Victorian Modern

Architect Stephen Tilly crafts an uncommon speculative home that is influenced by its neighborhood

by Mark Feirer

In 1979, Stephen Tilly and Elizabeth Martin bought a fieldstone and shingle house in Dobbs Ferry, N. Y., on a hill overlooking the Hudson River. The house was one of three adjacent structures that had been built around 1905 by Elizabeth Ogden Bystrom, a wealthy and somewhat eccentric physician who designed the houses as residences for herself and her sisters. Nearby was a clapboard cottage built in the 1860s, though not by Dr. Bystrom.

Tilly had been trained as an architect at the Massachusetts Institute of Technology in the early 1970s, an era when students took an active interest in both design and construction. It wasn't unusual in those days for students to supplement their education by working as part-time building contractors. So it's not surprising that Tilly soon began to repair the house he and Martin bought. Neighbors took notice, and soon Tilly was repairing the other Bystrom houses too. As remodelings and additions were required, he consulted on repairs to those as well, working always within the context of the original designs. About this time, officials from Westchester County and the local historical society began to consider the Bystrom houses for inclusion in a historic district.

Crisis or opportunity?—In 1983, the elderly owner of the clapboard cottage passed away, and an appraisal of the property indicated its value as a building site. Local zoning laws favor density, and the lot could have been developed with as many as six single-family units in some form. An aggressive developer might even have been tempted to demolish the cottage in order to provide parking space for such a development. If that were to occur, it would completely spoil the quiet, turn-of-the century character of the neighborhood.

Though it seemed to the Ogden Park neighbors that development was inevitable, they decided that it didn't need to have a negative impact if it were done carefully. So they began a vigorous search for a buyer who would respect the design vision established by Dr. Bystrom. The search was in vain, however, and the neighbors realized that they would have to buy and develop the property themselves.

As it worked out, Tilly and Martin took on the project, and the result (photos facing page) is in keeping with the style of the neighborhood. About 40% of the funds came from a construction loan, 13% came from one of the neighbors, and the balance came from Tilly and Martin.

Many roles for an architect—Tilly was more than the developer and primary investor in the project. He also designed the house, acted as general contractor, and even helped to frame the house alongside carpenter Scott McBride.

Perhaps the most important of Tilly's roles, however, was that of neighbor. The care he brought to the design was based on the affection he had for the neighborhood and the site itself. That kind of affection goes well beyond the pragmatic approach that begins with balance sheets and profit. He knew how the shadows fell in summer, and where river views opened up in the fall.

The garden—Tilly's design for the house owes its form to the things that restricted it. In fact, these concerns defined the form of the house to such a degree that Tilly once described the project as being "a diagram of constraints." One of the most important things to design around was the garden.

The site slopes gracefully toward the Hudson, and its southern, uphill side encompasses what had been a carefully tended garden of shrubs and flowers (photo facing page, bottom left). The garden had been worked for 30 years by a professor's wife, who designed her planting beds in the eccentric and romantic manner of English gardens. As a landscape designer, Martin appreciated the care that had gone into planting the area. The site boasts a number of trees and flowering shrubs, including forsythia, quince, weigelia, azaleas, rhododendrons and lilacs. Old cultivars of both rambling and climbing rose varieties hang from trellises. Bulbs planted long ago have spread over the years, and tulips, daffodils, crocuses, scilla and snowdrops appear in unexpected places.

While much of the old garden remained when Tilly and Martin took over the property, it had not been seriously tended for about 10 years. Brambles, poison ivy, Virginia creeper and bindweed filled in spaces between the other plants. Instead of clearing the whole area and starting from scratch, Tilly and Martin, with occasional help from some hired labor, selectively cleared the area by hand. At the same time, they were able to move numerous shrubs and perennials to the sides of the lot, where they would be safe from the heavy equipment that would carve out a niche for the new house. Much later, when construction was complete, all these plants would be relocated, and new plants would be added to the garden, including hosta, ferns, wood hyacinths, Virginia bluebells, periwinkle and pachysandra, along with irises, peonies, phlox and forget-me-nots.

Size and style—It was decided early on that only one house would be built on the property, even though the zoning allowed for more. Tilly placed it near the center of the lot, leaving no space for future development. This was more a design decision than one based on economics, since it would probably have been more profitable to build all the allowable structures.

