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Going for a Boulder Idea in Home Building

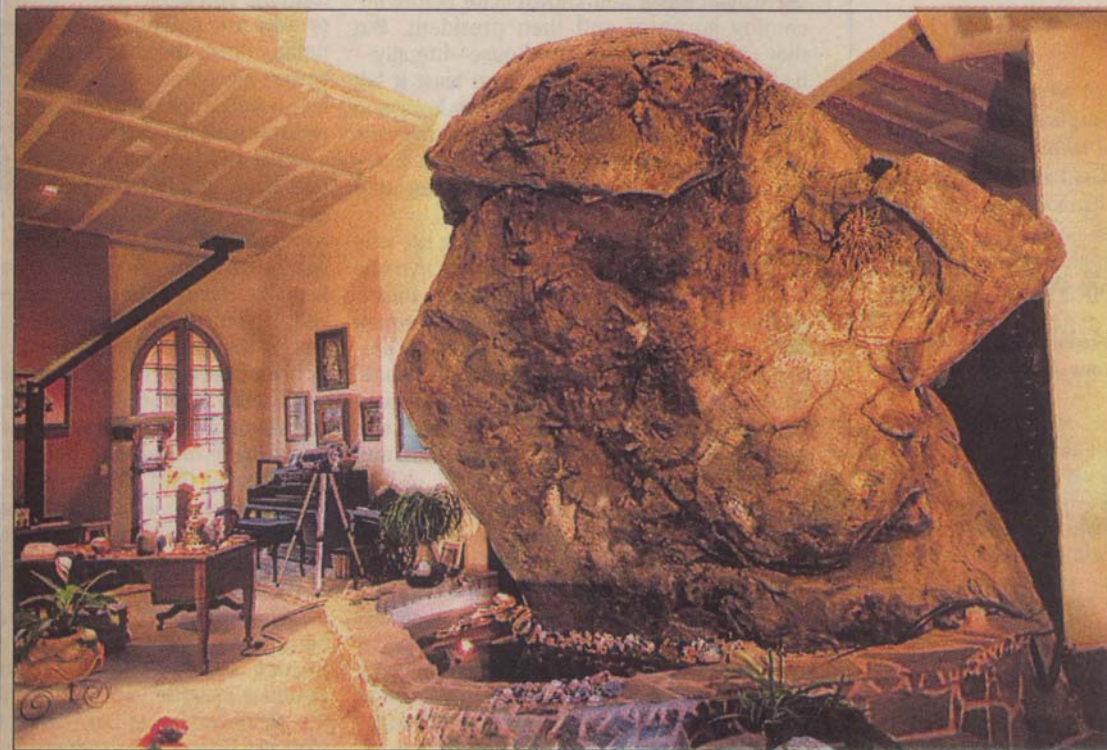
Made of straw, and designed around a rock, San Diego residence aims for energy self-sufficiency.

By BILL MANSON
SPECIAL TO THE TIMES

Things sure have changed since the three little pigs. A thousand feet above San Diego, where the wind huffs and puffs, Dick Dunham and Jeannie Kidwell have built a house of straw. Straw bales, that is. And it stands as steady as a rock. Literally. Because it is constructed around a giant granite boulder that serves as the centerpiece of their home.

"It's part eccentricity," says Dunham, but he adds they also created this unique design "for strictly practical reasons. This rock and the house's straw-bale design are going to save us \$200 to \$300 a month in energy bills."

It was completed a year ago in February, just before the advent of California's energy crisis. With it, Dunham and Kidwell appear to have created the perfect, energy-independent house. And no thanks to its location: On a rise above the township of Jamul, they get buffeted by winds off the ocean and the desert, with temperatures regularly in the 90s by day and often in the 30s by night. Unlivable, you'd think, without central air and heating.



Photos by RICK LOOMIS / Los Angeles Times

House: Building With Straw

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Wrong, says Dunham—if you abandon the idea of traditional 2-by-4 timber construction. “I was a professor of psychology at Florida State. When Jeannie and I decided to retire back here, where we were born, we bought this piece of land, and then we went to the computer and asked a question: Given the most likely risks that the home would have—fire and earthquake—what material should we build from? And the answer came up loud and clear: straw.”

In fact, straw-bale construction, because of its density, is extremely fire resistant, but it also has many more attractive qualities, Dunham discovered. When it comes to insulation, it beats normal 2-by-4 wall construction hands down. Standard houses’ R-value (the measure of a wall’s resistance to heat or coolness) ranges from a rating of 13 to 19. With straw bales as insulation, the resistance level rockets to a rate of 40 to 50. Plus, straw is cheap, and, when stucco-covered, it is far less susceptible to termites than wood.

Its use dates from Nebraska’s pioneering days, in areas where sandy soil made sod houses impractical. In the last two decades, because of its flexibility, straw-bale construction has been enjoying a major revival, particularly in Northern California, much of the Southwest, northern Mexico, Australia, Europe and China. (Chinese authorities in earthquake-prone areas have started building straw-bale schools for better protection.)

Dunham and Kidwell say once they had decided on straw, their choice of architect was obvious. San Diego architect Drew Hubbell, son and partner of maverick artist-designer James Hubbell, has become a major proponent of the material and has designed projects using straw ranging from a seed storage facility for the Wild Animal Park in Escondido to a Quaker meeting hall in San Diego. Besides, Hubbell was, Dunham and Kidwell thought, perhaps the only one who would understand their rock.

