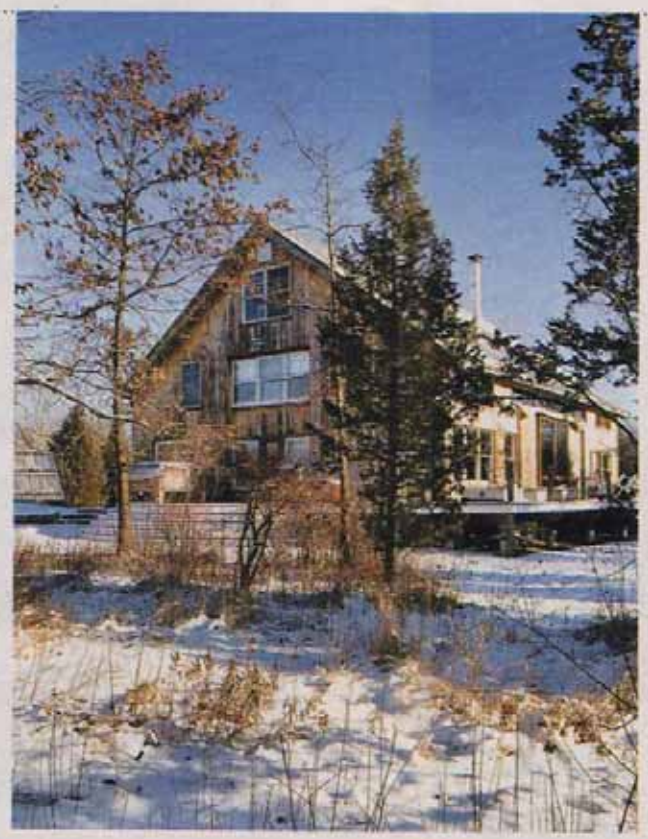
NOTHING NEW UNDER THE SUN

Using recycled building materials, a Newbury couple built cheaper and better and then added solar heat as a bonus.

BY REGINA COLE



Lisa Dorval and David Hall's Newbury house is not your typical family home. There's the double-height corrugated-metal ceiling, the boulder 2 feet thick and 10 feet in diameter that serves as a hearth, the swing hanging from an industrial trolley moving along a steel beam, and the rust-colored buffed-concrete floor. But within those vaulting spaces are child-friendly play areas, a highly functional kitchen, cozy places to read, watch TV, or play music, and inviting views of the surrounding woods and salt marshes, all of which make the dramatic structure comfortably livable for the couple and their three children.

The structure is also representative of Dorval and Hall's commitment to living and building green. The house is heated with solar technology and substantially built from recycled materials. To Dorval, a psychotherapist, and Hall, a real estate developer whose best-known project is The Tannery in downtown Newburyport, the use of salvaged materials is as important as reducing fossil-fuel use.

It also makes for some unique construction: A 40-by-60-foot prefabricated metal structure, more commonly used for commercial buildings, encloses a dwelling made with granite recycled from the Pru and structural steel reclaimed from a Boston Whaler plant.

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Photographs by ERIC ROTH

SALVAGE MEETS SOLAR David Hall sits by the hearth, a massive boulder, in his home's living area, where south-facing windows provide passive solar heat and a sun-fueled radiant system warms the concrete floor. Wife Lisa Dorval, her father, Romeo Dorval, and son Emmett are at the kitchen counter, where Parchitos, the family dog, is offered a tasty treat. Facing page, from top: The house resembles a New England barn; Dorval works at a built-in desk by a window rescued from a demolition site.

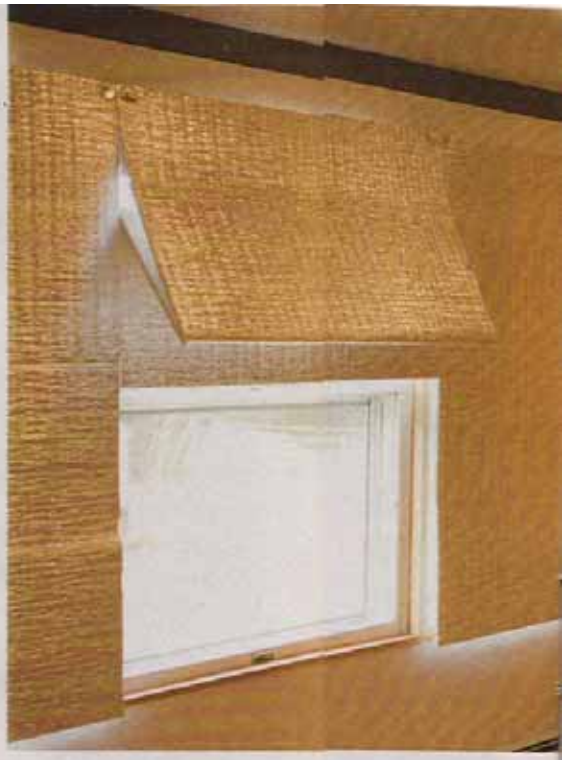
Once the truss-system frame was erected, the exterior walls were stick-built and sheathed with pine; the roof is a sandwich of corrugated-metal ceiling and insulation covered by galvanized steel. This shell cost about $30 per square foot.

