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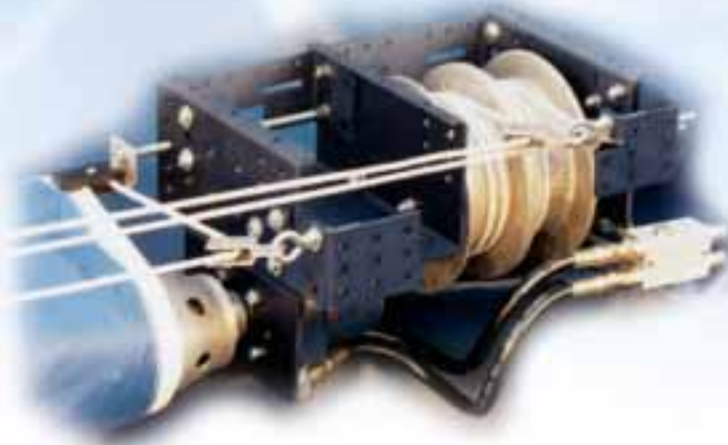
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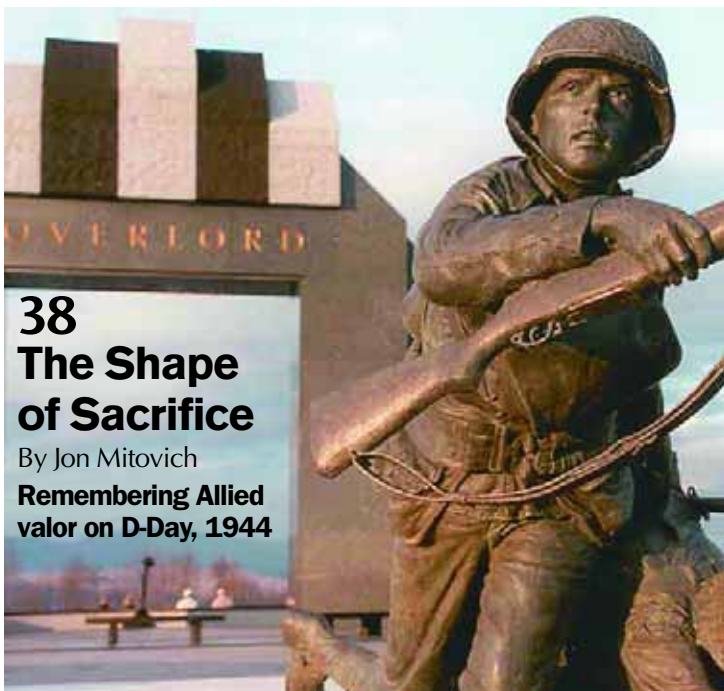
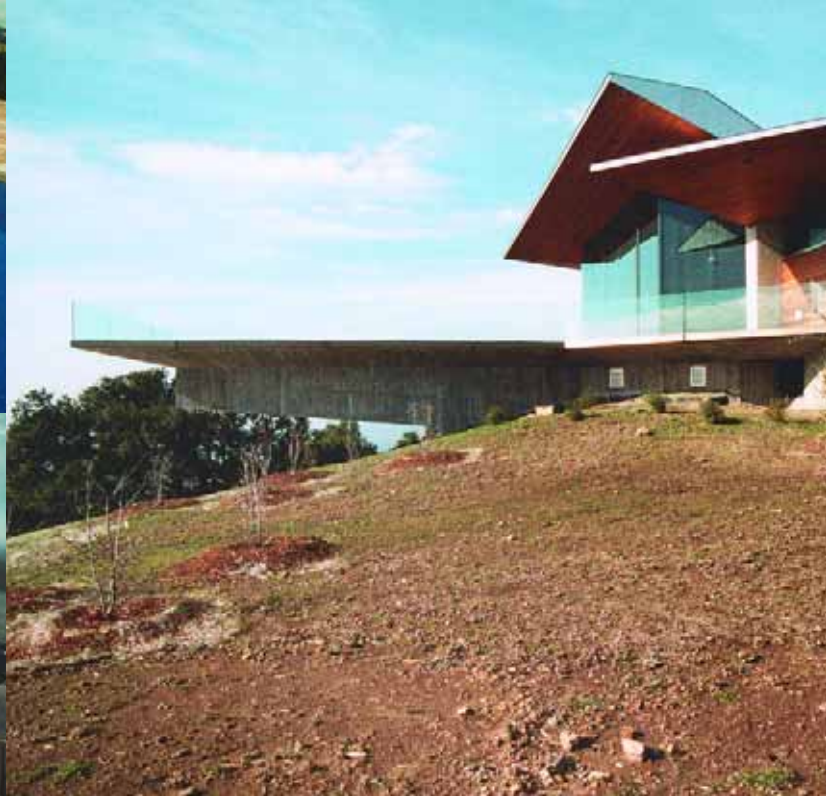
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features

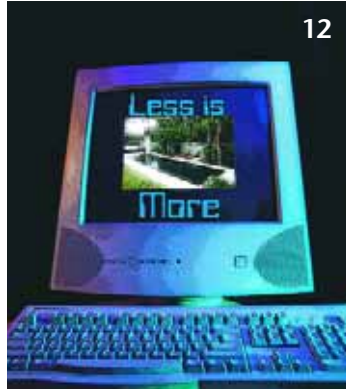
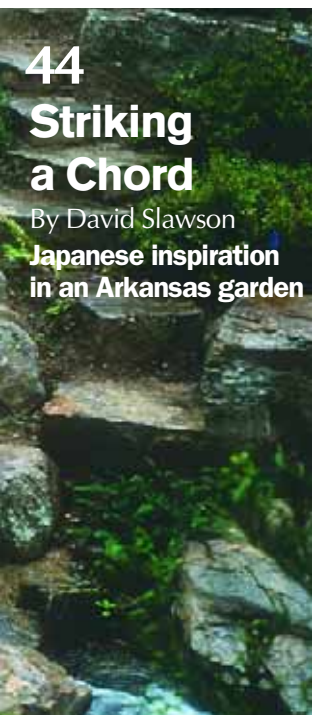


columns



44 Striking a Chord

By David Slawson
Japanese inspiration
in an Arkansas garden



12

6 Structures

By Eric Herman

**Fueling a client's
'dream machine'**

12 Aqua Culture

By Brian Van Bower

**Angling in on
design simplicity**

20 Natural Companions

By Stephanie Rose

**The importance of
continuous education**

26 Detail #39

By David Tisherman

**Artistry and dignity,
even with drain covers**

66 Book Notes

By Mike Farley

**A fine (and much
needed) pond resource**



26



20

departments

8 Letters

10 In This Issue

58 Advertiser Index

58 Of Interest Index

60 Of Interest



On the cover:

Photo by Sylvia Banks, Seven Hills, Ohio, courtesy David Slawson, Cleveland, Ohio

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By Eric Herman

Roaring Up the High Road

When I was a kid, I was obsessed with hot rods.

I suspect this resulted from my dad's subscriptions to magazines such as *Road & Track* and *Street Rod*: I was mesmerized by the chrome engines, fancy rims, custom interiors and all those audacious paint jobs, and I'd spend hours poring over the pictures, re-reading the articles and dreaming about a set of wheels that would someday be mine.

As a teen, my first car was a beat up '66 Ford Ranchero – dented body, tarnished hub caps and faded sea-green paint. It was a far cry indeed from the tricked-out machines I coveted, but by the time I sold it six years later, I have to say that the old wagon had come a long way: gleaming chrome rims, a great stereo and, best of all, black pinstripes on a pearl-white paint job. It looked great, even though the engine, suspension and body were nothing more than factory stock.

I'd be willing to put up the pink slip of my *next* car on a bet that auto-parts and accessories manufacturers move a lot more merchandise to the legions of average Joes like me than they do to collectors with garages full of vintage automobiles.

This is why I credit *WaterShapes* for doing the same sort of dream-feeding work as *Road & Track* and other magazines geared to the ambitions of "car crazies": By showing so many spectacular examples of recreational and decorative water and publishing so many projects with outsized ambitions and budgets, the magazine informs its readers about the extremes of the spectrum of possibilities and inspires you to offer your clients watershapes that reach beyond the ordinary.

Indeed, one of the most gratifying things we ever hear is how many of you actually share copies of *WaterShapes* with clients when discussing potential designs and approaches to technical issues. That's a practice I hope continues, for the simple reason that it's tough for consumers to want something they've never seen.

Case in point: On page 32 of this issue, you'll find coverage of a project that is as high-end and outrageous as any I've ever seen – a true hot rod of a pool, if you will. Although few may ever work on such a project, this article is a must for anyone who loves really cool swimming pools in spectacular places.

In the first article we ran on this project (see our May 2004 issue), watershaper Steve Dallons of Pacific Pools in Alamo, Calif., let us take a look under the hood of the pool and spa, which he has suspended in a cantilevered deck that soars well beyond the second level of an absolutely breathtaking mountaintop home. This time, we finish the coverage with an assemblage of amazing photos of the finished project.

But even with its lofty setting, indoor/outdoor design, precise construction and spectacular materials, we're still looking at a basic rectangle that's not so far removed from thousands of pools that are now being considered for countless other settings. What's important, I think, is how inspirational Steve's project can become by leading a prospective client to consider the possibility of, say, upgrading the decking, incorporating a perimeter-overflow system or even tiling the pool's interior.

To be sure, the typical middle-class homeowner won't go for the whole program (just as I never managed to add an all-leather interior to my Ranchero), but the possibility is out there for one and all to absorb. That's why we select projects for publication the way we do: It's just plain fun to think about what "someday" might bring.

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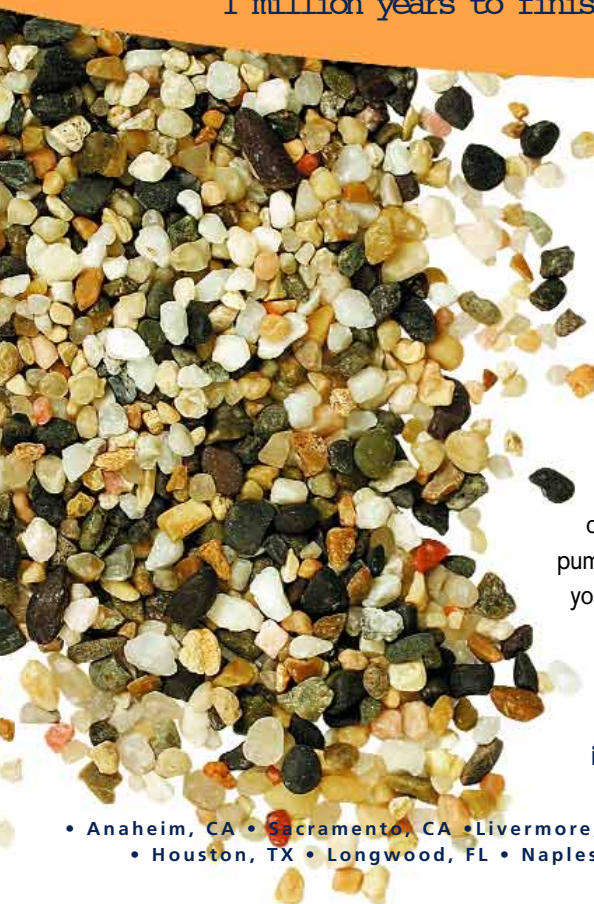


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good pads?

I'd like to address a troubling photograph in George Forni's article in the January 2004 issue.

The article "Free and Clear" describes the design and installation of ponds and includes discussions of hydraulics, filtration and water management. George Forni notes, "In almost all cases, the equipment will run constantly, which puts premiums on efficient hydraulics, system reliability and basic serviceability." Yet looking at the photograph on page 66, it would seem that someone did not read the above sentence.

q Why incorporate a self-priming pump for a system that appears to be below grade?

q Looking at the pump, we see a 90-degree elbow directly in front of the pump and yet another 90-degree elbow directly above the previous elbow. Basic pump installation guidelines recommend against both practices. With proper engineering and pre-planning, both elbows could have been eliminated.

q As for the pump discharge, it would appear that a bushing is used to reduce from four inches to three inches – might I suggest instead an eccentric increaser?

q An isolation/throttling valve for the pump discharge also seems to be missing. Short of isolating both filters, it would appear that a cleaning of the strainer would also result in wet shoes.

There are other (more minor) issues that could be mentioned that would have made for a more efficient and serviceable system. The lack of unions indicates that the installer was not thinking about future repair of the pumps or multi-port valves.

Because *WaterShapes* prides itself on promoting quality, it seems appropriate

to raise these concerns.

Terry O'Neill

If It's Water

Downington, Pa.

George Forni responds: Mr.

O'Neill brings up some valid points for designing, engineering and pre-planning *new* equipment vaults or set layouts. The vault he is referring to was in fact a renovation. The original was rife with serious safety issues that we resolved as best we could in the available space.

In all cases, our first concern is that of operator/technician safety, primarily with respect to electrocution. Many times those clients who use our renovation services do not want to incur (or simply cannot afford) the cost of complete tear-out and new construction, and in those instances we must work with what exists.

In this case, the vault was gutted down to the suction and discharge plumbing's penetrations through the wall. Our aim was to improve the operation of the waterfeature (which was accomplished) with safety and with significantly enhanced access.

As for the isolation valves, the entry/egress plumbing penetration locations are cut off in the photo – and all are equipped with shutoff valves. (If you study the photo, you can see the handle of the suction-side isolation valve in the lower left corner.)

Have something to add to this discussion — or to any other discussion raised in the pages of *WaterShapes*? If so, please use this forum to communicate with other watershapers by sending us a letter — by email to eh@water-shapes.com, by fax at (818) 715-9059 or by mail to *WaterShapes*, P.O. Box 306, Woodland Hills, CA 91365

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Steve Dallons is owner and president of Pacific Pools in Alamo, Calif. He established the firm in 1985 after spending five frustrating years working in a volume builder's design and sales departments. From the start, Pacific Pools has focused exclusively on creating quality, custom swimming pools and spas for residential clients in the San Francisco Bay area. Dallons prides himself on his hands-on approach to project management and his focus on offering clients the highest levels of service through all phases of the design and construction process. He has a background in design and architecture and is a graduate of the Genesis 3 Design School.

Jon Mitovich is president and general manager of Roman Fountains, a designer and manufacturer of fountain-system packages and components based in Albuquerque, N.M. He graduated in 1976 from Southern Methodist University's Cox School of Business in Dallas and has participated in seminars on fountain and pool design at UCLA and Harvard's Graduate School of Design. Mitovich is a member of the American Society of Landscape Architects, the Construction Specifications Institute and the National Spa & Pool Institute. He has conducted classes and seminars on the fountain

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business and fountain design for various ASLA and NSPI chapters to help watershapers understand the origin, history and application of water in architectural environments. He also has written for a variety of trade publications, including *WaterShapes*.

