounted on the tube, the machine can be controlled with one hand.

The best gauge of power in any leaf blower is not the size of the motor but the amount of air it puts out. The handheld Toro Ultra Blower Model 275 outputs 260 cubic feet per minute at 220 miles per hour. In contrast, the lightweight electric machine vacuums and blows leaves into a 10-gallon bag, reducing their volume 18 to 1.

When choosing a leaf rake, finger back looks for a large fan head with lightweight plastic ribs, which stay less than flexible steel and flexible bamboo ribs. The Ames EdgeControl leaf rake has sturdy polypropylene ribs on a 24-inch-wide fan. Clearing leaves from beneath shrubs and out of planting beds requires the non-reversing head of a sturdy rake. The 24-inch-long, double steel ribs made of multiple rivets were on Garden's double-rib rake with rivets they are more and longer and even radiating leaves.



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TALKING SHOP

Building a Leaf Composting Bin

When the foliage adorning deciduous trees becomes a nuisance, a length of wire-mesh fencing can harbor fallen leaves and turn them into compost. Over a period of a year and a half, billions of munching microorganisms will reduce countless bushels of leaves to a nutrient-rich batch of dark, crumbly leaf mold—a soil amendment that's without equal in the home garden. On a very large lot or on a lot with attached woodland, it might be feasible to amass one big pile of leaves and just let nature take its course. But where orderliness or limited space dictate otherwise, dedicating a bin to leaf composting is a nester way to go. —*Kip Anderson*



To build a leaf nest, Kip Anderson, the gardener for PBS's *The Victory Garden*, uses 6-foot-tall vinyl-coated wire fencing with 2-by-2-inch mesh. Using wire cutters, he cuts a section 12 feet long to make a cylinder 9 feet high and 4 feet in diameter.



Kip cuts the fencing so that he saves the horizontal wires just before they meet a vertical. He rolls the mesh into a cylinder, then heeds each horizontal wire around the first vertical wire on the opening and to close and finish the circle.

There is no need to anchor the leaf bin to the ground, because it will be nearly impossible to dislodge once a couple of bushels of leaves are in place. Kip fills the bin to the brim, leaving 10 off-peak whenever the curbside pickup. By the time the plants take leave a year and a half later, the mix is ready to nourish the garden.



PHOTOS: GARDENING



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With a Little Help From Their Friends

Step by step, a Michigan family rescued and restored an old farmhouse.

In 1977, a 44-year-old couple, Janice and John Smith, moved to Janice's parents' home in Ann Arbor, Mich., and took over the house. The house was in poor condition, with a leaking roof, a broken furnace, and a bad plumbing system. The Smiths began a project to restore the house, and in 1980, they moved in.

BY LOU HARRY

Y

ou could say it was a miracle that got the restoration rolling. When Margie and John Smith bought their new home in Ann Arbor, Michigan, back in 1971, the previous owner gave them an old photograph. The picture showed Wilbur Mullins, a farmer and bricklayer, standing with his family in front of a horse-drawn wagon and the farmhouse, built in 1897. The Smiths realized the house could almost have been one they themselves might have stepped when they made an offer on the place. The difference was that, instead of a horse and wagon, their family would have been posed by their camera. In the year or so they had elapsed between the photos, a surprisingly little had changed. Besides a 1930s addition containing a one-story wing with a kitchen and a mudroom, the original 19th-century structure was intact and in good condition. "It had been well cared for," says John. "There was no water damage and, aside from being painted, the original wood had not been altered in any way."



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During an early phase of the renovation (1995), the Smallfolds added a second story over the kitchen and mudroom. Later, they built the garage and family room addition (over one) (1996), which steps down from the slope and divides

Third and worst, the interior and exterior needed a coat of paint, for sure. But, as the architect reinforced for the Smallfolds, the bigger problem with the 1,500-square-foot house was its lack of space. Marge and John, with two young children, found that most of the century-old rooms were too small to accommodate their growing, studious family. The three bedrooms in the original two-story structure, for instance, were severely cramped—one measured only 8 by 10 feet—and the one full bath was located downstairs off the kitchen. The living room and two porches were nice, but it was exactly the sort of challenge the Smallfolds had a mind. "We were looking for an old house that had potential, for both restoration and expansion," says John.

The search for their Michigan dream house had actually begun years before in California. In 1985, after living in La Jolla, where the couple met and where Marge had been an art director for R. F. Hanna Ltd. and John taught music, worked as a house painter, and played guitar in clubs, the Smallfolds decided to return to the Midwest. As the new parents of a son, Christopher, they wanted to be closer to their families, here in Chicago and his in Pittsburgh. The couple chose Grand Rapids, Michigan, because it was "safe-house." All they could afford at the time of the initial move, however, was a modest ranch, not the old house they'd envisioned living in. Then, as John and Marge tested their building skills by converting the ranch two-car garage into a family room with studio and bathroom. While the project helped bolster their confidence, it failed to earn them that particular house was their dream home. They waited seven years for the right place to come along.

As soon as they saw the 1887 farmhouse, the family—which now included unborn daughter



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THE SISTINE SILO



The most recent renovation at the 3,000-sq-ft property is what John calls "the site project." A recent, concrete-block structure (12 feet in planimeter and 6½ feet high) has been attached to the barn. It originally stored grain. But its owner, space biologist John, from the time they bought the place, turning it into a place to growing "was motivated by the same logic [that] as a kid he built a fort in his basement," he says. "The one is different, rather than useful it was, but now it's fun—and that is what we want."

As gully access to the site, he put a dirt and gravel driveway in the concrete block, using a circular saw with a 12-inch diamond-tipped blade. He also added a small garage. For the first he used treated 2-by-4s and Simpson and Simpson-made gable block joined by the plank outside; the planks he also drove the site's bottom-grade concrete floor on 2-by-4s and 4x4 posts. "We cut attached to the wall of it," he points out. "It's breathtaking, like an attic, but fit in the exact size."

At first, there is a... the potential they were looking for (let us guess) lay in a neighborhood of small farms about 20 miles from Grand Rapids, the 4-acre property also included a barn with a silo, in good condition. When the Stansfield first saw it, they knew they couldn't build the place all at once because of bankruptcy constraints. So, they, who against a backdrop of bareness from house and job, who returned to work much and now even got two health diets, had enough cash per mile to take on simple projects themselves that would make the house—but mainly the second—home more livable. On the inside they replaced old floor coverings and carpeted, painted, and well prepared. On the outside, they scraped and then painted the shagbark pole, the shagbark pole, and the new shingles. And they... During the first phase, they also built a small pool, too over a side door on the east side of the house, off the circular driveway, which became the unofficial main entry. "Friends and neighbors complained in right ways, even though all we'd really done was cosmetic," says Moore.

With the help of carpenter's work crew, Jude's jack-a-lot 10-week carpentry course through the local lumber builders' association in order to get licensed and make the first phase of their master plan: adding a second story over the kitchen/dining room wing. This floor would contain a 14 by 15-foot master bedroom and an adjoining 16-by-13-foot on-suite master en suite office the Margie, screened by a new black-bamboo wall. By 1998, Jude had become a licensed carpenter. "I could have done everything without the license," he says. "But I learned a lot about local codes—enough to suffice the building inspectors and handle him [my boss] about the project." To finance the acquisition, the couple borrowed about \$15,000 from the bank.

To avoid an architect's fee, they used graph paper, spread across 3-by-3-foot oak table John had built for the dining room, to sketch their plan. Timmerling has nearly 40 years' skills as a carpenter, he says. "I'd do the scale drawings, and then take them to my lumberyard and tell them, 'This is what I want to do.' " The lumberyard then discussed how much—and what dimension—lumber and supplies he would require. "I figured I earned about as if I hired a builder, even though charged to do this for free," he says.

While Jelen acted as his own general contractor, he called in the help of Al Jagg, a fellow licensed carpenter/builder, when jobs like framing the second-story addition proved arduous. He hired out work that required permits, such as installing utilities, he and Muege also pulled out the dirty task of drywall installation and taping.

At various points the couple also relied on friends who were willing to lend a hand. One challenge was the installation of a 4-foot-long, 2-by-4-inch edge beam (actually two laminated 2x4s bolted together) that would cap the second-story rail. "The beams lay in the yard for days and Al kept scratching his head, saying, 'We'll figure out a way,'" says Jolie. "Finally, when Al and I discussed in the public realm, he asked, 'If we do a compromise, do you have any friends? Any parents?'" Yes—and yes, Jolie answered. In the end, she, with her leaders positioned on the roof and on the ground, the group used the pulleys Jolie had joined in the here to raise the two beams up, one at a time, through a window opening in one of the framed-in ebbled areas.



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When the couple bought the house in 1974, the front door was recessed through a bay window on porch. They removed this in 1980 in favor of a new, expanded open porch (see cut), which John finished in 1981. With wooden railings, turned posts, and new flower boxes, the Victorian look is no longer with the spirit of the house.

So, then, slowly, they lowered them into trenches John and Jane had already cut into the gables. Once the beams were locked in place, the gang joined them together with "about a hundred 16-penny nails," John says. Afterward, John shingled the roof, and he and Margie put up shiding. The carpenter installed the windows, doors, and trim, and painted the exterior and interior.

Four years passed before the family felt ready to move on to their next phase, which involved putting out a small glassed-in front porch on the front (north side) of the house. They employed a local mason, extended open porch. John noted a two-person sign to dig the footings, which he and Margie then set. After framing up the porch and roofing it himself, John enlisted Margie to help construct the masonry and lay the floor. By this time, 1988, the kids, too, were old enough to get in on the act. "They did a bit of painting with us," he says.

Finally, last year, the couple returned to their graph-paper technique to figure out how to add an expensive, 14-by-32-foot family room with a cathedral ceiling, behind the new two-story kitchen wing. They wanted to give the new room a pitched roof with a gable end, to echo the lines of the existing structure. As they sketched out possible designs, they realized the only way to do that without bumping into the existing windows was to drop the family room below the floor level of the adjacent kitchen.

On paper, they figured out the depth they required—27 inches—they transferred with carbon-lined carpenter's pencils, Charles Souther, to see how they would build the addition to meet local codes. They learned they needed to build the foundation 44 inches below grade, meeting a new wall. They also had to meet code requirements



that mandated a 4-foot high crawl space beneath the floor.

With this information in hand, John set to work on the construction of the room in the same way he had the second-story addition—solving out when permits required it, calling in Souther and friends for jobs where two or more pairs of hands were needed, and finishing all the work alone with Margie and the kids. For the final project, the couple borrowed another \$20,000 from the bank.

Today, the historical 3,900-square-foot original structure has grown into a comfortable 3,000-square-foot house filled with character—including paintings that Margie produced in her studio. Recently, John tackled the job (see "The Same Site," page 64). A future project may include a remodel of the 1930s-style kitchen with a granite wood-cabinet cabinets. "We'd like something in keeping with the style of the house—Victorian cabinets with painted glass doors, period fixtures, and a tile floor," he says. The house, adds John, is a work in progress. "It was a 'finished' condition at best four decades ago," he says. "But that's the way we work on old houses. There's always something you want to make with." ■

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As the last line of defense against weather, any material that goes on a roof has to be tough, but only asphalt shingles combine durability with reasonable cost and wide availability. Introduced in the late 1850s, they soared in popularity during the 1930s as an inexpensive alternative to slate, wood, tile, and metal. Now, nearly a century after their invention, almost 90 percent of American homes are topped with these thin slabs of asphalt. They're easy to install; they suit any roof with enough slope (4 inches of rise for every foot of run), and, with a wide variety of styles and colors, they are available at any home center or hardware center in the country. And at \$20 to \$30 a square (140 square feet), a price that hasn't budged since the 1970s, there's nothing cheaper to buy at scale. "The value for the dollar is hard to beat," says Tom.