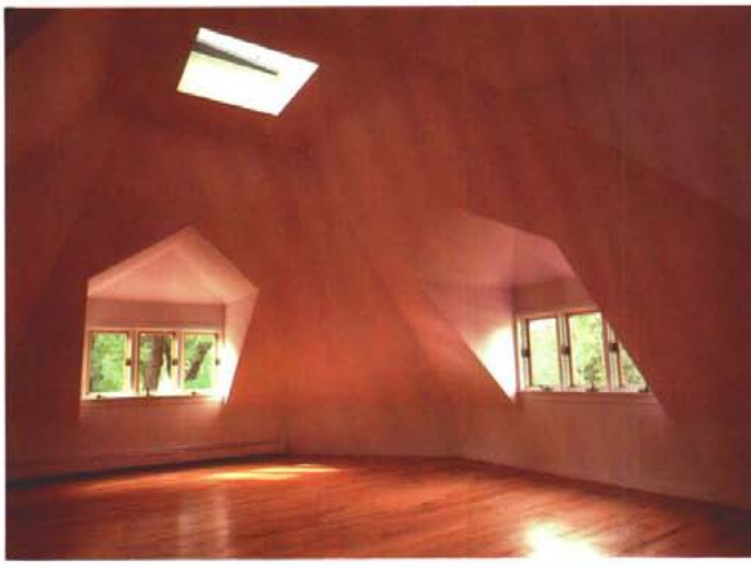
Two of the fieldstone and shingle houses in the neighborhood include private apartments, used most recently as rental units. They bring a subtle and positive flavor to the neighborhood, adding just enough different people and ages to provide a more dynamic mix. So the design for the new house added a separate apartment—a two-level, one-bedroom studio.

The "neo-Colonial" style of the adjacent Bystrom structures was another formative design consideration. The new structure would have to echo in a selective way the large volumes, steep roofs, dormers and shingled second stories of the neighboring homes, and present a pleasant counterpoint to the clapboard-sided cottage. Tilly combined shingles on the upper story of his design with clapboards below, a typical early 1900s style, and this solution links the new structure to the older homes in the neighborhood.

Solar heat and energy conservation—Tilly knew that a house with the sweeping, expansive features of classic Shingle-style mansions, even if built to standard codes, would be difficult and expensive to heat. It was evident that something had to be done either to conserve energy or acquire it inexpensively, and Tilly did both.

The site had good access to the winter sun. Since he wanted to avoid the use of any obvious

Facing page: The clapboard and shingle exterior of the house (top) echoes the turn-of-the-century styling evident elsewhere in the historic neighborhood. Some visitors to the house think the project was a remodel, instead of new construction. The house gets a passive-solar assist for its heating. The southern side faces away from the Hudson River, so most of the views from the house are toward the garden (left). The curved walls and roof of the house sweep from the entry on one side to a second-level pocket deck on the other side (right). This deck is accessible from the bedroom of the apartment, and offers an outdoor, yet protected, place to enjoy the sunlight.



solar paraphernalia on the exterior, a passive-solar approach seemed to make the most sense. This suggested that the living areas would be arranged along the southern portion of the lot. Since the southern exposure was toward the garden, and away from views of the Hudson River, Tilly used the garden as a focal point for most of the views, though it's possible to catch glimpses of the river from every floor in the house.

The climate in southern New York state couldn't supply all the house's heating needs, however, so supplemental heating was provided in the form of a Weil-McLain (Blaine St., Michigan City, Ind. 46360) VHE-4 high-efficiency gas-fired hot-water boiler, connected to a network of hot-water baseboard heaters. The system operates with five separate zones, each controlled by an independent thermostat. This allows the heating to be fine-tuned for maximum efficiency and convenience.

No heating system can be truly effective unless the heat generated is conserved, so Tilly made sure that the house had more insulation than the codes require. The thoughtful layout of the house also conserves heat. Almost the entire north side of the house is a service corridor that includes entry halls for both the house and the apartment, closets, a bathroom and a laundry area. You might think that this would eliminate all chances for balanced natural lighting, but a careful look at the plans will prove otherwise. The sinuous shape of the southern facade allows light to enter the living and dining rooms of the main house from various angles. In addition, fully glazed French doors on the north wall of the living room steal light and a bit of a view from a window directly across the hallway.

A speculative project—After the constraints of energy, garden, site and size had their chance to shape the design, one more thing had to be considered. The house was being built on spec, and that meant it had to be marketable. With a house of this size, extravagant detailing could put the price well beyond nearly everyone's reach. As it turned out, the house sold for $370,000, a figure appropriate to the area.