David Slawson, PhD, is a Cleveland, Ohio-based landscape artist with 30 years' experience in designing, teaching, writing and lecturing. He apprenticed in Kyoto under Kinsaku Nakane, one of Japan's foremost garden designers. Still not satisfied with his grasp of the art of Japanese gardening after several years in prac-

tice, he returned to Japan to study traditional gardens and translated the 15th-century garden manual, *Illustrations for Designing Mountain, Water, and Hillside Field Landscapes*. His own book, *Secret Teachings in the Art of Japanese Gardens*, is regarded as a classic by many in the field. Throughout his career, beginning with designs for the Cleveland Botanical Garden and Carleton College and straight through to his recent work at Garvan Woodland Gardens, his work has continued to evolve toward his dream of developing landscape gardens inspired by the site, regional scenery, local rocks and plants and his clients' favorite landscapes.



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By Brian Van Bower

Striking Simplicity



We've all heard the phrase "less is more" so often that it's become a cliché, but there are still situations where there is powerful truth in those words.

There is no question, for example, that watershapers can create tremendous beauty by using simple shapes and quality materials to accentuate and magnify a setting. This is particularly so when the watershaper exploits the alluring, reflective qualities of water itself to create a strong focal point while effectively blending the vessel into its setting.

A case in point is the swimming pool discussed in this column – a simple rectangle set on waterfront property near Jacksonville, Fla., and distinguished by the use of black absolute granite on a raised bond beam and, for the interior finish, an elegant black ceramic tile. It's a perimeter-overflow system that creates a monolithic appearance while functioning as both a pool and a graceful waterfeature.

This project emerged from a series of conversations I had with the client and the architect, Richard Skinner & Associates of Jacksonville. (I've worked with them on several projects.) There were originally two pools in the plan, one in the yard on the inland side of the oceanfront property, the other in a

Watershapers can create tremendous beauty by exploiting the alluring, reflective qualities of water itself to create a strong focal point while effectively blending the vessel into its setting.

driveway/entry space between the guesthouse and the main house. The desire with the latter watershape was to have a vessel that would act as a subtle entry feature while serving as a pool protected from the wind.

moving towards simplicity

The original concept for the sheltered pool had a rectilinear shape, but there was also to be an elevated patio on the side against the property line with an upper-level feature that would well up and cascade into the main pool.

I was originally brought in as a consultant on the oceanfront pool to design it and, most important, to help figure out a way to create a spa that would be entirely contained within the rectangular shape of the pool and still be completely invisible. We discussed several possibilities, including moveable walls and a unique system that would include a special water leveler that would be activated whenever the spa was to be used. This would serve to drop the main-pool level and make the spa break through the surface.

As is often the case with high-end design projects of this nature, that entire design was abandoned in favor of a much simpler pool/spa design and our focus turned to the dual-function watershape located between the two structures on the entry side of the house.

It was in an extremely high-visibility location from so many of the property's key lines of sight that we knew it had to have visual weight while also existing harmoniously within the space. Early on, the client and architect had decided they wanted a clean, rectilinear design that provided strong reflective qualities, but their thinking didn't go much far-



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As discussions progressed, we started talking more and more about using a perimeter-overflow design. This had the immediate consequence of knocking the two-level approach and the cascading water effect out of the picture because of concerns about surface ripples and their effect on a mirror-like surface. We soon moved from that relatively involved concept to the fairly simple idea pictured here.

Before long, we had a design with an elevated black edge flowing over on all sides, making the surface as reflective as possible. I was particularly pleased with the choice of the black surface materials, because they would naturally intensify the reflective qualities of the water while enabling the watershape to fit in neatly with the traditional architecture of the house and guesthouse as well as the surrounding greenery.

With the dark interior finish and the raised beam, you can only sense the depth





Given the watershape's high-visibility location on the property, we settled on a simple shape that provided visual weight while existing harmoniously within the space.


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of the pool when you're standing right next to it. Otherwise, even from a few feet back, all you see is a rich, glazed look – an ultra-clean appearance accentuated by a back-angled beam detail that sets a razor-sharp edge.

We were fortunate in this particular oceanfront application in that the structures and walls truly protect the vessel from

the wind – an obvious key to maintaining the reflective quality with a perimeter-overflow effect. We were concerned enough up front that we had talked about installing an anemometer to monitor the wind and turn off the system when breezes kicked up, but it became apparent early on that the sheltered location of the pool eliminated the problem.

water in transit

For all of the visual simplicity of the rectangular form, however, executing a perimeter-overflow system is never a small task.

First, there's sizing the surge tank. To do so, we determined what would be a reasonable and safe capacity to allow for storage of the water in transit when the system is turned off. That water in transit is considerable: For one thing, when the overflow system is in operation, the entire surface area of the pool is raised, thereby lifting the water over the edge. For another, there is water flowing through the gutter and piping that needs to have somewhere to go after the system shuts down.

We also had to consider bather displacement and surge. This varies greatly depending upon the anticipated number and activity level of potential bathers, so we applied this rule of thumb to de-

in the tank

Allow me to dwell for a moment on the virtues of using dual filtration systems in vanishing-edge or perimeter-overflow systems.

I've seen lots of watershapes similar to the one discussed in this column in which the designer or builder tried to use a single system for both the edge effect and the main circulation.

In addition to the problem of re-circulating dirty water up through the bottom of the pool in an unfiltered edge application, you have the increased risk of equalizing the water level between the two hydraulically connected vessels. When a service technician opens the vacuum line to clean the pool and forgets to close it, you've set up a path for the water to equalize down to the top of the overflow in the collector tank when the system shuts off.

That's not good – but it's a mess that can easily be avoided by including a second filtration system along with a plumbing loop on the overflow edge system.

–B.V.B

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termine the *minimum* surge capacity: You start by calculating the volume of water contained in two inches of the entire pool surface. Next, to determine the total surge-tank volume, you factor in the dimensions of possible tanks and calculate a typical minimum operating level of 12 inches.

This amount is then added to the previously determined minimum surge capacity and the tank size is set. It is safe to say that I have never seen a surge tank that was too big!

These tanks have access-ways large enough for a service technician to pass through and clean out the collected debris. This can lead to aesthetic problems, but in this case we minimized the visual effect by getting a tank with a collar and elevated lid. The bulk of the tank is hidden well below grade, reinforced and covered with a layer of soil and sod. All that is exposed is the square lid.

The cast-stone deck pitches slightly back toward the one-inch slot for a distance of three feet from the pool to allow splash-out to flow back into the below-grade gutter. That gutter is six by six inches and is made of waterproofed, poured-in-place concrete rigged with four-inch-diameter vertical drops spaced every eight feet around the perimeter. These feed a six-inch trunk line that slopes by a quarter inch per foot toward the surge tank.

(We've since changed our basic specifications to use drops on five-foot centers with horizontally mounted "pick-up" lines. This offers venting that minimizes vortexing and associated noise issues that sometimes arise—but that wasn't a problem with the project at hand.)

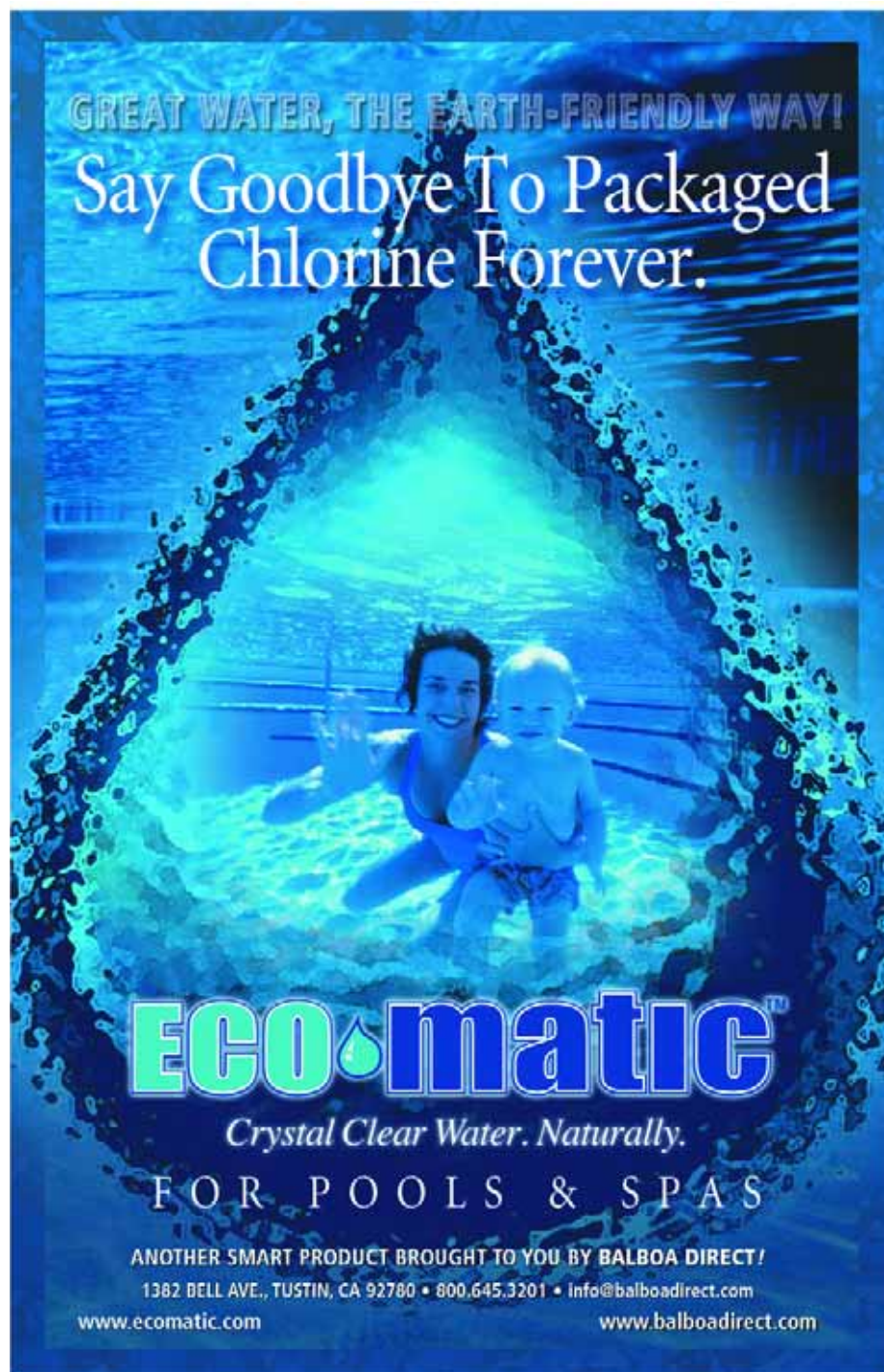
The deck material is cantilevered over the gutter using marine-grade, 3/16-inch, stainless steel plates bolted to the top of the outside of the gutter. This allowed us to fashion a continuous and uninterrupted slot that can easily be cleaned with a high-pressure hose in the event a storm dumps dirt and debris into the gutter.

The main vessel has its own circulation system and filter. For the edge detail, there's a separate system that draws water from the surge tank by a three-horsepower pump and feeds it through two 450-square-foot cartridge filters.

The idea that a perimeter overflow or vanishing edge system would operate unfiltered or share a circulation system with the main vessel makes no sense to me. (For more on this approach, see the sidebar on page 16.)

All of the water returns to the main vessel after passing through a very important plumbing loop (equipped with a

check valve and vacuum-relief breaker) above the pool's maximum water level. It flows via four black in-floor return fittings that eliminate turbulence, even in shallow-water applications. There are dual drains for the primary filtration system; this water is heated and sanitized before being returned via wall-mounted inlets off of a looped return line. The water



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Brian Van Bower,
President, Genesis 3, Inc.

Photo courtesy of: Dehme van Sweden & Associates

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The raised, perimeter-overflow pool has a monolithic quality and seems to float in place, while the dark materials – both granite and tile – enhance the reflectivity of the surface.

is sanitized using a salt-conversion, chlorine-generator system.

the fine points

In wet/dry applications such as this – especially when using porous, natural materials such as black absolute granite or travertine or even exposed aggregate – you have a situation in which, over time, the process of efflorescence will draw mineral salts from the material and leave unsightly deposits on the surface.

In this case, such a problem arose and was eliminated by cleaning the salts off and then applying a water-based sealer on the granite. The material will need periodic resealing through the years, but that's nothing compared to the steady maintenance hassle of keeping up with efflorescence.

We also saved ourselves trouble inside the pool by setting up a squared floor/wall design to go along with the square ceramic tiles we used for the interior finish. This radically reduced the need to cut tile and enabled us to create clean grout lines that don't interrupt the aesthetics of the finish.

We also went with a step detail that extends down the side of the pool, much like the configuration used by Frank Lloyd Wright in the swimming pool at Fallingwater – a detail much admired and often used by my friend and Genesis 3 partner David Tisherman. There's also a bench that extends partway down the pool on one side.

The result is a swimming pool that effortlessly achieves its dual objectives – a simple, striking waterfeature that also doubles as a fully functional swimming pool while fitting comfortably within the setting. In my book, it stands a good example of how less really can be more in the watershaping realm. **WS**

Brian Van Bower runs Aquatic Consultants and is a partner in Van Bower & Wiren, a pool-construction firm in Miami. He is also a co-founder of Genesis 3, A Design Group; dedicated to top-of-the-line performance in aquatic design and construction, this organization conducts schools for like-minded pool designers and builders. He can be reached at bvanbower@aol.com.

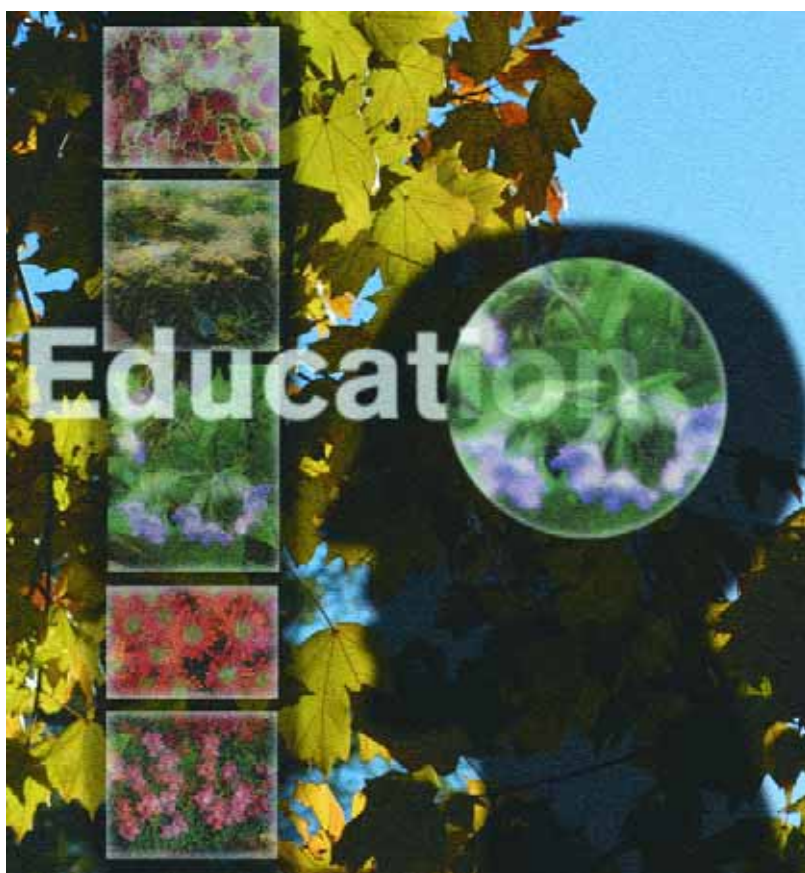


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By Stephanie Rose

Branching Out



I never really thought much about the plants and trees surrounding me until I started edging my way toward the landscape-design business.

