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HISTORY OF THE FOUNTAINS OF LONGWOOD GARDENS

BY

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A thesis submitted to the Faculty of the University
of Delaware in partial fulfillment of the requirements for
the degree of Master of Science in Ornamental Horticulture.

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PREFACE

The preparation of this thesis was made possible through a grant from the Longwood Program in Ornamental Horticulture at the University of Delaware. The study attempts to show the chronological development of the use of water for ornamental purposes at Longwood Gardens.

I wish to thank the many people who aided me in assembling the information presented here: Dr. Russell J. Seibert, Director of Longwood Gardens; Dr. Richard W. Lighty, Coordinator of the Longwood Program in Ornamental Horticulture; Mr. Arthur L. Jarvela, Superintendent of Maintenance at Longwood Gardens; the staff and the retired employees of Longwood; the staff of the Eleutherian Mills Historical Library in Greenville, Delaware, where the papers of P. S. du Pont are maintained; W. W. Laird, Jr., whose personal interest in Longwood history has encouraged me greatly; and all others who have generously shared their knowledge. I would also like to thank the Wemyss Foundation for financial support.

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ABSTRACT

Longwood Gardens has some of the most spectacular fountain displays to be found anywhere. These waterworks were the creation of Pierre S. du Pont (1870-1954), industrialist, financier, and garden enthusiast.

Even before he acquired Longwood, Pierre as a youth enjoyed visiting gardens whenever he could. In 1893, he was impressed with the lavish fountain display at the World Columbian Exposition in Chicago; it provided the inspiration, he later remembered, for illuminated water at Longwood. He also landscaped the family's residential property in Wilmington.

When Pierre purchased the old Peirce property in 1906, he had no intention of building lavish gardens; he simply wanted to restore the farm to its former condition and to make it a place where he could entertain his friends. During the first few years, however, he designed and planted an expansive, "old-fashioned" flower garden embellished with two pools, one of which spouted a fountain. The garden was such a success that he began hosting a garden party each June. This annual visit to Longwood soon became the highlight of the Wilmington summer social season.

In 1910 and again in 1913, Pierre toured Europe. In Italy,

he delighted in visiting the famous villas. After his 1913 visit to Siena's Villa Gori, noted for its outdoor theatre, Pierre constructed his own open-air facility at Longwood. Equipped with simple secret fountains built into the stage floor, the theatre became the setting for the garden party entertainments. In 1926, Pierre rebuilt the theatre and installed elaborate, electrically-illuminated fountains in the floor. Since its debut in 1927, this hydraulic display has thrilled thousands of viewers.

In 1925, after a tour of the great gardens of France, Pierre began work on a water garden based on the design of the Villa Gamberaia near Florence. He made all the hydraulic calculations and literally designed the garden himself. Reminiscent of Italian villas and French bosquets, the Water Garden at Longwood is a peaceful combination of water, stonework, and green vegetation.

Inspired by the success of the Water Garden and Theatre, Mr. du Pont planned an even larger display to rival that which he had seen at the Chicago Fair thirty-five years earlier. In the partially developed area south of the huge Conservatory (completed in 1921), he integrated into the existing plantings two long canals, a huge rectangular basin, and an immense water recirculation system. Additional plantings of huge specimen trees created the effect of a mature garden, and stonework imported from Italy produced an Old World feeling. Several hundred jets of water, shooting as

high as 130 feet and recirculating a total of nearly 10,000 gallons each minute, create a hydraulic display as magnificent as can be found anywhere. Illuminated at night in every conceivable color, the Conservatory Fountains are the culmination of Pierre du Pont's fascination with ornamental water in a garden setting.

INTRODUCTION

Longwood Gardens, near Kennett Square, Pa., is one of the most spectacular gardens in the world. Its great floral displays, its historic trees, its monumental architecture, and its ornamental waterworks are justly celebrated. It has few rivals in this country and compares favorably with the great gardens of Europe.

Longwood owes most of its creation to one man—Pierre S. du Pont, scion of the du Pont family, a creator of the modern corporation, builder of the Du Pont Company and of General Motors, and a lover of gardens. Pierre was also tremendously intrigued with waterworks, and his passion for fountains resulted in one of the greatest fountain gardens to be found anywhere. His creation was as exuberant as the era of the Nineteen Twenties in which it was built. Fortunately, it can be enjoyed today by all.

Pierre's life of eighty-four years was long and eventful. Many influences contributed to his outlook on life and, in particular, to his appreciation of gardens. A consideration of all these factors and how they affected his love for fountains is beyond the scope of this study. For purposes here, it will suffice to consider the historical development of the three major fountain

gardens at Longwood—the Open-Air Theatre, the Water Garden,
and the Conservatory Fountains—as well as some limited back-
ground preceeding this development.

I. THE YEARS OF PREPARATION

Pierre S. du Pont was born on January 15, 1870, at Nemours, a property of the Du Pont Company overlooking the Brandywine Creek outside Wilmington, Delaware. Of ten surviving children in the family, he was the third child and the eldest son.

Pierre's early years were spent along the Brandywine where he was exposed to the du Pont family traditions of gardening and horticulture and, always, to the water of the Brandywine. Water fascinated Pierre. "As a child," he wrote, "I was always delighted to behold flowing water and I confess to still feel a thrill at the sight of clear water running freely from a faucett."¹ The first fountain he remembered was at Nemours: "At home, we had a garden fountain with one jet, the size of a knitting needle, 'turned on' occasionally, closely watched, and 'turned off' as soon as possible."²

By comparison, the waterworks at the Philadelphia Centennial of 1876 were thrilling beyond anything he could have imagined. Six-year-old Pierre was fortunate to have visited the fair, and it was the mechanical equipment that captured his attention. He later wrote:

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The Machinery Hall captivated me....The great Corliss engine in the center of the building was awe-inspiring, its great height and reputed power seemed beyond belief though today it would seem a much over-grown toy.³

But of all the attractions at the Centennial, Pierre was the most impressed by the great "cataract" or "cascade."

He noted:

...the basin in Machinery Hall was captivating beyond description with its jets of all kinds spurting like mad and without cease....I could have remained all day beside this pool in Machinery Hall.⁴

In 1884, when Pierre was fourteen, the family suffered the loss of the father, Lamot du Pont, in a chemical explosion. Pierre assumed many of his father's responsibilities and developed financial and administrative ability. Equally important, he no longer had to suppress his artistic inclinations, of which the senior du Pont had disapproved.⁵ Pierre could now pursue such pastimes as playing the piano and attending the theatre.

