

An Estate in Bonny Doon

Natural forms, exuberant stonework and precise trim add style to a country house

by Eric Hoffman

It's about an 80-mile drive from San Francisco, south on Highway 1, to the turnoff to Bill Cunningham's dream. The major landmark is the cement factory in Davenport, a little seaside community that started out as a whaling station. The road to Bonny Doon intersects the highway a couple of hundred yards past the town, then winds up the wooded contours of a small canyon to the first escarpment of the Santa Cruz Mountains, 1,000 ft. above the sea. The ridge top is part meadowland and part forest, with stands of mature redwood, oak and fir trees.

A visit to a 270-acre parcel of land that was for sale in the middle of this setting convinced Bill Cunningham that it was time for a major career change. He had a successful dentistry practice in nearby Santa Cruz, but that wasn't the

creative outlet he wanted anymore. Instead, he saw the rural landscape on the ridge as a chance to involve himself in his long-standing appreciation of Arts and Crafts architecture, especially as practiced by the likes of the Greene brothers and Bernard Maybeck. Cunningham's wife Robin has a passion for plants, so her landscaping contributions would be a welcome addition to a residential development in these woods. The two had visions of a community of finely wrought homes on five-acre parcels, with a large tract of land set aside as open space.

And so with no experience in the construction business and no architectural training, Cunningham sold his dental practice and put up the proceeds along with his life savings to become a real-estate developer. He found enough inves-

tors to outbid a lumber company for the land, and set about to build a house on speculation that would establish the tone for the homes he hoped would follow.

A suitable style—Cunningham wanted to use natural materials extensively in the first house, with colors and forms that would make it seem a part of its setting. As he inquired among friends and associates for residential designers, the name of Clarke Shultes came up. Shultes lives in Santa Cruz, where he runs an office specializing in eclectic houses with a slant toward the Arts and Crafts period. The two men hit it off, and Shultes was hired to design a house that would be appropriate for the wooded setting.

Shultes' homes are usually built in established

neighborhoods, and his designs sometimes fall victim to neighborhood pressures to conform to recognized styles. But on the ridge top in Bonny Doon he had free rein to design a house from scratch. For inspiration, he looked to the trees. His goal was to invoke the shapes, colors and textures of the surrounding forest in the form and finish of the house.

Wherever he could, Shultes worked peeled logs into the structure—the entry is flanked by log columns, and the deck railing is supported by short log posts. The exterior siding is redwood board and batten. Inside the house, log beams are used as accents in the living spaces. On the west side of the house, the rounded forms of an eyebrow dormer and a two-story turret repeat the cylindrical tree-trunk forms. The steep roofs (16-in-12) mimic the shapes of the trees (photo top right). Wavy courses of cedar shingles cover the roofs, recalling the irregular patterns and soft shapes of coniferous foliage. Instead of sharp hips, the roof planes intersect with soft radii.

The price in time and effort to render these ideas was considerable. To fabricate the roof decking at the rounded hips, builder Greg Howerton's crew had to use built-up layers of ¼-in. plywood, pulled into place with a come-along and screwed to the framing. Then the roofing crew had to wilt the shingles with boiling water to coax them into following the contours of the roof. To wed the roofs to the forest, Shultes had the shingles sprayed with Copper Green, a product normally used for its preservative qualities. Says Shultes, "When the fog rolls in and your vision is somewhat blurred, the house fades into its surroundings because of its shape and color."

While the building's roof forms and colors unite it with the forest, it is the stonework that anchors the house to the site.