Growing up, I'd look out my bedroom window and into our backyard and see plants and trees, but I didn't know that they were called Junipers or Giant Birds of Paradise or Ficus trees. They all looked pretty much the same to me — a generic veil of greenery.

My path of discovery began when I bought my first house on Long Island. All of a sudden, there were rules about what I could and couldn't grow and, more specifically, about what would and wouldn't grow. I had no idea that the purple Rhododendron I was planting in my front yard would die in the full sun or that I couldn't plant Impatiens and expect them to last year after year with their full summer brilliance.

With trial and lots of error, I eventually learned that there was much more to plants and trees than (literally) meets the eye. I actually began to "see" what had been or was being planted in my garden and in my neighbors' yards. Soon I was able to identify plants by their leaves and flowers and

I've left school behind
but keep learning in a
less-structured way every day
and will, every day, almost
certainly find a new and
interesting variety I can add to
the repertoire of plants I trust.

trees by their overall shapes, and I could tell you whether those trees were deciduous or evergreen.

moving along

Eventually I headed for California, confident in all my newfound plant knowledge and happy to give up Wall Street for my true calling as a landscape designer — only to find that things are *much* different on the west coast.

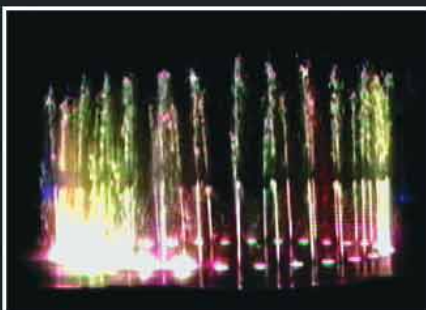
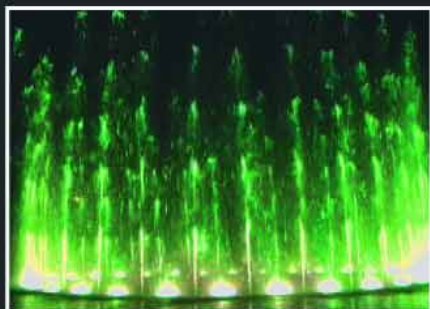
You can plant Impatiens here, for example, and will find that they *can* winter over (even if they do get a little ragged), and many of the trees that I thought were deciduous kept their leaves. Immediately, I found myself factoring in the climate at a point where I didn't yet know enough about the different types of plants available all around me.

A return to Wall Street was looking better and better: How could I possibly ever learn enough about plants to guide someone in designing the garden of their dreams?

I soon recognized that I needed more education on the plant kingdom if I was going to be successful in this business. I went back to school to take plant-identification classes (almost as exciting as they sound) and discovered to my amazement that this was the ticket to making everyone think I was a plant genius.

By the end of the first year, I felt great about being able to identify more than 300 individual varieties of plants, including nine different types of pine trees. (Talk about overkill: Looking back, I've only needed to identify two different pine varieties during the past 15 years.)

What I didn't perceive while I was taking classes and stuffing my head with facts was that even though I now possessed a vast body

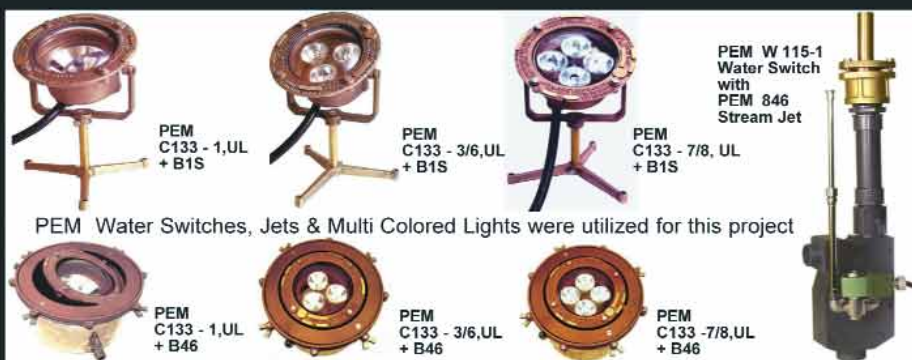


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of knowledge, most of the plants I had learned to identify were ones in which my clients wouldn't be or weren't particularly interested. I was discovering that the design business was less about knowing plant specifics than it was about knowing shapes, leaf colors, flowers, growth habits and overall lifetime characteristics of hundreds of plants – far more than I ever encountered in class.

In retrospect, I see this as one of life's little lessons: I've left school behind but keep learning in a less-structured way every day and will, every day, almost certainly find a new and interesting variety I can add to the repertoire of plants I trust. The classes had value, but what I really needed to do was open my eyes and get to work.

current tasks

All this is by way of background for my work on the project I've discussed in the past few issues of *WaterShapes*: It's one that has called on the knowledge I've been accumulating for the past 15 years, but it's also one that shows that there are few absolutes and no easy ways to find solutions to design challenges.

In this case, I was blessed by having almost a year to consider the planting design. That wasn't exactly by choice, but instead has to do with the fact that landscaping is normally the last project phase to be planned and implemented.

So I waited (and waited) until the structure of the house and the hardscape had final plans, knowing that whatever I might visualize before those elements took shape would inevitably be off the mark. Yes, I could think about an overall plant palette, but without the hardscape in particular I couldn't determine with any specificity what types of trees and plants were needed and where they would be placed.

As we waited, I could suggest enough different trees to give my client some ideas, but what I've found is that it's difficult to choose the *right* tree until the setting truly takes shape. In larger areas, of course, a designer has more freedom to select trees that might drop leaves, fruit, or flowers. In a more confined space such as my client's backyard, however, tree selection

is hemmed in by pool, hardscape and structures.

In this particular case, we have a planter bordered on one side by a driveway (much in need of camouflaging) and on the other by a deck and pool. That in mind, we wanted to make sure that the four trees we intended to plant in this roughly six-to-ten-foot strip wouldn't create too much of a mess. We're also dealing with a traditional Spanish-Colonial-style home, and this also limited the range of site-appropriate possibilities.

Beyond those two points, another key factor is that we needed to block the view of the neighbor's house from the master bedroom and bath on the second story. Seems simple enough, but this is a neighborhood in which lots of older homes are being knocked down and replaced by much larger homes and mini-estates.

As strange as it may sound, the neighbor we are trying to block out is elderly, and we have the sense that when she's gone, someone will buy the house, tear it down and build a monstrosity. Simply put, we're planning for the future.

making choices

With all these issues in mind, here are the criteria that framed all of our tree discussions. Whatever we chose had to be:

- Compatible with Spanish-Colonial-style architecture
- Compatible with the property's existing trees
- Clean, dropping as few leaves and as little debris as possible, given proximity to both pool and driveway
- Evergreen, preferably, and relatively fast-growing
- Large enough to block out the neighboring house by rising to a height of at least 30 feet quickly – and higher eventually
- Able to blend with the rest of the existing and proposed landscape.

To help the client decide, I needed to find a mature specimen – and make sure the choice wouldn't be one that would make the client want to curse me later.

It sounds simple, but it proved a difficult process. In fact, I consulted no less than three arborists, two landscape ar-

chitects, two landscape contractors and two different nurseries along the way, each offering opinions without too many points of agreement.

As I spoke with these people, I recognized that each of them had some sort of vested interest in the decision: The nursery wanted to sell us the most appropriate selection – but also the

The right tree is compatible with the rest of the landscape, whereas the wrong one creates a mess or, worse yet, kills off the rest of the plants.

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largest and therefore the most expensive one. For their parts, the arborists and tree trimmers wanted us to use a tree that would be easily maintained; the contractors hoped to plant whatever was most likely to survive and grow well; and the landscape architects and designers had personal favorites based on past experience.

The process was ungainly, but ultimately it served an extremely important purpose and reminded me of those days before I knew much of anything about plants and trees other than that they were green. Now my client was the one in the uninformed position, and it was up to me to make the call.

The point is, most people don't recognize how much the trees in their yards affect their lives. Trees can create shade, block out unwanted views, frame views you like, create terrible messes year 'round, serve up brilliant flower displays or delicious fruit and give you a great feeling when you look out a window. They can

do some of this or all of this, and navigating the range of possibilities for a client is quite a responsibility.

applied wisdom

As we neared our decision, I went back to basics and looked at the trees as the "bones" of the garden, the framework for everything else I would plant.

In that light, trees are never something to be taken for granted – despite the fact that most people do so because they aren't attuned to the effects trees have on the landscape and the function trees have in specific settings or the ways they change with time. The right tree is compatible with the rest of the landscape, whereas the wrong one creates a mess or, worse yet, kills off the rest of the plants.

As I learned with my bamboo nightmare (November 2003, page 22), it's extremely important to research major plant selections thoroughly before you place any orders. The affect the plants have on your client's life and lifestyle

might come back to haunt you, or you might get a stream of calls telling you how peaceful and serene it is sitting under the gorgeous tree you selected and planted in the backyard.

Bottom line, there is no tree that is necessarily perfect for any given situation. So what we must do is define criteria in as much detail as we can, isolate plants that meet most of them and make final choices with care and thought. Doing so, I think, gives us the best opportunity for long-term success. **WS**

Stephanie Rose runs Stephanie Rose Landscape Design in Encino, Calif. A specialist in residential garden design, her projects often include collaboration with custom pool builders. If you have a specific question about landscaping (or simply want to exchange ideas), e-mail her at sroseld@earthlink.net. She also can be seen in episodes of "The Surprise Gardener," airing Tuesday evenings on HGTV.

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By David Tisherman

Now You See It



Some people seem to believe that designing is all about reinventing the wheel every time they go to work on a new project or need to create a new detail of some kind.

Truth is, however, that most great design ideas and details are derivative of things that have been done before. This is why I'm such a strong advocate for education – especially the sort that involves venturing out into the world and seeing things with your own eyes.

You can see pictures of things in books and watch slide shows in classrooms, and that's extremely valuable for the way it opens your eyes to the world of ideas, but as I see it, there's no substitute for walking up to something, looking at it from every available angle, getting some sense of what's involved in making it come together and converting what you see into something you can do back home.

And I'm not talking about a trip to Las Vegas. I don't see anything wrong with gambling, drinking and staying up late, but I get a much greater thrill out of going places I haven't seen before, waking up with a clear head (most of the time, anyway) and striking out to peruse a world that's waiting to be seen.

There's something satisfying about seeing the work of craftspeople of ages gone by and looking at their work with an active appreciation for how their ideas can be used, refined, combined and re-appropriated in the here and now.

great grates

I've discussed all this travel stuff before in these columns, and I'm bringing it up again not because I want to demonstrate my credentials as a world traveler, but because just about every trip I've ever taken as an adult – to Turkey, China, New Zealand, Canada and Japan, to name a few – has fueled my creative fires with inspiration and very specific ideas I've used in my own work.

There's something satisfying about seeing the work of craftspeople of ages gone by and looking at their work with an active appreciation for how their ideas can be used, refined, combined and re-appropriated in the here and now to create new works of art and beauty.

This is why Frank Lloyd Wright spent time in Japan. This is why the artists of the Renaissance spent time studying Greek and Roman and Moorish sites scattered all around the Mediterranean Sea. Travel is indeed broadening. Fun, too.

In my own case, I give travel credit for inspiring a detail I've written about a lot in the past few years – that is, my treatment of drain grates – and most recently in the May 2004 issue of *WaterShapes*.

One of the reasons I keep coming back to this particular detail is that I've long been appalled by the effect that white PVC grates or drain covers or skimmer lids can have on the way a watershape looks. When they appear right, smack in the middle of a beautiful deck, they stick out like proverbial sore thumbs and in many cases turn a distressing shade of yellow over time.

What's worse is that a great many of these grates become brittle with age and have a nasty tendency to split when stepped on in the wrong way. That's a safety hazard, of course, but it's also a

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startling way to ruin a well-dressed woman's good time: Just watch what happens when she snaps the heel off an expensive pair of shoes at a poolside party by stepping on an old plastic grate.

I know that these ideas about quality grate and cover treatments have resonated with some of you because of the many comments I've received about columns I've written about the lengths I go to in hiding grates in stone decks or on tile lines. Despite my ego (another thing that people occasionally write me about), I cannot take credit for developing the creative grate treatments I use: The true innovators are spread across the ages and across the globe.

I came to these simple yet important ideas by seeing, up close with my own eyes, how great designers and artisans of the past treated their grates and drain covers. I've retooled those ideas in accordance with available materials and modern technologies, but the basic concepts I apply are certainly not original.



Drain grates needn't be elaborate or visually intrusive to get the job done, as is demonstrated by the slots and holes in the thoughtfully designed swales of the Boboli Gardens in Florence.

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viewing the classics

Here's a case in point. I recently traveled to Italy with a small group of friends from the watershaping trades: Paul and Donna Benedetti, Kevin and Candy Ruddy and my fiancée, Lisa. One of our destinations was Florence, where we had an exquisite time wandering the streets, gardens, cafes and galleries of this amazing bastion of architectural mastery and grandeur. Along the way, we also saw a variety of beautiful stone and concrete grates that have withstood the tests of time.

Some of the finer examples I came across were in the famous Boboli Gardens. Situated, appropriately, on Boboli Hill, the sprawling space was purchased in 1550 by the Medici family, which immediately retained architect Niccolò Pericoli to create a masterwork of Renaissance landscaping and architecture.

It's a dazzling place, loaded with great sculptures, wonderful ponds and fountains and organized on a tight axial plan. It's one of those many places around the world where you could literally spend days taking in all there is to see.

Entering the site, you're greeted by a series of swales that are part of the complex drainage system for the hillside property. If you look closely, you'll spot small slits and holes in the granite material from which the swales were fabricated – subtle and virtually invisible. They still work after centuries of use and, best of all, don't do *anything* to disrupt the shapeliness of the swales.