Despite Lamot's death, the lifestyle of the family continued relatively unchanged. In 1886, Pierre completed his studies at the William Penn Charter School in Philadelphia and entered the Massachusetts Institute of Technology. There, he studied chemistry and, in addition, mechanical drawing, physical geography, natural water systems, and water analysis.⁶

The highlight of Pierre's M.I.T. years was a trip to

Europe with the whole family in the summer of 1889. When he learned of the proposed journey, he wrote home: "If I had been run over by a steam roller, I could not have been more prostrated with surprise....Of course it has struck me very favorably and thrown me into a great state of excitement."⁷

The du Ponts arrived in Ireland on June 1, 1889, and then toured England and Scotland, visiting castles, churches, and even parks.⁸ On July 8, they arrived in Paris.⁹

That year, Paris was the center of the world, hosting the great Universal Exposition which was symbolized by the Eiffel Tower. The city was newly lighted at night, and Pierre's sister Sophie recorded that they walked along the Champs Élysées one evening to see the illuminations.¹⁰ More than likely, Pierre viewed the illuminated fountains that were a main attraction at the Fair.

The du Ponts traveled to Versailles on July 16 (a Tuesday, so probably they didn't see les grandes eaux which played only on Sundays) and to Fontainebleau three days later. Then they toured Switzerland, the Lake District in Italy (visiting Isola Bella), and, briefly, toured Germany and Belgium before departing from Liverpool for home.¹¹ All in all, it had been a grand trip, which Pierre recorded (with characteristic attention to detail) cost \$5,917.39, exclusive of passage across the Atlantic.¹²

Four years later, in 1893, Pierre visited the World Columbian Exposition in Chicago. Like all visitors he was overwhelmed by the grandiose effects. He wrote to Francis G. du Pont:

I am enjoying the Fair immensely, there is so much of beauty and interest that one can hardly decide to what to devote the time. The large buildings are magnificent beyond description, it is a lasting enjoyment to look at them alone. I only regret that they must so soon go and that, comparatively, so very few have been able to see them. I do not wonder that the Chicago people are proud of their city and the Fair.¹³

In 1938, Pierre recalled his original inspiration for illuminated water at Longwood:

The germ of the creation of the Longwood fountains was found in the great fountain in the Court of Honor at the Chicago Exposition of 1892 [sic]. This great court with its impressive, glistening white buildings of Grecian order and its magnificent water courses and fountains has not been equalled in any exposition held since that date. To be sure, the electric lighting was then in its infancy as compared with effects produced today, and, as far as the writer then knew, the display of colored lights in connection with water had not been presented publicly in so magnificent a manner, though, as memory serves, colored lights were applied only to two of the smaller fountains at either side of the principal group.¹⁴

However, there is no design similarity between the Chicago Fair and Longwood Gardens; the Fair simply provided the inspiration for illuminated water and for a night spectacular.

Beginning in the 1890's, Pierre gained more exposure to gardens and to horticulture. In the spring of 1891, he supervised the laying out of the garden at St. Amour, the family's new home

in Wilmington.¹⁵ Three years later, in 1894, he could write with characteristic wit:

There has been quite a display of energy in the garden in the last few days. Several hitherto hidden paths have been unearthed and it is possible to traverse the raspberry bed without stepping on a single weed, I might add, without seeing very many raspberry bushes.¹⁶

At the turn of the century, living in Lorain, Ohio, he reported:

We have a large kitchen garden in the backyard consisting of two plants and some mint. The whole garden is just the size of a folded newspaper and I notice that Louise [a servant] has protected the plants for the night by placing a paper over the whole.¹⁷

In 1904, Pierre visited the Louisiana Purchase Exposition in St. Louis and no doubt viewed the impressive cascades and fountains. But more importantly, he was attracted to the landscaping efforts of a New York firm, Siebrecht & Son. He requested that they come to Wilmington to advise on the development of the St. Amour property.¹⁸ However, their work so displeased him that he refused to pay the bill, and litigation continued for the next thirteen years.¹⁹

Disappointed with professional design organizations, Pierre landscaped the property himself, using books, visiting nurseries, choosing plants, and keeping a close eye of the condition of all his horticultural purchases.²⁰ He found that he could do the planning himself, and he enjoyed it, so why bother

with "professionals"?

With his rising position in business, Pierre traveled more and more. Whenever he could, he visited gardens. In 1904, in California, he stayed at the Del Monte Hotel, noted for its gardens and maze.²¹ The next year, he visited South America and was impressed with the tropical vegetation and with the botanical gardens in Rio de Janeiro, although he never got to inspect them closely because they were closed.²² In 1906, he went to Cuba and to Jamaica where from Castleton he wrote, "We stopped at the botanical gardens...and enjoyed them very much. Every kind of tropical plant is to be seen there and all in very good condition."²³

In his first thirty-six years, Pierre du Pont had a wide variety of experiences. His education, his business career, and his travels had given him substantial preparation and tremendous confidence. There would be little that he would be reluctant to undertake, whether in business or in the development of gardens and fountains.

FOOTNOTES FOR CHAPTER I

¹ Pierre S. du Pont, "The 204th Anniversary of the birth of Pierre S. du Pont (de Nemours)," begun 12/14/1943, continued 5/30/1945 (hereafter Memoirs, 1945), The Longwood Manuscripts, Group 10 (hereafter PSduP plus the identifying file number), File 1203-5, Eleutherian Mills Historical Library, Greenville, Delaware (hereafter EMHL).

² Ibid.

³ Ibid.

⁴ Ibid.

⁵ Alfred D. Chandler, Jr., and Stephen Salsbury, Pierre S. du Pont and the Making of the Modern Corporation (New York, 1971), pp. 12, 16.

⁶ Notebooks and drawings in PSduP 367-1, EMHL.

⁷ P. S. du Pont to Mary B. du Pont, 3 March 1889, PSduP 48, EMHL.

⁸ Pierre S. du Pont, Expense Ledger, 1889, PSduP 361-1, EMHL.

⁹ Sophie M. du Pont, Address Book, 1889, PSduP 123, EMHL.

¹⁰ Ibid.

¹¹ Ibid.

¹² Pierre S. du Pont, Expense Ledger, 1889, PSduP 361-1, EMHL.

¹³ P. S. du Pont to F. G. du Pont, 2 September 1893, The Papers of Francis Gurney du Pont (1850-1904), Series A, Accession 504, EMHL.

¹⁴ Pierre S. du Pont, "Memorandum in Regard to Longwood Fountains," 18 May 1938, PSduP 516-40, EMHL.

¹⁵Mary B. du Pont to P. S. du Pont, 14 July 1891, PSduP 48, EMHL.

¹⁶P. S. du Pont to Mary B. du Pont, 19 July 1894, PSduP 48, EMHL.

¹⁷P. S. du Pont to Louisa d'A. du Pont (Copeland), 26 April 1900, PSduP 388-7, EMHL.

¹⁸P. S. du Pont to Siebrecht & Son, 16 September 1904, PSduP 473, EMHL.

¹⁹R. Reese to W. Button, 14 August 1918, PSduP 473, EMHL.

²⁰See letters to Andorra Nurseries, 1906, in PSduP 488-1, EMHL.

²¹P. S. du Pont to Mary B. du Pont, 6 December 1904, PSduP 48, EMHL.