Nonetheless, the house isn't dull. With the help of some expert carpentry, the house has the kind of grace that comes to anything made with painstaking care. Tilly once said he allowed himself to design the shingle-style sweeps and swoops simply because he knew they would be masterfully executed by demon carpenter Scott McBride (see McBride's article about framing the roof of the house in *FHB* #28).

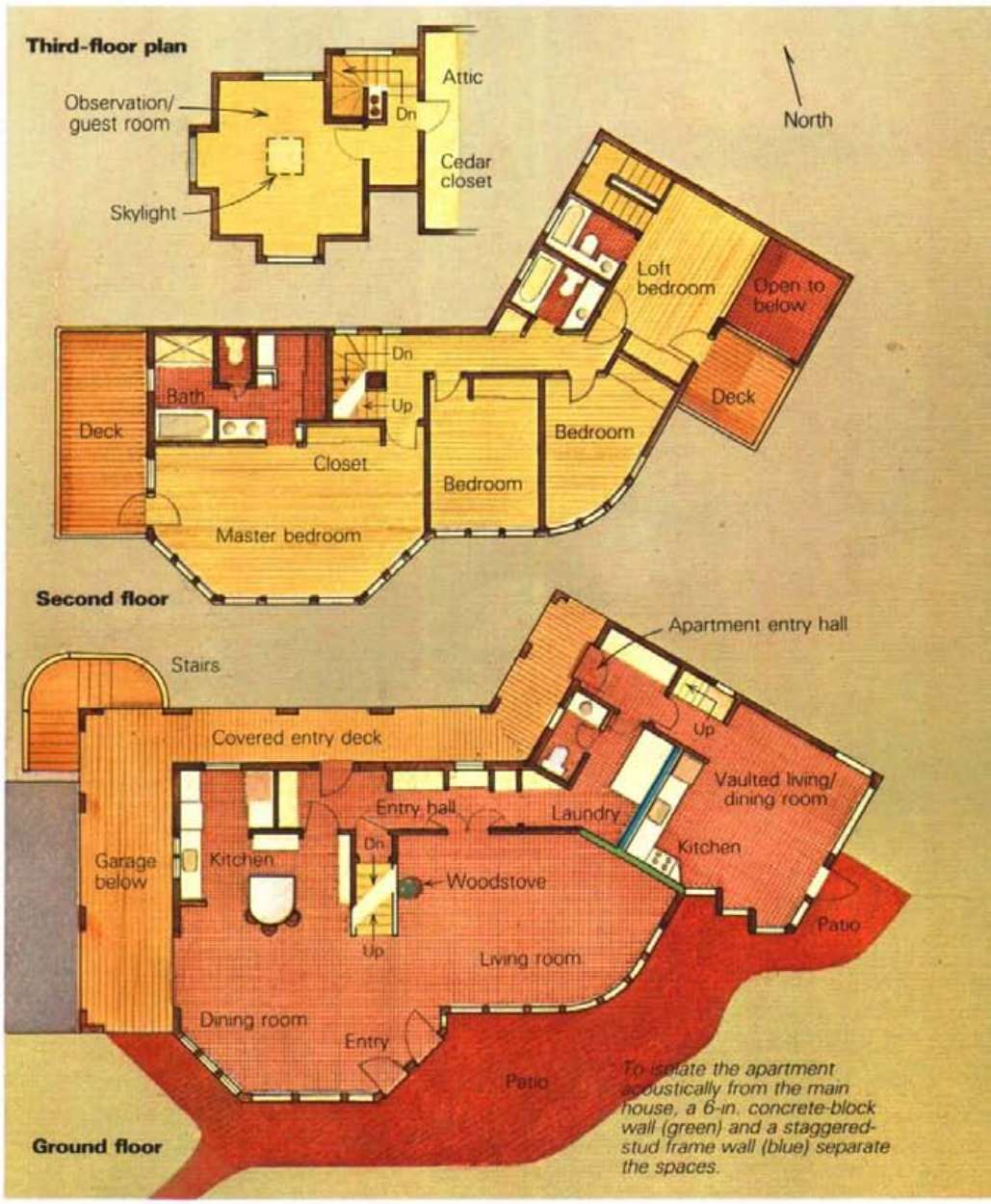
A Victorian Modern home—Emerging from the forest of design constraints is a building that fits in well with the neighboring architecture. So well, in fact, that visitors to the house have occasionally complimented Tilly on an excellent remodeling job.

