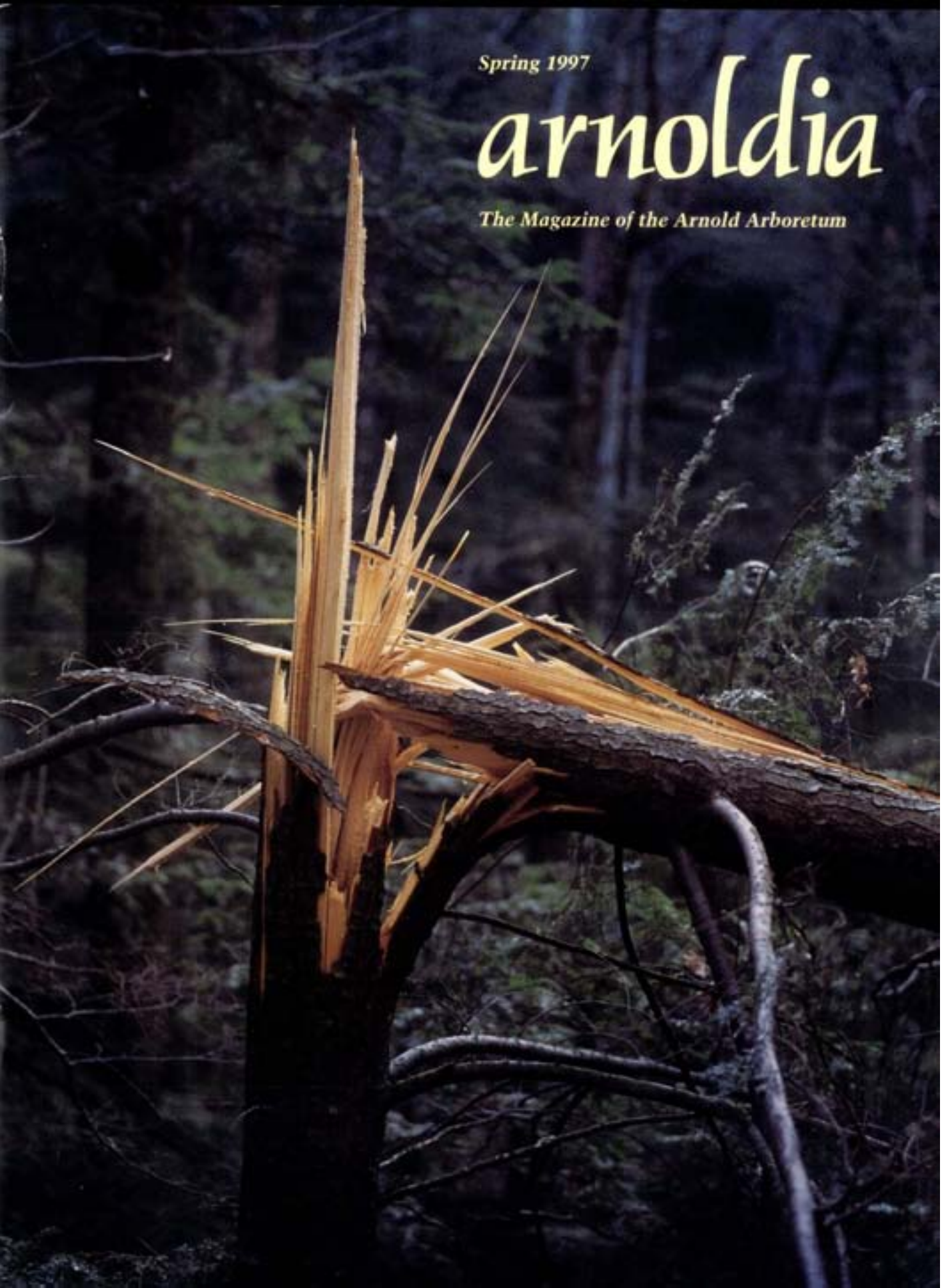


Spring 1997

# arnoldia

*The Magazine of the Arnold Arboretum*





# arnoldia

Volume 57 Number 1 1997

*Arnoldia* (ISBN 004-2633; USPS 866-100) is published quarterly by the Arnold Arboretum of Harvard University. Second-class postage paid at Boston, Massachusetts.