²²P. S. du Pont to Mary B. du Pont, 30 March 1905, PSduP 48, EMHL.

²³P. S. du Pont to Mary B. du Pont, 16 March 1906, PSduP 48, EMHL.

II. BEGINNINGS AT LONGWOOD

When Pierre purchased the Peirce property on July 20, 1906, he certainly did not have the creation of lavish fountain gardens in mind. He wrote to a South American friend, Elias Ahuja:

I have recently experienced what I would formerly have diagnosed as an attack of insanity: that is, I have purchased a small farm about ten miles from here. As I have always considered the purchase of real estate a sign of mental derangement and have so proclaimed, I fear that my friends may be looking for permission to inquire into my condition. However, I believe the purchase worth the risk, for my farm is a very pretty place, and I expect to have a good deal of enjoyment in restoring its former condition and making it a place where I can entertain my friends.¹

Pierre later recalled why he bought the property:

The purpose was to save the collection of old trees, which had been accumulated by the Peirce family over a period of more than one hundred years, many of them then of extraordinary growth and arresting appearance. A casual visit made to the property had revealed a plan on part of the then owner to sell the timber from all the woodland. The woodlot had been sold already and the trees in the park were to be offered for sale. To the casual observer it seemed that the property was being denuded for the benefit of the owner before the maturity of the debts incurred for its purchase.²

Mr. du Pont immediately began restoring the large lake, which was drained through a makeshift dam with the help of Italian laborers. He also erected a bath house which he insisted be of

rustic design, prompting one manufacturer to reply, "This design is not what you would term rustic, but we believe you could add to it yourself after the house was set in place from parts of trees and bark and make it quite rustic in design."³

For the spring of 1907, Pierre designed the flower garden, which he termed to be on the "old-fashioned plan of straight walks and box borders at the edge of the flower beds."⁴ At the intersection of the main paths, a pool about twenty feet in diameter was constructed. Its simple jet of water, supplied from a hydraulic ram, was Longwood's first fountain.⁵

The next year, 1908, he designed a double brick stairway leading to a lower level of the flower garden. Here, a square pool was built, providing a setting in which to observe the reflections of sky and trees, especially when viewed from the stairway or from a nearby tool shed roof.⁶ At some later date, a fountain jet was added to the pool.

In February, 1910, Pierre made plans to go to Europe alone on business, but at the last moment he invited his cousin Alice Belin (the future Mrs. du Pont) and two other couples to make it also a trip for pleasure.⁷ After a short time in England, where they visited the Hampton Court gardens, they went to France where, among other things, they toured Versailles. "One day, the rainiest of all," Pierre noted, "we devoted to Versailles and the Trianons, the gardens of the latter had some of our attention of

course but it was cold, damp and disagreeable."⁸ However, the beauties of Italy began to revive them, and after touring the Lake District in the north, they traveled down as far as Naples. Alice recorded visiting eight or nine villas, and it was at the Villa d'Este that Pierre told H. Rodney Sharp, so the story goes, "It would be nice to have something like this at home."⁹

Three years later, in 1913, Pierre, Alice, and two different couples were back in Europe touring palaces and gardens. They drove through France and Italy, punctured tires notwithstanding, and had a grand time. Wrote Alice:

We had the car to go to Versailles for the afternoon. It was so lovely there in the bright sunshine, so different from when we were there three years ago. There were several aeroplanes flying above us all afternoon and one enormous dirigible.¹⁰

In Italy, they visited at least twenty-two villas, including the Villa Lante and the Villa Gamberaia. But the most immediate impression was made at the Villa Gori near Siena. Its charming outdoor theatre provided the incentive, so Pierre wrote on the back of a photograph, to build one at Longwood.¹¹ The Villa Gori and all the other gardens created, Alice noted, a perplexing state of mind from the "constant absorbing of new ideas and new impressions."¹² These ideas and impressions were to manifest themselves in many forms at Longwood Gardens.

FOOTNOTES FOR CHAPTER II

¹P. S. du Pont to Elias Ahuja, 21 August 1906, PSduP 507, EMHL.

²Pierre S. du Pont, "Memorandum in Regard to Purchase and Maintenance of the Longwood Estate," PSduP 516, EMHL.

³Wyckoff Lumber Mfg. Co. to P. S. du Pont, 17 April 1907, PSduP 516, EMHL.

⁴P. S. du Pont to C. A. Belin, 10 May 1907, PSduP 438, EMHL.

⁵J. H. Bailey to P. S. du Pont, 25 November 1907, PSduP 516, EMHL.

⁶Recalled by W. W. Laird, Jr., in an interview with the author, 26 July 1974.

⁷P. S. du Pont to Roger de Tregomain, 2 February 1910, PSduP 668, EMHL.

⁸P. S. du Pont to Mary B. du Pont, 26 February 1910, PSduP 48, EMHL.

⁹Related to the author by John A. H. Sweeney, 19 April 1975, to whom the story was recounted at least ten years earlier by H. Rodney Sharp (1880-1968).

¹⁰Alice Belin (du Pont) to Henry Belin, Jr., 6 February 1913, PSduP 628-44, EMHL.

¹¹Photograph identified in Pierre's handwriting, P D938 a/b 1913 I 22 Cop. 1, Pictorial Collections, EMHL.

¹²Alice Belin (du Pont) to Henry Belin, Jr., 20 February 1913, PSduP 628-44, EMHL.

III. THE OPEN-AIR THEATRE

Pierre had always loved the theatre,¹ and the idea for facilities at Longwood was most likely the result of his wish to give additional pleasure to the guests at his celebrated garden parties. In November, 1912, he drew two rough sketches for an outdoor theatre on the site of the original Peirce barn.² Two months later, he visited the Villa Gori in Siena.

On his return from Italy, Pierre excavated the barn site, brought in stone to form retaining walls around the sixty-two-foot stage, and planted hemlock to conceal the wings on either side.³ The debut of the theatre at a garden party in June, 1914, was a huge success. The Wilmington Every Evening described it in detail:

A scene of unusual beauty was presented at the garden party given last night at the country home of Pierre S. du Pont, Longwood, on the Kennett Pike. More than three hundred guests were entertained and the decorations upon both lawn and through the many gardens were of a beautiful nature.

