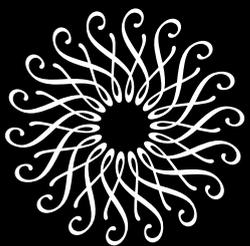
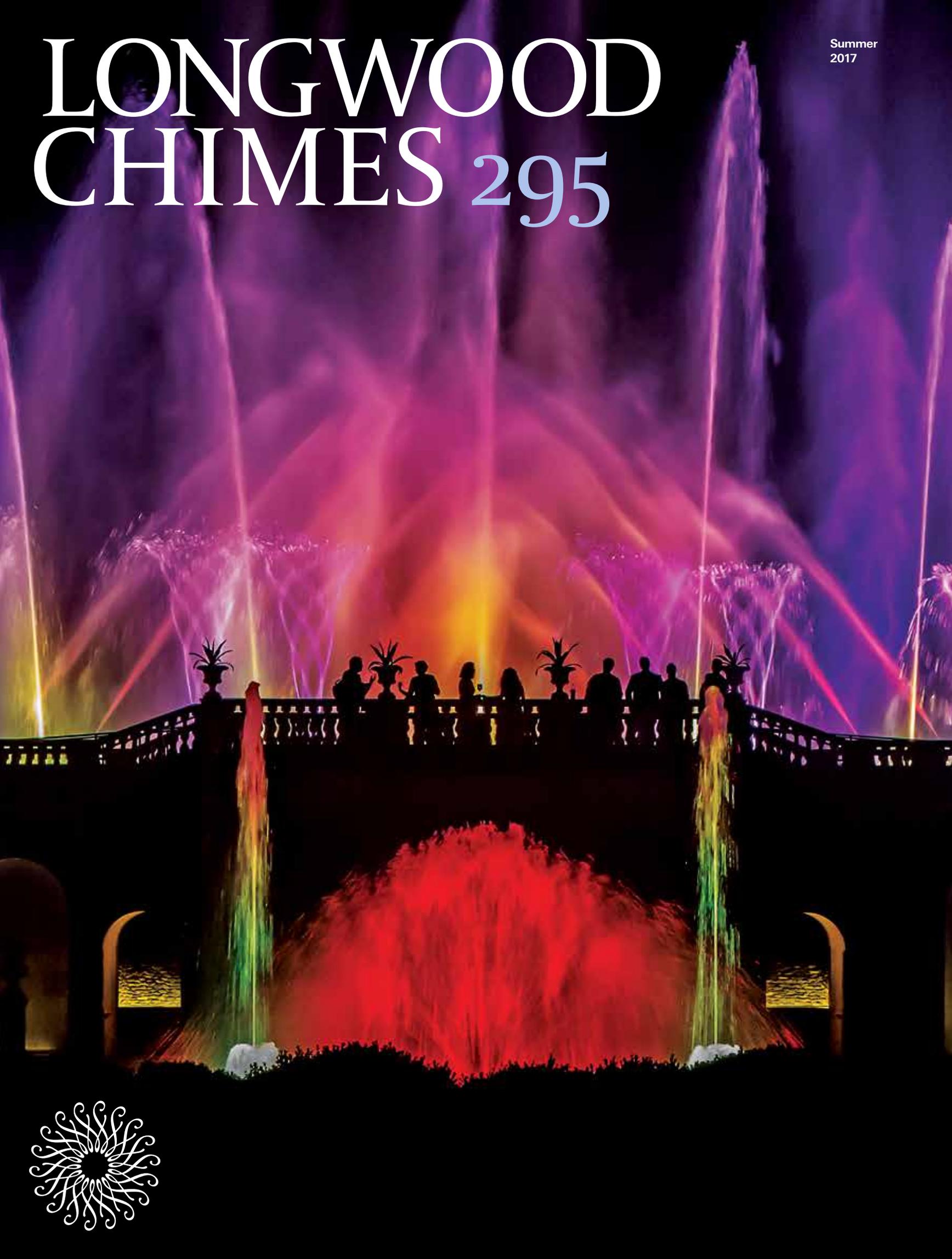


LONGWOOD CHIMES 295

Summer
2017





To rejuvenate is to make young or youthful again: give new vigor to. In this issue of *Longwood Chimes*, we explore many examples of rejuvenation. From our new Fellows Program, a reimagining of the previous Graduate Program; to our Specimen Tree Replacement Plan, which ensures our historic trees endure; to a sweeping survey of the years of planning, design, and implementation leading up to the triumphal return of our Main Fountain Garden—not simply restored, but resplendent.

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Our preview party celebrating the return of the Main Fountain Garden was also a grand fashion fête, bringing stylish guests from as far away as Italy.



Detail view of a Basketweave fountain frozen in time. This signature fountain pattern was created exclusively for Longwood by Fluidity Design Consultants in Los Angeles. The Basketweave fountains are located in the Octagon Wellheads in the Upper and Lower Canals of the Main Fountain Garden.

Photo by Daniel Traub.



Sustaining Our Roots

Our Specimen Tree Replacement Plan helps ensure our historic trees stand the test of time.
By Lauren Grow

Below:

This American elm (*Ulmus americana*), which stands near the entrance to the Gardens, is the sole survivor of an allée planted by Pierre S. du Pont in the 1930s; the rest were victims of Dutch elm disease. The specimens were originally purchased from the Duke Estate in Somerville, NJ by Mr. du Pont, and moved as mature trees by Lewis & Valentine.

Opposite:

Small cuttings from Longwood's legacy American elm will create an identical new tree. This is one component of the management tool known as the Specimen Tree Replacement Plan.

Photos by Daniel Traub.



Trees stand as important symbols of heritage, science, and nature's powerful roots in our daily lives. Our trees, some of which preface Pierre S. du Pont's purchase of the property in July 1906, are integral to our landscape, our plant research, and the enjoyment of our gardens for generations to come. To ensure we can continue the legacy of our historic trees, staff developed the Specimen Tree Replacement Plan. Formalized in 2015, this plan preserves the germplasm, or genetics, of original trees dating back to the 1800s, state champion trees, and those valuable to the aesthetic landscape of our Gardens so we can immediately replace notable trees with a mature and genetically identical specimen.

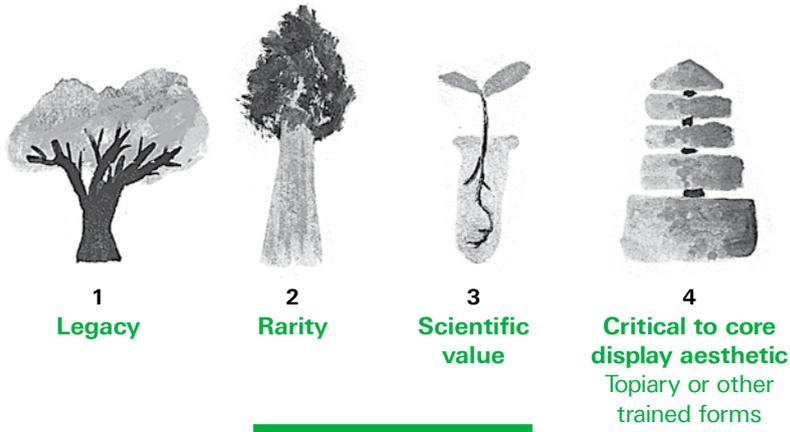
Painted across our 1,077 acres are more than 150 taxa of "Historical Trees" with roots established in the 17th century. A combination of 1,021 sugar maples, tulip poplars, Canadian hemlocks, and white pines remain from Mr. du Pont's time. When our arborists and horticulturists recognized the declining state of some of these original trees in Peirce's Park, the Specimen Tree Replacement Plan was born. When a tree is in need of replacement, whether affected by disease, growth, or disaster, a matrix in the plan determines whether the tree can be propagated and cloned, a replacement can be purchased, or an alternative plant can take its place. "We believe the use of the matrix will create long-term benefits by maintaining the diversity of our tree population while preserving historically and genetically significant trees in our Gardens," explains



Specimen Tree Replacement Decision Matrix

Criteria

The tree must have significance in one or more of these categories:



Is the tree a cultivar or straight species?



Cultivar

Is the cultivar commercially available?

Straight species

Is the tree exhibiting genetic superiority? (e.g., State Champion)



No

Is the cultivar present at other gardens?

Yes

No

Yes



No

Yes



Clonal replacements are not necessary



Outcome

Purchase replacements as necessary

Obtain scions



Outcome

Attempt to propagate clonal replacements



Outcome

Attempt to propagate clonal replacements

Outcome

Replacements in kind are not possible

Andrew Lyman, Senior Arborist. Used often by our staff, the matrix provides a necessary foundation for proper tree care for the landscape now and into the future.

Due to the size of our state champion trees, they cannot be immediately replaced as tree growth is a slow process, but their adapted and valuable genetics can be cloned to ensure the best traits endure for centuries to come. Iconic and recognizable trees that serve an aesthetic purpose such as the magnolia in Peirce's Park, the Topiary Garden's sculpted yews, the ginkgoes, and the copper beeches that line Copper Beech Allée have clones to ensure continued beauty in our Gardens.

The plan has required years of research, recordkeeping, and preparedness. First, our staff identified the trees that the Peirce family had originally planted by reviewing periodicals from the 1800s from Hagley Museum and Library, and documentation of trees growing at Tyler Arboretum in the 17th century that would have been similar to the trees growing at Longwood. The scope of the plan expanded to other areas of the Gardens where recordkeeping of trees and shrubs continued.