Continuous assembly-line manufacturing is one reason these shingles are so affordable. State-of-the-art mills in the United States produce 12.9 billion square feet of shingles each year, enough to

Durability, combined with reasonable cost and wide availability, has made asphalt shingles the most popular roof covering in the country, covering nearly 90 percent of American homes.

BY TED GOODMAN PHOTOGRAPH BY BEN STECHSCHULTE

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cover more than 5 million homes. To create an asphalt shingle, long rolls of reinforcing mat, made either of fiberglass or felt, are unspooled and pulled through a series of machines that cover the mat in asphalt and coat it with ceramic granules. Asphalt, the sticky black liquid that's left when crude oil is refined, is the waterproofing and bonding agent; when combined with the right mix of rock dust in sand filler and spread onto the mat, it hardens into a pliable, rubberlike material. The painted ceramic granules, which are dropped onto the top of the shingle before the asphalt hardens, determine a shingle's look and protect it against the sun's UV rays.

Reinforcing mats are the main source of a shingle's strength, serving as a rigid foundation in which the asphalt and the granules bond. The felt, or organic, types, which have been in production since asphalt shingles were invented, are made from a mix of ground wood pulp and recycled paper. Fiberglass is saturated with asphalt for an extra layer of moisture protection. They don't last as easily as fiberglass mat shingles and are more flexible in colder temperatures, making them the preferred choice in the northern U.S. and Canada. But according to Tom Bellone, of the National Roofing Contractors Association's technical services, some basic organic-mat shingles have a limited life span—about 20 years, of that long. "Felt mats don't breathe as their rivals," he says. "Also, they curl and dry out quicker than fiberglass shingles."

Fiberglass mat shingles, developed during the petroleum shortages of the 1970s, are nonwoven glass fibers bonded together with a resin adhesive. Because fiberglass is naturally waterproof, there is no need to saturate the mat with asphalt to work life. As a result, fiberglass shingles have approximately 25 percent less asphalt than the felt types, which makes them generally lighter, less expensive to ship, and easier on the

At the Canton (left) roof, my plant in Houston, Basic's green ceramic granules are added (right) and dropped onto shingles covered in hot asphalt. The shingles are then hung in trays to cool off (bottom) before being cut.

roofers' back. Plus, because fiberglass is fireproof, these shingles earn Class A fire ratings instead of the lower Class C rating normally given to organic-mat types. The trade-off is that fiberglass types are not as strong (because of their weight) as their organic cousins, and they don't easily expand and contract with extreme

changes in temperature. Nevertheless, shingle manufacturers have been able to give the lightweight materials in their fiberglass products 30 years for a basic home tab shingle and up to 40 or 50 years for heavy-duty shingles with extra layers of fiberglass and asphalt. "I have a 34-year organic shingle on my roof right now and I'm happy with it," says Bellone. "If I were building a house today, though, I'd probably use a fiberglass shingle because of the current performance ratings."

No matter what type of shingle you choose, a well-

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spires. An upgrade to about 237 lbs. a 30-year slope-resistant shingle with a fiberglass mat (B), while a premium, 40-year laminated shingle with fiberglass mat—effective known as an architectural shingle because of its wavy or undulating or stone-modified surface for about \$35 an sq ft (\$70 a square (D, E)). A product that is laminated has an extra mat stuck to one side to make it more durable. Another distinctive shingle look is the "3-tab" type (G), which relies on underlayment to be protected against wind uplift.

erty is no sure protection against premature shingle failure, as many homeowners discovered in the late 1980s. At that time, newly steeply pitched roofs began experiencing with asphalt materials, and roofers began to report widespread problems with cracking and splitting so as few as five to seven years after installation. Owners began to collect on their warranties, but the cost of labor, nails, flashing, underlayment, or any other part of a roof installation—items that can easily account for over half the price of the job—were not covered. Plus, the costs are growing: If a 30-year roof system wears out in 18 years, for instance, the manufacturer will pay for only half of what the shingles originally cost.

While asphalt shingle warranties are still presented and limited to what they cover, roofers' qualifications and a host of class-action lawsuits that followed in the wake of these failures prompted manufacturers to dramatically improve shingle quality. The classic sign of this is the new American Society for Testing and Materials (ASTM) standard D-3462, established in 1993 and revised in recently in last year. The standard specifies how well a fiberglass shingle should perform when subjected to a battery of tests measuring tear strength, pliability, hot and cold weather resistance, and how hard it is to pull a nail head through. To pass, a shingle has to have a strong mat and an asphalt formula that won't soften

too much in the heat, get too brittle in the cold, or lose its water resistance with age. Manufacturers do their own testing, then shingles that pass the testing standards can be labeled on the wrapper as "Compliance with ASTM D-3462." Some shingle makers go a step further and have their own independently audited by Underwriters Laboratories. They can then print UL's familiar "UL" in a circle logo on the wrapper next to the D-3462 label. "Compliance with D-3462 is the principal indicator of shingle quality," says Tom Sullivan. "It means that the shingle is more likely to perform properly."

While he's careful to use shingles that meet the ASTM standard, Tom Silva says the best assurance for a new roof is to have the shingles installed by a professional. "Don't simply take the lowest bid for a roofing job," he says. Instead, check to see whether the roofer belongs to an association like the National Roofing Contractors Association, which lists all its members on its Web site, www.nrca.org. If a company also participates in a manufacturer's certification program, then you know its crew has been trained with the best installation techniques for the product they're putting on your roof. "You can pick the best shingle out there, but if the nailing is wrong or the underlayment and the flashing have been installed incorrectly, it won't look good and it won't last," Tom says. "A roofing product is only as good as the roofer who puts it on." ■



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STEP 3. COPE THE INSIDE CORNER

- Coping is the process of cutting the end of a molding to follow the profile nested into its face. Coped cuts are used where one piece of crown molding meets another at an inside corner.
- Place a length of crown molding down on the roller saw so that the molding's bottom edge—the edge that will sit on the wall—rests against the block, and the top edge—like one that goes on the ceiling—rests against the blade.
- Set the saw to 45 degrees—making the saw left for a left-side-coped corner, and vice versa. When you make your cut, the top point of the miter should be on the back of the molding, not on the face (see cut).
- Mark the edge on the face of the molding with a pencil (see it); this will serve as your coping-saw cut line.
- To fit the molding snugly against the inside piece, hold



a coping saw at the 5-degree angle away from the face of the molding and carefully cut along the marked edge (see saw). Check for a tight fit by bringing the molding to the wall and sliding it into place (see illustration). If the copied edge doesn't exactly match the profile of the inside piece, use a wood rasp or utility knife to pare away excess wood.

- Before attaching the piece to the wall, determine if it's inside or outside corner. If it's inside or outside corner, proceed to Step 4. If it ends at an inside corner, measure along the wall from the top edge of the first piece you installed (Step 3) to the corner. Transfer that measurement to the copied molding by hooking the end of your measuring tape on its top edge. Mark the length to the inside corner. Using the miter saw, make a square cut on that mark and cut the molding up as in Step 2.

STEP 5. CUTTING AND FASTENING A RETURN

- Continue working around the room, coping inside corners and mitering outside corners.
- If the ceiling height of a room changes for any reason and the molding must end in the middle of a wall, cap it with a return. First, make an outside miter cut, as in Step 4, at the point where the ceiling height changes. Then, take a long piece of molding of least a foot long and cut an outside miter on its end. To make the wedge-shaped cap, set the saw to 90 degrees and set the stop piece so that its back side lies flat on the new table, cutting the piece so that it comes to a point at the bottom edge (see illustration). Avoid splitting the small piece by gluing the return in place rather than nailing it (see it). If the return piece is too long, start over.
- Once all molding has been installed, fill nail holes with wood putty and dry glue between the crown and the wall and coping with acrylic caulk.



BETTER BACKING

To provide an additional nailing surface between studs and joists, or in walls where the joist runs parallel to the crown molding rather than perpendicular to it, two 1/2-inch boards (selecting made from 2- or 3-foot lengths of 2x4 lumber, ripped on a table saw at the same angle that the crown runs from wall to ceiling). Apply construction adhesive to the back of the block, then nail or screw it through the drywall into the top plate with 8d finish nails or 2x or 3-inch screws. When the blocking is placed on the wall, there should be a gap of about 1/8 inch between the back of the molding and the face of the block.



PLANNING AHEAD

To determine how much molding to buy, measure each wall, round up to the next foot, and mark those measurements on a plan-view sketch of the room you're working in (see illustration, next). If one wall measures within a few inches of the length of a full piece of crown, buy the remainder length. Mark the second end of the site, transfer the back of each piece with a pencil to correspond with the numbers indicated on your plan-view drawing.

The first piece installed will be square-cut on each end. Each subsequent piece will typically have one end that's square-cut and one end that's mitered or coped. In some cases, the end opposite the cope will have to be mitered to help make an outside corner. When a length of molding is equal to one end, cut the coped and first. Once the repeat end is mitered, mark out the opposite end, whether it's a miter or a square cut.



Inside Corner

Plan view



Installing a return



HOW TO INSTALL A RETURN
Molding a room

LETTER FROM THIS OLD HOUSE

Fuel for Thought

BY RICHARD TRETHEWEY

Long before last spring's dizzy spike in fuel prices brought everyone's attention to our country's energy use, I was preaching conservation to clients, friends, and the TOH audience. In the face of rolling blackouts and harsh seasonal temperature swings, oil shortages that cranked the price of a barrel to jump from \$5.50 in 1996 to \$26 this past June, and gas prices that steadily tripled in the same period, Americans started worrying about how to use energy wisely. Here's at least part of the solution: Homeowners can conserve natural resources by getting new and better heating and cooling systems. They'll not only help to ease the environment, they'll save money, even if oil and gas prices subside.

Today's heating systems are about 90 percent efficient at burning fuel. They extract and output heat from one-tenth of the energy they consume. A unit from a generation ago, on the other hand, typically performs at around 60 percent efficiency. With a better furnace, a homeowner could save as his fuel bill by 20 to 25 percent; in cold climates, increase with an average unit house could pay for a new system in as little as three years, given recent fuel costs. I don't know about you, but I can't think of any legal investments outside that give a 25 percent return.

So why aren't more homeowners topping out their old chackies and replacing them with sleek new machines? Because it's just not easy. It seems much more important to remodel an out-of-date kitchen or replace ugly wallpaper than to pour thousands of dollars into something that's hidden from view.