“We’re sitting on a 1,100-foot-[high] granite mountain. This boulder is its peak. Its temperature comes from sources down deep. On hot days and cold, that rock will remain about 65 degrees, and the room around it will tend to stay near that.”

Through endless discussion, Dunham, Kidwell and Hubbell came up with a design for a Spanish mission-inspired earthy stucco house with a cliffhanging arcade of arched straw pillars covered with stucco. Driving up toward it from the valley below, you see what looks like a small, golden Greek temple. You enter through an intimate courtyard with gurgling water and desert plants that opens onto a very large open-plan living room with recycled arched doors, high sloping ceilings supported by recycled timber—glued chip wood beams—and see, at the far end, the rock.

Two-foot-thick walls create the sense of castle-like security, although the room remains airy with lots of French doors and windows. And the echo and clatteriness of new houses also don’t exist here, perhaps because the main floor area is exposed dirt. “These are poured earth floors,” says Dunham. “That also provides what amounts to thermal mass, the earth’s temperature coming into the room.”

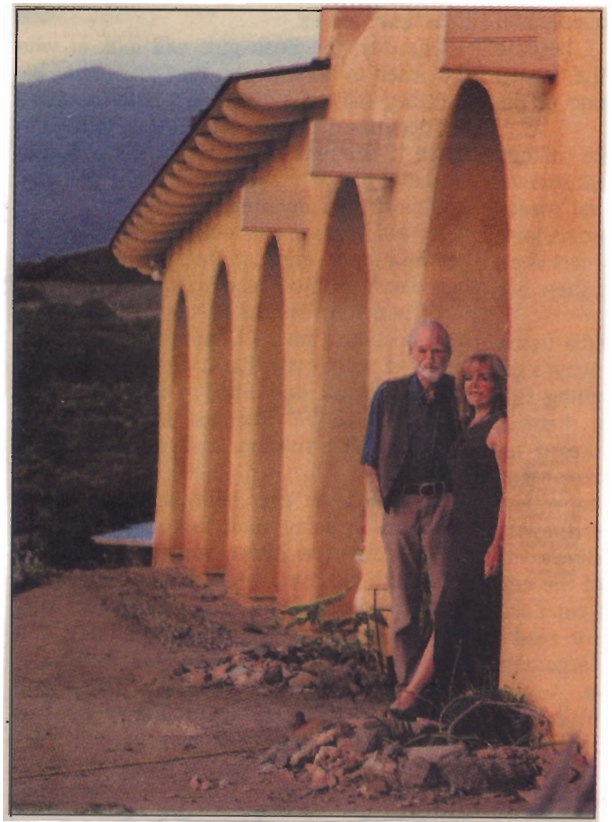
“The walls and floor are like coolness batteries,” adds Hubbell. “And the same with heat. You can heat it up and it will store in there. Straw is a wonderful insulator. Natural ventilation is important too, with good window designs.”

The master bedroom occupies most of one side of the rock. It has curved walls (“We whacked the bales into curves,” says Dunham), carpets on the poured earth floor, and straw bales holding up the master bed. “We missed the smell and presence of the straw after we’d stuccoed the walls,” says Kidwell, who also laid colored stones into quarry-tile paving around the edges of most of the rooms.

But if the straw is key to keeping the heat and cold out, the rock, with its 27-foot-high tower, is key to internal temperature management. The tiled Spanish round tower rises above the rock to several windows around its top. The windows, combined with the sloping ceilings, allow warm air to be vented out, Dunham says. On cold days the windows are closed and a large fan with cloth sails in the tower recirculates warm air downward. If necessary, the house can be warmed by one heater—a wood-burning stove.

But Dunham doesn’t think that will often be necessary. “We’re going to have a drip system from the tower,” he says. “The idea is to have water sheeting down over the rock and cascading into the moat. Our experience with it in our trials is that it can have a pretty dramatic effect [on room temperatures].”

“It’s like in greenhouses designed for orchids. They drop tem-



peratures by having water falling over fabric and blown by wind from behind, which makes a humid, chill atmosphere. But in winter, with the 10 passive solar water heaters we have, we can put very warm water up there, and run that down into the pond. So it will help with either cooling or heating. Eventually we’ll be largely independent of anything outside of the premises.”

Dunham says the house’s building costs were no more than the \$100-per-square-foot norm for standard construction. “Some straw houses have been built at \$7 per square foot. Others at \$150.” He says local building authorities were enthusiastic when Jeannie turned up with their permit application.

Yes, Dunham’s heard all the “Three Little Pigs” straw house jokes. But a certain approval becomes evident at the climax of any straw house building: wall-raising day. “We had 75 volunteers, including two architects, five builders and two psychoanalysts—and all the warmed-over hippies in the world, including me,” he says. “And we’ve had a continuous flow of visitors from all over the world since then.”

“When we were finishing our main construction, ours was the only straw-bale dwelling in urban San Diego. But a year later, I called a meeting of people who were either finishing or constructing straw-bale dwellings: There were 17.”

But none with a 12-foot mountain peak in the living room.