Our nursery is home to these clones and young trees waiting to take root in the rich soil of our Gardens. Under the watchful eye of Nursery Manager Naomi McCafferty, approximately 425 plants representing 25 taxa are being nurtured as part of this unique program. "It is unusual for a public garden to have the resources to not only preserve nature, but to continue original heritage for future generations of staff, visitors, and Members," McCafferty said.

The plan has already made an impact. In 2016, a 22-foot-tall copper beech was transplanted in our Copper Beach Allée. In 2017, a large *Taxus* topiary found a home in the Topiary Garden. In addition, trees started as rooted cuttings from our rare American elm at the entrance to the Gardens and our national champion cucumber magnolia have been placed into the Gardens while the original trees still stand tall. McCafferty is particularly proud of 12 red maple trees now growing in the nursery. Those trees hail from the historic red maple by the Large Lake that had to be removed at a time of year that was not ideal to root a cutting or make a graft. The trunk was removed and the stump was left

for several months in hopes it would sprout a sucker that would grow from the stump. It did not. However, the original trunk, which was stockpiled at Longwood, sprouted numerous shoots that were collected and rooted well, resulting in 12 flourishing red maples in the nursery—one of which will be selected for transplant into the Gardens in the next few years.

When the trees become too large to relocate or are not needed for a project, they always find a home somewhere on the property or at another arboretum or garden. One of the ongoing goals of the plan is to establish a trade with other cultural organizations in the event of a destructive event, such as a hurricane. In fact, giant sequoias from Tyler Arboretum and a sycamore from Brandywine Battlefield are growing at our nursery from cuttings of the original historical trees.

Our Gardens strive to support the mission of our founder, his original tree collection, and his love of horticulture. The Specimen Tree Replacement Plan continues our Gardens' rich legacy and sustains the trees that call Longwood home.

"It is unusual for a public garden to have the resources to not only preserve nature, but to continue original heritage for future generations of staff, visitors, and Members."

—Naomi McCafferty, Nursery Manager

Nursery Manager Naomi McCafferty in the allée of replacement red maples at our nursery. Photo by Carlos Alejandro.

Illustration (opposite) by Rebecca Clarke



Meet the Fellows

Introducing the five individuals on the path toward becoming the next generation of seasoned public horticulture leaders.
By Lynn Schuessler



Andrew Bell

In June 2017, the five talented professionals chosen for the new Longwood Fellows Program hit the ground running. One short week after moving into the residence they'll share for the next 13 months, they took part in a three-day retreat to get to know not only each other, but themselves.

"You can't be an effective leader unless you're aware of your own tendencies, preferences, and blind spots," reports Tamara Fleming, program director, who came to Longwood in March 2016 from the University of Virginia's Center for Leadership Excellence.

Effective leadership is what the Fellows Program is all about. "Historically, public garden leaders rose through the ranks of horticulture. They were plant science experts, but were not exposed to leadership as a discipline," says Fleming. Today, many aspiring leaders in public horticulture already have a degree—what they're really seeking is experience and exposure.

This groundbreaking program provides both—through cultural immersion at regional gardens, a comprehensive project, a domestic or international field placement, and coursework focused on leadership, communications, board culture and governance. Participation in Massive Open Online Courses (MOOCs), offered by leading universities, will expand the learning experience and tailor it to individual interests.

After their first three days of introspection, the Fellows switched gears to networking at the American Public Gardens Association Conference in Ontario (June 19–23), where alumni of the Longwood Graduate Program helped the Fellows brainstorm ideas for their yearlong collaborative project in public horticulture.

The conference also marked the launch of the Society of Fellows, the alumni group of the Longwood Graduate Program and of the Longwood Fellows Program.

This member-run service organization will focus on continued professional development through peer mentoring, an annual meeting featuring leadership topics, and the development of alumni networking tools, among other goals.

So what does it take to be a leader in public horticulture? Among the 66 program applicants representing 21 states and 17 countries, the sought-after qualities included a desire to lead, striving to be one's best, supporting the growth of others, deep intellectual curiosity, and intrinsic motivation for phenomenal achievement—a "fire in the belly."

"Gardens are complicated organisms," says Fleming. "Leaders need to deal with boards, be effective communicators, adapt to diverse perspectives... they need to hit the ground running."

Julia Thomé





Kaslin Daniels



Patrick MacRae

Fellows Spotlight

In their own words

What aspects of leadership do you feel are most important in today's changing world?

Andrew Bell: Maintaining relevancy while staying true to your mission. Creating and maintaining an institutional culture that will attract talented employees and increase years of service to the institution.

Neil Gerlowski: Ethics and vision—there is no other problem that poses a greater global ethical dilemma or requires our most ambitious unified vision than climate change. Public parks and gardens have a tremendous opportunity to serve as leaders in tackling this challenge.

Patrick MacRae: Expanding audiences to include historically under-served communities and contributing to conservation of plants, ecosystems, and landscapes in an environment that is changing in ways we can only partially predict. Leaders in that context have to be flexible and progressive, visionary, and creative.

What most excites you about this program?

Kaslin Daniels: I'm thrilled to be at Longwood, where I'll have access to the minds of many of the greatest experts in horticulture, a world-renowned garden from which to learn plants and design, the library and herbarium, the global network of plant people, and a location rich with other stunning gardens nearby.

Julia Thomé: The chance to get to know and to learn from the other Fellows through the group project and other group work. Each of the Fellows comes from a very unique set of experiences, so I am expecting a very rich learning environment over the coming year!

What unique background do you bring to this program that others will find valuable?

KD: I have a background in both non-profit botanical gardens and public municipal parks. My goal is to bridge the gap between these two worlds without making compromises to the social inclusiveness of parks or the botanical richness of gardens, [especially] where they are most accessible and necessary, in urban settings.

NG: Working for nearly seven years as an immigrant to Mexico has changed my perspective to one that is infinitely more global and inclusive. I find tremendous joy in empowering others to serve as agents of positive change and to approach collective challenges as colleagues rather than competitors.

Neil Gerlowski



JT: I studied and worked for over 20 years in the field of community development, focusing on grassroots efforts in low income, underserved, and otherwise marginalized communities in the US and internationally. I hope that some of these experiences will be applicable to the intersections of public horticulture with broader community development efforts.

What are your dreams for your own future and for the future of public parks and gardens?

AB: Establishing a new public garden in my home state of Tennessee that will welcome everyone in the region and make meaningful and lasting impacts on their understanding of and appreciation for plants both in nature and in landscapes, and how plants play a vital role in our everyday lives.

PM: My dream is to be an Executive Director of one of the world's great gardens. Experiencing their beauty is among the most powerful tools to encourage people to care about our landscapes and our environment. I want people to recognize that gardens have the power to change their lives, their communities, and our world.

Learn more about the Longwood Fellows Program and the inaugural cohort of Fellows at <https://longwoodgardens.org/education/longwood-fellows>



Director's Cut

The Philadelphia-based filmmaker discusses the inspiration behind the making of our fountain documentary *Flowing Water*.
By Glenn Holsten

When I first started talking to Longwood about directing a film that would document the two-year adventure of the revitalization of the Main Fountain Garden, a neglected history quickly emerged—more than one, in fact. The Main Fountain Garden is an art history story, an engineering story, and a social history story. But films need heroes. And I wondered: Could a fountain garden be a hero?

Certainly, the main character of the film is Pierre S. du Pont, the founder of Longwood Gardens, the designer of the fountains. Initial research revealed his early delight of “flowing water,” his fascination with world’s fairs and expositions, his thrill of fountains and fireworks, and his love of the marriage of spectacle and technology. And while his artistic side (which included a love of piano and theater as a child) may not have been encouraged by his father during his youth, it was certainly stored away for later years.

Pierre du Pont is a curious figure. While there is a fabulous story to be told about his business triumphs (at one time running both the DuPont Company and General Motors), it seemed that his true “happy place” was Longwood Gardens—the place where he could design and tinker with an adjustable fountain nozzle that would change directions, or design a water system that used gravity (and an elevated reservoir) to create enough pressure for a daytime display, or import full-size trees tall enough to create an instant, exquisite backdrop for his dancing fountains.

If Mr. du Pont is the main character, the supporting players of this story are the men and women charged with preserving, advancing and even enhancing his vision. Here there is passion in abundance. My film team traveled to the NYC offices of architecture firm Beyer Blinder Belle, where project architects Richard Southwick and

Miriam Kelly spoke of the challenges of dissecting and reassembling this “jigsaw puzzle” and installing it with 21st-century technology; to the landscape design firm West 8, where Claire Agre and Adriaan Geuze talked about eyeliner and hedges (yes, eyeliner!); to the Los Angeles office of Fluidity, where fountain designer Jim Garland transfixed me with his talk about the magnificent combination of water and sunlight; and to L’Observatoire International, where Hervé Descottes (who “teams up with the night”) discussed the transformation of the garden from day to night. Each person asked “What would Pierre do?” and, inspired by Pierre du Pont’s passion for invention and innovation, each was able to add his or her own bit of magic to the fountain garden.

Back at Longwood, drones captured Bancroft Construction in the creation of the giant hole that emerged early on. GoPro and hand-held cameras documented the system of underground tunnels that were created to service the fountains (think of a giant Lego set, pieces snapping together in place. In this case, each piece weighed roughly 70,000 pounds!). I loved filming with construction manager Tom Kern—a conductor of sorts, guiding backhoes, diggers, and all sorts of machinery leading this orchestra of dirt and sound.