I saw another drain treatment in the Boboli Gardens that was just as beautiful. In this case, conical openings had been recessed into the curbs, protruding slightly in a way that reminded me a bit of the band shell at the Hollywood Bowl. My guess is that these details serve primarily to shield the drains from debris from the garden's lush greenery. Again, it is functionality coupled with a wonderfully subtle yet elegant decorative treatment: Rather than disrupt the visuals of the hardscape, these drains actually accentuate the beauty.

I'd imagine that most people who visit these gardens never pay much attention to the drainage grates – and to a

large extent, that's the point: You don't notice them because they blend so seamlessly and consistently with all of the other ornamentation you see everywhere you look.

common beauty

The Florentines were not the only ones who seemed capable of observing this ba-

sic aesthetic principle about serving functionality in decorative ways.

Halfway around the world, Asian cultures were working in their own way to achieve what I consider to be brilliant and highly decorative grate treatments. In the gardens of Osaka, for example, I was blown away by a very simple (but striking) grating that was little more than sev-

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eral small, narrow lengths of bamboo woven together with rope.

Almost unnoticeable amid the manicured landscaping, such details carry all the warmth of the natural materials and signal the creativity and craftsmanship that went into their fabrication. And again, such details add to the beauty of a scene without taking center stage and screaming for attention.

I don't want you to get the idea that I roam the world looking at wastewater management: Far from it. In fact, the artistry you can absorb while traveling runs all the way from the simplest details on up to truly Big Ideas.

Not long ago, for example, I took a canal trip through southern France, again with industry friends – this time Randy and Martha Beard along with Lisa. There was so much to see in the picturesque towns and villages and the radiant countryside that it almost defies description. But one feature I noticed over and over again was the bold, even stunning use of colored plaster. In many cases, the plaster was aged and cracked, randomly exposing the stonework beneath it amid cascading vines and flowers.

Some of these scenes were so beautiful they made my eyes water.

What really hit me, however, was the use of strong, vibrant color: beautiful greens, purples and reds on their own or in combinations that most of us here in the United States would never think to use. Seeing this made me feel even prouder of the no-



Drain details can be wonderfully decorative as well as purely functional, as is seen with the raised cowlings of these grates found in the Boboli Gardens.

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torious “red pool.” It also encouraged me, in remodeling my own house, to use a warm red plaster for the exterior and to think in bold terms about the way I’ll be using colors in the future.

I was also more than impressed by the wooden structures that surrounded the cottages. These overhangs of every description dotted the countryside and were usually covered by free-growing vines and surrounded by wild grasses in ways that added touches of romance to their settings in most unexpected ways.

It may be easily affordable to go to Las Vegas, take in a show, quaff cheap cocktails and leave hard-earned cash at the tables. But for me, the richness of experience and inspiration that is gained from leaving behind the familiar is what living – and design inspiration – is really all about. **WS**

David Tisherman is the principal in two design/construction firms: David Tisherman’s Visuals of Manhattan Beach, Calif., and Liquid Design of Cherry Hill, N.J. He is also co-founder and principal instructor for Genesis 3, A Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction.



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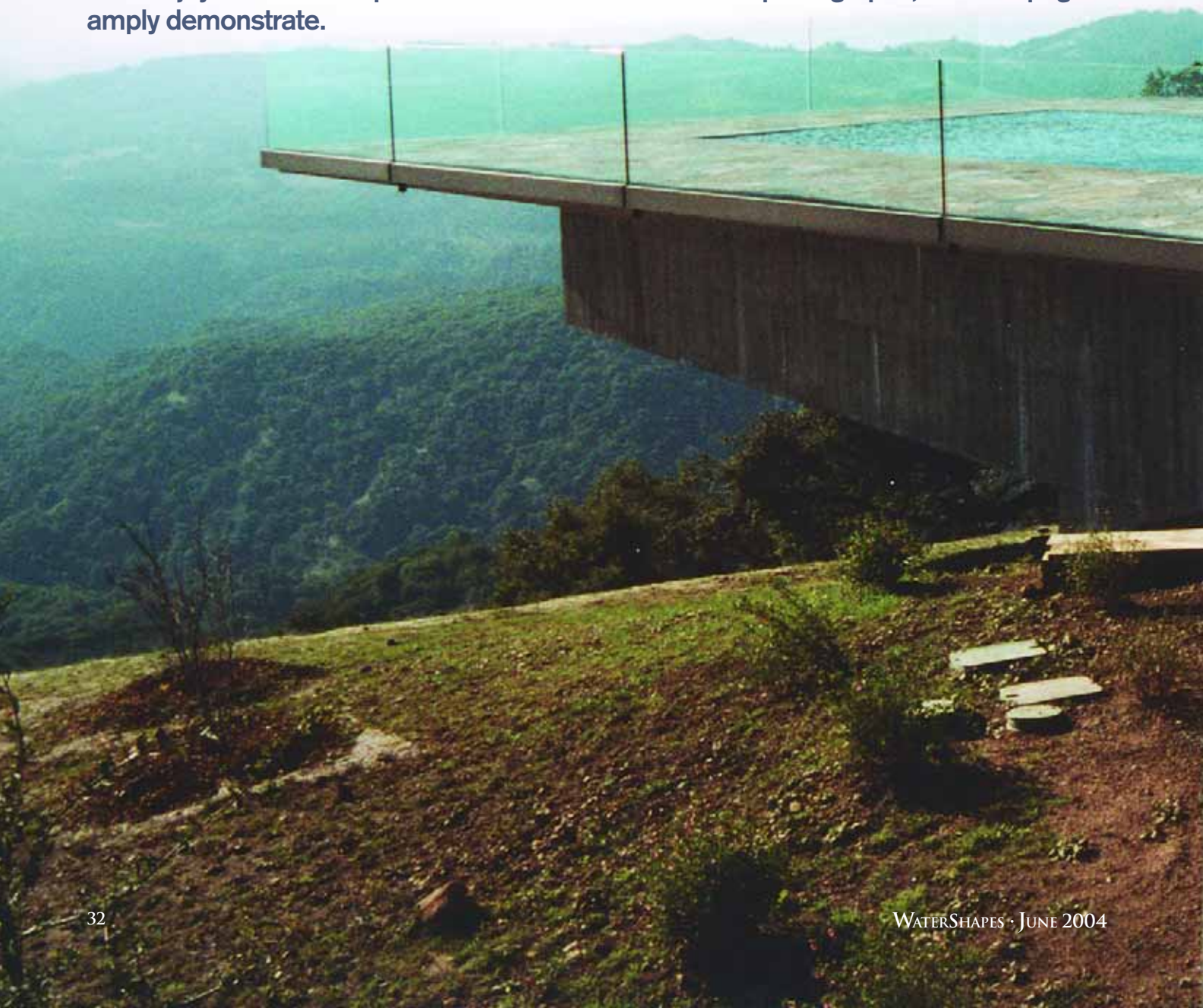
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Viewing a Dream

By Steve Dallons

There is no way to describe this home other than as 'art,' says watershaper Steve Dallons. It was a mountain of a project that demanded every bit of skill and craft he and everyone else who worked on site could muster, but the opportunity to work on a world-class project designed by a renowned architect made everything worthwhile, even enjoyable. And the proof of the achievement is in the photographs, as these pages amply demonstrate.





The late, great architect John Lautner is believed to have been among the first to conceive of and build a vanishing-edge swimming pool as a means of more directly tying views across the water into distant vistas. It's a landmark of modern aquatic design that has been emulated thousands of times in the 45 years since he designed "Silvertop" in Los Angeles, and it's wonderful to know that his spirit of innovation survives to this day in the company he started.

The home and watershapes seen here are the work of Lautner's protégé and longtime collaborator, Helena Arahuate of John Lautner Associates (Hollywood, Calif.), who composed it all as a spectacular exploration of organic design principles and the use of water to express and magnify details of a setting while leading the eye into the distance.

The pool seen here may have a deck-level, perimeter-overflow edge treatment rather than a vanishing edge, but it functions in the environment in much the same way – as a rectangular key to experiencing the home, the ambition of its owner, its spectacular setting and views that literally go on forever.

UNLIMITED VISTAS

The indoor/outdoor footprint of the pool begins the process of drawing the eye from inside to outside. There are brilliant reflections off the deck-level water, incredible blues set against rich earth tones of stone decking that flows right into the home alongside the water. Most spectacular of all, the pool deck has a southwestern orientation that carries the observer beyond the deck and mountaintop and on to San Francisco Bay and the towers of the Golden Gate Bridge.

The photographs will do much of the talking here, because I find it difficult to express the searing beauty of this place in words. I am also humbled by Arahuate's sensitivity to the mountaintop site and the way she has used steel, concrete, glass and stone to engage all 360 degrees of unobstructed views of a truly beautiful part of the planet.

The pool is a key component of this aesthetic package, and the way the watershape's supporting cantilever juts out over the hillside is a detail that both intimidated and inspired us as we worked. Arahuate's genius is revealed in just how amazing and impressive the home looks from down the hillside – a thoroughness of design that challenged all of us but inspired us to rise to the occasion.

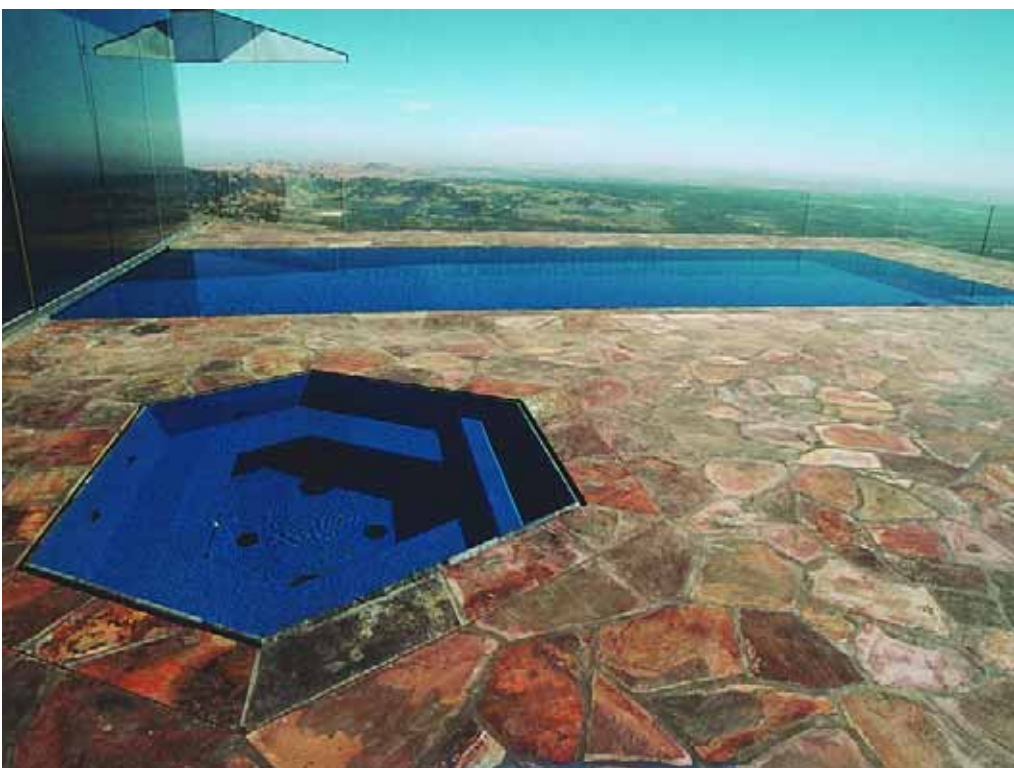
Up on top, from inside the house with the pool at your feet and the glass panels retracted, you get a sense of moving through unending space, with visibility through the atmosphere and your own eyesight providing the only limitations. I came to appreciate the entire structure, watershapes and all, as a work of the sculptor's art, but at the same time, I also found it a remarkably inviting and comfortable place to be.

In the May 2004 issue of *WaterShapes*, I covered the process by which the watershapes were built. Allow me to step back now and let the beauty of Arahuate's dynamic design do most of the rest of the talking.



The finished cantilever carries the surcharge of the pool and spa shells, the stone decking and a large volume of water without showing the slightest visual effort – a tribute to a highly refined design, great engineering and phenomenally careful construction by many trades.





The dark, all-glass-tile finishes of the perimeter-overflow pool and spa make the vessels stand out in the field of flag-stone decking – just the sort of wide-open, highly reflective surfaces the architect was after in designing them.





The glass panels and the indoor/outdoor nature of the pool create stunning visuals from the outside looking in and from the inside looking out, but there's also much to be said about the purely interior views, where reflections off the water make the space expand.





The Shape

Dedicated in 2001, the D-Day Memorial in Bedford, Va., stands as a solemn commemoration of the sacrifices made by the U.S. and Allied troops who landed on the beaches of Normandy in June 1944. At the center of the memorial stands a striking watershape – designed and fabricated by fountain specialist Jon Mitovich and the staff at Roman Fountains – that captures the spirit of the battlefield and serves as a haunting place of remembrance.



By
Jon
Mitovich

June 6, 1944, was a cold, dark, cloudy day along the northern coast of France.

When the Higgins boats carrying allied troops slapped their gangways into the cold sea 60 years ago this month and released their human cargo onto the beach, withering machine gun fire greeted the soldiers from German bunkers high above the beach. Before the day was over, 6,603 Americans had lost their lives in what became known as D-Day – the start of the allied invasion of Nazi-occupied Europe.

When planning started for a National D-Day Memorial to be built in Bedford, Va., the project's consulting engineer, Lawrence Perry & Associates of Roanoke, Va., contacted us at Roman Fountains to design a commemorative watershape. We were pleased and excited by the opportunity, but as the project moved forward, our excitement was replaced by a tremendous sense of responsibility and our awareness of the need to handle the project with the utmost levels of sensitivity and respect.

Not only were we asked to design the hydraulic, mechanical and electrical systems for a unique watershape, but we were also being engaged to participate in encompassing and interpreting a historic event that forever changed the world. As the work moved forward, everyone on the project team was profoundly aware that we had been entrusted with the memories and deep emotions of D-Day veterans and their families.

It was a humbling and exhilarating experience.

of Sacrifice

A Clear Mission

Our task was clearly defined at the outset by project architect Byron Dickenson, principal of the Roanoke, Va.-based firm of Dickenson Architects & Associates:

- Hydraulic function and appearance had to be of the highest quality.
- The nozzle equipment had to be invisible, while nozzle performance had to be "visually accurate."
- Operation and maintenance of the fountain had to be user-friendly.
- Because the memorial is a facility for the ages, it was imperative that the system be able to endure the tests of time.
- Public safety was a paramount concern in all areas of the facility.
- The sponsoring D-Day Foundation is supported entirely by private donations, so the system's design and execution had to be cost effective.
- Finally, all of this was to be executed in a design that essentially represented the event itself in a compelling and engaging way.