Just after dark electric lights were turned on, simultaneously illuminating the stage in front and sides, and a spot light discovered four couples descending from the terrace above the stage and its gorgeous costuming and finely executed, dignified figures elicited hearty applause.⁴

After half a dozen other quaint numbers came the climax:

The finale was a frolic by the harlequins, who, much to the surprise of the guests, danced among them, throwing confetti and garden roses, then winding their way out in a path of light, finally disappearing amid the trees. The audience might easily have imagined itself transported to the days of Marie Antoinette and the scene Versailles, with the wonderful setting of theatre, lights, dancers and nature.⁵

Two weeks after this tremendously successful party, Pierre began experimenting with fountains for the theatre stage.⁶ He had seen in Italy, or in his garden books, secret fountains which, he noted, "produced no scenic effect and served as surprise measures only."⁷ Into the Longwood stage, five circles of 1/8" jets were built, operated from foot valves hidden in the grass immediately in front of the stage.⁸ In addition, three stone basins were installed on the upper level of the stage, which at that time was not linked by a stairway to the main platform.⁹

The simple jets d'eau of the first Longwood theatre debuted at the 1915 garden party. The Florence Noyes School of Rhythmic Expression, with its aesthetic dancers conjuring up visions of diaphanous nymphs, was engaged to provide the entertainment.¹⁰ The papers again reported the event in glowing terms:

Saturday evening was a fitting close to a rare June day, the infinite beauty of the night contributed to the glory of the gardens and park and made Longwood glow in more loveliness than type can describe on the occasion of the annual garden party given by Pierre S. du Pont.

All approaching roads were choked with automobiles taking guests to the biggest social event of the year.

At a timely hour supper was served on a hundred little tables, which had been arranged in the pit of the open-air theatre, and here the guests sat in congenial companionship until the sun had gone down. Then their attention was directed by a spotlight to a clump of trees nearby, where appeared dancing figures of young girls in filmy draperies of white, below which protruded their bare feet. They romped and cavorted among the branches and finally made their way to the stage, where they danced a "Spring Frolic."¹¹

The entertainment continued with various period dances, but it was the concluding dance that was ever-so-special:

...the finale was a slow waltz danced by the Noyes' girls, making frieze pictures until at the end, each girl in her flowing white costume, was encircled like a statue by a brilliant column of sparkling water which sprang up as if by magic from the tiles of the stage. At the back of the stage, too, a number of fountains rising from electric lighted ponds were set in motion and a rare and beautiful scene remained for a moment or two and was quenched in darkness.¹²

Over the next decade, the Longwood theatre was used several times each year for theatrical performances, garden parties, concerts, and as a place of amusement for Mr. du Pont's nieces and nephews.¹³ Pierre was not altogether pleased with the flat layout of the auditorium, which restricted visibility of the stage,¹⁴ and in 1926 decided to improve the facilities. The stage was excavated (although the hemlock wings were untouched), and underground dressing rooms and space for equipment

were created. The soil that had to be removed was used to give the proper slope to the auditorium.¹⁵

Having learned much about waterworks as a result of designing the Water Garden (see Chapter IV), Pierre decided to install elaborate colored fountains in the floor of the stage while rebuilding the theatre. He sent his chief electrician, Russell P. Brewer, out to the midwest to view fountains in St. Louis and in Denver.¹⁶ In the latter city, Brewer learned that incandescent lamps were being considered as replacements for the obsolete arc lamps. Closer to home, in Willow Grove Park outside Philadelphia, he found a fountain lighted by arc lamps shining through moveable color glass filters, requiring the physical movement of the filter glass by hand to produce a color change.¹⁷

The net result of Brewer's travels was learning how not to build fountains. Instead, a new system had to be devised.

Pierre recalled:

As the electricians and hydraulic workers at Longwood had nothing to guide them, some preliminary experiments were made as to height and color effects and a very primitive apparatus was put together on the grounds. From this were designed the size and height of jets of water deemed necessary for the larger effects to be put into use. Primary colors—red, blue and green—, as well as clear uncolored glass, were chosen as sufficient for the purpose. In order to produce intermediate color effects each set of lights is provided with a dimmer by which the amount of color produced from that set of lights may be reduced or augmented, changing red to blue, etc., by small, imperceptible steps.¹⁸

From the meager data accumulated, the pumps and the electrical equipment needed were ordered with the help of the manufacturers. "The date set for the first performance was badly chosen," Pierre remembered, "as the apparatus was finally finished and installed at such a late date that the first public performance was practically identical with the first complete trial of the apparatus."¹⁹

No one would ever have known. For the debut of the remodeled theatre on September 17, 1927, which also happened to be the garden party debut of Pierre's niece, Molly Laird, the new fountains worked perfectly. Many who witnessed the affair thought it the largest and most brilliant in the social history of Wilmington. The papers were not sparing in their praise for this electric Versailles:

Not only was it the debut of Miss Molly Laird. It was also the debut of the fountains. Another beauty has been added to Longwood.

The thousand guests assembled last evening in the open-air theatre—sophisticated folk, for the most part, who simulate boredom as a part of their code—gasped at the loveliness devised for their eyes, and shown for the first time last evening.²⁰

The entertainment was a varied theatrical program where, it was noted, "in the glittering lights...the spectators must have felt themselves in an enchanted garden, where music played and dancers pirouetted with the stars."²¹ Few were prepared for the water display which followed. Marion M. Laird, a guest at the party, wrote:

The dancing done, the dancers steal away
The dream fades fast, none but the dreamers stay.
The silver crystal curtain rises bright
One thinks 'Tis time to bid our Host "Good-night"
"When Lo!" The Screen falls.

See! From the stage, rise tall sheaves of grain,
Rising and falling with patter of rain
Shattering, scattering golden and bright
See from below there are other sprites rushing,
Rising in fountains, playfully gushing,
Changing from gold to red,
Dancing with lightsome tread
While ever overhead, Glows the soft light.²²

Originally, the new stage had glass steps connecting the upper and lower levels, but unfortunately the staircase leaked and was difficult to effectively illuminate; the steps were rebuilt in stone.²³ In 1933, the control tower at the rear of the amphitheatre was rebuilt, and a new console from which the fountains were controlled was installed at that time. The extra electrical circuits left over from the old stair lights were re-wired to control yellow lighting circuits,²⁴ an addition deemed necessary because of the difficulty in producing yellow from the primary red, blue, and green lights.²⁵ Also, compressed air was introduced beneath a number of the taller jets, increasing their height and producing, Pierre thought, an extremely satisfactory illumination effect.²⁶

With seven fountain basins built into the main stage floor (with removable covers of aluminum), a unique water curtain (which Pierre thought the most successful feature²⁷), two upper level basins, and with two isolated roof fountains, all concealing

several hundred jets of water recirculating at a rate of over 2,000 gallons per minute and illuminated by over 600 lights,²⁸ Longwood's open-air theatre boasts perhaps the most beautiful system of colored fountains ever devised. The concentration of water and light about the sixty-two-foot stage make possible sublime coloration, and motorized dimmers allow for very subtle and continuous change of chroma and intensity. Although the operation of the fountains is difficult, despite a control board that approximates the layout on the stage, the diligent operator can produce artful, if sometimes accidental, effects.