We filmed at Dan Lepore & Sons in Conshohocken, PA, where an immense warehouse was turned into a cathedral of stone repair. Our crane couldn’t get high enough to capture all of the 4,457 pieces of stone that were being cleaned and repaired there.

We interviewed du Pont family members who fondly reminisced about “Uncle Pierre.” They described his formidable presence, a mask, perhaps, to cover a quiet, thoughtful yet playful man. Someone who would lie down on the floor

to play cars with his nieces and nephews. They spoke with reverence about his achievements in business, and of his great artistic achievement—Longwood Gardens.

Throughout the adventure, I worked with the remarkable staff at Longwood, under the strong visionary leadership of Paul B. Redman, including public relations, archivists, plumbers, and horticulture experts—all happy to share their time and expertise with us to make this film happen. I am most grateful to them for their support.

A good film has a variety of moods and energies—pacing is critical to engage and sustain an audience. This project supplied me with many options: quiet moments, like the time we documented an artisan at Dan Lepore & Sons painstakingly repairing the neck of one of the two figurative statues in the garden affectionately named “Mr. and Mrs. Turtle.” And thrilling moments, like filming the fountains test in the Gardens in October 2016—where finally all of the talk, careful planning, and construction were put to the test. We all held a collective breath and finally exhaled as the fountains “took

off”—colors more vibrant than I thought possible, movement more intense than I had imagined.

More recently, I filmed lighting designer Hervé Descottes as he became emotional when he was last at Longwood Gardens, as he watched his firm’s carefully designed lighting plan emerge from the “blue hour”—that moment when day becomes night, when the Main Fountain Garden transforms from a place of majesty to a place of mystery. I got it. The landscape was coming alive, and he was part of that transformation.

“We did the unimaginable,” Redman said about the MFG revitalization in one of our interviews. *Flowing Waters* tells of this heroic effort. And, yes, I think through it all, the Main Fountain Garden truly emerges as a character, almost a living, breathing thing that engages our eyes, ears, and heart. It’s a beautiful tale of design, vision, and the possibility of imagination.

Finally, I am happy to add, I traveled with a crew to both Italy and France, to travel in Pierre du Pont’s footsteps, to

capture the villas and gardens that he toured along with his wife, Alice, and other family members. I documented the very places where design and horticulture and technology blended to create exceptional aesthetic experiences that shaped Pierre’s vision for Longwood Gardens. Places like Villa Gamberaia, Villa Gori, Champs-sur-Marne, Vaux-le-Vicomte, Versailles, and the fabulous Villa d’Este, where Pierre once stood among the glorious fountains and gardens in Tivoli, and remarked “It would be nice to have something like this at home.” Stunning locations to capture on film.

As I stood at the Villa d’Este, I completely connected with Pierre du Pont. Something very special happens in this place. The scale of the garden, the surprise at every turn, the beauty and the sense of wonder at the engineering feat you are witnessing. The intersection of sunlight, water, and sound.

I stood there, my senses peaked, agreeing with the man who started it all—“Yes, Pierre. It would be nice to have something like this at home.”

“The Main Fountain Garden is an art history story, an engineering story, and a social history story. But films need heroes. And I wondered: Could a fountain garden be a hero?”



Flowing Waters crew, left to right: Phil Bradshaw, director of photography; Mike Bland, gaffer; Max Tubman, drone operator; Glenn Holsten, director; Meg Sarachan, associate producer; Chayne Gregg, producer; Matt Hamm, camera assistant.

Opposite:
Film stills from the *Flowing Water* documentary.





Water flows once again into the carved limestone shell basins that populate the Pumphouse Façade of the Main Fountain Garden.

Photo by Daniel Traub.



New Heights

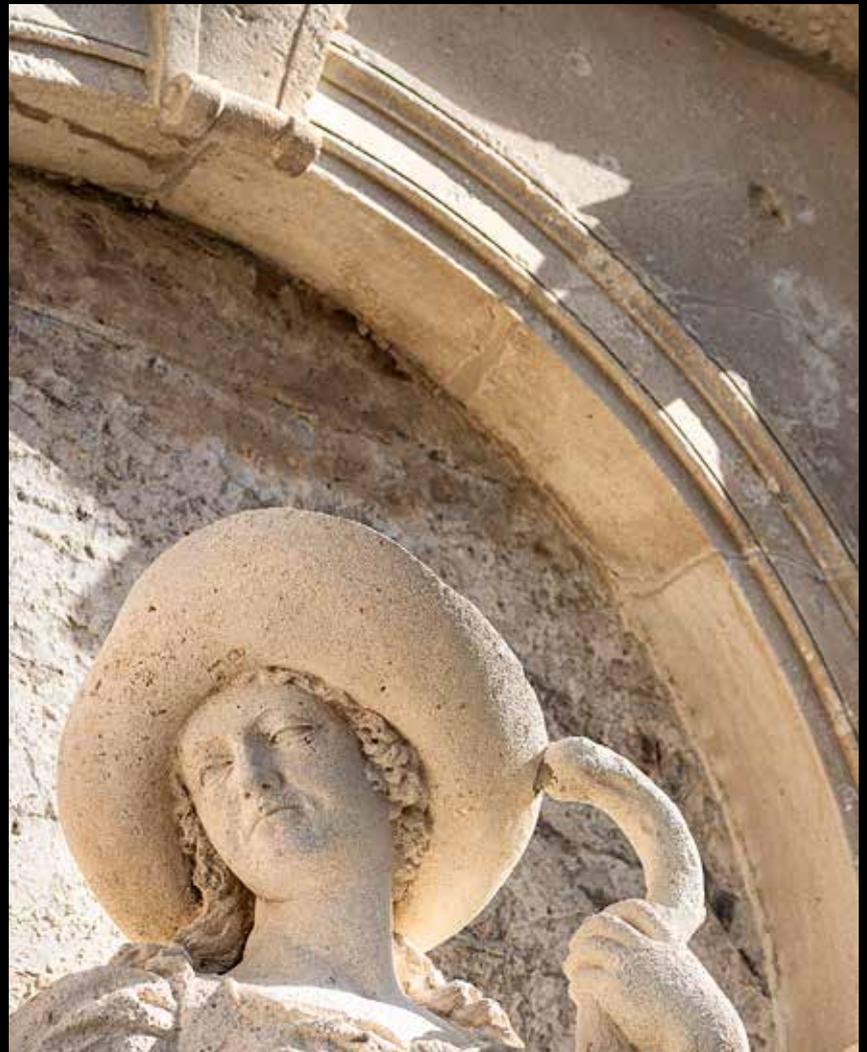
After years of planning, the Fountain Revitalization Project comes to fruition resulting in the triumphal return of the Main Fountain Garden.
By Colvin Randall



This page, clockwise from top left: The circular Basketweave rings located in the Octagon Wellheads hold 40 meticulously positioned nozzles that shoot water at a slight angle; Rectangular Basin fountains featuring the new robotic "Hidden Layer Dancer" one-axis nozzles (center); Reinstallation view of Fountain A cornice with restored Italian limestone.

Opposite: Simultaneous display of a range of new fountain features including the "Garden Grow" spinning nozzles, the "Hidden Layer Dancer" one-axis nozzles, and the "Dancer on a Stage" two-axis nozzles.

This page, clockwise from left:
Fountain A, restored Italian limestone male figure during reinstallation phase; Restored Italian limestone female figure during reinstallation phase; Restored Italian limestone cornice of Fountain A; Restored Italian limestone gargoy mask, located in the pedestal base of Fountain A.



The formal recognition that Longwood's Main Fountain Garden required serious renovation was established in November 1991 with the approval of \$100,000 for in-depth studies prior to developing a working plan for restoration. It was estimated that the total rebuilding cost would be \$10 million. Little of the investigative funding was spent, however, because the studies were undertaken by an in-house committee that first met in March 1993 and subsequently split into core, landscape, mechanical, electrical, and hardscape groups. Meetings were held over the next year, but then the process was put on hold for four and a half years while the Orangery and Exhibition Hall were reconstructed.

In 1998, the committees were revived, and in 1999 several fountain companies were invited to present their thoughts on what fountains at Longwood could be, including for the expanded Children's Garden and existing Palm House, Open Air Theatre, and Main Fountain Garden. Internal meetings continued through 2002, but by 2003 the pace had slowed considerably, due largely to reconstruction of the East Conservatory. In 2006 a

comprehensive meeting was held with retiring director Fred Roberts to summarize what had been decided to date. Roberts estimated that rebuilding the fountains would now cost \$40 million.

Once Paul Redman assumed leadership, a new visionary planning process for all of Longwood was begun in 2008, and in 2010 a Physical Site Master Plan was commissioned from West 8, an urban design and landscape architecture firm based in Rotterdam and New York, in conjunction with six other consulting firms. One was Los Angeles-based Fluidity Design Consultants, whose Jim Garland evaluated the existing water features throughout Longwood. The finalized plan was adopted in 2011. It stressed that the revitalization of the Main Fountain Garden should be a top priority, being an iconic feature around which so much was centered.