The flow of the watershapes and hardscape was critical in meeting these criteria. Working from top to bottom, the first watershape is a massive waterfall cascading over granite tiers that are flanked on either side by stark concrete forms representing the German bunkers. (These bunker sites also serve as observation platforms for visitors.)

The waterfalls flow into a receptor pool, where the water collects for re-

circulation back to the falls. In that pool, a fixed amount of water is allowed to flow gently over a dispersion block and onto a “beach” simulated with a sand-colored, exposed-aggregate concrete.

As the water flows across the beach, it trickles into a watershape known as the “invasion pool,” a large reflecting basin containing rusted steel landing obstacles and a stylized Higgins boat constructed of large, black granite slabs. In the invasion pool are twelve randomly dispersed, air-powered, micro-shooter nozzles that are designed and programmed in sequence to periodically “shoot,” giving the appearance of bullets striking the water.

Equipment Outfitting

The fountain equipment for the memorial display described in the accompanying article includes a 15-horsepower, self-priming, skid-mounted display pump system with eight-inch suction and discharge manifolds and a low-flow sensor switch. The pump delivers approximately 800 gallons per minute at 40 feet of head pressure to run the waterfalls.

A permanent-media sand filter skid with dual 25-inch filter tanks and a three-horsepower pump keeps the water “gin clear” at all times, while a dual-point water-treatment system constantly monitors water pH and ORP and adds chemicals as needed to keep the water both balanced and sanitized.

The twelve air-operated “firing” nozzles are pressurized using a five-horsepower rotary-screw-type compressor and an air receiver tank rated at 200 psi. The nozzles are activated by a 12-volt DC, three-way solenoid valve. A custom fountain control panel runs the show, complete with a main disconnect switch; solid-state, adjustable pump-motor starters with thermal overload protection; a compressor starter; and a safety switch.

The system includes a rack-mounted, programmable microprocessor with back-up battery memory, a memory module, a surge-protected power supply and I/O modules. In addition, a low-water-level monitor/auto-fill system is used to ensure proper operating levels. The system runs on 120- and 208-volt three-phase power.

Initial programming was performed at our factory in Albuquerque, N.M., and fine-tuned on site during the start-up and commissioning processes.

— J.M.

To add to the realism, some of the nozzles are pointed in the direction and match the angle to the concrete bunkers.

Hovering over the entire “battlefield” is an imposing, 45-foot tall arch of black and white granite inscribed with the word *Overlord*, the allies’ code name for the Normandy landing.

Faces of Honor

Agonizingly realistic sculptures of soldiers taking the beach stand frozen in time.

One statue, christened “Death on the Shore,” depicts a lone, fallen soldier with a bible falling from his backpack. Another, “Across the Beach,” depicts a soldier drag-

ging a wounded comrade toward cover, and another, “Through the Surf,” depicts the bust of a soldier wading toward shore with his rifle raised overhead. The water trickling across the beach ripples and pools around these figures as it moves to the invasion pool.

The chief sculptor for the various statues of the soldiers at the memorial was Jim Brothers of Heartland Bronze Foundry in Lawrence, Kan.

The facility also includes a variety of other displays arranged around the periphery of the waterfeature. To the seaward side of the beach area is the Airborne Plaza, created to honor the contribution



The heroism of those who landed on the beaches of Normandy in June 1944 is expressed in the sculptures and structures of the D-Day Memorial in Bedford, Va., where water flowing over the beach serves as a poignant reminder of the start of the ordeal.



of the air forces to the invasion. At this point, an Aeronca L-3 reconnaissance plane is on display, bearing Operation Overlord markings on its wings and fuselage. Propellers from a C-46 transport plane (of the sort that ferried paratroopers and gliders over France during the invasion) are also on view. In the future, these displays will be replaced by an abstract aviation sculpture.

To the right of the waterfeature is the Naval Plaza, which includes a temporary display of a Danforth anchor, the 10-foot-tall, 8-foot-wide anchor first put into service in 1943 and used extensively during World War II on transport ships for landing craft. (The anchor is on loan from the Mariners' Museum in Newport News, Va.) Also on temporary display is a 1942 Coast Guard bell, on loan from the U.S. Coast Guard in Cape Hatteras, N.C., and honoring the Coast Guard's role in delivering troops to the beachheads and res-



On startup day, the waters began flowing with the landing craft and shore defenses in place but with most of the bronze sculptures to follow. The small jets of water spout randomly and vividly represent the hail of bullets that met the allies as they landed on the beach.





The National D-Day Memorial exists to celebrate and honor the Valor, Fidelity, and Sacrifice of the Allied Forces on D-Day, June 6, 1944. Physically, morally, and intellectually courageous, those soldiers, sailors, airmen, marines, coast guardsmen, and merchant seamen kept faith with the Alliance, their homelands, the chain of command, the mission, their units, and their fellows. In so doing, they necessarily set aside comfort, safety, innocence, youth, blood - even life itself. This monument pays tribute to those who died on D-Day but also to those who lived to secure the beachhead and carry freedom inland - and to those who transported the ground forces by air and sea, provided their aerial and naval support, and delivered their combat and combat-support services. D-Day's success owes an incalculable debt to its participants. That you yourself are free and here today is but a portion of their rich and enduring legacy. Treasure it.

cuing stranded soldiers. Another abstract sculpture will replace these temporary displays before long.

In the foreground in front of the beach is the English Garden. Designed to represent the flaming sword seen on shoulder patches of the Supreme Headquarters Allied Expeditionary Force, the space also features bronze portrait busts of British and American officers in the command group mounted on pedestals along the garden path.

In the center of the waterfall stands a granite structure with a statue called "Scaling the Wall," a 20-foot-tall tribute to U.S. soldiers who fought and died while climbing the sheer cliffs of Pointe du Hoc in Normandy to capture that position.

Beneath the arch stands "The Final Tribute." The work of Kansas sculptor Matt Kirby, it depicts a rifle dug barrel-first into the ground and topped by a helmet - a grim reminder of the temporary graves for soldiers who fell that day in combat.

Dedication Day

Bedford was chosen as the site for the

memorial because the community was hit harder than most by the invasion.

A farming community with a population of 3,200 in 1944, 19 of the town's 35 soldiers died during the first 15 minutes of the invasion, and four more lost their lives in the days that followed. In fact, Bedford has the dark distinction of having experienced the most D-Day casualties per capita of any community in the whole of the United States.

The memorial was dedicated June 6, 2001, in ceremonies attended by dignitaries including President George W. Bush and many of the brave veterans who participated in the invasion. In all, 22,000 people were on hand.

In his remarks, D-Day Foundation chairman Bob Slaughter of Roanoke, Va., remembered scurrying across Omaha Beach under withering gunfire more than half a century earlier. He recalled stopping to clean his rifle, fouled by sand and seawater, and said, "It was then that I began to examine the extent of the hammering we had taken. It was there that I realized the bloodied price that we would pay for freedom."

Contributions

The D-Day Foundation deserves all the credit for creating and maintaining the memorial and is supported entirely by private donations. A significant participant is "Saving Private Ryan" director Steven Spielberg, who donated funds to build a theater that is now used for educational purposes.

For information about the foundation, the memorial and contributing, visit the foundation's website: www.dday.org.

J.M.

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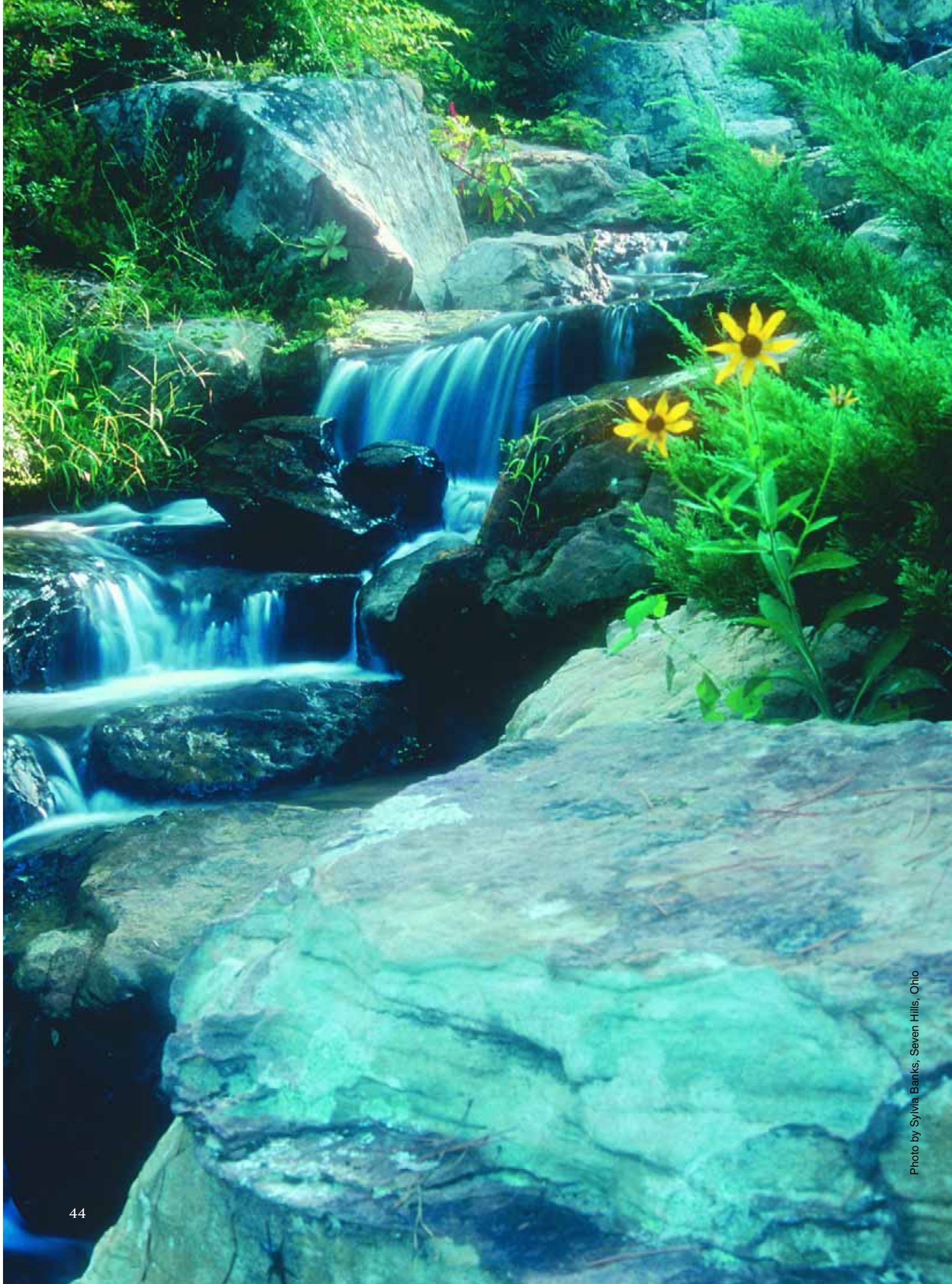


Photo by Sylvia Banks, Seven Hills, Ohio

Striking a Chord

Nestled in the wooded ravines of the 210-acre Garvan Woodland Gardens in Hot Springs, Ark., are four acres of rocks, plants and water assembled by landscape artist and Japanese-garden specialist David Slawson. It's a space that serves as the garden's centerpiece and springs from what he calls his 'triangle of accord,' an approach that combines sensitivity to the site with the character and desire of the client as well as the beauty of indigenous rock and plant materials.

By David Slawson

When I first walked the four acres of wooded ravines of what would later be christened "The Garden of the Pine Wind" at the heart of Garvan Woodland Gardens in Hot Springs, Ark., I was both delighted and daunted by the experience.

The delight came in the site's natural beauty, which reminded me of tromping through the woods as a child – an activity I enjoy to this day. As for my sense of unease, I don't know which was more significant: the expansiveness of the dry drainage ravines that were to be converted to ever-varying cascades and streams, or the omnipresence of ticks and poison ivy.

When I made my first visit in the fall of 1999, the site was part of a little-developed 210-acre woodland parcel on the shore of Lake Hamilton given by Verna Garvan to the Department of Landscape Architecture at the University of Arkansas in Fayetteville. She had long seen the peninsula as the ideal setting for a botanical garden and had spent two decades developing her vision, planting camellias and azaleas and a rose garden and commissioning a pavilion by the architect Fay Jones and his partner, Maurice Jennings.

I had worked in Fayetteville before, crafting a woodland stream for a residence in 1996 that had subsequently been visited by representatives of the university who apparently liked what they saw. They were looking for a designer, they said, who had "exceptional ability in adapting oriental design philosophy to native landscapes" and asked me to develop an elaborate stream-and-cascade system for the university's new garden.

Going with the Flow

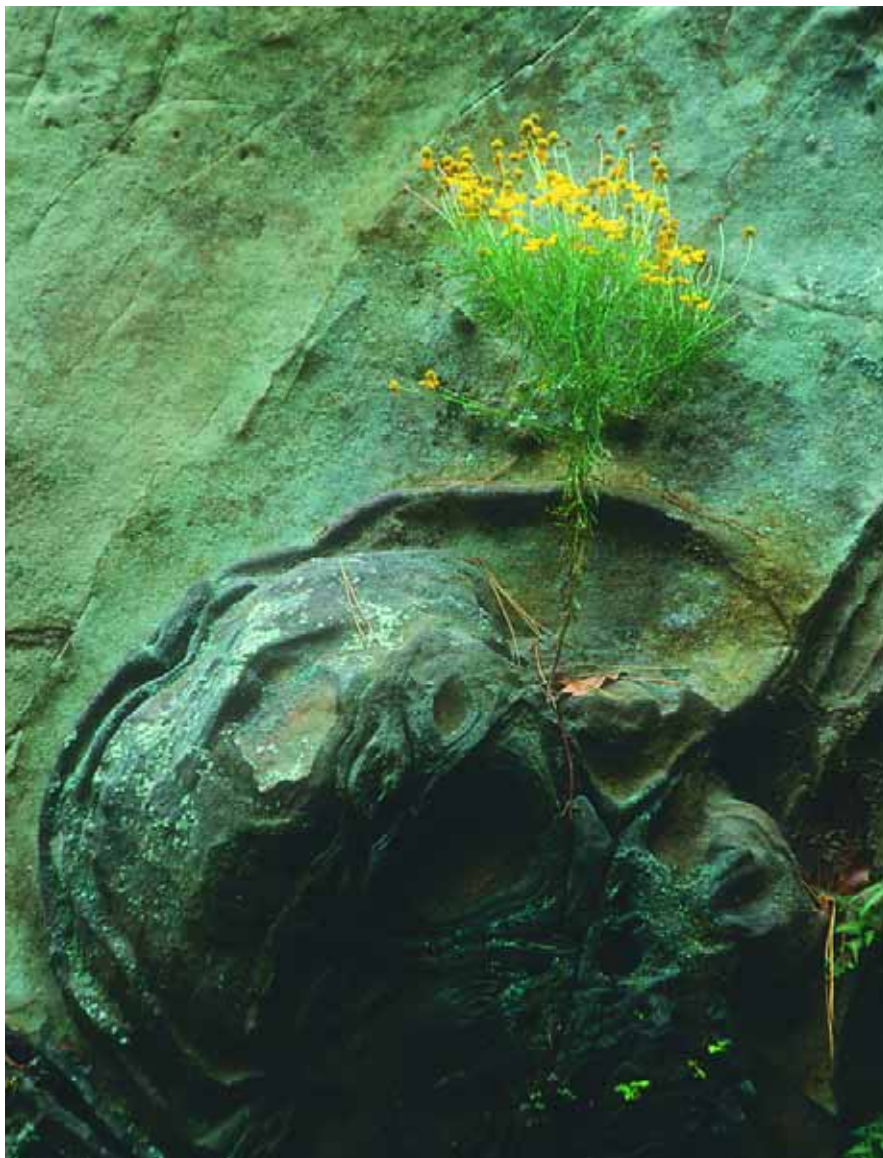
I spent 11 weeks in 2000 designing and directing the construction of the facility's rock and stream garden. In the following years, I directed landscaping for its Welcome Center and Bonsai Garden, around which the stream and main path lead to the watershapes below.