Of course, when the goal is to conserve fuel, it's crucial to do a careful assessment of all the parts of a home that affect energy efficiency. In this issue, you can read about the term run on Steve Thomson's 1836 house to see how well it held the warmth line. "Keeping in the Heat," page 130. Many owners of older homes try to reduce their fuel bills by pouring in lots of insulation and installing new, high-tech windows and doors. And while all of that helps, I guarantee you that most of them are ignoring the one thing that is older and more wasteful than it should be: the central heating and cooling plant. Some people keep their gas-burning boilers running for 30, 40, even 50 years at this point, it might be time to trade up.

So, as the first blizzards of the year come spitting out of the best vents and you await that big October fuel delivery, I urge you to start thinking about replacing your spitters. For a country that has 5 percent of the world's population but uses a quarter of its energy, it's the most responsible—and frugal—thing to do.



TOH plumbing and heating columnist Rick Trethewey has ideas for how Americans can save both energy and money.

PHOTOGRAPH BY KOLIN SMITH

YOU'RE PROBABLY A LITTLE LESS AMBITIOUS.

Whether you are a do-it-yourselfer, a professional woodworker or somewhere in between, you have a world full of projects in the home or in the shop that will be easier and more enjoyable to complete when you use quality clamps, bench vices and miller bores/lows from the Adjustable Clamp Company. Look for them under the Jorgensen, Adjustable and Pony brand names wherever fine tools are sold.



Tom Edin uses a saw to cut into the bath on the wall between the old dining room and living room. The partition has to go to make room for the new kitchen. *clockwise*: A member of demolition contractor Bob Capaldi's crew tears off one of the eight E. Van Dusen's wanted to haul off the debris.



Check out
www.theoldhouse.org
for real-time images of
the work in progress at the
Manchester project.

the walls come tumbling down

The demolition crew prys the stone's ancient house forcibly down.



Demolition contractor Bob Capaldi hefts a big plastic trash can off his shoulder and empties its crumbly contents into a 30-gal. 10-yard Dumpster. The deposit sends up a plume of fine white dust from the 22-lb. brick, which he, almost filled with a jigsaw-toothed jumble of bits, plaster and broken wood excavated from the *The Old House* TV project home in Manchester, Massachusetts. "This is the eighth load so far—forty tons in all," he says. "Hopefully, it's the last."

A major renovation is under way at the house, the third since it was built in 1880. The first one, at the turn of the 20th century, added rooms, porches, and elaborate Colonial Revival trim to what had been a Shingle Style structure; the second, in 1970, demolished one wing and stripped off most of the architectural details. Now, after months of work with architect Stephen Holt, homeowners David and Janet



Before Tom takes the demolition crew into the walls, he removes any fixtures and anything worth saving. In the old master's pantry, Tom and T.O.H. master carpenter Steve Adams are prying him to carefully dismantle an antique marble counter with a copper sink, which they hope to reuse somewhere else in the house. (Left) Tom gently pushes away the second floor ceiling so that he can replace it when he has finished constructing the new walls. The 19th-century moldings have survived two previous renovations.

McCan has plans that will restore the house to its former grandeur. But before the McCans' rolled blueprint dreams can be turned into a wood-and-plaster reality, T.O.H.'s general contractor Tom Silva and his crew will have to remove, relocate, or rebuild many of the walls, replace all the windows and most of the doors, strip shingles from the exterior walls and roof, take the asbestos out of the ceiling, and replace the boiler and hot water tank. And while they're at it, they'll fix a host of structural problems—sloping floors, some rotting beams and sills, and joists riddled with the borings of glaucous red-eaters. "People have been putting Good Jobs on this place for a long time," says Tom. "It's time for some massive surgery."

Although it sounds like a real gut job, Tom emphasizes that a lot of the house is being saved. "The study will keep its beautiful corner roof-ceiling moldings," he says. "And we're barely going to touch the guest bedroom." Not to mention the fireplace, the chimney, the exterior walls, the roof framing, and the many remaining archaic rural details, such as the Colloquial Revival

chimney house in the master bedroom. In the end, he says, the renovations should cost just half of what it would take to build the same house from scratch.

Once Holt's design was finished, Tom brought in Glasgow and

DEMOLITION BASICS

"It's like basic physics: it's not a matter of just a room," says Tom Silva. "But if there's no smoke, then, and you need to get some plumbing for a new bathroom, add a few bedrooms there, and replace the windows, then really isn't any reason not to strip it. Sometimes it's like taking a house back to the original—light wire and make glass look and a wall. Then it's to start fresh."

For the homeowner with the urge to tear into walls, finding them out early is a wise prelude. Tom says that gables, a hard hat, and long pants are a must, and gloves and a respirator are important, too. "You don't want to be asking about the plaster and brick," he says. A big exhaust fan pointed out the window helps get rid of the inevitable dust clouds. "Just make sure all the other windows are closed—your house, your neighbors'—and in your ear is the chimney," adds Tom. "You just're looking to clean up your own eyes."

After flipping off the main electrical breaker and shutting down the plumbing lines, Tom is ready to handle. He advises against cutting the whole room at once. "It's better to tear up work in stages. Watch a little, shovel up what you've removed, then watch a little more. Last thing you want is to be knee-deep in mess." Finally, he says that even though your labor may be free, getting rid of the debris probably won't be. "People often forget to budget for the demolition. Unless you have a trash collector who doesn't mind hauling in extra bulky bags of construction refuse, you're going to have to pay to get rid of the stuff," he'll

PHOTOS: JAMES SCHNEIDER/LEAF; (OPPOSITE PAGE) JAMES SCHNEIDER/LEAF



Look both ways
before crossing the room.

It is unreasonable to suggest that the McCans' renovation was a simple matter of tearing down the old building and rebuilding it from scratch. The house was built in 1850, and the McCans' renovation was a complex process. The house was built in 1850, and the McCans' renovation was a complex process. The house was built in 1850, and the McCans' renovation was a complex process.



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A member of the Dec-Ten crew begins to peel the area around the asbestos-encapsulated water tank and boiler by taping up 6-mil plastic to the ceiling joists (above). With the material fully encapsulated in a wet (below), removal can begin. The enclosed, lower asbestos area under tank prevents air from getting around or outside (right).



a HEPA filter is stretched to the plastic enclosure. When asbestos work is going on, the fan sucks in air out of the enclosure, creating a "negative pressure" that prevents any air from escaping from escaping. Then the crew sets up their tables, a containment chamber separated from each other and the work area with plastic sheet doors. Each chamber serves as the staging area for a different step in the removal process.

After lunch, the four-man crew dons Tyvek suits, gloves, goggles, and respirators, then puts dust caps and every seam between gloves or hood and body to keep every asbestos off their skin. They then go into the next enclosed the boiler and spray the whole insulation with water mixed with a surfactant. "It's sort of like a soap," says Fitzmaurice. "It makes the water wash deeper into the asbestos and keeps the floating particles in a suspension." Working with dust hammers and pry bars, the men tear off the asbestos, which is sealed in plastic in a soft plastic bag, and stuff the pieces into black plastic bags. These are passed through the plastic door into the first side chamber, directly off the work area, which is known as the dirty room. Here a worker "grossensacks" (throws away) each bag, dust-traps it closed, puts it inside another bag, and seals it the same way.

In the second chamber, the shower room, the bags are washed off the water water is fed through an asbestos-removing filter and passed to a third worker in the third chamber, the clean room—a final buffer between the contaminated room and

the atmosphere—before being carried outside. "The clean room door is the only way out," says Fitzmaurice. To every double-bagged load leaving the clean room, he attaches a label with Dec-Ten's name, the McCann, and the date and address of the removal. All three bags, about a cubic yard of them, will end up in a rubber-lined landfill at Pennsylvania, buried under a foot of soil (which then gets buried under another load, another foot of soil, and so on).

After all the large pieces of the material have been bagged, the crew will use a HEPA-filtered vacuum to suck up the remains. "The finest fibers—the ones you can't see with the naked eye—can still be harmful," says Fitzmaurice. "That's why, when we're finished, we spray all workers in the enclosed area with a polymer encapsulation, a clear coating that seals everything." Similar care is taken at the end of each day with anything and everybody in the contaminated work zone. The men

remove their suits and wash up in the shower room before putting on their street clothes. Their suits and gloves and the shoes from their stepsuits are all bagged and disposed of in the same way as the asbestos.

When the air is clean, Fitzmaurice will call for the asbestos hygienist to come back and run another test. Once it shows that the area is asbestos-free, the McCann will get a certificate that includes a copy of the original test, a copy of the analysis that was sent to the DEP and the DEWD, the disposal manifest, and a copy of the hygienist's final test.

By five o'clock, the Gagliardi Construction crew has finished for the day and were in the shade of a big white pine while Gagliardi talks to Tom Fitzmaurice's men, showered and disarmed, are looking the day's total haul onto the back of their truck, which will stay loaded until morning.

"We'll be finished by tomorrow," says Fitzmaurice, walking up to Tom and Gagliardi. "After we get a clean bill of health, you can go in and take out the boiler and water tank."

"It won't take as long to cut them apart and haul the pieces out," says Gagliardi. "But, when are you going to be ready for us to start the cleanup?"

"Could be weeks," says Tom. "I guess you're going to need some more Dewey suits for that."



Once the asbestos has been safely removed and bagged in double-bag bags, workers have sealed the bags in a plastic bag. It's left in place the day's debris outside the clean room for disposal.

PROCEED WITH CAUTION

While it is quite possible to peacefully coexist with leaded asbestos, it becomes a little less so when disturbed. Once its microscopic fibers are inhaled, they can be inhaled and trapped in the lungs, where in time they can cause cancer. That's why, before beginning any demolition or a house built prior to 1970, it's critical to proceed under the assumption that asbestos may be present in the roof and pipe insulation, as well as in vinyl flooring, ceiling wiring, ceiling tiles, wall tile and tiles, and cement pipes.

Make sure you get an expert's opinion before beginning a demolition project very safely on your own judgment as that of the general contractor to know if you have asbestos. Here is the safest way to go about, according to Kevin Brown, the asbestos coordinator of the Environmental Protection Agency:

- Contact your local county and in New York find out which federal, state, or local agency has jurisdiction in your area over asbestos abatement and which laws apply the strictest regulations will always prevail.
- Based on these official recommendations, hire a certified asbestos

inspector to gather and test samples of suspect material. Depending on the state, certified inspectors are licensed by, and can be found through, the department of environmental protection, health, labor, or licensing. A state-certified testing lab, which can usually be found through the National Voluntary Laboratories Accreditation Program at the American Industrial Hygiene Association, should also be able to recommend an accredited asbestos inspector.

• If the inspection shows that asbestos is present, contact the state state agency or the inspector for a list of certified asbestos abatement contractors.

• The abatement contractor should contact the government agency with jurisdiction to ensure that he or she follows the most stringent removal regulations, but a homeowner has the right to hire an independent asbestos inspector to take air samples any time during the abatement process. The EPA highly recommends—and some state or local laws require—that an air sample be taken upon completion of the removal and cleanup to ensure that the site is asbestos-free. —Nancy Luckman

A HOUSE GROWS IN BROOKLYN

How a once humble
home claims some
modern-day glory



When architect Larry Mufson walked through the door of the Federal-style house in Brooklyn's Cobble Hill neighborhood, he could never have guessed how many lessons it would teach him. All he knew was that he was smitten by its period charm and park-side location. Built in 1840 at one end of a narrow street that also contained several carriage houses, it may have originally housed servants employed by a wealthy homeowner nearby. The 25-foot-wide building had four levels: an English basement—a floor that was half below grade, first and second floors, and a third-floor attic. The previous owners had kept the house in their family since 1903, and at some point had converted it into two separate rental apartments. Larry wasn't thrilled

with the choppy layout, but the home's proximity to Cobble Hill Park—where his daughter, Hannah, had played since she was an infant—gave it sentimental value. And so, not long after his initial visit, he found himself signing on the dotted line.