By 2012, Bancroft Construction Company from Wilmington, DE, was asked to coordinate the fountain rebuilding. Bancroft was already working on other projects at Longwood, such as the Meadow Garden. In early 2012, Longwood selected and interviewed 13

The finalized plan was adopted in 2011. It stressed that the revitalization of the Main Fountain Garden should be a top priority, being an iconic feature around which so much was centered.

Below:
This computer-generated image is just one of countless viewpoints that the High Definition Laser Scan of the original garden can create.





Above, top to bottom:
Installing one of the pre-cast sections of tunnel for the Lower Canal; View of Lower Canal with pre-cast sections in place. The circular openings in the top indicate the location of the Octagon Wellheads.

Photos by Sam Markey.

architectural firms, and after a lengthy three-stage evaluation, Beyer Blinder Belle was chosen to head the revitalization. BBB, headquartered in New York City, had worked on such well-known projects as Grand Central Terminal, the Ellis Island Museum of Immigration, the U.S. Capitol, and Lincoln Center’s Promenade. Fluidity was retained to design Longwood’s hydraulics and West 8 the landscape, along with L’Observatoire International for site lighting, Urban Engineers and Keast & Hood for engineering, and Integrated Conservation Resources for materials conservation.

The planning process was divided into five sequential tasks: a massive 353-page Pre-Design Report documented the history and existing conditions; an equally large Concept Design Report presented ideas for light, moderate, and maximum intervention; a Schematic Design crystallized the approach; a Design Development finalized details; and the resulting Construction Documents were used to rebuild the garden. Longwood chose to go for maximum intervention to not only restore the well-loved legacy features but also to add new offerings so

that the garden, as Paul Redman put it, “seems very familiar yet better, but guests really won’t know why.”

In the fall of 2014, a comprehensive 3D High Definition Laser Scan of the original garden was carried out by Karins and Associates from Newark, DE. This surveying process uses a laser beam to measure up to 50,000 points a second from up to 1,000 feet away. One scan creates a data cloud of millions of points. Many combined scans create a virtual 3D model of the area which then can be viewed as detailed elevations, plans, or even 3D fly-through animations. The effort ensured that the original 1931 garden was definitively documented.

The old Main Fountain Garden was laid to rest on October 13, 2014, after a short early morning fountain show for the entire staff. The area was then cordoned off with a perimeter fence, and finally in December the first really obvious change was the removal of existing plantings inside the construction zone. Furious demolition of the hardscape filled the early months of 2015, with vast quantities of earth moved to create space for tunnels, reservoirs, and pump rooms. By that summer, concrete for



Above:
View of site from Conservatory rooftop shows pre-cast underground tunnels and Upper Canal Pump Room constructed. Original curved retaining wall of the Upper Canal is visible in foreground prior to adding the new canal, which will sit higher than the tunnel below. Photo by Sam Markey.

the Upper Canal tank was poured, and by November it was backfilled with soil. In early 2016 the Upper Canal was looking more like its old self with the return of the restored Octagon Wellheads. By April the huge three-story service building topped by the Rectangular Basin was formed, and that summer the utilities were installed, ready for initial testing in the fall. As many as 175 workers could be on site on a single day, and the project moved 100,000 cubic yards of soil and utilized 9,000 cubic yards of concrete, five miles of pipe, and 51 tons of copper wire that could stretch 10 miles.

May 2016 marked the partial planting of the linden allée and boxwood. Much turf was laid in June, which greatly improved the view from the Conservatory. By August water was flowing again in the Canals and by October water was filling the Rectangular Basin. Testing of shows began in October through November 2016 and resumed in April 2017. The fountains were previewed in May and publicly inaugurated on May 27, 2017.

The most radical change was to construct 1,400 feet of tunnels to provide access to all utilities, plumbing, and wiring, unlike the old garden where these critical arteries were buried directly in the soil.

The tunnel idea for fountains was first considered when the Italian Water Garden was rebuilt in 1991 but it was only realized with the Main Fountain Garden. Although installing the pre-cast sections turned the garden into a “Big Dig,” the tunnels are today totally invisible. Down below, there is an underground city where the uninitiated would get lost were it not for prominent directional signs. To provide temperature and humidity control, 30 geothermal wells were drilled into the Picnic Area parking lot and connected with buried pipes.

Longwood’s staff asked Fluidity for some new water features—a few spinning jets, some angled nozzles, and the ability to make the five tallest jets even taller for a show finale. Jim Garland and his staff responded with a much enlarged vision for what the fountains could be. All the legacy effects were retained, but with height control using variable speed drives to ramp the pump motors up or down. Two original 60-foot-tall and two 80-foot-tall jets can now rise to 125 feet, and the old central 130-foot jet can now zoom up to 175 feet.

Sixteen five-stream spinning nozzles were added, with controllable height, speed, and direction. Eight nozzles that can move side to side and 11 nozzles that

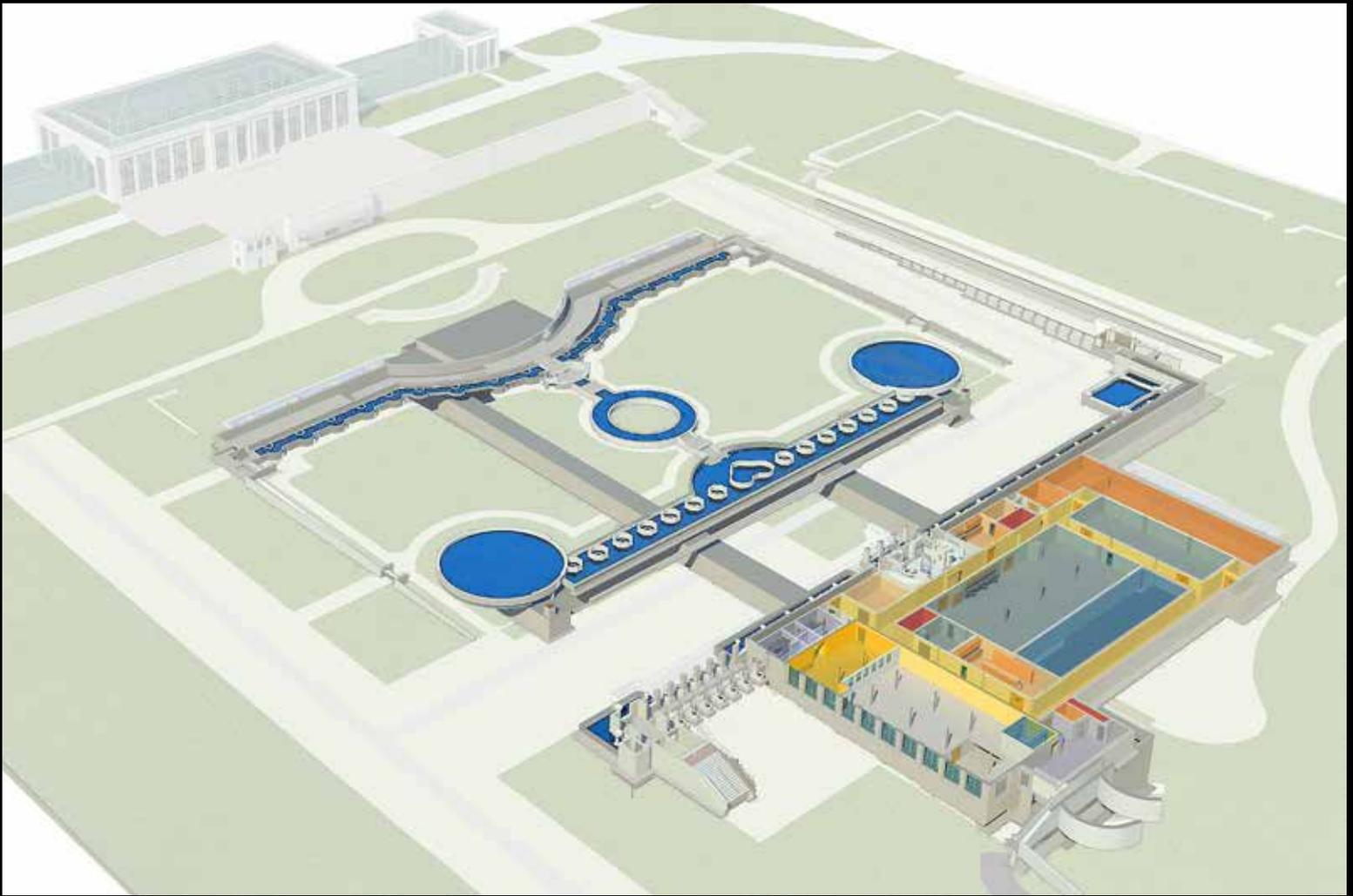
can move in any direction allow unlimited flexibility. In the Canals, circular pipes with 40 small jets apiece add a unique basketweave effect to the 29 stone octagon enclosures, totaling 1,200 new nozzles. The icing on the fountain cake is 32 air-propelled water “cannons” that blast 100 feet high with a controllable soft pop to loud bang. Competing for the surprise factor are 30 flame jets that appear like aquatic birthday candles atop the Upper and Lower Canal jets. The old garden had 386 jets, sprays, scuppers, spouts, waterfalls, and weirs; the new garden has 1,719.

Water totaling 338,000 gallons is stored in three underground tanks beneath the basins. The pools drain completely at night into the reservoirs, the water is treated while contained, then the next morning it is safe and ready for fountain duty. There are also 200,000 gallons stored in the old Pear-Shaped Basin for use with the Eye of Water, Waterfall, and Hillside Flume. That system is now completely separate from the fountains, although the pumps are located in the new Service Building beneath the Rectangular Basin. There are 68 display and filtration pumps (compared to 15 used in the old garden) in four pump rooms.