The story is told that Mrs. du Pont would come to the control board while the fountains were in operation. When a particularly beautiful color sequence was achieved, she would exclaim, "How'd you do that? Do that again!" Of course, the poor operator knew that it was next to impossible to repeat an effect exactly.²⁹

FOOTNOTES FOR CHAPTER III

- ¹ see letters to Mary B. du Pont in PSduP 48, EMHL.
- ² Sketches in PSduP 488, EMHL.
- ³ see photographs on file at Longwood Gardens. The hemlock was removed at some time after 1927 and replaced with arborvitae.
- ⁴ Wilmington Every Evening, 25 June 1914.
- ⁵ Ibid.
- ⁶ P. S. du Pont to Schutte & Koerting, 8 July 1914, PSduP 488, EMHL.
- ⁷ Pierre S. du Pont, "Memorandum in Regard to Longwood Fountains," PSduP 516-40, EMHL.
- ⁸ Russell P. Brewer, "The Fountains of Longwood Gardens," on file at Longwood.
- ⁹ Russell P. Brewer, "Fountains of Longwood Gardens," #2, 8 November 1956, on file at Longwood.
- ¹⁰ H. Rodney Sharp to Florence Noyes, 11 May 1915, PSduP 516-100, EMHL.
- ¹¹ Wilmington Every Evening, 14 June 1915.
- ¹² Wilmington Morning News, 14 June 1915.
- ¹³ see W. W. Laird, Jr., interviewed by the author, 26 July 1974, on file at Longwood.
- ¹⁴ Pierre S. du Pont, "Memorandum in Regard to Longwood Fountains," PSduP 516-40, EMHL.
- ¹⁵ Ibid.
- ¹⁶ Mrs. Russell P. Brewer, interviewed by the author, March 1974, on file at Longwood.

- 17 Russell P. Brewer, "Fountains of Longwood Gardens," #2, on file at Longwood.
- 18 Pierre S. du Pont, "Memorandum in Regard to Longwood Fountains," PSduP 516-40, EMHL.
- 19 Ibid.
- 20 Wilmington Sunday Star, 18 September 1927.
- 21 Ibid.
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IV. THE WATER GARDEN

By 1925, Pierre had transferred much of his investment holdings over to his brothers and sisters and was free to indulge in what he termed the dissociation process. He was actively involved with the Delaware school system and with tax reform,¹ and he also had time to travel. So when the opportunity arose to tour France that summer with the Garden Club of America, both Pierre and Alice were enthusiastic participants.

The exclusive group of over twenty of the cream of American society toured fifty of the great French chateaux and gardens. They were quite taken, Alice remembered, with

those most formal and imposing ones that owe their impressiveness to the magnificent use of water in a series of immense fountains, namely Champs, Pomponne, and Vaux le Vicomte; unlike Versailles where the government's lack of money has prevented a too thorough upkeep and has permitted both gardens and fountains to show the mellowing effects of time, these gardens, that have been restored by the lavish use of money made in sugar and tobacco, look almost too perfectly kept. They look so new that it is hard to believe that the restorations have been made absolutely in accordance with the plans that date back to the time of Louis XIV. At Vaux le Vicomte and Champs the chateau face hillsides down which the fountains pour their water in stone work channels of every variety of shape and size into basins equally diversified and in both places the water comes from an underground reservoir at the top of the hill. At Vaux le Vicomte where the reservoir only holds

enough slowly pumped water to allow the fountains to play for four hours a week nearly the whole week's supply was exhausted by our visit. Some idea of the size of the water basins may be given by telling you we crossed one that was almost a lake, on a little ferry boat. This was in order to walk up the hill to get the view from the top. As words seem futile in describing what I saw I can only hope that someday you may all see the originals as we did.²

Pierre returned from France with new enthusiasm. For several years, he had been planning a "water garden"³ presumably for a wet, marshy area immediately north of the large lake. This area was drained and partially filled while the du Ponts were abroad.⁴ On his return (perhaps while still on the boat⁵), Pierre began a design for the garden based not on something he had seen in France but instead inspired by the water garden of the Villa Gamberaia in Florence, which he last visited in 1913. He drew a preliminary plan, as well as an elevation showing the lengthening of the two farther pools by fourteen feet to compensate for excessive foreshortening.⁶ On August 21, 1925, he instructed his engineer, Roland Taylor, to take certain dimensions which seemed worth keeping from the plans of the villa Gamberaia.⁷ It is likely, therefore, that Pierre consulted one of his garden books for the dimensions and plan. He also figured out pages of hydraulic calculations and the manner in which the jets of water would be arranged.⁸

The Water Garden was constructed over the next two years at a cost of \$143,039.05.⁹ It was planted with European Lindens

(Tilia europaea) along either side, with ivy bordering the pools, and with boxwood spotted throughout the garden and at the northern boundary.¹⁰ More recently, the boxwood were removed and hemlock substituted to form a tall hedge at the northern extremity.

Numerous garden writers have praised the Villa Gamberaia for its "air of loveliness...that lingers long in one's memory as an example of the formal garden brought to a state of perfection under the influence of an owner who knows the charm that lies in the combination of well-designed architecture with the beauties of flowers and foliage."¹¹ However, Edith Wharton in her Italian Villas and their Gardens notes that the water garden at Gamberaia, being a turn-of-the-century modification, has "the disadvantage of being unrelated in style to its surroundings."¹² Norman Newton, in Design on the Land, arrives at a more moderate verdict:

Some critics consider this "new" garden an anachronism, feeling that its use of too much unruffled water, too many flowers, and too many topiary pieces is not consistent with either the Italian ideal or the character of the villa. In a literal sense there is no doubt some merit in this argument, but the fact remains that most visitors, whatever their degree of professional skill or historical erudition, find this water garden an effective contributor to the prevailing peacefulness of the villa.¹³

Given the reservation that Gamberaia's garden is not consistent with the Italian ideal, one should not take too seriously Derek Clifford's pronouncement in his A History of Garden Design:

The most notable feature at Longwood is a reproduction of the garden of the Florentine villa of Gamberaia. Despite the copy's physical resemblance to its original, it so lacks the spiritual qualities belonging to it that, unless we were told the source of the design, we would be unlikely to recognize it.¹⁴

Pierre himself stated that he had no intention of reproducing Gamberaia. In 1934, he wrote:

It is not strictly a copy of the Villa Gamberaia garden. The resemblance is only in the dimensions of the pools on the lower terrace. The view from the upper terrace is in actual measurement the same as that obtained from the Villa Gamberaia overlooking the Villa garden. You doubtless remember that the view from the Villa Gamberaia over the hills toward Florence is very fine. At Longwood the garden is in a hollow surrounded by trees on all sides. The fountains do not occur in the villa.¹⁵

It is, indeed, the fountains that provide much of the interest in Longwood's Water Garden. Over six hundred jets of water shoot heavenward from six blue-tiled pools and from twelve pedestal basins along the sides. The hydraulic system recirculates about 4,500 gallons at maximum display, although usually only one-half of the display operates at any one time.¹⁶

It is interesting to speculate why Pierre chose arching jets along the sides of the rectangular pools. In 1922, Mrs. du Pont visited Spain and wrote to Pierre back in Wilmington:

We have had a marvelously successful day for the Alhambra and the Generalife Gardens both exceeded my wildest expectations. I simply

longed for you in both places for you would have enjoyed it more than I can ever persuade you and there were such good ideas in the water line that we could use in the water garden....¹⁷

The pictures she brought back¹⁸ show the arching jets along the canal in the Generalife. It is possible that this was the inspiration.