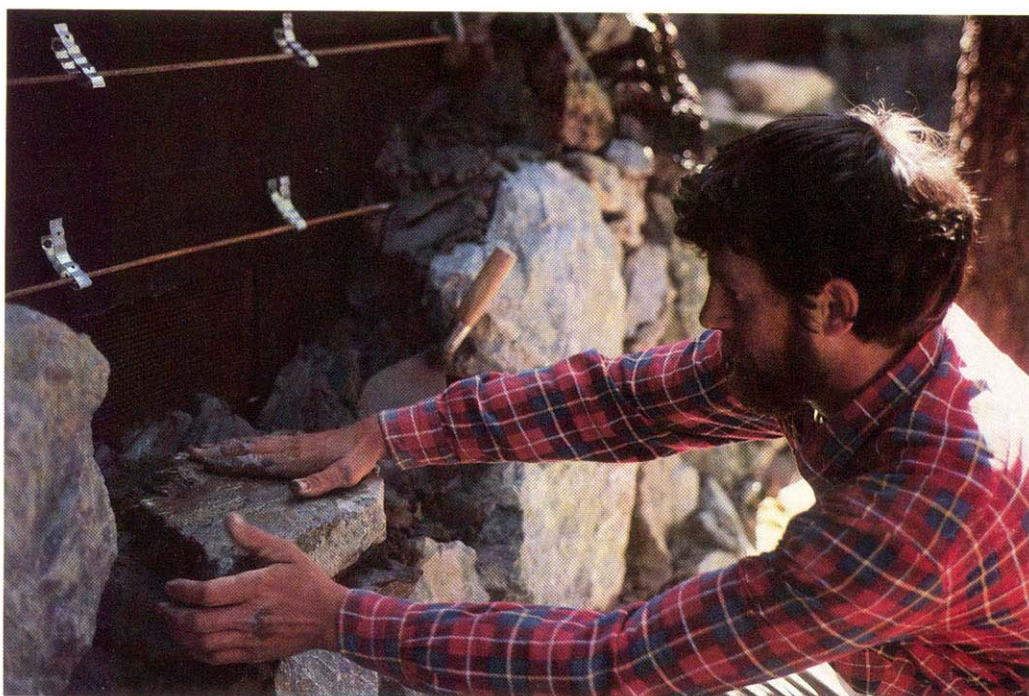
Stonework—Before he packed up his tools for the last time on the Cunningham job, stonemason Hansel Kern had built two immense fireplaces, several intricate stone walkways, numerous walls and a true arch. Counting the 200-yd. retaining wall along the entry road, Kern grouted and stacked over 1,200 tons of green serpentine stone that Cunningham had hauled 180 miles from the Sierra Nevada Mountains.

Hansel Kern is the son of the late Ken Kern, the author who inspired a generation of back-to-the-land builders with his books on alternative construction techniques. Hansel Kern has been making stone walls since he was 10 years old. A dozen years ago, when he was 16, he started crisscrossing California, busily laying rock for everyone from "aging hippies who need a stone fence to keep their goats from wandering away to people like Bill Cunningham who realize the art value of rock work."

Over the years as a stonemason, Kern has worked with dozens of varieties of rock and has settled on three favorites: green serpentine, desert fieldstone, and tailings from Sierra gold mines and hydroelectric shafts. Kern likes these materials best because they have sharp angles that will fit together with a minimum of mortar. He prefers not to shape the rocks into conformi-



Clarke Shultes' design for a house in a redwood forest pays homage to the trees in form and color. The steep roofs with rounded hips echo the silhouettes of the trees in the background, and the cedar shingles tinted green mimic the surrounding foliage.



Above, Hansel Kern taps a rock in place along the base of a low wall built against wood framing. In California, stonework has to be reinforced to resist earthquake jolts, so Kern has attached masonry ties to the studs. The ties in turn are folded around ¼-in. pencil iron reinforcing steel, which can be easily bent around the irregular rocks. Kern's work is characterized by invisible mortar lines (facing page) and stones carefully juxtaposed to amplify their differences in shape and size.

ty, and he often works an entire day without having to chip away at a stone to get it to fit into its niche.

Kern refuses to work with river rocks because it's a lot like stacking blocks, which he says is boring. Says Kern, "Give me a couple of dump-truck loads of green serpentine straight from a quarry and I'll be able to do something special."

Because California's earthquake-conscious building codes forbid unreinforced masonry, Kern's residential stonework is done as veneer. If he's working on a wood structure, he attaches masonry ties to the framing on 16-in. centers, spaced about 10 in. apart horizontally (photo above). California building codes call for a masonry tie for every 2 sq. ft. of surface area for veneer-type masonry, so Kern's reinforcing tech-

nique amounts to nearly twice as many ties as are normally required.

If he's going to work along a poured-concrete wall, Kern makes sure ties are part of the form-building. Standard masonry ties, which are 8 in. by ¾ in. by ½ in., have to be shoved through precut slots in the foundation forms and wired to rebar before the pour. With block walls, the ties have to be worked into the mortar at appropriate intervals. Each tie is bent into an L-shape, and the foot of the L is hooked over the inside of the block so it can't readily be pulled out. In situations where ties have not been provided in either block or concrete surfaces, Kern simply nails the required number of ties to the wall with a powder-actuated fastener.

A layer of stone veneer is very heavy, so Kern



Windows and door are cased with rounded trim stock milled from select 2x4s (left). Half-lap bird's-mouth joints at trim intersections (detail above) are used throughout the house, and were milled in place with routers.

so that it points almost straight up, beginning a line of subsequent stones that seem to burst geyserlike from the earth. In other places, the stones repose in sedimentary layers. One of his primary rules is to "balance" a wall. "Too often masons put all the big stuff at the bottom and the little rock at the top as if the top is where all the leftover material belongs," says Kern. "I like to put large stones and small stones throughout a wall. Big stones high in a wall balance a work and create curiosity."