Competing for the surprise factor are 30 flame jets that appear like aquatic birthday candles atop the Upper and Lower Canal jets.

Left: Flame jets are a new feature in each of the 29 Octagon Wellheads located in the Upper and Lower Canals. Understated white LED's highlight the external stone carvings surrounding each of the Octagons. Photo by Hank Davis.



Above: This rendering shows the Pumphouse and tunnel layout in detail.



Above: The tunnel system—a virtual underground city which even has its own directional signage—allows all of the electrical, plumbing, and water features to be easily accessed for maintenance.



Left: View of the Main Pump Room, located within the Rectangular Basin. Shown here are 19 pumps that power the robotic nozzles, one pump per nozzle.

Photos by Daniel Traub.



Left: Twenty-five masons dedicated approximately 15,000 hours to the painstaking task of dismantling the already-crumbling Italian and Indiana limestone. Here, workers are seen removing deteriorated masks, basins, pedestals, urns, and blocks from the Pumphouse Façade.

Opposite: A new staircase (left) at the southwest corner of the garden provides access to the Rectangular Basin above, with an attached elevator. The restored Dolphin Fountain was also relocated here (center).

Photos by Sam Markey.



Clockwise from above: View of Italian limestone urns in the Lepore warehouse facility. Photo by Sam Markey.

New Italian limestone bouquets were machine carved then finished by hand by the artisans at Quarra Stone Company in Madison, WI, to match the detailing and specifications of the originals.

Lepore craftsman prepping an element from one of the Octagon Wellheads for a stone Dutchman repair. Photo by Sam Markey.





The maximum recirculation rate is about 40,000 gallons per minute (including the Eye of Water/Waterfall, Hillside Flume, and filtration pumps), compared with 10,000 gpm for the old system.

An astounding conservation effort was undertaken to preserve the historic stonework that had been carved for Mr. du Pont in Italy and Philadelphia in the 1930s. Following an extensive physical examination and chemical analysis of all aspects of the existing limestone by BBB and Integrated Conservation Resources, Dan Lepore & Sons Company from Conshohocken, PA, brought in 25 masons in 2014 to dismantle 5,312 pieces of stone in 15,033 hours. To map this largest of jigsaw puzzles each piece was marked with a matrix QR (Quick Response) bar code (black squares in a square grid) that tracked its every movement. The pieces were very gently cleaned (unlike previous years of blasting with fire hoses) and bacteria was dissolved.

Several stone repair methods were used: cementitious patching, pinned crack repairs, stone Dutchmen (hand-carved limestone pieces that replace damaged sections), and full stone replacements. There were 2,906 repairs completed to the stone. As a final step, a consolidant that

strengthens and protects was applied to help guard against future damage. In all, 4,457 pieces of Italian and Indiana limestone were restored, 855 pieces were created to replace those beyond repair, and 61 pieces of Vermont Verde Antique Serpentine in the Loggia and Pennsylvania Blue Marble in the Dolphin Fountain were restored or replaced, adding up to a grand total of 5,373 pieces. Some of the new full stone replacement pieces were mechanically carved and hand finished in Madison, Wisconsin, using stone from the same vein of Italian limestone as the original work. Other decorative hand carvings were completed in Conshohocken, PA. The conservation process took 27,304 hours to complete. Then the stone was returned to the garden in an equally painstaking reinstallation and temperature-dependent curing process, taking 25,828 hours to reinstall.

Architectural changes include a new stairway at the southeastern corner to allow easier access to the upper level and to provide a direct route back to the Visitor Center. At the opposite southwestern corner, the old balustrade stairs were replaced with an arcaded extension that mimics the arched Pumphouse Façade yet allows easy

passage through to a new Pumphouse Plaza to the south and to the Rectangular Basin above via a monumental staircase with an elevator.

But the most exciting architectural feature is the addition of a new Grotto hidden behind the restored Loggia in the center of the Pumphouse Façade wall. Grottos were favorite garden features in ancient times and again from the 16th to 19th centuries. Longwood's was inspired by the likes of those at France's Vaux-le-Vicomte and England's Stourhead. The formal entrance with carved fountains and water rills transitions to the rustic in a few short steps. Seventy tons of Avondale Brown Mica Stone from D'Amico Quarry in Avondale, PA, form a dome room encircling a round water curtain pouring from a ceiling oculus. On the south side 20 tons of Avondale Brownstone are stacked into a planted panoramic wall lit from above to enhance the cave-like atmosphere. The Grotto is the work of Gary Odle from Stonescapes, Inc., of Landenberg, PA.

Outdoors, the garden from the Conservatory Terrace looks very much like the original. Immediately evident is a large paved esplanade fronting the Reception Suite, useful for seating large groups but usually dotted with tubbed boxwood.

The allées now resemble a Parisian park such as the Tuileries with large expanses of decomposed granite under trimmed trees and peppered with benches for much freer and random access.

The new U-shaped linden allée of 168 *Tilia cordata* 'Greenspire' replaces 110 Norway maples. The trees are surprisingly large for new transplants and will create a mature clipped allée in just a few years. A monumental planting of boxwood delineates the canals with green "eyeliner." Pierre du Pont allowed the original specimens to retain their huge billowing forms, but in recent years replacement shrubs were tightly trimmed into uniform hedging. Going forward, the 3,000 newly planted *Buxus microphylla* var. *japonica* 'Green Beauty' will be pruned in a free-flowing hybrid approach that is both contrived yet organic.

Walking down into the garden reveals more obvious changes, especially in the replacement of turf and ground cover with decomposed granite, known as DG. The allées now resemble a Parisian park such as the Tuileries with large expanses of DG under trimmed trees and peppered with benches for much freer and random access. Sufficient space was allowed for mechanized lifts to help prune the trees. The south allée, originally two trees deep, now has three rows of trees, with DG running right up to the extended wall façade with fountains. The slope from the Conservatory to the Pumphouse is perhaps more noticeable than before, especially

once the allée is trimmed parallel to the ground rather than horizontally as before. The Game Lawn to the west, once level and boxed in with a love temple at the south end, is now completely open, sloping, and useful as a concert venue. Everywhere the smallest of changes, such as new railings and copings, have improved access and unified the garden in subtle ways not immediately apparent.

It is at night when the extraordinary magic of the garden is readily visible. More than 1,700 LED fixtures cast a warm white glow on the paths, wall fountains, and stonework. The 29 limestone Octagons in the canals have white LEDs uplighting the external carvings for the first time. The overall effect is like strolling through Rome or Paris after dark.

And then the show fountains erupt in a saturated rainbow of ever-so-intense color. The original fountains had 724 red, blue, green, amber, and clear white lights, 142 lights per color (plus 14 extra clear lights). The new 1,005 color fixtures are each filled with red, blue, green, amber, cyan, and lime LED diodes. The system was developed for Longwood by Crystal Fountains of Toronto. The addition of cyan and lime permits a much wider range of white light, from a very cold to very warm color. An additional 19 moving fixtures encircle the robotic nozzles and have red, blue, and green



Right:
View of the South Allée with its three rows of trees. Photo by Sam Markey.

New Fountain and Illumination Technology

The Rectangular Basin is filled with more plumbing, nozzles, and lights than ever before. It looks confusing to the uninitiated eye, but it is actually logically laid out. Following are highlights of some of the new, and legacy, features.



Three of the most important legacy nozzles are shown here. At lower left is the #1 Fan with a curved slit that spreads water into a 100-foot-wide sheet. At lower right is the #1 Jet that shoots up to 175 feet. And the Tree Jet (center) has five flattened nozzles that form a composite fan.



“Garden Grow” spinning nozzles each have jets that shoot out of the top five pipes and are rotated by a motor assembly (black oval box) that can turn clockwise or counterclockwise at a variable speed. There are 14 of these in the Rectangular Basin and one in each Round Basin.



A six-color lighting fixture shows the arrangement of the red, blue, green, amber, lime, and cyan LEDs. When on, the light produced is bright enough to illuminate low-flying clouds.