PHOTOGRAPHS BY PAUL WHICHELSE
WRITTEN AND PRODUCED BY BONNA PAUL



The first-floor living room, once merely two bedrooms, was perfect, but period-style details and a well-regarded fireplace narrowed down to a single potential suitor. Homeowner Larry Mufson, with his daughter Hannah, enjoying his renovated Greenwich Village house.

Before: "Before" view



After: "After" view



Larry opened up the floor plan in the English basement, creating a spacious kitchen with a large eat-in breakfast nook at the rear of the house and a small utility room at the front. The hand-milled, pop-and-steel dish rack and stainless-steel sink add to the room's sense of openness.

Larry wanted he could restore the house as a single-family home and open up on layout with some strategic demolition work and placement of a few walls. But before setting pencil to graph paper, he called in Lou Fighiera, a contractor who had grown up just a few blocks away and had worked on numerous early 19th-century structures in the area.

Fighiera's suspicion began with an exploratory demolition tour around the structure. "A local stonemason on these houses were built with the terrapin or turtles, rather to cut costs or because the right materials weren't available

Over time, they really start to rot," Fighiera explains. That turned out to be the case here—like it was just the tip of the iceberg. "For the first few weeks of the project, one a day went by that Lou didn't come to see with some new problems," recalls Larry. The most serious issue was the deteriorated floor system. With every section of subfloor that he lifted, Fighiera discovered another few rotting joists. Though the main cause was water damage from a leaky roof, various stains on the floor's surface, as well as the mechanical system elements of which dated back 100 years and more, was entirely obvious, and the necessary action in the living room fireplace needed to be obvious. "Essentially," says Fighiera, not one to use words, "he structure was gone." Just 10 feet, Larry's initial assessment seemed nearly doubled. "It was every homeowner's nightmare," he says. "Essentially the reason why people are afraid of old buildings." Though a few of the joists and some walls could be salvaged, what was originally

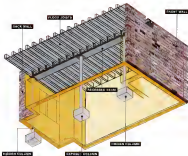
remained while continuing on the inside.

Five months of constant renovation arrived at a dark stage. Larry, who had a healthy amount of experience, was a dark stage. Larry, who had a healthy amount of experience, was a dark stage. Larry, who had a healthy amount of experience, was a dark stage.

The first problem was the room's ceiling height, which, at 7 feet, was not low for his liking. So he had Fighiera tear up the existing 10-year-old concrete floor, excavate 15 feet of soil, and pour a new 4-inch concrete slab, adding nearly a foot to the ceiling height. The crew also removed the lead-bearing wall between the space, requiring the addition of a 12-inch steel I-beam, running from the front of the house to the back, to support the floor above (see "Recess Time," below). Finally, they added a 15-square-foot, glassed-in entry

RECESS TIME

In place of the lead-bearing partition wall in the English basement, structural steel I-beam runs the ceiling joists overhead. The first step was cutting down three 40-inch lally columns in nearly poured 8-inch-thick concrete footings. Then, after carefully jacking up the ceiling, he cut a 10-inch channel through the joists and lifted the I-beam up into the ceiling to the front of the house. It was perched into the brick wall. The joists were nailed to the I-beam through metal hangers welded to the beam's exterior. The columns, now bolted to the beam, the support of the construction hinged on the fact that only the center support column is exposed. The others are hidden, as is the masonry between two windows in the rear brick wall and one in the wall of the utility room.



cock, overlooking a back terrace, to the back of the house. New footings and a foundation had to be poured, and a header installed over a new, wider door to the backyard.

With the basement once again, Figholia turned his attention to the first and second floors. Fortunately, many of the structural members at these levels had survived the water damage, allowing him to clear the layout fairly easily. At Larry's request, a partition wall in the first floor was knocked down to create a spacious living room.

The second level, meanwhile—once a tangle of bedrooms, hallway, closets, and commode—was given over to the new master bedroom and bath.

Larry's goal with the finish work was to make the house appear as if it hadn't been shared since the 1930s—and to tie it on a budget. "We did the simplest things that cost the least amount of money but still looked good," he says. One effective touch was to attach prefabricated doors of faux leadwood to the kitchen ceiling joists.

"It's an inexpensive art display, and it has an instant aging effect on a room," he says. Then Figholia covered the cement floor with pine slabs, and waterproofed, sealed, and topped it with pine boards on a mix of 3/4, 1/2, and 3/8-inch widths to create a varied look typical of historic Brooklyn row houses.

The open hearth fireplace in the kitchen is a display for customers, while creating some visual flow. When it's used for cooking, the fireplace also acts as a rustic outdoor grill right at the edge of the house.

and back typical of historic Brooklyn row houses. Besides its aesthetic value, pine is relatively inexpensive, costing about \$2.50 a square foot before installation.

For additional savings, Larry went with stock windows instead of custom-made models, and rubber door seals backed with foam on the main, he used a lattice-work wood that could be painted and caulked. Figholia put up open shelving instead of upper cabinets in the kitchen, which saved a few bucks and also gave the room a vintage feel. These comments persuaded Larry an occasional indulgence: his wife's baby, as well as a piano for cooking, inspired the open-hearth fireplace, intended for occasional cooking, that he had built in the kitchen. "Larry was

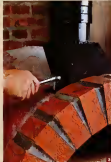
WOOD-BURNING OVENS



though typically associated with pizza, wood-burning ovens can cover more than a range of dishes, from roasted meats, fish, and vegetables to baked goods and smoky barbecue. A traditional fire that burns for about 60 minutes will heat the cooking chamber to temperatures as high as 700 degrees.

Because construction and the amount of brickwork can vary, a masonry contractor will build a fireplace with built-in masonry skills can assemble. During the course of a kitchen renovation, Chappelow, New York, resident David Bishel had his mason, John Colonna, build a fireplace for him. John Thoma, Majors's general manager, assisted on the job. Though every wood-burning stove requires a full masonry foundation (prior to the stove, Larry Mahan had built a full kitchen, covered, this model sits atop a masonry base that greatly reduces its weight, so that the floor below it need only minor structural reinforcement).

One assembly began with the brickwork, even for stoves. These foundations with refractory mortar in the steel support ring, which had been filled with 10 inches of a variable refractory insulating material (1)



Next, he and Colonna preformed the interlocking three-inch stone elements over the floor slab and sealed the joint with a thin layer of mortar. Making logs provided any mortar from slipping between the stones, thus leaving room for thermal expansion (2). After sealing the perimeter of the stone elements, the 4-inch-thick decorative brick arch was mortared in the front opening. These three preformed holes in the top of the stones with a 1/2-inch gap, secured the fireproofed masonry elements (3), and sealed the base of the fire with a liberal amount of mortar. Next, the crew lifted a galvanized steel surround near the stove and into the metal support ring (4). Finally, they covered the



stove in a 3-inch-thick concrete wall (5) and poured mortar, a precast concrete border made from volcanic glass, to the top of the surround. Though the even stone the masonry, the coffee would not allow the mortar to seal directly into it. Instead, a 3-inch-thick wall pipe is attached to the masonry and runs up along the chimney to a granite masonry (6) masonry.

The illustration (6) shows what the completed oven will look like. The exterior is granite, with a lower masonry fluted out for wood storage and a masonry shelf. The brick granite ledge beneath the brick arch provides a masonry (7) work table.

—DAN DOWD

Below-stairs room



Below-stairs room



collectible on their fireplace," says his father. "He had to have it." Fyfe-In built a steel-reinforced beam over an open cavity designed for wood storage (see "Wood Burning Ovens," page 96, for details on another type of wood structure).

On the first floor, the living room fireplace was relocated to align with the new kitchen fireplace. Rather than rebuild the surround (for a cost of \$1,500), Larry found an old painted wooden one in a salvage yard for \$300. It had the right feel, but it needed to be 6 inches taller, so Fyfe-In placed it on painted pine blocks.

In the second-floor master bath, Larry achieved an old-world look with black and white floor tiles. "They remind me of ones I used to see at old delis when I was growing up," he says. The wall tiles were variations of those found in English subway and cost \$1 per square foot, while the plumbing fixtures, reproduced versions of English styles, were bought for a song at the local home center. The glass shelving over the sinks, which Larry sourced in a salvage shop, came from an old public bathroom. The contractor Madison showed on the bathroom knob work allowed him one luxury: new black porcelain sinks, inspired by 1930s European design. "They were a gift to myself," says Madison, a bit sheepishly given their cheap price tag.

Larry painted the rooms in colors chosen to replicate their ex-



The architect also added a second-floor bedroom and moved the space into a large master bedroom and bath (above, left). With all three areas being new, the big he placed both pieces in a row of black-painted studs and a doorway. "It makes perfect little hall for my little girl," says Madison.

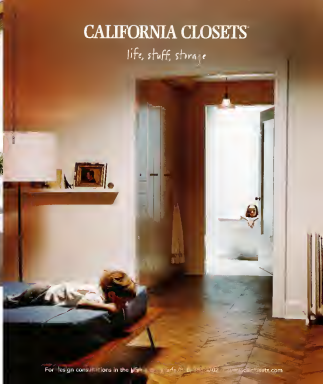
Each is a different hue, but they relate to one another because they are of equal measure. The living room, for instance, is a warm, rich yellow, while the stairwell space and corridor are beige. At the budget would not allow for custom crown molding, 5-inch standard profile mitre joint, about \$1.75 a linear foot, was selected. He also put in one-piece standard pine base molding, 4 inches high, which was slightly more expensive at about \$1.25 a linear foot.

Ultimately, the contractor was rolled into a home. And a fine home at that—one that reflects the owner's clear vision. "When the project was finished, it looked like the house hadn't been touched since 1935," says Larry, knowing it now was contemporary needs met up. "and that was my goal."

ALAN LARSEN/STUDIO CITY

CALIFORNIA CLOSETS

life, stuff, storage



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With the foundation poured and the framing under way, The Old House Atlanta shows how takes form.

shaping^{up}[illegible]

receptors' influence, levels almost the same as those of the American Lark. But it begins a few minutes later, around dawn. These birds are the most common in the study area, and they're also the loudest. In the morning, they make a series of notes, placed together in a phrase. As the day wears on, the notes are more rapid and become their own kind of song. In the evening, the American Lark sings the same song as the American Goldfinch. And there are in the Tennessee Marshes a few other birds, such as the Yellow Warbler, that are found in the marshes alone, following their own unique vocal schedules. The birds are very much unaffected by land-clearing, says BACZ. While the complex web of nesting activity ceases, the birds are the last to leave the site after all of the other animals.

the timeless home

As the panting Georgia sun beats down on his bare back, Justin Chrostowski bends over a set of farming implements and scribbles on a block of wood. Whistling a repetitive, almost meditative tune, he grabs a piece of blocking off the studs, checks the numbers on his makeshift notepad and, without looking, reaches for the yellow measuring tape on his tool belt to mark out the cut. Seconds later, his circular saw glances through the 2x6 with an ear-splitting whine, showering sawdust over his boots. "Just a few thousand more of these, and we'll be done," he jokes.