One of the more intriguing features of the garden is the water staircase at the southern end. Steps down which water cascades are common in Old World gardens, but there seems to be no direct precedent for the one at Longwood. It is especially unusual because the water flows out from an upper tread as if to surprise the unwary climber; originally, it served both as a staircase and as a water feature and therein was the novelty. The story is told that Pierre one day posed his neices and nephews in their Sunday finery on the steps for a photograph. At the right moment, the water was turned on and everyone got wet, much to his delight.¹⁹

When building the Water Garden, Pierre also constructed a pool with five jets at the end of the vista between the main avenue of trees in Peirce's Park.²⁰ Mrs. du Pont, it is said, loved to entertain her friends on the grass outside the mansion house and start the avenue fountain by pushing a button.²¹ Wishing to get full use of the water in the avenue fountain after pumping it up from the Water Garden, Pierre designed a waterfall

and two smaller falls on either side of the Water Garden observation terrace through which the water tumbles on its way back to the pump house.²²

Much of the apparent Italian flavor of the Water Garden comes from the architectural and garden ornamentation. The carved stone vases and baskets placed at the corners of the pools were, in fact, purchased from the New York showrooms of the Florentine firm of A. Olivotti & Co.²³ The other stonework, the copings, the ornaments on the facade below the observation terrace, the balustrades, and the staircases were carved in limestone by a Philadelphia firm, B. Ridgway & Son.²⁴

Perhaps the descriptive title that is frequently applied to the garden, the "Italian Water Garden," is a misnomer. In its use of Italianate architecture in the garden, and in the ornamentation, the garden may perhaps be called "Italian." But it is as much French as Italian, recalling the bosquets of Versailles, those leafy rooms which engravings show with as many or more uses for water than in the gardens of Italy. Really, however, it reflects Pierre du Pont more than any historical style. With countless jets of water and with its green-blue-gray appearance soothing both eye and ear, the Water Garden ranks as one of his most pleasant garden creations.

FOOTNOTES FOR CHAPTER IV

- ¹Chandler, p. 563.
- ²Alice B. du Pont, untitles notes on French gardens, 8 December 1925, PSduP 628, EMHL.
- ³see proposed drawings, on file at Longwood.
- ⁴see "Projects and Estimates" on file at Longwood.
- ⁵This was the opinion of Russell P. Brewer, who related the story to Dr. Russell J. Seibert.
- ⁶Drawings in Pierre's handwriting in PSduP 516, EMHL.
- ⁷P. S. du Pont to R. Taylor, 21 August 1925, PSduP 516-53, EMHL.
- ⁸Calculations in PSduP 516, EMHL.
- ⁹Estimate 447, on file at Longwood.
- ¹⁰see photographs on file at Longwood.
- ¹¹H. Inigo Triggs, The Art of Garden Design in Italy, (London, 1906), p. 84.
- ¹²Wharton (New York, 1910), p. 42.
- ¹³Newton (Cambridge, Mass., 1971), p. 119.
- ¹⁴Clifford (New York, 1966), p. 205.
- ¹⁵Mrs. E. J. Schroeder from P. S. du Pont, 11 October 1934, PSduP 516, EMHL.
- ¹⁶Russell P. Brewer, untitled manuscript #4, 28 February 1931, PSduP 516, EMHL.
- ¹⁷Alice B. du Pont to P. S. du Pont, 9 October 1922, PSduP 628-44, EMHL.
- ¹⁸Photographs in P D938a/b 1922S, Pictorial Collections, EMHL.

¹⁹W. W. Laird, Jr., interviewed by the author, 26 July 1974, on file at Longwood.

²⁰see notes and calculations in PSduP 516, EMHL.

²¹W. W. Laird, Jr., interviewed by the author, 26 July 1974, on file at Longwood.

²²Plan of piping layout on file at Longwood.

²³P.S du Pont to A. Olivotti & Co., 3 September 1925, PSduP 516-40, EMHL.

²⁴Blueprints on file at Longwood Gardens.

V. THE CONSERVATORY FOUNTAINS

Pierre built his first conservatory, connecting the two wings of the mansion house, in 1914.¹ Subsequently, he began to visualize a much larger greenhouse project. In 1916 and 1917, landscape architect Ferruccio Vitale, from New York, was retained to draw preliminary plans. However, Pierre soon became dissatisfied with his efforts, especially when the architect proposed a \$4,000 model. Pierre thought the money could be better spent making full-scale mock-ups.² Vitale was released from service shortly thereafter.

By 1921, after two additional architects, the Conservatory was finally finished. In Pierre's words, it was designed to "exploit the sentiments and ideas associated with plants and flowers in a large way."³ It was and continues to be an instant success with all who visit it.

When conceiving of the greenhouses in 1917, Pierre noted: "The expansion of the project is somewhat limited as we will have to conform to the character of the surrounding country which is agricultural and of very simple architecture and landscape effect."⁴ This would suggest that he had no intention of building an elaborate fountain garden at that time.

In front of the Conservatory, there was nothing but an empty field barren of trees or shrubs. The field was graded to slope gently down to a more steeply rising knoll, and the excess soil was used to fill in behind the enormous retaining wall below the greenhouses.⁵

The initial planting of 1921 consisted of specimen boxwood placed in a curve to complement the opposite curve of the adjacent turn-around driveway in front of the Reception Suite. An additional line of boxwood was added to parallel the curve, and it was extended in a straight line to the east-west extremities of the field.⁶ Over one hundred Norway Maples were planted in a U-shaped allée to enclose the area.⁷ Again, there is no indication that the plantings of 1921-1922 were made with the future development of a fountain garden in mind.

However, the successful completion of the Water Garden and of the rebuilt theatre fountains from 1925 to 1927 must have inspired Pierre. He began to plan for the ultimate spectacle to rival that which he had seen at the Chicago Fair of 1893. The area in front of the Conservatory was only partially developed, and it would be the perfect setting for such an undertaking.