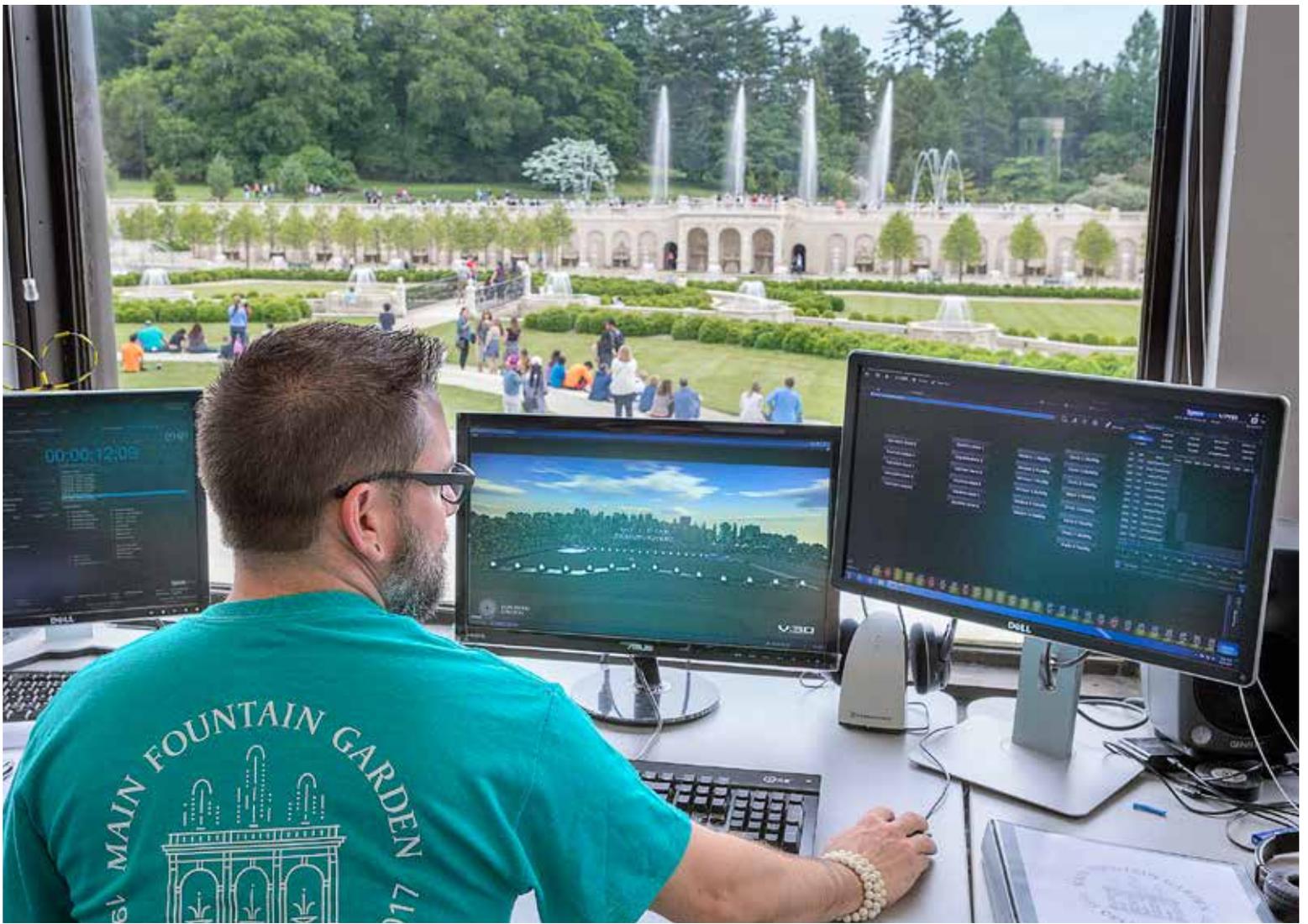
There are eight “Hidden Layer Dancer” one-axis nozzles that move east to west. They are lined up north to south in the rear center of the Rectangular Basin. They move independently but look like one complex effect when viewed from the Conservatory.



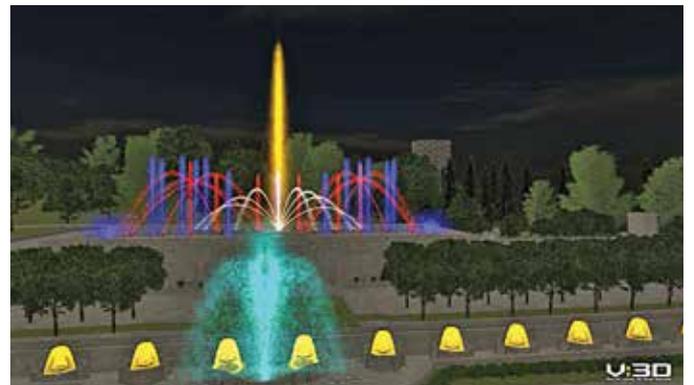
A surprising effect is produced by 32 Titan Air Nozzles that blast five gallons of water each about 100 feet into the air. A valve allows water in a trough below to flow into the unit, then on command compressed air rockets it skyward. Depending on how long the release valve is open, the blast can be quiet or like fireworks.



The “Dancer on a Stage” two-axis nozzle can move in any direction. Two motors tilt the central nozzle on an X and Y axis. Four lights shine inward, and four shine outward. A light fixture encircling the nozzle moves with it for continuous illumination regardless of position. There are 11 such nozzles in the Rectangular Basin.



Fountain designer Brady Gonsalves monitors the fountains on the Synchronorm control system from the control tower of the Main Fountain Garden. The center screen shows the computer-generated visualizer. Photo by Daniel Traub.



Views of Synchronorm visualizer screens. This system allows the fountain programmer to see a realistic color video of a show during the design process from an unlimited range of vantage points.

LEDs. Together, these 1,024 fixtures permit millions of colors at many times the old saturation.

DMX (Digital Multiplex) is used to run all this. The original fountains had, in simplest form, 51 dimmers to control 724 lights plus switches for 15 pumps and additional valves. The new system can regulate all six colors plus a master intensity for each of the 1,005 fixtures separately, control three colors each for 19 moving lights, plus manage the other lights, pumps, robotic nozzles, valves, water cannons, and flames. The German-made fountain computer is called Synchronorm and handles 16 Longwood “universes,” each with 512 channels (totaling 8,192) of 256 settings (from 0 to 100%) apiece. It talks to another computer called Navigator made by Tait Towers of Lititz, PA, that ensures all systems, such as water levels and propane, are operating safely. If it seems complicated, it is!

The advantage of Synchronorm is that it has a visualizer that allows the programmer to see a realistic color video of a show during the design process, prior to actually running the fountains on site. The show can be tweaked repeatedly and the results are immediately visible. All effects are created as “scenes” which are then added to a moving time line (like a player piano roll) as “cues.”

Complex kinetic nozzle, pump, and lighting sequences are easily produced with an effects generator.

Whereas Longwood’s old shows were created primarily by one programmer, five designers are now working on new shows using Synchronorm. Many different programs have been assembled. The old static display that ran all day long is now more kinetic, with frequent changes. Special 12-minute daytime shows expand upon the old five-minute full-capacity displays. Some shows have narration, and a wide variety of music is used for both daytime and evening displays, from classical to jazz, Broadway to pop. A new state-of-the-art sound system surrounds the audience with music coming from the front as well as from behind. Portable speaker towers add even more definition for fireworks displays.

The old technology has not been forgotten, however. The historic Pumphouse with its 1930s equipment has been transformed into a permanent museum exhibit, with descriptions of how it all worked originally. Equipment geeks will appreciate an up-close, detailed look at period pumps, air compressors, and the gadgetry that made Longwood’s original fountains so memorable. During the summer of 2017, an additional exhibit in

the Music Room tells how fountain shows and fireworks have embellished Longwood for decades to the delight of millions.

The Main Fountain Garden Revitalization has truly been an international effort, with 94 suppliers from at least 13 US states, Canada, United Kingdom, France, Germany, and Italy. All this expertise has been costly at \$90 million for the fountains, plus several million more for a new electric substation that can handle future needs for all of Longwood.

What would Pierre du Pont think of this revitalization of his greatest hydraulic achievement? At first he might be taken aback by the complexity and cost of something so infinitely more versatile. In 1930 he reacted to a General Electric fountain control proposal with “while . . . appropriate for a place where regular entertainments are given, it seems to me that the apparatus is too complicated for the more casual work that exists at my country place.” But 87 years later, with Longwood a must-see destination attracting 1.4 million visitors a year from around the world, he no doubt would understand that the investment “is worth the risk,” as he explained his original purchase of the Peirce farm. This new investment will bring great enjoyment to present and future guests for years to come.

The historic Pumphouse with its 1930s equipment has been transformed into a permanent museum exhibit . . . Equipment geeks will appreciate an up-close, detailed look at period pumps, air compressors, and the gadgetry that made Longwood’s fountains so memorable.

The Historic Pump Room Exhibit features all of the original pumps and air compressors from the 1930s in their original setting along with detailed interpretive panels. Photo by Jeffrey Totaro.



Hidden in Plain View

Residing within the new Main Fountain Garden is the Grotto, a place of engineering, romance, respite, and mystique.
By Lynn Schuessler

Photography by Sam Markey

Light spills in from multiple sources in the cave-like Grotto, including from above by way of the rain curtain oculus and hidden skylights; from the two curving arched entry tunnels to either side; and from the front via a carved Italian limestone screen. LED illumination is used to delineate recessed seating areas, walkways, and exits.







Longwood Gardens has always combined high expectation with artful surprise. Amid the spectacle and splash of the new Main Fountain Garden, “the Grotto invites you to step off the path for a moment of solitude and shelter,” says Miriam Kelly, Design Architect of Beyer Blinder Belle. “It lies central but hidden, offering a sense of discovery amid five acres of delight.”

It’s a space that delights in illusion. Just as grottos were once tucked into folds of the Roman landscape, our Grotto hides in plain sight behind the Loggia, the central covered gallery of the garden’s south wall.

A shift in scale signals the threshold. At either end of the Loggia, a classic arch collapses to three-quarters height, and a folding in of the Pumphouse Façade places you eye to eye with one of its open-mouthed masks. The arch of the entryway then stretches into a tunnel, as the smooth limestone of the fountains becomes the rough-hewn brownstone of a cave.