Mortised trim—To maintain the continuity of the rounded look on the interior, Shultes drew up a trim detail that carries on the radiused feel of the peeled logs, but in a very precise manner. The detail uses hefty casings fashioned from kiln-dried vertical-grain Douglas fir 2x4s. Where trim members intersect, they are joined by way of a V-shaped half-lap on the end of one member and a V-shaped mortise in the other (photos left and above). The detail looked good on paper, but making it would present some challenges to the trim carpenters. The casings would eventually be finished with lacquer, so there wouldn't be any room for putty in these joints.

To make the trim efficiently, Cunningham turned to a pair of woodworkers who are well known in Santa Cruz for their work on sailboats. At Cunningham's suggestion, Rick Bornhurst and Yarrow Smith moved their cabinet shop into a renovated barn near the house, and pondered workable solutions to making the trim and the fastidious interlocking joinery shown in Shultes' intricate elevation drawings.

Milling the trim was straightforward work. A section of the trim shows the rounded profile to be half of an ellipse. The woodworkers ordered a custom-made cutterhead for their shaper to match the profile drawn by Shultes, and then ran 3,000 lineal feet of 2x4 stock through the machine. Each piece got two passes per edge. The first took most of the unwanted material, and a second light touch cleaned up the surface.

Shultes wanted the trim members to be full-length pieces, unbroken by scarf joints. In some

makes sure that the building's foundation is substantial enough to carry its weight. Usually the builder will widen the footing before the foundation is poured to pick up the load of the stone. But sometimes this necessity is overlooked—even by the inspectors—and a separate footing for the stonework has to be grafted onto the building's foundation.

Kern folds the ties around horizontal lengths of ¼-in. pencil iron so that the iron ends up about 3½ in. from the wall. He prefers pencil

iron to ¾-in. rebar because the ¼-in. stuff is flexible enough to bend easily around the irregular shapes of the rock as the stones are mortared into place.

Once underway Kern's style is all his own (photo p. 66). He sometimes uses one kind of stone as a main course and another to create veins of a different tone. He often develops contrasts by placing smooth stones next to jagged rocks, or juxtaposing small pieces next to hefty boulders. Sometimes Kern will plant a long stone

places, as many as five vertical pieces intersect a horizontal member. Some verticals run between two horizontal pieces, and their length has to be on the money. Recalls Bornhurst, "In essence, hundreds of trim pieces became an interlocking matrix, and if a piece didn't fit perfectly, other pieces would be affected." Bornhurst and Smith reasoned that the most accurate and efficient way to cut the many joints would be with template-guided routers. The templates would have to clamp to a piece of installed trim, so that the mortises could be cut in place.

Templates and bits—To make the templates, the two woodworkers had first to think about the bits they were going to use to make the cuts. They decided on straight-flute bits with bearings mounted above the cutters to follow the contours of the templates.

For the mortise cut they used a 1/4-in. straight bit with a 5/8-in. bearing, as shown in the drawing at top right. They used the small-diameter bit for the mortise because they wanted as small a radius as possible at the point of the V. To complicate matters, the mortise template had to be oversized to allow for the difference in diameter between the bit and the bearing. In this case, the offset amounted to 3/16 in. per side. Once they had a master template made out of 1/4-in. Plexiglas they made a dozen copies using a router with a flush-trim bit to duplicate the master. They knew the templates would be subject to gouges from accidental router cuts, and once a template is damaged, it's tough to repair it.

Making the half-lap, or beak, portion of a joint took three steps. First, the end was rough cut with a power miter saw. Next, a male template that corresponded to the profile of the V-shaped mortise was clamped about 1/4 in. from the rough cut, and the finished edge cleaned up with a 5/8-in. dia. flush-cut trim bit (drawing, middle right). Finally, the template was removed and the trim stock turned over. At this point the other end of the template could come into play. Its straight side was clamped to the backside of the beak, and the wood was routed out to complete the half-lap joint (drawing bottom right). By clamping the templates directly over carefully scribed layout lines, the trim carpenters could work to within 1/64 in.

When they first started experimenting with the templates, Bornhurst and Smith bought some bits from a supplier with the bearings already in place. The bits were expensive, and after a predictable number of cuts the carbide edges wore down and the bearings failed. Faced with hundreds of joints to cut, they decided to try to reduce their tool expenses by adding bearings to ordinary straight-flute bits. To do so, they affixed router-bit bearings from their local supplier to the 1/4-in. bit shafts with Loc-tite, a glue normally used to keep bolts and nuts from separating on machinery that is subject to intense vibration. Smith and Bornhurst found that their homemade versions lasted just as long as the more expensive ones, and that the bearings would give out long before the glue bond failed. □

Eric Hoffman writes about houses and travel from his home in Santa Cruz, Calif.