The physical completion of the garden got under way in 1928 when the nurserymen, Lewis and Valentine, offered Pierre a gigantic boxwood which they had located in Lancaster, Pa. It was 25-35 feet in diameter, 75-80 feet in circumference, 12 feet high,

and it had been imported from England in 1720. Priced at \$8,250 including delivery, it was irresistible both from the point of size and from the feat of moving it.⁸ A ball of earth thirteen feet in diameter and three feet deep was dug, and to transport the bush telephone wires were removed and overhanging trees tied up. One man supposedly stood fourteen hours to see the boxwood pass by, only to learn that it was parked nearby awaiting the reinforcement of a bridge.⁹ The huge boxwood was planted in the very center of the garden, and additional specimens were added on the lawn to either side.¹⁰

Pierre knew that to supply fountains throughout such a large area he would need a substantial water storage system. To the southwest of the garden, his workmen dug into the hillside and discovered soft, crumbly rock which hardened after exposure to air.¹¹ Delighted, Pierre created a cliff and, at its base, a shallow, concrete-lined "pear-shaped" basin which would serve as a reservoir. (In 1931-1932, shortly after its construction, the pear-shaped basin was enlarged to hold 350,000 gallons of water.¹²) Alongside, a chimes tower was built which, Mrs. du Pont noted, was inspired by a similar structure they had seen in France.¹³ Above the cliff, at the highest point in the hydraulic system, a 90,000 gallon reservoir was constructed. Its overflow tumbles over the cliff forming, Pierre thought, a very miniature Niagara.¹⁴ From this recirculating reservoir system, supplied by wells, massive amounts of water can be held in readiness to supply the

fountains in the adjacent garden. The entire fountain system hold 675,000 gallons of water.¹⁵

Construction of the fountains proper began in July, 1929. Pierre decided to build a long, narrow canal immediately adjacent to the boxwood hedge planted in 1921 opposite the Reception Suite driveway. Russell P. Brewer, Longwood's master electrician and the person who transformed Pierre's ideas into reality, recorded in his notebook a plan for a canal with jets and sprays alternating equidistantly, without any type of enclosures to hide the plumbing.¹⁶ As finally built, the jets and sprays were grouped into fourteen pairs. Photographs show that this "upper" canal was constructed without any disturbance to the boxwood hedge.¹⁷

In Italy, Pierre had admired the Villa d'Este's Avenue of One Hundred Fountains. At Longwood, there was a change in level between the lawn on either side of the Upper Canal, so it was logical to take advantage of the elevated supply.¹⁸ One-hundred-fifty overflow troughs, snouts, and jets were installed immediately south of the canal. Supplied by the overflow from the fountains above, these "bubblers" and "scruppers," as R. P. Brewer called them,¹⁹ create beautiful, shimmering effects when seen in daylight.

From the Upper Canal, water pours down and out from under a stairway, divides around the central boxwood, and flows into

a parallel Lower Canal. This, in turn, connects to large, sixty-foot circular basins at either end. The Lower Canal spurts sixteen jets or sprays and a huge fan spray. The round basins on either end each have a tall sixty-foot central jet, a central spray, seven equally-spaced arching jets, and four sets of ten small jets, each set spaced at right angles to the next.

Parallel to and south of the Lower Canal, a retaining wall was built into the hillside marking the southern boundary of the "sunken" area of the garden. Perhaps the inspiration here was Vaux-le-Vicomte, which so impressed the du Ponts in 1925. As at Vaux, the wall was embellished with any number of spouting, dripping fountains.

Above this wall, which also serves at one end as part of the pumphouse, a huge rectangular basin serves as the area of maximum fountain activity. Its six pairs of displays were poetically described by R. P. Brewer:

The first pair...requiring 1,000 gallons of water per minute, is located in the center of the basin. It consists of one regal stream shooting 115 to 130 feet into the air, or a magnificent fan-shaped spray spreading to a height of about 40 feet and width of 100 feet. Number two pair, from positions well to either side of the center, sends two sentinel-like streams either straight up for a distance of 80 feet, or arching gracefully to meet above the center. Numbers three and four pair, located in front and back of the center, have three and four single streams, respectively, like so many pages standing about their king, or the same number of delicate sprays like flower girls around a queen. Number five pair consists

of two sets of five jets evenly spaced on 30-foot circles around the number two jets. When in operation it reminds one of two groups of soldiers standing at attention. The number six displays are more difficult to describe. The single jets are arranged in two sets of six in a straight line on each side of the center, and are so directed and regulated that when in operation they form perfect semi-circular streams of water as a background for the displays in the center. The alternate of this pair consists of two balls of fuzzy spray 50 feet in diameter, located one on each end of the basin, which wave and billow like the smoke from two mammoth incense burners.²⁰

It is a major hydraulic accomplishment to throw so much water into the air. A full fountain display lasting thirty minutes ejects 250,000 gallons through 229 nozzles by use of eighteen pump-motors and two air compressors which propel the water at a rate of nearly 10,000 gallons each minute.²¹ The usual daytime showing, however, is a much smaller display gravity-fed from water pumped up to the 90,000 gallon reservoir.

Pierre thought that fountains were most effective, during the daytime at least, when displayed against a green backdrop of trees and shrubs. The hillside behind the new Conservatory fountains was, however, completely barren. Pierre at the age of fifty could not wait an additional fifty years for young plantings to mature. Fortunately, money was no object. From 1928 to the mid-1930's, Lewis & Valentine, the "largest landscape organization in the United States" (thanks to Mr. du Pont), assembled at Longwood over five hundred mature specimen trees

from old estates, commercial nurseries, and the native fields of fourteen states, from Massachusetts to Georgia and as far west as Michigan.²² These plantings, some 70 feet tall such as a White Pine from Toughkenamon, Pa.,²³ cost in total several hundred thousand dollars. "The fountains themselves are of simple design...and cost very little," Pierre noted in 1937. "It is the landscape effect that adds to the total bill."²⁴

Even after several thousand feet of boxwood hedging had been planted to border the canals, the plumbing and electrical equipment was still visible. Pierre got the idea for an enclosure to mask the fountainheads and lights, and Henry Hope of New York, a supplier of garden furnishings, constructed a lead cistern on trial.²⁵ Pierre, however, was not pleased with the price tag of \$685 per unit,²⁶ and the single cistern was later converted into a lead drinking fountain at the southwestern edge of the garden.²⁷ Various other designs were tried, but it was the design submitted by the Olivotti Company, richly carved in limestone and costing \$365 apiece,²⁸ that was accepted. Twenty-nine such enclosures were erected.

But Olivotti's most important contribution was the embellishment of the long wall fronting the pump house and hill. In explaining their plan, they wrote to Pierre in 1931:

Before all we wish to explain to you under what point of view we have carried out the design which we are submitting to you. Taking in con-

sideration that the wall with the numerous fountains and vases is of an unusual length (about 300 ft.) we have kept to the classics and simplicity so that when the wall is seen from a distance, the eye will not be distracted by awkward lines. In fact you will notice that the basins have been placed all at the same level. The bases of these fountains although all of different design have all been kept of same mass so as to give an harmonious view. Same we can say for the vases and pedestals.

So as to have the water jets play differently we thought to have every other fount with a small basin that overflows into the larger one below.

We quite remember that you told us at Villa d'Este that you did not want any figures, but we could not resist in being somewhat contrary to your idea on the two fountains that face the swimming pool. We did this so as not to have the place look too monotonous.