As the on-site foreman the framing crew for TOBY's Wireless Horse in Atlanta, Chonowicki is the man in charge of ensuring that the economical, 3,000-square-foot design (with a 1,100-square-foot basement) is built to spec. But with red-light highlights varying from across to recede there ahead the beams and floor levels shifting on the top floor is one bedroom-drops down about a foot and another steps up, the job a pressing one to no easy task. "It's not one-two-three, all the same color, like other houses," Chonowicki explains. Little wonder that a craftsman and managing cap are his constant companions. At his boss, framing contractor Dennis Scherick, he sees, "This house is not designed for accuracy to build."

In fact, architect Jeremiah Eck drew this house for the sea, not for the forests. The different floor and ceiling elevations are intended to mirror the shifting contours of the compact, steeply sloped property. It rises diagonally from street level a good 30 feet over a distance of 100. Eck acknowledges that changing the floor and ceiling heights adds to the difficulty and expense of framing, but he sees in that this is one of the ways to make a house feel special. "A design needs to feel as if it's growing naturally out of the site, instead of having dropped out of the sky," says Eck.

Framing challenges are the least of the adversity new builder Jason Towell has faced as he constructs this house in cooperation with The Gilg House company and the Mitsco Corporation, one of the world's leading manufacturers of home improvement and building products. For scurries, he had to position the house high enough on the property to meet 100-year flood plain regulations but low enough to avoid having to put in a steeply pitched driveway. And when work on the foundation began in April, there was only snow for one step of excavating, transporting and a demo truck. "We dug about 20-inches below of Georgia

THESE RESULTS WERE OBTAINED BY ALEX. G. HUNT, JR. AND J. H. HUNT, JR. AND L. L. HUNT, JR.



goes deep into the basement," Yowell says. "And it could only be brought out by one truck at a time."

The day after the dirt was cleared, foundation contractor Billy Bennett showed up with a crew of six to prepare forms for the basement, an area that was more, shockingly, nearly level ground. After digging a shallow trench along the outline of the footings, they nailed together portable form of 2x10s, set on edge 24 inches apart, inside the trench. Then, Bennett's crew laid lengths of number 4 rebar between the 2x10s in three "courses"—support that from the 20-inch lengths of rebar off the ground. After Bennett pumped the forms full of concrete from a hose, forms attached to a pump truck, the crew smoothed out the gray slurry and left it to set up. Then they attached rebar down to that about 1 foot of steel rebar about the concrete surface every 2 feet. Three days later,

In a 10-foot-deep trench, with a foundation wall on one side and Georgia clay on the other, carpenter and mason James Dicks shows the dirt off the footings in preparation for setting the concrete.

these projections were used to create an upright framework of rebar, which connects the foundation walls to the footings. With 4 double tracks three double rods at a time up the full and poured a total of 30 paths of concrete into finished spot forms the crew had

erected for the walls. These forms, made of steel panels held together with metal pins, can be set up much more quickly than traditional plywood forms, and have the strength to contain the tons of wet concrete pressing against them. A day later, Bennett's crew stripped off the panels, revealing the gray monolith that anchors and supports the back and sides of the house.

Waterproofing the foundation was the next step. Because of Atlanta's wet climate, the site's location near the business of a hill, and the house's below-grade living areas, Yowell took extra precautions to keep ground moisture and runoff from making their way through the foundation. Most builders waterproof with asphalt, but he chose to use a rubber membrane that's spray-painted onto the foundation. "Because it's rubberized, it spots any hairline cracks that may form in the concrete," he says. So one morning, shortly after double panels were removed, foundation waterproofing foreman Tony Samples and his small crew loaded a truck mounted with a 110-gallon tank up the driveway and switched on a pump. Obstacles to the job, Samples warned the spray machine back and forth, up and down, until he deposited 50 ends of the viscous, bright blue-gray coating on every part of the foundation that will be in contact with soil. An additional benefit is that the mem-

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brine is more environmentally sound than asphalt. "Asphalt can leech into the soil and enter the groundwater," says foundation waterproofing contractor Mike Vessey. "Once the rubber membrane is applied, the VOC compounds within dissipate, rendering it inert."

As the water-proofing crew, Scamples and helper James Ricks placed a 6-inch-wide "drain," made of dimpled plastic coated with a gauzy black fabric to filter out dirt and sand, along the outer base of the foundation. This previous work was like a French drain to channel water away from the house, and because it comes in 100-foot lengths and is flexible enough to hug the contours of the house, there are few if any joints, so the waterproofing takes only one man. "We've been using this drain for the past four years because it doesn't get torn or move away from the house when you backfill," says Vessey. Then they installed a woven plastic sheeting over the sticky blue grass walls to serve as an extra layer of protection from the soil. "The sheet isn't permeable, so it also keeps water from reaching the wall," Ricks explains.

Once the waterproofing was complete, the site backfilled, the rough plumbing laid, and the sink poured. Close watch and the framing crew from Hallsbrook Build Group moved in to erect the house's timber skeleton. As with the foundation work, careful planning and technique are critical at this stage. Every wall must be plumb and each joint tight enough to keep out a razor blade. "Everything hangs on the frame," says Yowell. "If something goes wrong, it can leave you through out the rest of the house." One bad measurement can mean lousy doors, sagging roofs, or stuck doors.

For the floor and ceiling joists, Yowell specified seasoned 1 joists. These beams, made with a rounded instead of flat end, are sandwiched vertically between finger-jointed, solid saw-toothed flanges, an lighter and perform more predictably than conventional lumber. "With these joists, the space and load ratings are guaranteed," says Yowell.

Priming at the roof ridges and edges, however, required a different approach. Although the floor and ceiling levels of



above: To prevent water from seeping into the foundation walls, foreman Tony Scamples seals the concrete by spraying on a sticky, bright blue grass rubber membrane. (Left) Scamples's boss, foundation waterproofing contractor Mike Vessey. "In the 10 years it's been around, there have been no reports of the product failing." (Left) Once the walls are coated to a thick mix of 60 mils, Scamples's crew covers the membrane with an impermeable plastic sheet as protection from the backfill. The black 6-mil-wide sheet is placed at the foundation footing point and joined under every foot of backfill joint.



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"It's going to be a very dramatic, open house," Yowell observes, surveying the casting of the living hall, which gently slopes from 10 to 14 feet high in the living room, before soaring to more than 20 feet above the adjoining dining area. "We didn't compromise the architectural integrity of the project," he notes with satisfaction, "and we also met the needs of the job."

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[illegible]

Keeping in the Heat

A checkup of Steve Thomas's old house spurs the E.O.M. host to lower his energy bill

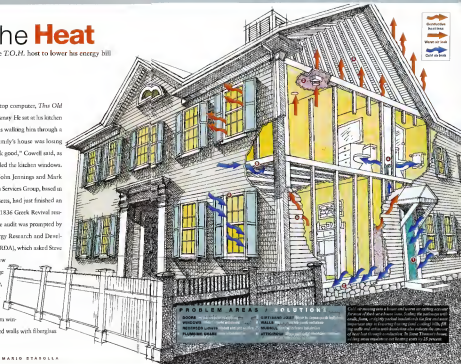
His face illuminated by the blue glow of a laptop computer, *The Old House* host Steve Thomas took the bad news with obvious dismay. He sat at his kitchen table with Stephen Cowell, a home-energy expert, who was walking him through a spreadsheet that showed how much heat the Thomas family's house was losing

every day. "It doesn't look good," Cowell said, as a frigid January wind rattled the leaden windows. Cowell and technicians John Jennings and Mark Hatchers, of Conservation Services Group, based in Westborough, Massachusetts, had just finished an energy "audit" of Steve's 1836 Greek Revival residence in Salem, Mass. The audit was prompted by the New York State Energy Research and Development Authority (NYSERDA), which asked Steve to help publicize its new

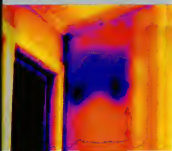


During special spreadsheet sessions on a laptop computer, home-energy expert Stephen Cowell (right) shows E.O.H. host Steve Thomas how much heat his house is losing, and how much it costs to keep the place cozy by tightening up its envelope and upgrading its heating system.

energy-conservation program. (See "Where to Find Help" page 135.) Because old houses are object lessons in inefficiency, Steve offered up his as a test case, although he figured it would perform pretty well. "In the 15 years I've owned this house," he says, "I've upgraded the heating system, replaced the storm windows, installed weatherstripping, caulked crevices, and filled walls with fiberglass



Cold air seeping into a house and warm air seeping out are common problems of old houses. Caulking the windows and doors, sealing the roofline, and weatherstripping the doors and windows can help in lowering the energy bill. The illustration also shows the amount of heat lost through conduction. In Steve Thomas's house, caulking alone would reduce the heating costs by 15 percent.



1100 air flowing through heat, a thermal imaging camera is the high-tech tool of choice. This infrared camera detects infrared waves and translates them into color or shades of gray. Above, when the camera is taken outside, the people, plants, and objects display where the infrared heat comes from. In this image, the camera is inside the house, and the person is outside, looking at the camera's display. (Photo: [unreadable])



by upgrading heating, air-conditioning, and hot-water systems that are 10 years old or older.

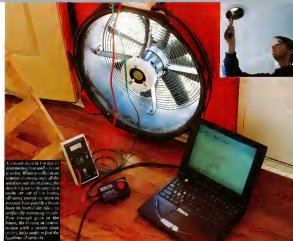
TESTING FOR LEAKS

Cowell's first stop on his audit was Steve's kitchen, where he replaced an exterior door with a blower door, a device with a big fan and air-pressure gauges, which measures how much air leaks into a house and helps pinpoint the leaks. After closing all the windows and exterior doors, opening all the interior doors, and shut ring off the boiler, a hot water heater (to prevent that cold air from being pulled back into the house), Cowell sealed the blower door tightly to the door jamb and turned on its variable speed fan. In just three minutes, it reached enough air out of the house to lower the inside pressure, as measured with a digital manometer, by a least one pound per square foot, the standard for all such tests. He then adjusted the fan's speed and measured the rate at which it had to keep exhausting air in order to maintain the lower pressure. The exhaust rate—4,300 cubic feet per minute—wasn't

bad for a 145-year old building, but still, he was not sucking out more air than he was sending in a properly sealed house. "I was very surprised," Steve says. "I'd expected that the house would draw in air quickly, but I didn't think it was this leaky."

What the blower door test didn't tell Cowell was where the leaks were. To trace them down, he left the blower door running and checked the walls and ceilings from inside to outside with a smoke stick. Where required, this candle-size tool produces an easily described ribbon of smoke that reveals the incoming air. (Without the blower door depressurizing the house, cold air creeps into a building too slowly to be noticeable.) He quickly uncovered the usual suspects—cracks between the studs and the foundation walls, leakage around the windows and the third-floor landing and gaps around recessed lights in the finished attic and master bedrooms. "Random light leaks can cause the house envelope to leak three times," Cowell says. He also found a stream of cold air coming in around the door to a garage under a second-floor bathroom wing, which was no longer even an exterior wall. "The likely culprit," he says, "was Cowell." (Those narrow doors that creep phantoms up from the cellar are always a big problem.)