A versatile floor plan, shown in the drawing below, can serve equally well as a single-family house or as a house with an attached private apartment. The structure is divided into a 2,400-sq. ft. main house and a 700-sq. ft. apartment, and includes nearly 600 sq. ft. of decks. On the ground floor, the living room, dining room, kitchen (photo facing page, top left and right) and main entry of the main house share almost uninterrupted space. Tilly shaped these rooms to share views of the garden, making a relatively small area seem larger. In addition, the lack of interior partitions allows heat to circulate from the solar-charged slab and the living-room woodstove (photo facing page, top right).

The living rooms of the main house and the apartment share a party wall, but it's a safe bet that Mozart played in one won't interfere with Mick Jagger in the other. A 6-in. concrete-block wall separates the rooms, with ⅝-in. drywall laminated to each side. The apartment's glazed south zigzag wall (bottom photo, facing page) scoops up the sun, while solid walls face the main house for the sake of privacy.

Other privacy considerations had to be made as well. By placing the studio entrance on a portion of the house diagonally opposite from the main entrance, Tilly ensured the privacy of both entries. A laundry area serves as a buffer zone.

The second floor is the sleeping level for the building, providing two bedrooms and a master



Facing page: The first-level interior of the house is extensively tiled to provide durable surfaces and to increase the structure's thermal mass. Floors are tile over a 4-in. concrete slab. In the kitchen (top left), backsplashes and a built-in table are all finished with various colors of tile. The staircase that separates the kitchen from the living room (top right) is a key element of a passive cooling system. As it winds upward through all three levels of the house, the staircase collects summertime heat from each and exhausts it through windows at the top. On the third floor, above the bedrooms, is the observation room (middle right). Windows break into the vaulted space on three sides, and views are good to both the garden and the Hudson River. An operable skylight at the peak of the room aids ventilation on hot days. The attached, but private apartment (bottom) receives a passive-solar assist through the large windows that step along the south side. Additional light comes in through the wedge of glass that separates the vaulted living room from the pocket deck above.

Drawing: Gary Williamson

Working with curves. **The large number of windows in the curved exterior walls made for difficult framing. Curved plates were cut from plywood, and individually framed window sections (complete with headers) were nailed in place (above). Parts of the second-level floor structure were framed radially to follow the curved walls, and curved blocking at the rafter ends was bandsawn to follow the curves. The entry stairway (top) was originally planned as a rectangular structure (note the angular footing). Later the design was changed, and carpenter Scott McBride formed a curved skin of steam-bent cypress strips and cedar shingles.**

bedroom for the main house, and one bedroom for the apartment. If the entire house is used by only one family, the door between the apartment and the main house can be unlocked, and the entire apartment can become a fully equipped master suite.

Up one last flight of stairs in the main house is an observation room that could serve equally well as bedroom, study or sanctuary (middle photo, previous page). Windows that poke through the almost geodesic vault of the room offer bird's-eye views of the garden, as well as longer views to the Hudson.

Foundation and floor slabs—The foundation was built of 8-in. concrete block that supports concrete-slab floors on the first floor of the house. The slabs are 4 in. thick, and provide thermal mass for the passive-solar heating system. Under the apartment, the slab is on grade, insulated underneath with 2 in. of polystyrene blueboard (Dow Chemical USA, Inquiry Services, 1700 South Saginaw Rd., Midland, Mich. 48674). Slab-on-grade was chosen in this area to minimize the amount of excavation.

Most of the slab under the main house is supported by a system of structural-steel columns and steel I-beams, which leaves space for a two-car garage and storage area. Extensions from the basically rectangular main foundation, such as the large bay on the south and a wedge-shaped area near the apartment, are slab-on-grade to avoid unnecessary excavation. Once the slabs for the main house and the apartment were in place, a 1½-in. thick top coat reinforced with wire mesh was poured over them. This provides additional mass and serves as a leveling base for the ceramic tile that covers the entire first level.