“The grotto at Vaux-le-Vicomte, which Pierre du Pont visited, was the precedent from which we borrowed our classical shapes,” explains Kelly. “Then we studied the local geology, because this is supposed to be a cave, a natural part of the landscape ... we have this local brownstone mica from D’Amico Quarry in Avondale, PA, whose texture gives an old feel, and local knowledge of how to use it. Gary Odle of Stonescapes builds an arch in wood and places the stone, pours concrete from above,

and takes the formwork out from below.”

A trough of water on the wall of each tunnel—a flowing handrail—invites you to run your hand through it, leading you deeper into the Grotto. The descent—a mere 10 inches along an ADA-accessible slope—heightens the illusion of entering the earth.

At the end of the tunnel, the Grotto opens up before you. Huge boulders fill the back wall, “as if you’ve hit bedrock,” says Kelly. The troughs spill into a cave-like pool at the bottom of the wall, providing moisture for the moss and ferns that dwell here.

Matt Taylor, Research Manager at Longwood, explains that his team had the task of trialing plants for a space that didn’t yet exist, and so they turned an old basement into a research greenhouse, where seasonal temperature changes might mimic those found in a cave. Ashley Clayton, Research Specialist, tested 10 species of ferns at progressively lower light levels, so they could recommend plants for the Grotto. The team also grew samples of Longwood-collected moss in “sticky soil”—potting mix with glue added to it—on rocks and even on the basement walls, finding that roadside moss fared best.

This past April, cave-hardy ferns in cloth pots were tucked into crevices of the boulder wall, while patches of moss were “sticky-soiled” in place, with the hope that their root-like rhizoids will soon search out bare

rock. Hidden skylights nurture the plants with daylight, while grow lights assist during non-public hours. The primitive nature of moss and ferns befits the Grotto, providing a feel as old and as natural as Avondale brownstone.

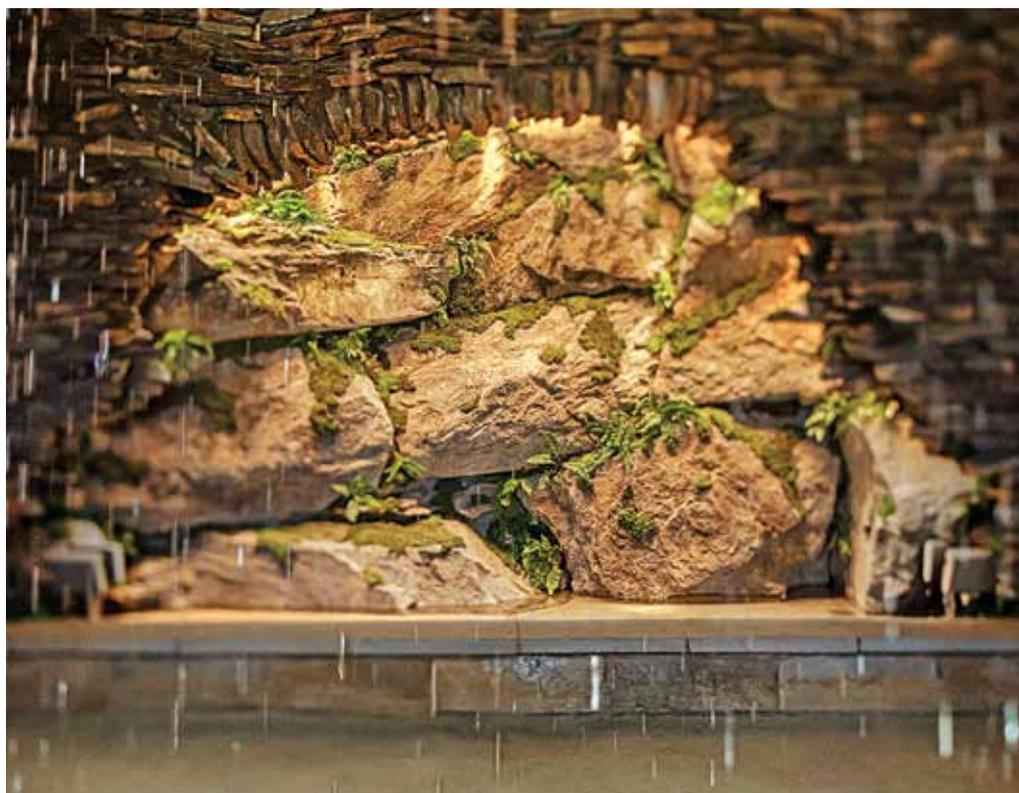
In the center of the Grotto, a circular rain curtain quietly falls from the heavens, from an oculus that fills the space with diffusely glowing daylight. Stone benches invite you to rest, “to imagine an artesian well bubbling up from the aquifer below,” says Kelly, “to catch a glimpse of rainbows as light plays with water, or, on the brightest days, a hint of diamonds—from shadows cast by the latticed stone of the Loggia.”

The perpetual flow of the rain curtain convinces you that here, in the Grotto, water finds both source and terminus—the symbolic heart of the garden. And because it is a place of respite and reflection, it also becomes the garden’s soul.

“All the strands of the Main Fountain Garden project come under the microscope in the Grotto,” says Kelly. “This is a space where you have to get it right. You need the right light levels for the plants. We worked closely with Fluidity to get just the right raindrop size for the water curtain. Here, fine machine-like engineering rubs shoulders with a Roman structure. But that’s what gardens are about. That’s what Pierre du Pont did. He took European gardens and added his own sparkle.”

Right:
The Grotto’s curving entryway troughs spill into a cave-like pool at the bottom of the wall, providing moisture for the moss and ferns. Natural light spills in from a hidden skylight.

Opposite:
Dyce’s holly fern (*Polystichum x dycei*) is nestled in the rough-hewn Avondale brownstone of the Grotto. This species was one of 10 trialed by our Research team to determine appropriateness for the Grotto’s unique conditions.





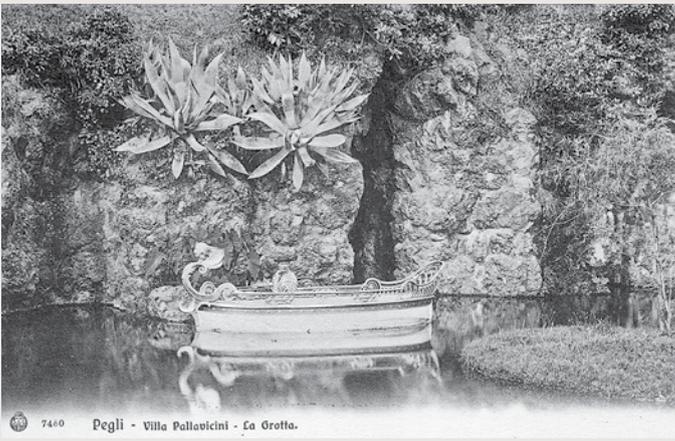
Above:
The descent into the Grotto—a mere 10 inches along an ADA-accessible slope—heightens the illusion of entering the earth.

Opposite:
A carved Italian limestone screen in the Grotto creates a lattice of light on bright days. Bancroft Construction Company collaborated with deSantana Stone in Ashville, NC, to acquire the Bianco Avorio limestone from Vicenza, Italy. Each of the 11 pieces came in its own crate. The combined approximate weight of the pieces is 14,000 pounds.

“And after having remained at the entry some time, two contrary emotions arose in me, fear and desire—fear of the threatening dark grotto, desire to see whether there were any marvelous thing within it.”

—Leonardo da Vinci, *Codex Arundel*





Pierre and Alice du Pont acquired this *La Grotta* postcard during their 1910 visit to the Villa Durrazzo-Pallavicini garden in Pegli, a suburb of Genoa, Italy.

The Grotto: Nature Contrived

Underground caves, heavenly chambers, mysterious places—the idea dates back to ancient times, from prehistory to Hadrian’s Villa. But it was in the Renaissance that the idea fully bloomed in the garden, from the Medici villas of Florence to the great ecclesiastic villas around Rome. Then the idea caught on in France and throughout Europe—one simply had to have a grotto, if not underground in a hillside, then in a free-standing structure or in the palace basement. The variety was endless, from man-made stalactites and stalagmites, and dark and damp wedged-in rocks, to shell-encrusted walls and mirrored glitter. Many grottos had action features to douse unsuspecting guests with inescapable streams, or sing with water-powered birds or organs, or float metal cones atop fountain jets. Ludwig II of Bavaria lingered in a boat on his grotto lake, with hidden electric lights creating a colorful Wagnerian paradise.

Pierre du Pont chose never to build a full-fledged grotto at Longwood, but he certainly was familiar with the concept. His garden adventures in Italy and France introduced him to a number of famous cavern-like settings, from Isola Bella and the Villa Pallavicini in northern Italy, to Castello and Boboli around Florence, and the villas d’Este and Aldobrandini outside Rome. In France, Fontainebleau, Versailles, the Bois de Boulogne, and Wideville all had grottos of some sort. And of course, he visited Vaux-le-Vicomte, whose Confessional, or *Grotte Sèche*, was the inspiration for Longwood’s grotto as imagined by Beyer Blinder Belle and Fluidity.



Ludwig II’s remarkable Venus Grotto at Linderhof in Bavaria was built 1876–77 with rocks and stalactites of canvas and cement. Rotating glass discs in front of 24 arc lamps produced changing color effects. The theme is taken from Wagner’s opera *Tannhäuser*. Photo by Softeis.