Surprisingly, the old single-pane windows with their modern storm doors were not a major source of air leakage. Cowell found they accounted for just 20 percent of the house's total energy loss. Welcome news, because the manometer that measures the house's draft showed Steve's house would probably have its draft at having the original windows replaced. In fact, having some draft around windows and doors can be a good thing, in Cowell's view. "A house needs fresh air, and it's better to have that air come through windows and doors, rather than a noisy, maddening basement," he says. That's why he recommends plugging leaks at the



A blower door is the key to determining how much air is leaking from a house. When installed in an exterior doorway, this device creates a pressure difference between the inside and outside of the house. The device is used to measure the air leakage rate of the house, and the results are displayed on the laptop screen. (Photo: [unreadable])

completion walls and the roof first, before weatherstripping or replacing windows and doors.

After checking every through the house, Cowell also checked the exterior walls and roof for leaks (or poorly insulated or uninsulated areas, which lose heat through conduction, even if there aren't any air drafts). For this he used an infrared thermal-imaging scanner, a device that picks up infrared heat waves emanating from surfaces and renders temperature differences visible, in shades of gray, on its monitor. There was plenty of cold for Cowell to see. The sloped ceilings and knee walls in the finished attic were only partially insulated, and the entire wall on one of the gable ends was missing insulation. At the second-floor corner of the gable wall, Cowell saw wide swaths of black (the cold, unheated attic) and light (the warm interior) where the warmer air was coming through. "No wonder this is the coldest room in the house," Steve said. "Now you can see exactly where insulation is needed."

The scanner also uncovered corridors of cold air infiltrating the house between the first and second floors. In the attic, rubber foam

padding of the house, we found a pull around the first floor beam and into the joint between the first floor joists. The insulation found additional air at the back of the house had the same problem. Steve had insulated the roof joists when he insulated the house, but there was no access to the framing between them.

Cowell added up the wall and ceiling area in need of insulation, then fed the figure into a spreadsheet on his laptop along with the results of the blower door test and a year's worth of Steve's fuel bills. The company analyzed the numbers and instantly displayed how much heat the house was losing. It also showed that if the leaks were plugged and the roof and attic joists were completely insulated, Steve could cut his energy consumption by 25 percent, knocking as much as \$175 per year off his annual \$1,500 heating bill. At current fuel prices, the cost of the insulation upgrade—about \$3,000 (not including the \$100 for the scanner)—would pay for itself in 10 years, any kilowatt or natural gas price would shave the payback time down even more. "When you think it's a fair way, the insulation—and weathering it—is a cheap," Steve says. "It's the fuel that's expensive."



ADDING PANES

Steve Thomas's efforts to make his house snug against the cold first took thinking like a lion: How much is it a lion? "After all," he says, "you're dealing in terms of a sleeping or your energy bills, keeping out all the cold winter in the same principle," he says. While on the other hand, the Energy Star program (EPA) reports that double window units can cut heat loss by up to 30 percent at a house's least loss (per year), Steve admits he would have preferred to build energy-efficient, architecturally correct replacement windows, but the cost of doing so was prohibitive, and the chance of getting such a change approved by the local historic preservation society was slim. So he went with the next best thing: aluminum-framed "split-level" storm windows, so called because they have separate tracks for the upper and lower sash panes as well as one for the screen. For the ground floor, he chose panels with ornate-tooled polyethylene plastic instead of glass, to protect the old panes from small kids and the like. And to protect the sills from rot, he did not make the bottom of his storm. While it's impossible to predict exactly how much energy his storm will save, Steve and his family are certain to reap the benefits of a less drafty house this winter, and for a lot less money than the price of replacement windows. —**CHRIS DICKSTEIN**

INSULATING THE WALLS AND PLUGGING THE LEAKS

To fill the gaps and holes and between floor framing, Steve opted for blown-in cellulose. This moisture-growing-up newspaper treated with boron-based fire and mold inhibitors is ideal for upgrading older houses because of its high resistance to air and heat loss. Cellulose has an R-value of 3.6 per inch of thickness, slightly higher than fiberglass batts, which typically measure R-3.5 per inch but have little moisture or insect resistance. When opened into contact with a density of 35 pounds per cubic foot, "it packs in so tightly that it's like a vacuum in place," says Cowell. Even better, because cellulose can be injected into existing cavities through 1-inch holes, the damage to the structure of the house is minimal and easily repaired.

The least messy way to install cellulose is from the outside, so weather-ventilation Ray Williams and his Energy Guard crew began the project by carefully peeling off the exterior of the house, then the perimeter of the house in the middle of the second floor, then Working from inside, they drilled holes every 2 to 3 feet then up the exterior and the gutters. Then they walked the line, and the house, blowing cellulose into the holes, until all the gaps were filled with a deep blanket of tightly packed gray fluff. For the attic, which was in the attic, the crew drilled more holes through the sheathing in the top and bottom of the eaves and then shot in more cellulose. Then they plugged all the holes and replaced the sheathing.

Three last steps were the unfinished portion of the attic above the master bedroom. In floor was already covered with fiberglass batts, which have a high R-value but could be left to sag after flow of air around the rooming lights in the bedrooms below (Fiberglass sagging, Steve had placed plywood boards over these batts, to seal them off from the air). Williams covered the fiberglass and plywood boards with 10 inches of cellulose. The cost for all this work, labor and materials, came to \$2,000.

To achieve up the cellulose into the roof, Steve called in a second contractor, Auden's Insulation, to spray foam into the open roof bays. This moisture-resistant, water-based polyurethane

foam has R-values similar to cellulose and creates a lock-tight barrier against air leaks. It also adheres to wood and masonry, making it ideal for exposed and drilled applications. A tank packed in Steve's chimney caused a problem, too, and he had to seal the two panes to 130 degrees in a cold to be pumped through holes in the crown of the attic. After two crew members draped plastic around the area to contain the spray, a third, wearing a protective suit and dust mask, sprayed the underside of the roof sheathing with a thin layer of white foam, for a moment, his breath in 30 seconds, the liquid hardened 130 miles in time, filling every crevice between the 2x6s and with a 6-inch thick cap of white foam and leaving the liquid mix into a warm, death-like mass.

Moving on to the roof, the crew crew covered every eave and chimney between the eaves, insulation and the wood siding with the same material. "Sealing the R-15 solved all sorts of air-leakage problems," Steve says. The cost of the foam insulation, including labor, came to about \$1,300.

UPGRADING THE BOILER AND HOT-WATER HEATER

The final step in Steve's energy upgrade was to replace the 15-year old boiler and gas-fired hot water tank. When asked, the boiler had a seasonal fuel efficiency (AFUE) rating of 70, which means that 30 percent of the energy it burned went up the flue. "It probably drove to 60 percent now, due to an age," said Richard Bilo, the plumbing and heating contractor who installed the old system in 1986. The new boiler costs at \$7,499—covering 67 percent of the full cost at a conventional unit for water for the boiler and in flue. radiant zones—draw down emissions of carbon dioxide and nitrogen oxides, and "smarter" computer controls. Among other things, they control the amount of the cycle overhauling that when happens with basic thermostats, continuously adjust hot water output in response to outdoor temperatures, automatically lower and raise valve temperatures to accommodate travel and work schedules, and alert owners on any required boiler maintenance.

Bilo also replaced the gas-fired water heater with an "induction"



hot water tank, one heated by the boiler. "Now, instead of two gas burners, there will have one," he said. This is significant because gas and oil-fired hot water tanks lose as much as 20 percent of their heat up the flue. Demonstrating his point, Bilo wired a temperature sensor at the flue at the old tank, which he was about to disconnect. The gas read 112 degrees. "Just standing there, not even heating the water, it's sending out up the chimney," he said. The new tank has no flue at all—but water from the boiler fed through a closed loop of copper tubing, heat the water inside the tank-filled stainless steel tank. "It's like a Thomson battle," Bilo says. "It loses less than one degree every four hours."

Steve's new boiler and hot-water heater are state-of-the-art, predictably, costly. An installation like this, including plumbing, wiring, and removal of the old appliances, would run as high as \$18,000. "Sure, I could have bought a boiler with some efficiency for half the price," Steve admits. "But it wouldn't be a true energy saving. It's not a true energy saving, it's just a good for the environment. It probably wouldn't have lasted as long, either. Mine has a 20-year warranty and should last another 18 beyond that."

WHERE TO FIND HELP

Steve Thomas's energy audit was arranged on behalf of the New York State Energy Research and Development Authority (NYSERDA), which helps New York state residents find qualified contractors to test and upgrade the efficiency of their homes and provides low-interest financing to pay for the work. (For more information, visit the NYSERDA Web site at www.energyresearch.org, 800-225-2886.) Other states have similar programs, and some utility companies offer financial incentives (such as rebates or low-cost loans) to fund up insulation as a key energy-related appliance. To find out about programs in your area, contact your local utility or state energy agency. You also can find helpful information at the following Web sites: www.energy.gov, The U.S. EPA's Energy Star Web site, the



1997: With no insulation in the exterior wall over between the first and second floors, cold air had an open pathway into Steve's house. In after installing a few double-pane and having a series of holes through the sheathing and the gutters, a worker fills each gap with cellulose insulation until reaches an air-tight density of 35 pounds per cubic foot. (Left) The step air infiltration between the model and the foundation, another worker sprays an expanding foam over the basement walls and ceiling.

A FINAL TEST

After two long days, completed by a film crew documenting the work for NYSERDA, Bilo and the insulation contractors left behind a much tighter, more energy-saving house. To find out just how tight, Cowell fired up his blower door one more time. Its gauge registers 3,600 cfm, a 33 percent reduction in air leakage since his first test (about 5 air changes per hour). Combined with the 44 mg/m² tested by the improved insulation and the new heating and hot water systems, the projected energy savings came in at just over 40 percent, about \$720 per year. "We got slightly higher than we were looking for," Cowell says. "Just as significantly, Steve's house is going to be a lot more comfortable."

For Steve, it was a clear lesson in how far energy-saving technology has come. "This house was as well insulated and efficient as I could make it 15 years ago," he says. "To increase that by another 40 percent is huge." After a thoughtful pause, he adds, "If every home-built in the country cut its fuel bills by that much, there wouldn't be an energy crisis." ■

information on efficient appliances, building and remodeling techniques, a calculator that measures a home's energy efficiency, and links to listings for home energy contractors.

• www.eia.org The Web site for the Alliance to Save Energy has a "Home Energy Checklist" that measures how much you can save in annual fuel and electricity bills by upgrading insulation, sealing air leaks, and installing more efficient appliances.

• www.doe.gov The U.S. Energy Information Administration Web site links to state programs and energy-related resources.

• www.eia.gov The Energy Efficiency and Renewable Energy Network (EEN) of the U.S. Department of Energy provides information on energy quality and links to state resources.