The project was an opportunity to apply the design/construction process I had learned in Japan, which includes responding to the character of the site. In this case, the process was aided by a very capable and committed construction manager and crew hired by the university as well as a variety of important local resources.

As I see it, design and construction are inseparable with Japanese-style gardens – and any landscape built to high artistic standards, for that matter. In creating landscape art, the design must never be "frozen" at the drawing or specification stage: In fact, there must be 100-percent fluidity within all aspects of the process as it unfolds – not entirely unlike the improvisation that occurs in the creation of jazz music in the sense that all the team players improvise within a structure.

As with every challenging project, I've found breaking the composition down into parts enables me to solve problems as I go and allows what I consider an intuitive process to unfold more freely.

Little Rock, Ark.-based landscape architect Merle Seamon's firm, MESA, had already drawn up the conceptual layout, mapping a sinuous trail that complied with the Americans with



Some of the stones selected for the project were beautifully encrusted with lichens and striated by erosion, but many had a special character – especially (as seen here) the chocolate-colored 'knobby swirly' specimens we prized for their unusual shapes.

Disabilities Act. Indeed, MESA's initial layout for The Garden of the Pine Wind offered a keen example of listening to the site and letting it help in shaping the work.

The course of the trail, for example, was determined by the topography of the site. Working with a 90-foot drop from the upper to the lower portion of the garden, the trail had to follow a gradient that would not exceed a one-foot rise or fall in 20 feet of run – that is, a five-percent slope. Multiply that 90 feet of drop by 20 feet of run, and you come very close to the one-way length of the trail, which stretches from an upper

parking lot and the garden's Welcome Center down to a final, 12-foot sheet waterfall with a walk-behind recess.

Design work was simplified by the fact that there was no need to generate detailed drawings of the waterfalls or other rock features: Although I usually do detailed perspective drawings in a simple but effective style I learned from my teacher Kinsaku Nakane, such drawings primarily benefit the client and give an impression of the proposed design to potential donors. In this case there was no such need and the money saved could be applied to garden construction.

What we had, however, were engineering drawings that MESA had produced to guide construction of the reinforced-concrete weirs that would anchor the waterfalls. But even here, the capable construction chief, Mike Brown, was given flexibility to improve on the drawings as the project progressed. Brown himself operated the track hoe to dig the four-to-six-foot-wide trench into the bedrock for the shallow footings. He also personally directed the construction of the formwork and installation of the reinforcing steel.

Weir Dynamics

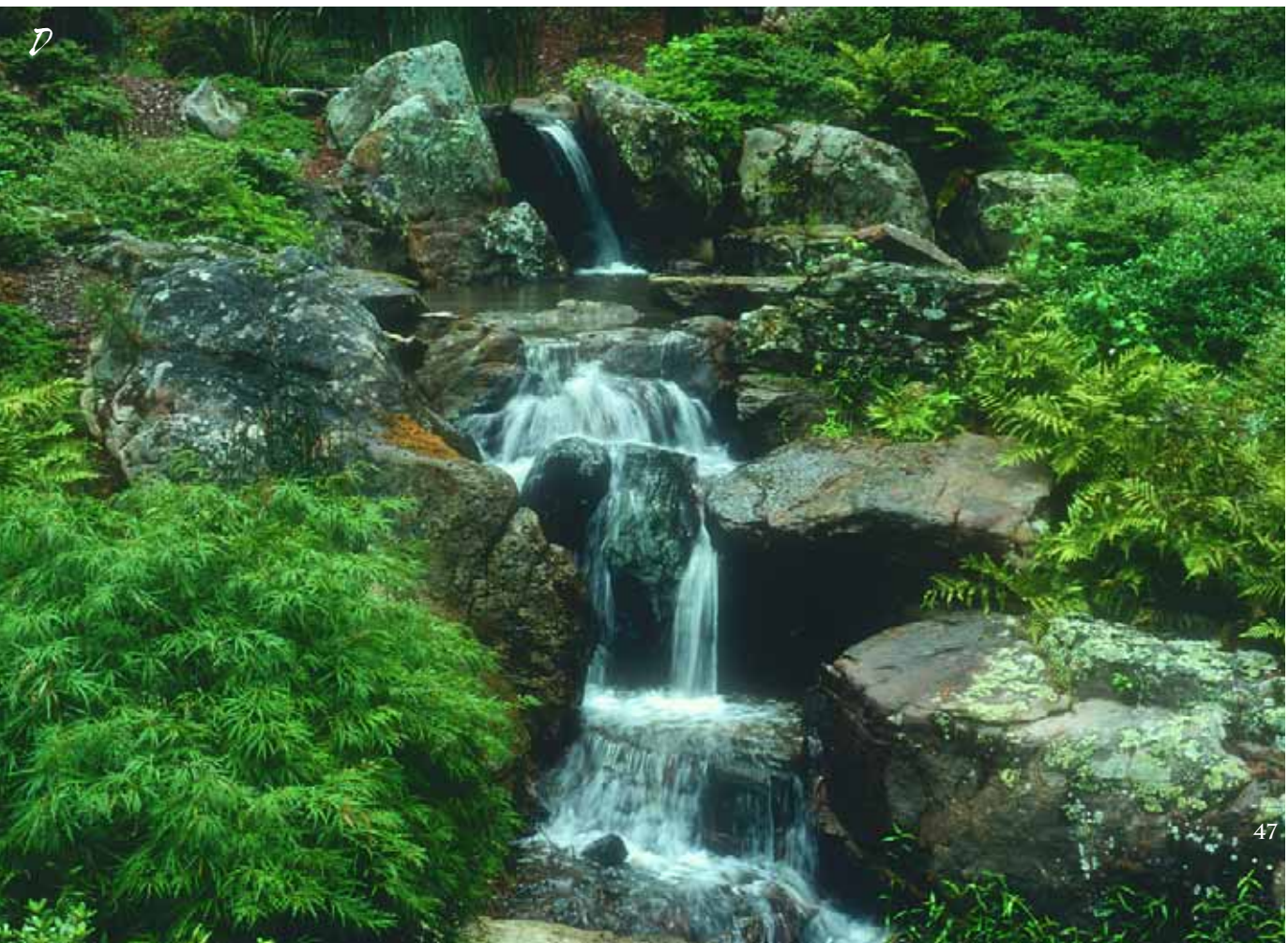
The weirs really were the primary heavy-construction concern, because there was no need to create watertight, engineered-concrete shells for the pools and stream courses.

That need was eliminated by turning two characteristics of the site to our advantage. First, bedrock just below the surface would take care of any problems with hillside erosion. Second, the water is pumped from and returned to Lake Hamilton, so water loss into the soil was no real issue. (In fact, the same 600-gpm pump that feeds the waterfeatures during the day also feeds the sprinkling system at night.)

We did use clay to line some of the pools, but that really was the extent of our work in "containing" the water.

By contrast, the weirs were carefully engineered and executed. The plans indicated locations of four reinforced-concrete structures along the ravines through which the water was to flow. Each would create the space to include a pool (the extent of which was determined by weir height) and a waterfall that would tumble over the rockwork I was to design below the weirs.

I was on site when the weirs were laid out and was able to fine-tune their orientation and height (and the location of the waterfall notches) in accord with the assets of the adjacent topography. In some locations, that topography suggested altering the planned orientation of a weir to flow, for example, diagonally to the stream valley. In others, I adjusted the height of the weir so that its upper pool would take best advantage of the shape of the land and existing, mature trees.



Before construction began, we strung the tape so that I was able to determine the optimum height and angle to the valley of Weirs 1 and 2 (see the tape in A and concrete dam in C), just one example of numerous on-site field adjustments. Once the weirs themselves were poured (B), we could begin the painstaking process of setting rocks and directing the water (C). The result is an overall composition that works visually on its own while fitting with the natural contours of the ravine (D).

When I returned in April 2000 to begin setting rock, Weirs 1 and 2 had been poured about 30 feet apart to present a single “scene” when viewed from below. Several hundred tons of rock, mostly quartzite sandstone, had already been trucked in by Millsaps, a rock purveyor located in the Ozarks about 100 miles north of Hot Springs.

I did not handpick the rock, but gave instructions on the type of material I wanted as it was being hauled to the site. While much of it was plain with horizontal strata, erosion had given character to many of the rocks. Most were covered in moss and lichen, some had a chocolate coloring we nicknamed “knobby swirly” for its unusual shapes.

(Later, when I directed the rockwork for the stream and falls in front of the new Welcome Center, we were able to use local Ouachita Mountain rock, which had been much more subject to folding and faulting and was often moss-covered with quartz inclusions.)

Natural Decisions

The rocks had been offloaded in the woods along the edge of the service road,

spaced out so I could see them from all sides. Weir 1, where the upper falls would originate, was at the narrowest spot along the upper drainage valley and featured a patch of fragmented, exposed bedrock on the north side.

This narrow defile suggested to me a single-stream, vertical fall – quite appropriate for the pinnacle of a triangle whose base was to be created by the wider Weir 2 – with its rockwork channeling the cascade through the lower half of the compositional “picture plane.”

What I did here was typical of how I selected and directed the placement of rocks for all of the major waterfalls. I see this as an intuitive process, one based on impressions received through the senses on site and informed by past sensory experiences in natural landscapes.

As I familiarize myself with the site, both up close and from places where the scene will be viewed most frequently, certain details elicit creative leaps of imagination through what seems an unconscious and visual process of association. As the topography of Weir 1 registered with me, for example, it became clear that the upper fall should be nestled against

the left side of the channel’s V notch where the bank was steepest, because this is where the water would naturally flow.

Taking my cues from the site, I made a rough sketch of the key rocks that would guide the single fall. Clearly, the shape of the drainage valley, so steep on the left, “requested” a pyramidal-shaped rock that would boldly accentuate the hard rock mass that the water could not wear down but instead had to flow around. The site also “called for” a waterfall-overflow rock down in the notch and, on the other side of the fall, another water-channeling rock stepping down in height from the pyramidal kingpin rock on the left. Frankly, I couldn’t argue with such eloquence.

The rest of the rocks forming the cliff along the edge of the upper pool would simply play off of and step down from those first three rocks. As the 15th-century Japanese gardening manual, *Illustrations for Designing Mountain, Water, and Hillside Field Landscapes*, declares, “As a rule, you first set the largest rock, and then set each succeeding rock in proportion to it. This can only be done intuitively.”

In other words, the most important thing to establishing such compositions is using your senses in “right brain” mode, freeing your imagination to respond to the site and available rocks. This involves letting the qualities of the rocks register on the senses while considering how their size, shape, texture and color will best evoke the desired sense of movement and flow while fitting together as does a geological formation in nature. (For more information on this approach, see the sidebar on page 53.)

Spatial Relationships

My aim is always to imbue a scene with a sense of naturalness, so I am careful not to place the rocks too much in a row or use too many rocks of the same shape and size in close proximity.

Proportion is a key factor in setting adjacent or closely related rocks, and I avoid placing rocks of a size that would divide the neighboring rock in half. Instead, I seek proportions such as 1/3 or 3/5, approximating the “Golden Section” – and the same goes for the

The Accord Triangle

We in the United States have a tendency to associate “imagination” with novelty and make believe. Even the dictionary calls it the power of the mind to form a mental image of something that is not real or present, but I choose to look at the word in a different and more substantial way.

As I see it, the natural world is a rich source of imagination, which makes the field of landscape design especially blessed. As a landscape artist trained in Japan, I count three main sources of inspiration for my designs and call them the Accord Triangle.

- ✦ The client’s nature (including our human nature and senses) and any special desires he or she may have for the setting I’m entrusted to design. Once, for example, clients wanted a garden that captured the beauty of a woodland stream and took me to visit their local favorite.

- ✦ The nature of the site and the scenic beauty of the surrounding landscape as well as the architecture from which the garden will be enjoyed.

- ✦ The nature of locally and regionally available materials, particularly rocks (either natural, hewn or recycled) and plants (both native and adapted).

Clearly, any landscape that entices us may serve as inspiration for our gardens. As it says in the 15th-century Japanese gardening manual, *Illustrations for Designing Mountain, Water, and Hillside Field Landscapes*, “In the planting of trees and herbs, you make their natural habitats your model. You will not go astray so long as you bear in mind the principle of planting trees from the deep mountains in the deep mountains of the garden, trees from hills and fields in the hills and fields. ... For the landscape garden mirrors nature.”

– D.S.

spacing between rocks.

I also seek out rocks that, in their general shape, hue, texture and weathering, will integrate well as part of the same formation. In other words, I stick with nature as my model in seeking to combine ever-changing variety with integrity, as the rocks step down from vertical emphasis to diagonal and finally horizontal orientations along the edges of the ponds and streams. This creates a dynamic (yet stable and tranquil) feeling.

But I've gotten a bit ahead of myself: With my sketch in mind, I browsed through the available rocks. I had looked at the rocks before, of course, noting those that had special qualities. But now I was eyeing the rocks like actors auditioning for parts as I selected them for special roles in the design. As I moved up and down the service road, one by one the conceptual rocks in my rough sketch were replaced by actual, tactile rocks that "spoke" their parts the best and, gradually, Weir 1 took shape.

I used a comparable design process for Weir 2, moving from big idea to rough sketch to actual selection and setting of the rocks. Remember that the wider Weir 2 was to serve as a stable, compositional base for Weir 1's single stream fall.