The plan we are sending you is the best we could imagine, also for the fact that the whole work can be very easily enriched or simplified, still keeping to the same classical lines.²⁹

The design was carried out, with modifications, over a period of several years, at a cost of many thousands of dollars. Hundreds of cases, each containing one piece of carved limestone, were sent over from Florence by boat.³⁰ Each piece was carefully numbered to correspond to the plan, and on at least one occasion the Olivotti designer visited Longwood.³¹ Of all areas of the fountain garden, this wall facade, with its richly carved vases, masks, shells, and pedestals, is the most strongly reminiscent of the Italian gardens which Pierre so loved to visit.

But the stonework and the mass of plantings are rendered invisible by the darkness of night. Then, the fountains assume a new dimension as 740 electrical lighting units color the water red, blue, green, yellow, and white, with every conceivable variation in between. This spectacle is managed from a small room beneath the observation terrace in front of the Conservatory. The control board, originally with over 200 toggle switches and 100 small levers,³² remotely activates pumping and dimming equipment located in the pump house at the opposite end of the garden. Until recently, the dimmers were motor-operated, allowing for very gradual change, and were so designed that settings could be varied and then returned as before simply by moving small levers up and back; once the setting was changed, it would take up to a minute for the dimmer to achieve the desired position.³³ There was also a cyclic dimmer device that would automatically change the colors, freeing the operator so he could manage the hydraulic display.³⁴

The artistic operation of such a complex control board was no easy accomplishment. Russell Brewer and Charles Ruoss were, Pierre thought, the only successful operators. As to artistic effect, he noted in 1938:

The operation of the electric fountains is by arbitrary process. There seems to be no relation to a sequence of color or water display. The chief of the electric installations and his assistant are the only two persons who are capable of operating the fountains successfully,

but the methods of these two men differ considerably, so that it is possible for the observer to state which of the two is handling a display.

There seems to be great latitude for aesthetic effect and artistic feeling. Unfortunately, the necessary concentration on the mechanical movements in connection with fountain operation would detract greatly from the exercise of artistic operation and a person would be obliged to acquaint themselves with the mechanics of the apparatus before he would be in position to attempt the use of more artistic methods.³⁵

In 1963, the motorized dimmers were replaced with a system using silicon-controlled rectifiers to electronically dim the lighting circuits. The new control panel uses cards containing tiny potentiometers to activate, all at once, predetermined dimmer settings. This mode of operation has substantially changed the lighting scheme from one that is continually evolving to one that changes with periodic regularity; however, the new system can be operated with a minimum of training, and, mechanically, it is much easier to maintain.

Several other changes to the Conservatory Fountains have been made in recent years. Much of the boxwood, broken up by heavy snows and by harsh winters, has been removed and, in places, replaced with Japanese Holly (Ilex crenata). Structural additions, such as a large staircase rising up to the Rectangular Basin, several terraces, and bridges across the canals, have been added. Atop the 90,000 gallon reservoir on the hill above the garden,

water glides off the "Eye of Water," a structure resembling a huge doughnut and inspired by the Ojo de Agua in Costa Rica. From 1970 to 1972, the fountain hydraulic system was largely rebuilt, and although changes were made in the plumbing layout, the fountain effects remain the same.

From the point of view of garden history, the Electric Fountains are an eclectic assemblage of Italianate ornamentation and French grandeur, with perhaps a bit of English greensward thrown in. But, like all the gardens at Longwood, they represent a unique synthesis arrived at by Pierre du Pont as a matter of course rather than because of an overriding artistic vision. That the garden is such a magnificent experience is a tribute to Mr. du Pont's ability to please.

Since October, 1931, the Conservatory Fountains have thrilled hundreds of thousands of visitors to the Gardens. The effect, R. P. Brewer so enthusiastically noted, is such that

as the red, blue, green, yellow and white lights spring into being, or creep slowly up from or return to darkness, or, as the mixtures, shades, tints or blends of these colors turn the stately streams of water into columns of beauty, and the floating masses of gauze-like spray into mystic grandeur, the expressions of appreciation escaping from the lips of the awe-inspired audience give undeniable testimony to the magnificence of this man-made wonder.³⁶

FOOTNOTES FOR CHAPTER V

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- ²P. S. du Pont to F. Vitale, 21 February 1917, PSduP 488, EMHL.
- ³P. S. du Pont to A. J. Harper, 1 November 1918, PSduP 516-43, EMHL.
- ⁴Ibid.
- ⁵Knowles R. Bowen, interviewed by the author, 14 June 1974, on file at Longwood.
- ⁶see photographs on file at Longwood.
- ⁷P. S. du Pont to Lewis & Valentine, 12 October 1921, PSduP 488-7, EMHL.
- ⁸C. Clifton Lewis to P. S. du Pont, 3 August 1928, PSduP 488-15, EMHL.
- ⁹unidentified newspaper article, 17 August 1928, PSduP 516-1, EMHL.
- ¹⁰see photographs on file at Longwood.
- ¹¹Knowles R. Bowen, interviewed by the author, 14 June 1974, on file at Longwood.
- ¹²see Estimate 548 on file at Longwood.
- ¹³Alice B. du Pont to "Rosalie," 6 July 1942, PSduP 628, EMHL.
- ¹⁴P. S. du Pont to Mrs. E. J. Schroeder, 11 October 1934, PSduP 516, EMHL.
- ¹⁵R. P. Brewer, "The Story of Longwood," August 1954, on file at Longwood.
- ¹⁶Notebook on file at Longwood.

- 17 Photographs on file at Longwood.
- 18 W. W. Laird, Jr., interviewed by the author, 26 July 1974, on file at Longwood.
- 19 see Brewer's notebook, on file at Longwood.
- 20 Russell P. Brewer, "The Story of Longwood," August 1954, on file at Longwood, pp. 13, 16.
- 21 Fountains of Longwood Gardens (Kennett Square, Pa., 1960), p. 24.
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- 30 see letters in 516-40, EMHL.
- 31 A. Olivotti & Co. to P. S. du Pont, 26 June 1933, PSduP 516-40, EMHL.
- 32 R. P. Brewer, "Longwood" (#8), 15 April 1933, in possession of Mrs. R. P. Brewer.
- 33 R. P. Brewer, "The Longwood Fountains as explained to the Average Spectator," 22 April 1938, PSduP 516, EMHL.
- 34 R. P. Brewer, "Longwood" (#8), 15 April 1933, in possession of Mrs. R. P. Brewer.
- 35 Pierre S. du Pont, "Memorandum in Regard to Longwood Fountains," 18 May 1938, PSduP 516-40, EMHL.

³⁶Russell P. Brewer, "The Story of Longwood," August 1954, on file at Longwood, pp. 19-20.

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Additional manuscripts, blueprints, and photographs are on file at Longwood Gardens in the Library, in the Photographer's Office, in the Office of the Director, and in the Maintenance Department. At present, this material is not catalogued. The following manuscripts, all written by Russell P. Brewer, have been cited in the text:

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