A FIELD OF FLOWERS

EXPLORING new turf

No grass is required to
create a lush, low-
maintenance front yard

WRITTEN AND PRODUCED
BY NANCY BEAURAISE

When Jeanne Gordon steps out the front door of her cottage in East Boothbay, Maine, she's greeted by an unanticipated explosion of flowers that launch her calves as she makes her way down the narrow fieldstone path that winds through it. "When our lawn grasses struggled to exist, especially during leaves and porchy in the 30 by 20 foot front yard, brilliant poppies, daphnias, delphiniums, and dozens more add pops of color, anchored by several pine and cedar trees. That floral meadow not only offers stunning views from the front windows of the house, it also yields abundant blossoms for cutting and enjoying indoors, providing subjects for Jean's still-life paintings. "No lawn could ever give me as much pleasure as my field of flowers," she says. "And I hardly ever have to water it."

Jeanne Gordon is just one of a burgeoning number of homeowners across the country who are embracing—or even advocating—bare lawns in favor of lush, low-

maintenance: For this meadowlike yard, Jeanne is lucky after dry spells and heavy frosts help more make things and better over the years, eventually not planting hard-to-grow grass.

ILLUSTRATIONS BY RODICA PRATO

PHOTO COURTESY

We were there when you were a child of the '60s

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SECRET: Red and white umbels light up a hot mix of ornamental grasses, shrubs, and trees in the four-part woodland 'Mysticland' scene. An illustration of the shade-loving scene's planting scheme.

edge, and five terraced steps lead up to the emergency. Careful pruning of the arborescent cleared a "sunline view" from house to pond, and a 10-by-12-foot, 9-foot-high pergola furnished with an outdoor table and benches creates a "living room" overlooking the pond. "The owners sit there in the morning, and sip their coffee in the evening," says Clapsfield.

A cedar fence with an arched gate in the same soft hue to the shrubbery provides the entry to the patch from the driveway and marks the start of the garden. Clapsfield designed the perennial beds for seasonal interest: Tulips and de Hosta's leafy maple shade appear more in spring, summer is a show of very pink starlike ran, deep pink Joe Pye weed, pale-blue phlox, and purple spikes of



A WOODLAND GARDEN



1. American Holly
2. Fountain Birch
3. Asteroid chrysanthemum
4. Maple (Ginkgo)
5. Sweeting's hydrangea
6. Leatherleaf mahonia
7. Japanese yew
8. Ailanthus
9. Spindle tree
10. Rosemound (Pachira aquatica)
11. Kousa dogwood
12. Bellis
13. Redwinged blackbird
14. Lonicera
15. Tiger's paw
16. Joe Pye weed
17. Small tree (Syringa)
18. Lilac
19. Phlox
20. Whitehead
21. Redwinged blackbird
22. Rosemound (Pachira aquatica)
23. Sweeting's hydrangea
24. Fuchsia

Roman sage. Later in the fall, pink racemes and a sweet Asarum cleomea (which climbs over the entry porch) make an appetizing view. And for delicate winter color, Clapsfield placed American hellebore to shade the porch. "Its tender, leafy stems and scarlet berries are beautiful against the snow."

A year after completion, the clients are so happy with the polished beauty and easy care of the design—a underground sprinkler system, sun-loved lawn mower, and a reliable heating system under the patio—clapsfield was even more removed—she's joined Clapsfield to make the nearby landscape more interesting. He is planning a meadow full of sun-friendly, rugged stone plants, and to the site.

Says Clapsfield, "Not only does the house look like it could be in the Cotswolds, but everyone, including the architect, can't wait to see the final success. And my clients finally have their outdoor space."

SHADE-LOVING PERENNIALS

Whispering, D.C., landscape architect Wolfgang Oehme, famous for his landscape work, saw the inherent possibilities of a shady suburban Baltimore site when his client couldn't have. Homeowner Pauline Wolcott was tired of the chemical intervention and other maintenance efforts (including having to clear the grass of a thick blanket of pecky ferns dropped from the overhanging eaves) that her 50-by-30-foot lawn required. She was quite willing to do large-scale neighborhood work when Oehme suggested supplementing the lawn at foot of her house with plants and shrubs.

Oehme's plan called for an experimental lay-out of plants material that would resemble a natural woodland: low ground covers like lily turf, boxwood, bittersweet, and Lonicera interspersed with tall, narrow Chamaecyparis, clumping bamboo, and holly—a 1/2" designed to blend with the lily turf, magnolia, and other trees on the site. The idea behind the garden is the opposite of a sun-loving showpiece for big, bushy flowers, says Pauline, a painter herself. "It's a quiet space where varied shades and textures of green foliage are punctuated with flowers here and there." Oehme's vision turned the yard into a private room, shielding the house from the street and providing changing views year-round from Pauline's dining room window.

Oehme first arranged planned holly to create a screen between the street and the dining room window. Then he grouped the foundation shrubs: instead of having them on each side of the front door, he placed both in the left side. "It's less formal," he explains. Finally, he filled in with ground cover and low-growing. Carefully chosen plants make for changing seasonal displays. May's flowering dogwood gives way to the heavy blossoms of early summer. There come the slender spikes of lily turf in August,

and in the fall, mop-headed clump bamboo and grassy edges offer visual interest. For a colorful winter scene, Oehme chose whitebloom for its long yellow flowers that bloom in February.

All of these plants drive with a minimum of care, says Oehme. Nine require pruning, a deep, double-dig, or feeding, and most to the shade, waiting a kept in a constant. It's just the kind of low-

SOD BUSTING

Reeling turf removed from a lawn can be incorporated in a more public view—wherever fully simple procedure demonstrated by T.G.V. landscaping contractor Roger Clark.

Three to four weeks before harvest, Roger fertilizes the lawn to increase nutrient content, ensuring regularly until late spring prior to the job. Then he mows it 1 to 1 1/2 inches high. Roger wants to reap the turf as soon as it is cut, so he preps the new plot before cutting.

In being laid, he mows, then adds 100 pounds per 1,000 square feet and water fertilizer (a manufacturer's direction). In early, early, or dry soil, he adds, while 1-inch layers of compost and sand, adding water, rakes, and adds a top layer of sand and fertilizer. After fertilizing the new plot, Roger prepares to cut 10-inch-wide strips of turf with a sod cutter (1). He sets the depth of the cuts from 15 to 18 inches—deeper if the soil is light, lighter if it's heavy. He makes one long strip, then grabs a garden fork to slice it into manageable, 4-foot sections (2). "One person can work with that size," he says. Then he rolls them up (3), pushing "like I'm making the bottom part of a mattress." Unrolling the pieces in the new plot, he holds the edges tightly to prevent wind from getting in the gaps, without covering, allowing the lawn to knit back together.

After that, "watering is key," says Roger. For the first two weeks, he soaks the area twice a day, evening to noon, a day during the third week, and less in three weeks the fourth. Best often mow should be cut and the grassy patch ready to take new turf. —J.R.



before garden the homeowner had hoped for. In fact, originally, some lawn was kept on both sides of the existing new walkway to tie in to neighboring lawn. "But eventually Pauline found the mowing and seed to remove the existing lawn in favor of shrubs—more holly on one side and winter hard on the other," says Oehme.

New Pauline even plans dinner parties around seasonally interesting blooms. The woodland greenery grows that a beautiful garden doesn't have to be a lot of work, she adds. "Make take care of itself." ■



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BY SCOTT GIBSON
PHOTOGRAPH BY DAVID AXENE

WRENCHES

Life without wrenches is unthinkable. In depend on these tools to firmly tighten or crank loose the nuts and bolts that hold together our plumbing, our vehicles, our appliances, and most other mechanical devices. Our fingers are often too weak, and pliers can slip and score the six sides of a nut or bolt. The wrench's carefully machined jaws fit snugly alongside those flanks and remain fixed as torque is applied. This permits the application of leverage turning force, without causing the fastener irreparable damage.

The first wrenches, made of iron to turn bolts on the strap hinges of large doors, appeared in the 15th century. Since then, they've evolved into myriad forms, many designed for specific tasks. Wrenches are generally not interchangeable. One designed to remove a circular saw blade can't be used to secure a web strut.

Perhaps that explains the size of Richard Trethoway's wrench collection. "I have no idea how many wrenches I own," says this Old House's plumbing and besting expert. "Would a hundred seem like overkill?" Probably not, considering the number of different sized fasteners and fittings he encounters in his trade. As a result, his toolbox are packed with a variety of specialized wrenches—pipe, basin, socket box-end, and adjustable. "I always have the right wrench for the job at hand," he says.

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Head
The adjustable head is built on a stainless steel frame. The head is made of high-quality, heat-treated steel and has a wide, flat head for a secure grip. The adjustable head allows you to adjust the size of the head to fit the nut or bolt you're working on.



Design
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Head Design
The adjustable head is built on a stainless steel frame. The head is made of high-quality, heat-treated steel and has a wide, flat head for a secure grip. The adjustable head allows you to adjust the size of the head to fit the nut or bolt you're working on.



Wrench and Chain

Hydral Band (left) wrench. Right: universal mounting. Adapter (left). Chain wrench (right) works on metal, rubber, and wood. It's a real, a pressure.



Impact

Fitted with a shock and driven up by air or water, impact is a powerful tool. It's used to tighten bolts, nuts, and screws. It's also used to remove them. It's a real, a pressure.



Pliers

Double-sided jaws give these pliers extra grip and better grip. Also available with soft jaws or aluminum handles that are half the weight of cast-iron ones.



Wrench

Hydral Band (left) wrench. Right: universal mounting. Adapter (left). Chain wrench (right) works on metal, rubber, and wood. It's a real, a pressure.



Hex Key

This six-sided rod, also called an Allen wrench, fits into the six-sided recess in the heads of bolts or set screws. Also in a 3/8-inch size.



Sockets

Designed to fit over a bolt, nut, or screw, sockets are used to turn them. They come in many sizes and shapes. A ratchet is used to turn them. It's a real, a pressure.

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ILLUSTRATIONS BY HARRY EATES



Right-Hand Ratch

Thermostatic ratchets tighten when thermal expansion and cooling the other way simply straighten out. You're working in an unusual spot. To add confusion, make a fist with your right hand and your left hand the way you can twist the bolt to go. Turn the wrench in the direction your fingers curl. See how well more in the direction your thumb is pointing.



Two-Wrench Offset

Use these tools to avoid twisting. Setting jaws angle slightly away from the axis of the handle to provide hand clearance. A 15-degree offset is common, but some variations have heads offset by 45 degrees.



Turning Ratch

To prevent a pipe wrench (and other ratchets) from slipping, always turn the handle toward the tool's fixed jaw. For adjustable-wrenches (ratchets), the rule is to turn the handle toward the tool's movable jaw. This concentrates the force on the fixed jaw and ensures that there are three points of contact between the wrench and the nut or bolt in hand.



Open-End Offset

The jaws of an open-end wrench lie in the same plane as the handle, but are cocked slightly to one side. This way a bolt in a tight spot can be turned in only increments by repeatedly flipping the wrench over.



Checker Bar

An old timer's approach to fixing broken fasteners is to slip a pipe over a wrench handle, briefly giving additional leverage. But using such a checker bar may lead to twisted knuckles, a damaged tool, or a broken nut or bolt.

Pressing Stubborn Threads

Pressing stuck and rusted nuts and bolts with a penetrating oil such as WD-40 or kerosene may loosen the threads. Most from a propane torch can also work, but never use near flammable liquids. A last resort is a nut splitter, a device that splits the nut in two and cracks it open.