My design task at this point was to come up with a big idea for this lower cascade, one that would fit seamlessly with the upper fall. For inspiration, I conjured memories of Spruce Flats Cascade in the Smoky Mountains, where an upper vertical fall

Righteous Rock-Setting

Do:

Whenever possible (that is, most of the time), strap or cable the rock with a single wrap around the rock, placing the loose end through the loop at the other end so the wrap tightens around the rock against the desired top. When properly done, the rock will hang from the lifting equipment exactly as it is to be placed in the composition. If it does not hang in the desired position when lifted, then lower it and reposition the strap so it does.

This is crucial: It frees the designer to do his or her job, directing a composition as though painting in three dimensions. It also facilitates the job of the crane operator and the ground crew. Hanging in the correct position, the rock is brought to where it is to be set, and it's easy to tell where and how much soil to add or dig out, because the shape of the bottom of the rock is just as it will lie. Once it is set with the underpinning stones (for water work) or soil (for dry work) tamped under it, you're done.

Don't:

Never double strap or cable a rock unless you absolutely must. With two straps, you can't rotate the rock in the horizontal plane. Also, don't rough-place a rock with the bucket of a backhoe and then try to properly set it by pushing or pulling it with the hoe. This often mars the rock and is much less efficient than single cabling.

In my experience, double-strapping and backhoe abuse are typical of U.S. contractors and it's what they'll do if you don't instruct them in other methods. I suppose that if you don't have to get rocks in exact positions and you are working alone with a backhoe, this casual approach makes sense. But it doesn't when you are building a garden that calls for placing rocks in varying, precise positions.

— D.S.

Photo by Sylvia Banks



A Way with Plants

My plant choices are not based on which species are most unusual or exotic, but rather on which plants have the qualities — structure, leaf size, texture, color — that will best evoke the scene being portrayed *and* thrive in the environment at hand.

I compose these plants to emulate what is found in nature. In the "Garden of the Pine Wind" this meant flanking the falls with masses of small-leaved shrubs such as azaleas and ilex (shorter in the front and taller at the back) to enhance the sense of scale and create the illusion that the hillside continues beyond what can be seen.

When planting trees and shrubs on sloping hillsides such as these, it is best to place the root balls so that the trunks are perpendicular to the slope — the way plants grow in nature — rather than straight up as is so often done in American landscaping. This method has the added advantage of maximizing the visibility of shrub foliage and is a key to making plants look like they belong.

— D.S.

runs down to a wide shelf of slightly inclined horizontal bedrock with twin rivulets in the middle.

One might think that's ranging pretty far from local flavors in finding a model, but I had observed a good bit of similarity of the exposed bedrock in Tennessee mountain streams and the nearby Gulpha Gorge in Hot Springs. Basically, nature's models told me that the two types of falls could occur in tandem.

The rest of the design was inspired by the desired sense of flow and the available rocks. I used two of the largest we had, nine and 12 tons, placed at 10 and 4 o'clock positions relative to the direction of the stream below the cascade, thus framing the upper left and lower

right stream channels where the cascade would tumble out. At the top of the weir, the water would flow over a ripply five-foot-wide horizontal rock, and then be forced to cascade around both sides of a convoluted rock that we eased down in the center (it barely fit) after the flanking rocks had been set.

Rock Settings

The actual setting of rocks took place weir by weir. I generally work from back to front of the construction site and from top to bottom of the picture plane. As each rock is brought to the work site in a logical sequence (based on aesthetics and practicality), I direct the equipment operator and men on the ground in exact placement.

At Garvan, we used nylon straps for rocks up to four tons and steel cables beyond that. I'm quite particular about the rigging used in moving stones and set things up in such a way that the hard work of getting them positioned can take place efficiently. While I remain cognizant of both design needs and operator convenience, I won't ever sacrifice aesthetics in the name of short-term convenience. (The sidebar on page 49 offers some guidance.)

Once the waterfall rocks had been placed in front of each weir, we pumped in concrete to fill all the voids, leaving planting pockets where appropriate – that is, where they would be above water level and not subject to erosion by the moving water.

After the rocks were set for Weir 2's falls, the stream below the falls was then edged with rocks, primarily on the concave bank of the left side. This evocation of cliffs would force the stream to turn diagonally toward the lower right corner of the picture plane, where it would flow under a five-foot-wide, one-foot-thick stone slab. (We set five of these slab bridges in all, using rock quarried 50 miles north of Hot Springs.)

Below the stone bridge, my able assistant Mike Walker placed rocks here and there along the banks where the stream would naturally turn in response to existing topography and wash away the thin soil to expose the bedrock. This



Photo by Sylvia Banks

created a very natural effect and is a change of pace from the concentrated rockwork of Weirs 1 and 2.

At the base of the hill, the stream joins with another, smaller stream and flows into the long pool impounded by Weir 3. Because of the 40-foot-plus width and four-foot height of this weir as well as the narrow drainage ravine that went straight down the hill for some 70 feet into what would be the system's largest pond, I decided to have three separate falls breach the weir and tumble around jagged rocks that inclined toward the

top of the falls as a counterthrust to the powerful movement of the water.

The three falls would meet after tumbling around the foot of this first, steeper course of inclined boulders, just below a wide, shelf-like rock linked to either shore by flat-topped stepping stones – a cascade crossing that appears to be mostly a work of nature. Here the cascade turns into a mountain stream, flowing between gently inclined or flat-topped bank rocks over an occasional low falls before spilling into a large pond over a 12-foot-wide stone ledge.

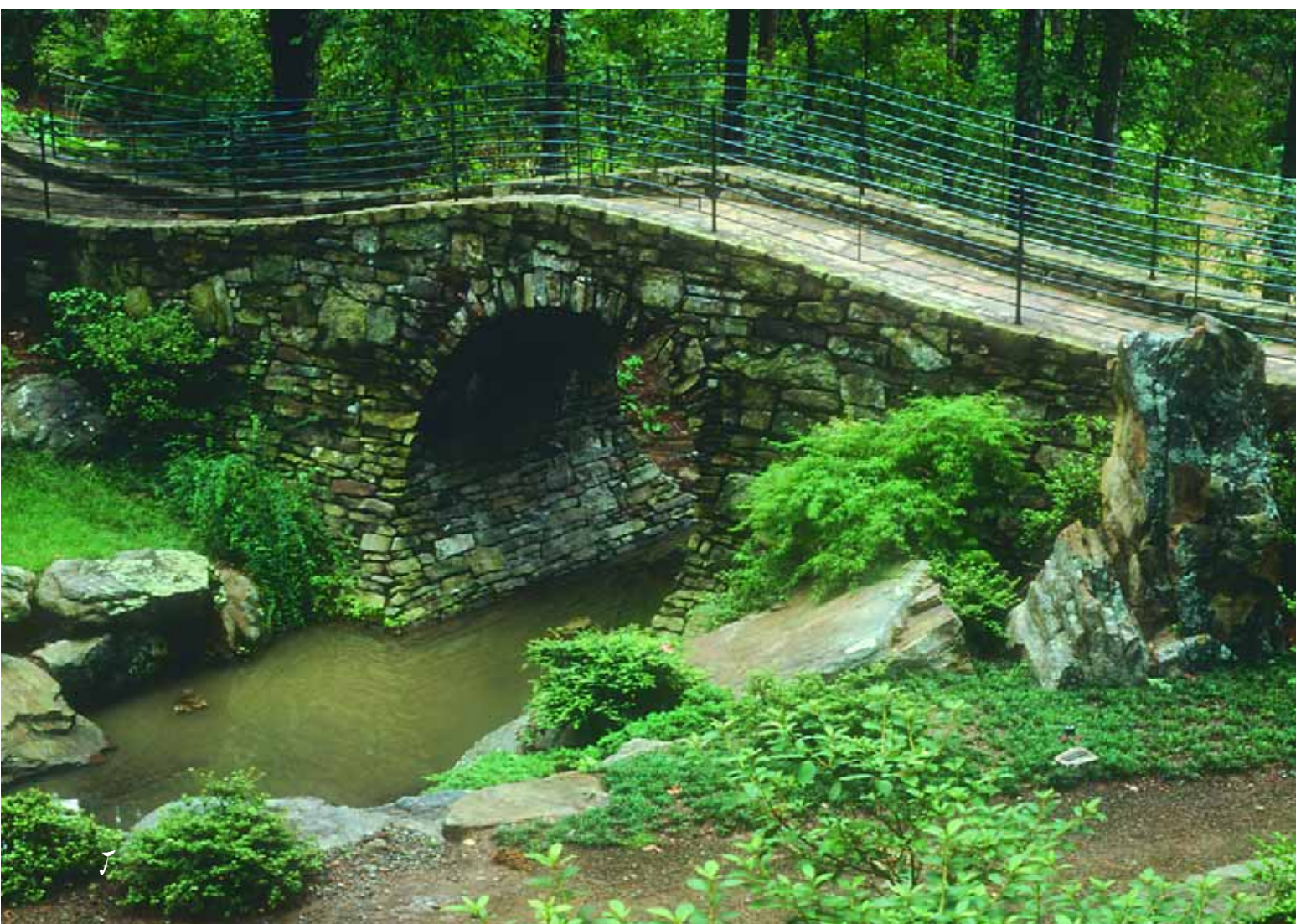


Here we used cinder-block underpinnings to raise the 'projecting ledge' rock from the concrete footing to the desired height above the top of Weir 3 (E). By the time we were finished, of course, our handiwork was completely masked (F), and even the stepping stones have a random, natural appearance (G) within a space in which all the rocks seem to have tumbled from higher elevations (H).





The stonemasons who took the sketches for Full Moon Bridge and made it a reality did truly brilliant work (I). The bridge has the graceful sweep and lift of the Chinese exemplars that inspired it (J) and now serves as the perfect visual frame for the gentle flow of water that moves beneath its span (K) on the way to the composition's fourth and final weir.



Building Drama

The trail does not lead directly to a vista of the Weir 3 falls, but instead overlooks them. Just beyond the final overlook, which casts its view over the largest pond and, through the trees, to Lake Hamilton below, the path turns to the right and, after crossing a rill, loops back along the opposite side of a little valley.

An alternate way of crossing the valley – taking off right after the overlook where the main path turns – is the gently arching, 60-foot-long Full Moon Bridge, inspired by Chinese stone masonry.

The bridge began to take shape the evening after I first viewed this wooded ravine. Garden director Bob Byers told me at the time that Mrs. Garvan had hoped for some sort of bridge. Back in my hotel room, I made a rough sketch of

what I thought would fit, not having any clear idea just how brilliantly Mike Brown, his construction crew and the stonemasons would execute the design.

They created a steel jig with rotating arms to form the nine-foot-diameter opening for the stream. The sides of the bridge flare out from six feet wide at the top to more than 10 feet at ground level, so two curves meet at the edge of the circular opening. All of the native Arkansas sandstone they used seems to belong to and grow out of the setting. (Head stonemason Bob Lowrey is justifiably proud and has said he regards this as the crowning achievement of his long career.)

After looping back to meet the stone steps at the far end of Full Moon Bridge, the path crosses a dry wash and cuts

For More Detail

My degree of involvement in paying attention to rock setting and working with variations in shape, size, color, texture and appearance while striving for compositional integrity is such that I dedicated a chapter in my book to the subject.

If you want more information, see *Secret Teachings in the Art of Japanese Gardens* (Kodansha, 1987).

– D.S.



Photo by Sylvia Banks



I also draw inspiration from two-dimensional landscape arts, such as this woodblock print by Yeisen (1790-1848) depicting the Urami Fall in Japan (L). This image of a dramatic waterfall translates beautifully to the Arkansas setting and native rocks (M).

through a stony bank. (Those of us working on the project called this area Tibetan Valley for its stony, arid feel). The trail then descends gradually, overlooking a meadow sloping to the large pond on the left, and then winding through the woods to the shore of Weir 4's pond and the top of the dramatic 12-foot drop that pours directly out of it.

With the falls placed below the path in the final drop to Lake Hamilton, the formation isn't seen until you reach the ADA-accessible overlook: Here the central fall is revealed, cantilevered to drop in a sheet over a ledge so the more adventurous can walk behind it. The client had asked for just such a dramatic fall, and the 12-foot height of Weir 4 was exactly what we needed to carry it off.

When the footing trench was dug, I was impressed by the character of the exposed bedrock on each of the two side banks. Without hesitating, we pulled the weir ends back on both sides, thereby leaving these areas exposed. That's why Weir 4 is shaped like the prow of a ship – and represents a perfect example of the way field adjustments can be made to heighten a scene's impact and elevate the work from generic drawings and specifications to the realm of context-sensitive art.

Broader Strokes

The two little falls of Weir 4 – pouring through a chute in the spillway rock at the left and, on the right, trickling down two inclined rocks selected for their grooves – were spaced away from the main fall and were inspired by the character of the exposed bedrock. (Indeed, it's al-

Long Views

No landscape will grow into and then continue to evoke the scene imagined by the designer without skilled maintenance. It takes cleaning and pruning, week after week and year after year, to maintain that scene in all its potential.

It's my view that any public garden worth installing ought to have a maintenance endowment sufficient to pay the needed gardeners and the cost of materials – say as five percent of the annual interest from the endowment. This works beautifully when supplemented by a good volunteer-gardener program, which not only helps with the maintenance, but also produces a cadre of informed advocates who can educate visitors and increase everyone's enjoyment of the garden.

– D.S.



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most impossible to tell where the native rock ends and the placed rock begins.)

The height of Weir 4 meant that expressing naturalness was a somewhat different challenge here than with the other weirs. In effect, it was a process of vertically stacking a large number of big, mostly irregular rocks with the precision of a jigsaw puzzle rather than a matter of positioning a few key rocks on an incline and then setting the other smaller rocks in response to them.

A path winds down from the overlook, crossing a bridge of two cantilevered seven-foot long stones whose zigzag edges narrow to a one-foot gap. Some have remarked on the resemblance of this form to the outstretched hands in Michelangelo's painting, "Creation of Adam," on the Sistine Chapel's ceiling.

Just beyond the fall is a boulder that appears to have broken off the edge of the cliff, with its upward-thrusting lines leading the eye to the top of the fall. To fill this dual role, I selected an unweathered, quarry-blasted rock with a wide base and tapering top.

With the spray off the fall, it has already weathered to take on the look of the bedrock beneath it – a perfect expression of the integrity and intensity I bring to my projects in order to capture the dynamic stability of nature in every way I can.



The prominent, flat-topped rock jutting out at the base of Weir 4 was set as a visual and physical anchor at the point where the concrete dam makes a 'V' like the prow of a ship (N). The cantilevered bridge on the pathway from the overlook (O) suggests to some the angles and composition of Michelangelo's 'Creation of Adam' – a reading I leave to the eye of the beholder. The rivulet fall at the right includes some of the 'knobby swirly' stones that were available at this stage of the project (P).