The famous Grotta di Buontalenti in the Boboli Gardens, Florence, was finished in 1593 and extends three chambers deep. The first room is dedicated to nature and metamorphosis; the second to the Trojan War; and the last to philosophical transformation. It is likely that Pierre du Pont visited it on his 1913 trip to Italy. Photo by Colvin Randall.

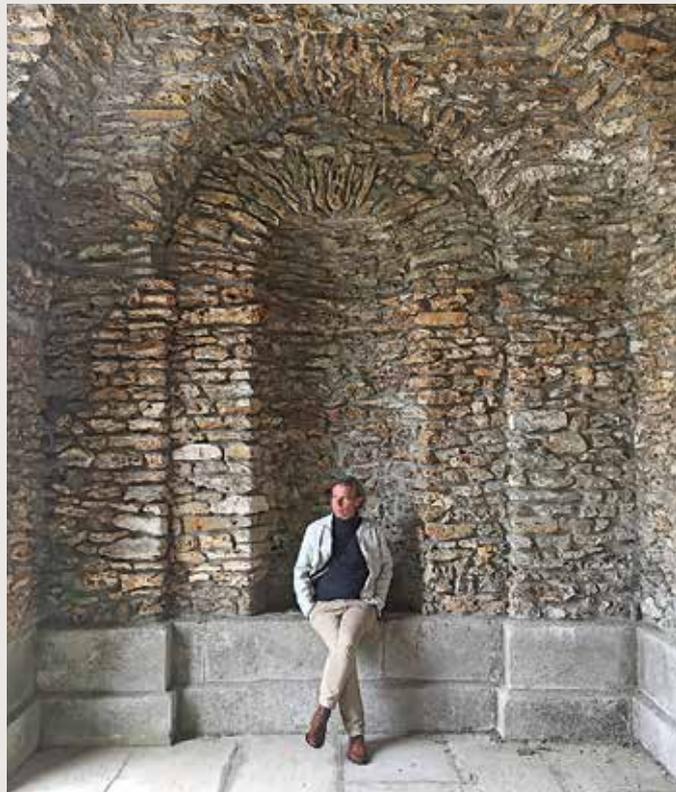


Right:

The interior of the Confessional at Vaux-le-Vicomte in France was the inspiration for the stonework in Longwood's grotto. Pictured is filmmaker Glenn Holsten, director of the Longwood fountain documentary, *Flowing Water*. Photo courtesy of FreshFly.

Below:

The Sacro Bosco at Bomarzo, near Rome, is filled with 16th-century sculptures, including this "Orcus" which qualifies as a small grotto. Supposedly a whisper spoken inside can be heard at the base of the steps outside. Longwood Section Gardener Karl Gercens tried it out in 2003. Photo courtesy Karl Gercens.



Below:

The Confessional at Vaux-le-Vicomte has a more formal look on the outside than on the inside. Pierre S. du Pont visited Vaux in 1925 and may have inspected it. Photo by Colvin Randall.



Left:

The Grande Cascade de Longchamp in the Bois de Boulogne in Paris is shown here in a photo owned by Pierre S. du Pont, who visited it on his 1889 teenage trip to Europe. One can walk behind the waterfall into a grotto.







An emotional high moment in this illuminated fountain performance is punctuated by the synchronized firing of the Rectangular Basin's 24 Titan Air Nozzles.

The Arts

A celebration of the return of our Main Fountain Garden, as seen through the eyes of one of our favorite lensmen.

Photography
by Daniel Traub

Spectacle & Splash



“The epic effects of the new performing fountains...may make the observer forget the beauty and significance of the garden itself, which is one of the largest and most alluring classical revival landscapes in the country.”

—Adrian Higgins, *The Washington Post*

Opposite:
The revitalized Main Fountain Garden allows guests unlimited access to the Pumphouse Façade wall, an area previously inaccessible for decades.

Below:
The symmetrical precision of the Lower Canal and its basketweave fountains contrasts with the playful geometry of the neighboring Topiary Garden seen in the distance.



The four new limestone turtles on display in the Turtle Pool were hand-carved at Quarra Stone Company in Madison, WI, to match the specifications of the originals, which were beyond repair.



Above:
The new linden allées create inviting, accessible walkways. They are composed of 168 *Tilia cordata* 'Greenspire', replacing the previous 110 Norway Maples.



Above:
The return of the Turtle Pool to full function and accessibility has made this area a must-see destination for guests of all ages.

Left:
Nepeta racemosa 'Walker's Low', catmint, accentuates the new Carpinus Allée. This allée defines the east edge of the Main Fountain Garden, providing a design-related link between it and the Topiary Garden. It also facilitates circulation, giving a direct route to both the Love Temple and terrace of the Rectangular Basin.







A glorious view from above the Turtle Pool reveals the classically-inspired architecture of the Pumphouse Façade and its wall fountains.

New pathways and architectural lighting enhancements throughout the Main Fountain Garden invite guests to explore and linger.



The project interweaves new architectural elements that improve access for guests throughout the Main Fountain Garden.

'Green Beauty' boxwood (*Buxus microphylla japonica*) accentuates the edges and expanded walking paths in and around the Round Basins, at either end of the Lower Canal.







Previous:

Guests gather above the Loggia to observe an illuminated fountain performance. This area has quickly become a favorite viewing and gathering location.

Right:

New fountain features including the Flame Jets were on full display at the *Star Spangled Spectacular* Fireworks & Fountains Show, July 2, 2017.





Fashion Fête

Our preview party celebrating the grand return of the Main Fountain Garden was also a grand fashion fête, bringing stylish guests from as far away as Italy.



Jim Garland (left), founder and President of Fluidity Design Consultants, with Hervé Descottes, founder of lighting design firm L'Observatoire International.



Above: Longwood Trustee Bob Peck participating in the ribbon cutting.

Left: Nathan Hayward, III., (center) Longwood Trustee Emeritus and great-nephew of Pierre S. du Pont, with friends Ollie and Cindy Curme from Boston. Photo by Jaimie Perez.



Thère du Pont, President, Longwood Foundation (right), with Joe and Debbie Schell. Photo by Jaimie Perez.



Above: David Sleasman (center), Longwood Library & Information Services Coordinator, Kathryn Biddle, Architectural Conservator for Dan Lepore & Sons Company, the firm who handled the stone restoration in the Main Fountain Garden, and her husband Charles. Photo by Jaimie Perez.

Brent Heath of Brent & Becky's Bulbs. Photo by Jaimie Perez.

Performer, Philadelphia School of Circus Arts.
Photo by Jaimie Perez.



Left: Jane G. Pepper, Chair, Longwood Board of Trustees (center), her niece Amanda Guest (left), and Paul B. Redman, President and CEO, Longwood Gardens.



Above, left to right: Mike Seibert, son of Longwood's first director Russell J. Seibert, with Laura Shepard Churchley, Julie Shepard Jenkins, and Julie's daughter Lark Stewart. Laura and Julie are the daughters of astronaut Alan Shepard, and the granddaughters of Longwood master electrician Russell P. Brewer, the man most responsible for the original design of Longwood's illuminated fountains.



Left: Irénée du Pont Jr., (center) Longwood Trustee Emeritus, with Barbara Morseletto (right), and her daughter Gaia. The Morselettos traveled from Vicenza, Italy. Barbara is the granddaughter of Pietro Morseletto, the artistic director of Olivotti & Co., the firm responsible for all of the original carved limestone created for the Main Fountain Garden.



Barry Yinger, former Longwood Fellow and noted plantsman.



Left: Katy Moss Warner, former Longwood Fellow, former Director of Horticulture and Environmental Initiatives at Walt Disney World Resort, President Emeritus of the American Horticultural Society, and currently Board President of America in Bloom, with Adriaan Geuze, Director of West 8, the firm responsible for the landscape design of the new Main Fountain Garden.

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Cover

Guests atop the Loggia enjoy a nighttime display at the Grand Fountain Fête preview party celebrating the return of the Main Fountain Garden. This view harkens back to classic 1950s photos by Longwood staff photographer Gottlieb Hampfler. Photo by Carol DeGuseppi.

Back Cover

This dynamic, abstract view of the Grotto was captured using a hand-held camera positioned within the rain curtain and trained upward on the oculus. Photo by Carlos Alejandro.

Inside Covers

Inside front: Eighty-plus years of falling water on an Italian limestone bouquet eroded most of its detail, while a newly carved bouquet is as crisp as the original was in the 1930s. Photo by Daniel Traub.
Inside back: The Italian limestone carvings along the Pumphouse Façade create a rhythm of classicism that suggest the beauty of Italy and France. Photo by Hank Davis.

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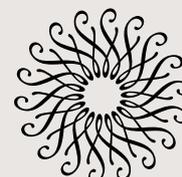
Longwood Chimes is mailed to Longwood Gardens Staff, Pensioners, Volunteers, and Gardens Preferred and Premium Level Members, and is available electronically to all Longwood Gardens Members via longwoodgardens.org.

Longwood Chimes is produced twice annually by and for Longwood Gardens, Inc.

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LONGWOOD
GARDENS



“The perpetual flow of the rain curtain
convinces you that here, in the Grotto,
water finds both source and terminus—
the symbolic heart of the garden.”

—Lynn Schuessler, from *Hidden in Plain View*, page 30

Longwood Gardens is the living
legacy of Pierre S. du Pont, inspiring
people through excellence in garden
design, horticulture, education, and
the arts.

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