"We knew the exterior would be barnlike," says Keith Moskow, a Boston architect who helped his friends Dorval and Hall design the house. "A new McMansion sort of building would look out of place in rural Newbury, but barns fit right in. We adjusted the pitch of the roof to look more traditional. The design process was backward. Normally, you design a house, and then you acquire the building materials. Here, David had a kit of parts, and we collaborated on the design, based on those parts."

Both at home and in his business, Hall loves to use salvaged materials. "You can get exceptional quality at an absurd price," he says. "Our 16-inch heavy-gauge stainless-steel stovepipe, for example, would have cost $1,000 new. We paid a couple of hundred bucks, and the quality of steel we have simply isn't available for the domestic house market. The hanging light fixture in the front hall is a contractor's mistake meant for a rest area on Route 495. We bought granite slabs when they redesigned the Prudential Center; we paid $1,000 instead of $40,000. And all the interior doors are made from hard-pine wide boards that were originally inside the Newburyport High School."

In addition to good value and reducing waste, he adds, you get history. "The trolley that our kids love to swing on was used to carry the Boston Whalers through the factory as they were being built."

Winter warmth comes from passive solar heat gained via south-facing windows. There is also radiant heat in the concrete floor that uses hot water from a thermal-solar system in a metal shed in the front yard. Originally a shipping container, the shed houses a water



INDUSTRIAL DESIGN The colorful decor works with the steel framework and metal ceiling, left bare in order to reflect heat back into the home. Above: Panels of reflective insulation, shown stripped of fabric coverings, keep the heat in at night.

tank heated by an array of glass vacuum tubes mounted on its roof.

"These tubes are the reason we have consistent solar heat in cloudy New England," Hall says. "The technology didn't exist until very recently. It has enabled us to do without an oil burner, which would use about 1,000 gallons a year to heat a house of this size."

Another energy saver is the metal ceiling, which bounces heat and light back down into the house. Interior walls are finished in gently mottled shades of terra cotta and red, the pigments mixed right into the plaster.

Now that the house is finished, there's only one thing Dorval would change. "We don't really need so much space," she says. "But it's great for the kids – they can run, play, skateboard, and roller skate inside."

That's when Jacob, 14, Ella, 11, and Emmett, 7, are not swinging out over the living room from that factory trolley.

"Dave practices what he preaches," says Moskow. "We all try to do that, but Dave and Lisa really live out their principles." ■

ROOM TO PLAY Emmett, 7, swings from a trolley that once transported boats on the Boston Whaler plant's assembly line.

How the Solar System Works

The thermal-solar system (above) is in a shed made from a shipping container. Each of the 96 glass vacuum tubes is a closed system made of two concentric glass tubes. Between them is evacuated space filled with a special gas; a miniature pump delivers heat to a copper bulb at the top of each tube. Each bulb is inserted into a female copper receptacle that transfers heat to the water. "That's what has transformed the industry," says homeowner David Hall. "Previously, water had to pass into and out of each tube."

The water in the 800-gallon storage tank inside the shed is kept between 120 and 160 degrees. If a long sequence of cloudy days causes the temperature to drop below 120 degrees, a small demand-style heater warms the water in the pipe as it returns to the house. The system is illustrated on the manufacturer's website, sundasolar.com.

The Financial Advantage

The common misconception is that federal and state subsidies for alternative energy have dried up since the heyday of the 1970s. In fact, there are a lot of financial incentives for environmentally minded homeowners and even for contractors. When David Hall and Lisa Dorval installed their $30,000 solar system, they received a total of $5,000 in credits from the state and federal governments. Utility companies also offer incentives, including rebates on many products, and some Massachusetts utilities will grant up to a $1,500 credit to customers who weatherize their homes. In addition, a state law mandates that local real estate taxes be reduced for homeowners who spent money on solar-energy systems. The federal government offers a tax credit of up to $2,000 of the cost of solar systems installed on primary residences, and a builder who installs solar energy systems gets a $2,000 tax break.

Information on tax incentives is available at energytaxincentives.org. Another informative site for Massachusetts homeowners is dsireusa.org.

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SOLAR HEAT SYSTEM sundasolar.com