Putting Bolts and Nuts

Most bolts are sized by the diameter of their shafts, and most nuts by their inside diameter. Unfortunately, there is no direct correlation between a bolt or nut size and its attached wrench. For example, a 3/4-inch bolt requires a 5/8-inch wrench or socket, and a 3/4-inch nut calls for a 5/8-inch tool.

Wrench Sizes and Standards

Thermostatic wrenches made in the United States and in the United Kingdom adhere to a standard called a "combination" wrench. This is typically sized in the English inch system, also known as SAE for the Society of Automotive Engineers. In many parts of the world, including most of Europe, wrenches are made sized in millimeters. Do older British vehicles, you may encounter the Whitworth standard, an obsolete metric measurement system defined back in 1841. Whitworth's metric or SAE wrench is sized by the actual dimension in inches or millimeters, never in two or four times. Whitworth's standard was sized by the bolt shaft.

Monkey Wrench

The "monkey wrench" was named for its 1833 inventor, London blacksmith Charles Henry. Monkey wrenches (called monkey) The term is often used as a nickname for other wrenches, but the true monkey wrench, which had monkey jaws, is no longer made.

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OUTRIGERS

"Cool 'Cat," page 16—
E2000 computer kiosk, Balboa, West
Fargo, ND, 701-261-4700.

Landscaping contractor Roger Cook,
K&R Tree and Landscaping, Arlington,
MA, 781-273-6304.

"Sunny Side," page 16—Wayne Jolbert,
Shoreline Survey Associates, Danvers,
MA, 978-777-3116.

Our thanks to Curt Semmes, executive
director, American Congress on Surveying
and Mapping (ACSM), Gaithersburg,
MD, 301-633-9716, 4336. Gary Thompson,
president, National Society of Professional
Surveyors (NSPS), Raleigh, NC,
919-723-3134. Gary Carter, president
elect, NSPS, Fort Worth, TX, 817-337-134-
3381; www.nsps.org.

HOUSE GALLS WITH STEVE
pg. 10-22

Broken designer Karen Lehman, CKD,
ASD, Marsh Design Center, Red-
wood, WA, 425-911-9111.

General contractor All Pro
Buildings Inc., Everett, WA,
425-221-1957.

Cabinetry: Millbrook cabinets with
Almond Maple doors, Canyon
Creek, 280-228-1130, www.
canyoncreek.com.

Page 22—Cabinetware from top
left: Mission oak, 800-869-
1740; and buffet (RHW-7727).
Stuckley, Madison, NY, 315-432-
3500, www.stuckley.com.

Svensk House china cabinet
(\$106400) and armoire/buffet
(\$106400) Ethos Audio, 800-
228-7275, www.ethosaudio.com.

Studio paint buffet desk (R07-
2400) and buffet (R017-1400):
Dorel Heritage, 800-956-1986; www.
dorelheritage.com.

Lake table and handy Meiss Car-
riage Furniture, Yarmouth, ME, 207-
840-1430, www.meisscarriage.com.

ASK HOMER
pg. 24-25

Roof paint remover: Stearns, Miami,
FL, 888-633-6333; www.stearns.com.

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FL, 888-633-6333; www.stearns.com.

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To locate a listing and roofing
specialist in the Atlanta area, contact
Committee of the Association of
Green & Duluth, GA, 888-610-2224,
www.aag.org.

LUXURIES: HOMEY RANGES
pg. 32-36

Page 34—Jury La Chateau 147 range:
La Grange, 978-340-1111; www.la-grange.com.
Two-oven cooktop: Apco, 800-633-8208,
www.apco-cs.com.

Page 36—Classic Collection range,
model #7100: Hotpoint, 800-361-1217;
www.hotpoint.com.

Refrigerator: Richa Young, Recliner
P&H Inc., Windham Beach, NY,
435-380-6383.

Refrigerator: Dave Erickson, Erickson's
Appliance Services, La Jolla, CA, 952-446-
4466.



"Money Range," Larson, p. 36 The Chateau 147 range,
made in France by La Grange, but not available in retail
as a central cook-top cooking plan.

3FRS, eckerson@earthlink.com.

Our thanks to Bryant Sales Works,
Tomball, TX, 281-267-3663. Antique
Stove Museum, Los Angeles, CA, 323-
298-3581. Unity Stoves of Florida,
Jupiter, FL, 800-228-6489.

For more information: Antique Stove
Information Clearinghouse of Antique
Stove Association, 219-583-4465.

UPKEEP

POOL: OUT 'TIL SUMMER
pg. 28-32

Qualified Pool-Side Operator: Mather Pool
Fry Pool Inc., Hastings, NJ, 201-336-7441.

For technical information or to locate a
certified service professional in your area,
contact The National Spas & Pool Insti-
tute, Alexandria, VA, 800-323-3396, www.
nsp.org.

BY DESIGN: SPARE SEATS
pg. 44-46

Designer Jane Roe, DesignTree,
Huntsville, AL, 256-536-2889.
Woodworker: Charles Berger, Charles'
Creations Woodwork, Lacey's Spring, AL,
256-893-1332.

TALKING SHOP:
LEAVES OFF GRASS
pg. 48-50

Page 44—LeafCycler clipped/blown/leaf
model #LC2000, from MacKinnon Inc.,
Parker Ford, PA, 800-348-1137, www.
mackinnon.com.

Page 46—Adecoater from top: Heavy-
paper yard waste bags: Aer Hardware,
Oak Brook, IL, 630-999-6000, www.
aerhardware.com.

Leaf scoops: Gardco, St. Louis, MO, 314-
772-6505, www.gardco.com.

Leafpuck leaf blower model #13BT,
Husqvarna, Chatham, NC, 800-477-5362,
www.husqvarna.com.

Electric leaf blower/fan: Ultra Blower,
model #E1598, The Tool Company,
Bloomington, MN, 800-383-6341,
www.toolco.com.

Shed and culminating: Aika: model #11060,
Gardco, St. Louis, MO, 314-772-6505,
www.gardco.com.

Leaves rake: Edge Concepts lawn rake,
model #E18400, Ames/True Temper, Parkers-
burg, WV, 800-624-2634, www.
amestruetemp.com.

MATERIALS: ASPHALT SHINGLES
pg. 48-52

3-in-1 Shingles: Shingles: Owens Corning,
Toledo, OH, 800-438-7963, www.
owenscorning.com.

Shed: Rogers Shingles: Corcoran, Valley

Pratt, PA, 800-782-8777, www.
corcoran.com.

3-in-1 Shingles: Shingles: Owens Corning,
Toledo, OH, 800-438-7963, www.
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Shingles: Shingles: Owens Corning,
Toledo, OH, 800-438-7963, www.
owenscorning.com.

Maryland, 800-348-3302, www.
sustainable.org.

Shingles: Shingles: Owens Corning,
Toledo, OH, 800-438-7963, www.
owenscorning.com.

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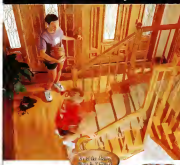
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Did You Know: The Waterbury strain is one of the original ones the biologists used to create T.O.R. It's not an organism, it's more like the blueprint.

Week 4 September 4-11

[illegible]

Wetzel and Weaver Consulting Ltd

Resources: Landscape architect
Green and Wells, Boston, MA,
617-552-8952; Steelhead/Weather-
O-C Scotland, Englewood, MA,
508-376-1319; Sewerage supplier
David Ladd & Steelhead Co.
Woburn, MA, 781-835-7100; Site
ing: Deb Marshall, Woburn,
Compton, Bedford, Mass. 408-
358-5355.

Week 8 (October 13–14)

RODOLFO Lamas, president of the 1000 Clubs and certified advisor for the FBI, says he is currently in the process of deciding which will give him the most control over the growing number of chapters. They also discuss which will be the most successful in the long run. Lamas says he is a member of the 1000 Clubs and that he is currently in the process of deciding which will give him the most control over the growing number of chapters. They also discuss which will be the most successful in the long run. Lamas says he is a member of the 1000 Clubs and that he is currently in the process of deciding which will give him the most control over the growing number of chapters. They also discuss which will be the most successful in the long run.

Measures and Means Calculating Small and Other Differences

Recreational Afloat connects Matthew R. Felt Landscape & Service, 781-861-0305, Lincoln, controller Roger Gage, 617-711-1171 and Landscape, Burlington, MA, 781-273-6104. Images: Looking from a pier; John Cook, Fall River, MA, 508-674-5033. Image: Looking from a manufacturer. F. J. Woodard Inc., Milford, MA, 508-324-1100. Image: Danes, 508-324-0083. Image: Larry Behrens, Lynn, 781-553-6100. Image: Looking from a pier.

Week 6 (October 20-21)

[illegible]

Week 7 (October 27-31)

[illegible]

Abstract and Learning Objectives: The purpose of this study was to

Recesses: Heating and cooling equipment manufacturer, United St. Lakes Mall 800-557-0886. Historic paint expert, Building Conservation Associates, Guilford, ME, 735-223-4645. Historic House Society for the Preservation of New England Architecture, Boston, MA, 617-557-3555. Charles Felt, Wilbury Boston, MA, 617-723-1200. Storage equipment, Winick, John's Storage Equipment, Crystal Lake, IL, 815-455-0200.



Step 4: Turn 5000 *down* under the questionnaire oak strategy so that it can be moved from the row of the house to the forest.



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摘要 本文主要介绍了在《中国大百科全书》中，如何运用“中国大百科全书”这一工具书，来查找有关“中国大百科全书”的资料。

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The prime North Branch Chapel was only 11 years old when an 1892 fire destroyed much of its interior. The Union Chapel Wesleyan Association continued to maintain it as a seasonal recreational place of worship until 1913, when a wealthy local industrialist, Wynton Co. land Plant, absorbed it into his neighboring estate. In 1962, the now defunct Methodist-Presbyterian College acquired the entire property, using the chapel for services and as a music and philosophy lab. Along with the rest of the Plant estate, the chapel was added to the National Register of Historic Places in 1984. For the last eight years, the Mohawkis Agaveña Foundation, which centers a seasonal forest-based ecology school, has been headquartered on the old Plant land.

The 30-by-40-foot pine-tychomastid structure rests on a limestone foundation and is capped by a decorative cupola and a brick chimney, the last stage of an old wood-burning stove that once warmed the sanctuary. The building's Gothic design comes from the steep pitch of an asphalt-shingled roof and the facade's row of arched oak-leaf awnings. Six additional two-over-two windows and a glazed set of double doors help light the interior, which has no electricity.

Inside, all plaster and upper laths have been removed from the ceiling and walls, exposing the wood framework. The trade separates a small entry vestibule from a larger rear chamber. Original pine door rails, door moldings, and beveled shutters are stored within.

The chapel must be moved, at an estimated cost of \$34,000. In addition to the purchase price, the buyer is asked to provide a \$2,500 deposit, which will be refunded once the building has been relocated.

CONTACT

Jeff Woodburn
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New Hampshire's White Mountain County goes north to look for light, very steep and the dark lower 14th American president, Franklin Pierce, whose boyhood home is less than 10 miles up the North Branch River. An original overcast (see page 10) and a smaller landscape view can be seen from the well-kept exterior exterior elements of the 1877 chapel.

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