Energy-efficient details—All exterior walls of the house are 2x6 construction, 16 in. o. c. in most walls, but spaced wherever a stud could be squeezed in on the highly glazed south walls, with R-19 fiberglass batts in the cavities. To increase the insulation levels of the walls, a 1-in. layer of Thermax insulated sheathing (The Celotex Corp., P.O. Box 22602, Tampa, Fla. 33622) was fastened to the outside of the studs. The carpenters felt, and Tilly agreed, that it would be better to nail the clapboard siding into something solid, like plywood sheathing, than it would be to nail into the softer insulated sheathing. Since the structure didn't depend heavily on the plywood for rigidity, the sheathing was nailed over the Thermax, and served as a substrate for the siding.

Attics in the house were completely wrapped with fiberglass insulation, with R-19 going in the rafters and R-30 in the ceiling joists below. Although the attics weren't intended to be conditioned space, Tilly wanted them to be warmer than the outside air temperature in the winter so that they'd be better suited for storage. The additional insulation also improved the acoustics of the bedrooms, making them quieter. A ventilation channel above the rafter insulation leads to a continuous ridge vent.

Summer ventilation of the house is encouraged by another energy-efficient feature. The interior stairwell winds upwards through all levels of the house and serves as a thermal chimney. At each level of the stairwell are operable windows, and at the top is a vent to a 36-in. whole-house fan. The fan, controlled by a timer, operates mostly in the evening, when it draws cool night air through windows in the living room. To keep summer heat gain to a minimum, 2-ft. deep eaves surround the house.

Building a curved stairway—The stairway from the driveway to the entry deck was originally designed with straight runs of steps leading to a rectangular landing. But what was actually built is considerably more interesting—and considerably more difficult to put together.

The final version pivots around the northwest corner of the house, turning 180° from the driveway pavement to the entry deck above. Like the first version, it too incorporates a landing, but this one is semicircular. McBride supported the structure with a framework of Wolmanized wood. Four-by-four posts were fastened to metal anchors embedded in a concrete footing (poured when the rectangular version of the stairwell was still planned). Two-by-tens stretch between the posts to support 2x6 floor joists, which fan out radially from the corner of the

porch. Vertical 2x4s, fastened to the joists and anchored to a plate on the foundation, form the walls of the stairwell.

To get the smooth, sculptural curve of the stairwell and provide a nailing surface for the wood-shingle siding, McBride steam-bent cypress and screwed it in place (top photo, facing page). To bend the continuous lengths of wood, he built a 16-ft. long steambox lined with sheet metal, and fired it up with a kerosene heater. This allowed him to soften the ⅜-in. by 2-in. cypress boards just enough to wrap them around the stairwell framing.

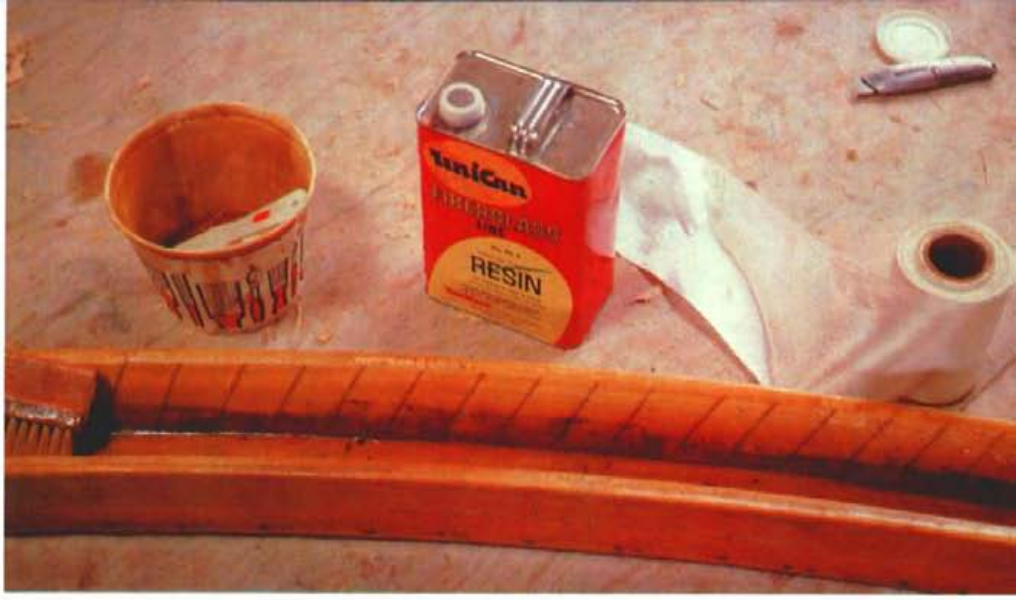
The handrail for the stairway is made from sections of 2x8 cedar, glued with resorcinol and given bullnose edges. McBride carefully feathered the joints to give the illusion that the handrail is one continuous piece.