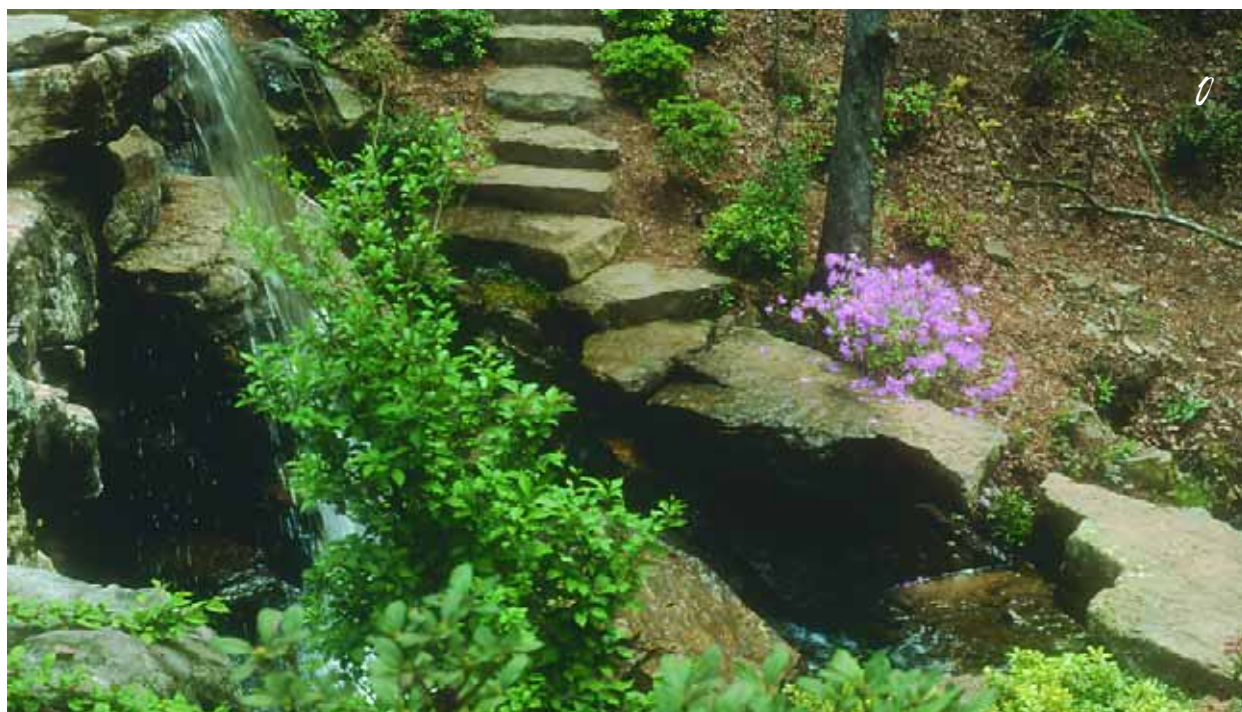


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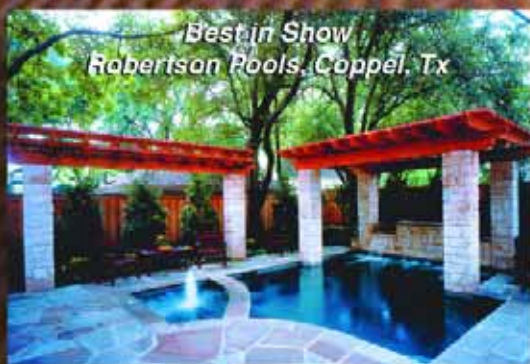
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135	Praher Canada Products (pg. 60)
136	Lumière/Cooper Lighting (pg. 60)
137	KRC Rock (pg. 60)
138	Vitriturf (pg. 60)
139	Hayward Pool Products (pg. 61)
140	CLI Industries (pg. 61)
141	Shade Systems (pg. 61)
142	Paramount Pool & Spa Systems (pg. 61)
143	OWI (pg. 62)
144	Greaves (pg. 62)
145	Firestone Building Products (pg. 62)
146	Acu-Trol Programmable Controllers (pg. 62)
147	Cal Pump (pg. 63)
148	Cleardeck Systems (pg. 63)
149	SeaStone Group (pg. 63)
150	Jandy (pg. 63)
151	Huffy Sports (pg. 64)
152	S.R. Smith (pg. 64)
153	Rock Formations (pg. 64)
154	Bobcat (pg. 64)
155	Deck-O-Seal (pg. 65)
156	Custom Mosaics (pg. 65)
157	Caterpillar (pg. 65)
158	Otterbine-Barebo (pg. 65)
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Continued on page 62



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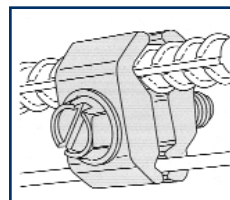


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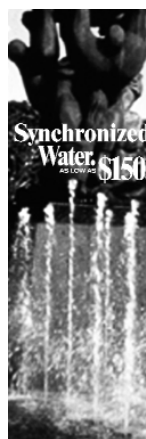
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CARTRIDGE FILTERS

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JANDY has introduced the CJ Series of single-element cartridge filters. Each unit in the line features easy-grip tank handles, an innovative lock-ring design for ease of service, fully interchangeable inlet/outlet ports for complete plumbing flexibility and a durable, high-impact, UV-resistant thermoplastic tank body. Each unit also has 2-inch unions, a drain-plug assembly, an air-relief valve and a pressure gauge. **Jandy**, Petaluma, CA.



Continued on page 64

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POOL GAMES

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HUFFY SPORTS manufactures products for use in vigorous pool activities, including complete systems for basketball and volleyball in both portable and deck-mounted models. Basketball backboards come in a variety of styles and can be set up with team logos. Volleyball nets are supported by aluminum poles that fit standard 1-1/2-inch deck sleeves. Balls, nets and pumps are available. **Huffy Sports**, Sussex, WI.

POOL BULKHEADS

Circle 152 on Reader Service Card

S.R. SMITH has added the Stark Bulkhead to its line. The solid-fiberglass product transform pools into multi-use facilities for classes, sporting events, competitive meets and special events. With a 100% flow-through, cut-out design, there is no wave rebound and water levels are never disrupted. All bulkheads are custom designed and manufactured for ideal sizing and come with 25-year warranties. **S.R. Smith**, Canby, OR.



CAST ROCKWORK

Circle 153 on Reader Service Card



ROCK FORMATIONS offers Rico Rock – cast rockwork and waterfall formations for use with new or existing swimming pools. System components are made of lightweight, reinforced concrete and are mortared together for permanence. Fully modular systems come complete with plumbing, waterproofing and finish coloring, and landscape boulders, grottos and custom designs are also available. **Rock Formations**, Fontana, CA.

MINI-TRACK LOADER

Circle 154 on Reader Service Card

BOBCAT has introduced the MT52 mini-track loader. Designed for use on projects too big for shovels and wheelbarrows but areas too small for full-sized skid-steer loaders, the new unit offers ride-on or walk-behind capabilities and is just three feet wide for easy site access. Direction and speed are controlled by one handle, while the loader's lift and tilt functions are controlled by one lever. **Bobcat**, West Fargo, ND.



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WATER SHAPES

SEALING COMPOUND

Circle 155 on Reader Service Card



DECK-O-SEAL has introduced One Step, a single-component, non-sagging sealing compound for caulking joints in structures that are subject to movement caused by temperature changes. Ideal for use with concrete and for providing permanent waterproof seals or expansion joints, the product can be used where tile meets the coping and in other critical vertical-surface applications. **Deck-O-Seal**, Hampshire, IL.

SKID-STEER LOADER

Circle 157 on Reader Service Card



CATERPILLAR has introduced five new B-Series skid-steer loaders, including the versatile Model 248B, which offers increased engine power and breakout force as well as improved operator comfort and enhanced machine reliability and serviceability. The lift has a capacity of 2,000 pounds and a load-sensing system that can provide high hydraulic power with the engine at low or high idle. **Caterpillar**, Peoria, IL.

DOUBLE-CONTAINMENT PIPING

Circle 159 on Reader Service Card



ASAHI/AMERICA introduces Pro-Lock pipes for use with sodium hypochlorite and bleach. Available in a range of sizes and with Schedule 40 x 40, 80 x 40 or 80 x 80 ratings, the system features two separate pipes (one the carrier, the other for containment) constructed of PVC and CPVC as well as a patented fitting that locks the inner pipe to the outer pipe for control of stress and thermal expansion. **Asahi/America**, Malden, MA.

POOL FINANCING SERVICE

Circle 161 on Reader Service Card



WHITEWATER WEST manufactures AquaSpray activity elements, individual waterfeatures designed for smaller facilities or budgets. Model AS-901, for example, is a multi-level series of steel or fiberglass troughs in which water flows from one runnel to another, fed by a small pipe fall with an optional, interactive valve that enables participants to control the water's flow. **Whitewater West**, Richmond, British Columbia, Canada.

DECORATIVE MOSAICS DETAILS

Circle 156 on Reader Service Card

CUSTOM MOSAICS offers the Paradise Series of mosaics for pools and patios. Various dolphin species, orcas, sailfish, mahi mahis, flying fish and sharks are available, along with beachballs, shells, turtles, angelfish, crabs, rays, seahorses, starfish and more. There's also a mermaid/turtle mosaic. Most designs are available in multiple sizes, and smaller pieces come in nine different colors. **Custom Mosaics**, Sunrise, FL.



NEW FOUNTAIN PATTERN

Circle 158 on Reader Service Card

OTTERBINE-BAREBO has added the Genesis spray pattern to its line of aerating fountains. Featuring two tiers and 16 streams with a minimum operating depth of less than 30 inches, the effect is like that of an architectural fountain in reaching heights of 18 feet and widths up to 62 feet. This brings to nine the number of interchangeable patterns available in the company's product line. **Otterbine-Barebo**, Emmaus, PA.



POOL DESIGN SOFTWARE

Circle 160 on Reader Service Card

STRUCTURE STUDIOS offers Pool Studio software to aid pool designers, landscape architects and builders in getting their clients to visualize how their backyards can look with a complete, virtual tour. Developed by a pool designer, the software creates a detailed, 3-D representation of the finished product, right down to tile and interior finishes, from a designer's 2-D drawings. **Structure Studios**, Las Vegas, NV.



PLATE COMPACTOR

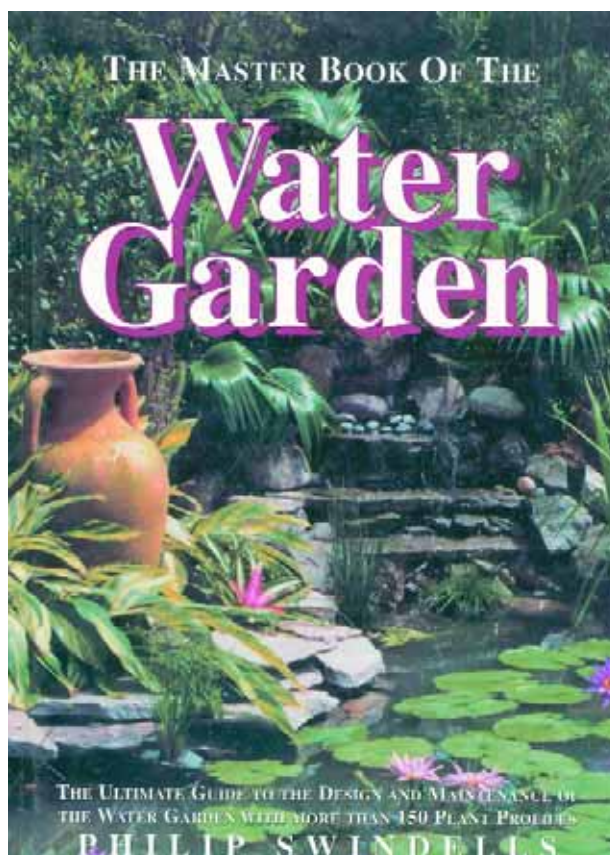
Circle 162 on Reader Service Card

VIBCO introduces the TP-10, a lightweight plate compactor. Weighing in at just 87 pounds, the unit is designed for easy maneuverability and one-person operation in small or tight locations — ideal for soil compaction with watershapes or in settling paving stones. Safe, durable and fast, the unit produces deep compaction while maintaining high efficiency and has a self-cleaning, unitized base plate. **Vibco**, Wyoming, RI.



By Mike Farley

Into the Pond



Experts in watergardening and pond enthusiasts of all stripes are quite quick to claim that their form of watershaping is the fastest-growing segment of the industry and trumpet a history that stretches, they say, to the Islamic world, Japan and Europe.

I can't say whether they're right or wrong with their assertions, but it's my sense as someone who's been designing with water for many years that the current trend toward naturalistic ponds and streams is quite strong (and probably getting stronger) and that it's important for all of us professionals to approach the art and science of "living" watershapes in a deliberate and thoughtful way.

To that end, I've examined many publications dedicated to watergardening – and I'd be lying if I said that I've been either impressed, inspired or much informed by most of the material I've seen on the subject. In fact, the vast majority of publications I've encountered – and there are *many* – are so basic that they could only be of service to hobbyists.

Although the books I'm after as a professional seem quite rare, however, I found a gem in *The Master Book of the Water Garden* by award-winning

garden writer and teacher Philip Swindells (Tetra Press, 1997). As is the case with many of the best-regarded writers on the subject, Swindells hails from England, where he is among watergardening's most significant advocates. And he does indeed offer a wonderfully comprehensive and informative survey of his art and craft.

He helps by sorting out the stylistic aspects of pond and stream design in intriguing and insightful ways, first by classifying them as formal, informal and semi-formal and then by covering (at length) the key elements of Chinese, Japanese and European watergardens. These discussions include substantial, well-illustrated treatments of ponds built to support and display Koi, amphibians and other forms of wildlife. He also covers streams, bogs, cascades and combinations of these forms as components of open meadows or denser landscaping.

Some of the categories overlap a bit, and some of the distinctions he draws are fairly subtle. But at every turn the discussions that unfold are truly informative, especially when he gets to aquatic plants and flora suited to use near the water's edge. He also goes into great detail on pathways and edge treatments and includes useful diagrams of stream and pond systems – complete with waterfalls and cascades.

Swindells has written extensively on these subjects and edited the helpful book by Peter Robinson entitled *Pool and Waterside Gardening* (Collingridge Books, 1987). Part of a series called the "Kew Gardening Guides," this publication also offers some keen insights as well as useful information about the world of watergardening.

Speaking as one new to this field, I'm open to any suggestions you might have for books that will head me in the right direction as a watershape designer and builder. In the meantime, I recommend these two books as primary resources – and have my eyes wide open for more. **WS**

Mike Farley is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Gohlke Pools in Denton, Texas. A graduate of Genesis 3's Level I Design School, he holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.

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