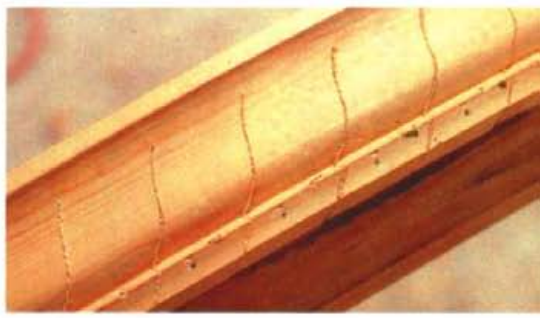
More curved surfaces—Some of the exterior 2x6 walls were curved as well. Plates were cut from ¾-in. plywood and doubled to match the straight 2x6 plates they joined. Windows were built in segments using standard headers; the exterior plywood sheathing is actually what gives the walls their curve (bottom photo, facing page). To provide a continuous nailing surface at the top and bottom plates, pieces of 5/4 pine furring were bandsawn to the desired curve and nailed to the plates. Interior wall surfaces are ⅝-in. drywall, and the sheets were moistened with water to help them bend to the curves.

Other curved features of the house were inevitable, taking their cues from the walls. Building gutters to follow the curved eave line was one of the most difficult jobs (photos at right). By the time the house was ready for gutters, fall had arrived, and the cool temperatures made wood bending and gluing difficult. McBride set up a workshop in the observation room, using a kerosene heater to keep the room warm.

The bottom of the gutter was cut from 1x cypress, sawn to the correct curve and put together in sections. For the back side of the gutter McBride steam-bent more 1x cypress and screwed it to the assembled bottom section. Gutters can be a fairly conspicuous part of a house, especially when they face an outdoor patio, and the visible front surface of the gutter couldn't be just a repeat of the flat back surface. So for the face, McBride used crown molding to follow the curve. Using a jig to ensure uniform cuts, he kerfed the molding about every 2 in., sawing from the bottom edge upwards. The cuts were slightly angled, and stopped just short of the top edge of the molding. This "broke the back" of the molding and allowed it to follow the curve set by the other two parts of the gutter. It was then fastened with small galvanized finish nails and resorcinol glue. When the glue had thoroughly dried, McBride coated the interior of the gutter with fiberglass (photo top right) to make it waterproof.

When it came time for installation, McBride found that the gutter had sprung slightly out of shape. To coax the gutter against the eaves, he worked gradually from one end to the other, lag-bolting through the gutter back and into the 2x blocking between the rafter ends. The shape of the gutter matches the aluminum gutter it meets, and the effect (photo above) is of one continuous gutter that wraps around the house. Where the gutters joined, the connection was thoroughly coated with fiberglass. This solution wasn't entirely effective, however, and there was some leakage as the fiberglass separated from the aluminum. A liberal application of silicone sealer solved the problem.





Gutters. **Building curved gutters for the house presented a considerable challenge. The floor of the gutter was bandsawn from sections of 1x cypress, while the back of the gutter was steam-bent from a single length (top). For the front face of the gutter, McBride saw-kerfed crown molding (right) and bent it around the previously built cypress L-section, using galvanized finish nails and waterproof glue to hold it in place. Alternating layers of fiberglass resin and fabric waterproof the inside of the gutter. The section of curved wooden gutter joins standard metal gutters on either end (below); fiberglass and silicone sealant prevent leaks.**

A new code: fire sprinklers—Very few communities in the U. S. require fire sprinklers in all new residential construction, but the village of Dobbs Ferry is one of them. Fire-sprinkler systems are usually separate from the regular water system of a house, and are of two basic types. Dry systems have water in the pipes only when there is a fire, while wet systems, such as the one used in this house, are always full. Design guidelines come from the National Fire Protection Association (Batterymarch Park, Quincy, Mass. 02269). Ask for publication NFPA 13-D. Tilly's system operates at street pressure, and includes a main shutoff valve and an alarm that goes off when water begins running through the system. The installed sprinkler system added about $3,500 to the cost of the house. □

Photos pp. 68-71: Stephen Tilly