Subscriptions are \$20.00 per calendar year domestic, \$25.00 foreign, payable in advance. Most single copies are \$5.00. Remittances may be made in U.S. dollars, by check drawn on a U.S. bank, by international money order, or by Visa or Mastercard. Send orders, remittances, change-of-address notices, and all other subscription-related communications to Circulation Manager, *Arnoldia*, The Arnold Arboretum, 125 Arborway, Jamaica Plain, Massachusetts 02130-3500. Telephone 617/524-1718; facsimile 617/524-1418; e-mail [Arnoldia@arnarb.harvard.edu](mailto:Arnoldia@arnarb.harvard.edu)

**Postmaster:** Send address changes to

*Arnoldia* Circulation Manager  
The Arnold Arboretum  
125 Arborway  
Jamaica Plain, MA 02130-3500

Karen Madsen, *Editor*  
Carol Line, *Mercer Fellow, Assistant Editor*  
Andy Winther, *Designer*

#### *Editorial Committee*

Phyllis Andersen  
Robert E. Cook  
Peter Del Tredici  
Gary L. Koller  
Stephen A. Spangberg

Copyright © 1997. The President and Fellows of Harvard College

#### *Page*

- 2 Ellen Biddle Shipman's New England Gardens  
*Judith B. Tankard*
- 12 'Lilac Sunday'—The Cultivar  
*John H. Alexander III*
- 14 *Leitneria floridana*:  
A Shrub for Wet Woodland Conditions  
*Gary L. Koller*
- 21 Book Review  
*Peter Del Tredici*
- 22 Storms and the Landscape: 1938-1997  
*Susan Kelley*

**Front cover:** A storm-splintered *Tsuga canadensis*. Many plants on Hemlock Hill fell victim to the blizzard of April 1, 1997. Photograph by Peter Del Tredici

**Inside front cover:** Ellen Shipman designed this Colonial Revival dooryard garden at "Old Farms," Wenham, Massachusetts, in 1913. This 1914 photograph is by Edith Hastings Tracy.

**Inside back cover:** Specimens of *Pinus sylvestris* throughout the Arboretum were destroyed by the snow of April 1. Photograph by Peter Del Tredici.

**Back cover:** The Arboretum's new lilac introduction, *Syringa x chinensis* 'Lilac Sunday'. Photograph by Peter Del Tredici.

# Ellen Biddle Shipman's New England Gardens

*Judith B. Tankard*

**This pioneering landscape architect, distinguished for her innovative planting designs, described her use of plants as “painting pictures as an artist would.”**

Ellen Biddle Shipman (1869–1950) was one of the most important landscape architects during the 1910s and 1920s, the great years of estate building across the United States. Shipman's approach to garden design was steeped in the traditionalism of the Northeast, especially the Colonial Revival style. She owed her great success in the design and planting of small gardens to early years of gardening at her New Hampshire country home. “Working daily in my garden for fifteen years,” she wrote, “taught me to know plants, their habits and their needs.”<sup>1</sup>

Shipman brought a fine-tuned artistic sensitivity to garden design. She transformed the flower border into an art form by using carefully articulated compositions of flowers, foliage, and color, thoroughly grounded in her exceptional knowledge of plants. This planting expertise set her apart from other landscape architects of the period. Shipman's simple, unpretentious designs for gardens served as a framework for her dazzling plantings. To create the proper setting, she would surround the garden with an enclosing curtain of trees and always used generous quantities of small flowering trees, shrubs, vines, and standards (such as roses, lilacs, or wisteria) to create structural notes and to cast shadows over the borders. Invariably her gardens were enhanced by her delightful designs for rose arbors, pergolas, benches, teahouses, dovecotes, and other structures that carefully echoed the architectural style of the house. Shipman collaborated with numerous architects and landscape architects, including Charles Platt, the Olmsted Brothers, and James Greenleaf. Warren Manning, with whom she collaborated on many projects, considered her “one of the best, if not the very best, Flower Garden Maker in America.”<sup>2</sup>

Once hailed as the “Dean of American Women Landscape Architects,” Shipman designed nearly six hundred gardens throughout the country during the course of her thirty-five year career (1912–1947).<sup>3</sup> Clusters of her gardens once proliferated in areas such as Grosse Pointe, Michigan; Greenwich, Connecticut; and Chagrin Falls, Ohio, where she designed several dozen gardens. She also carried out a number of commissions in the New England states, where she had gotten her start. Sadly, few examples remain in their original condition.

Ellen Biddle was born into a prominent Philadelphia family, the military rather than the financial branch. Her father was a career soldier, and she spent an adventurous childhood in frontier outposts in Nevada, Texas, and the Arizona Territory. Her discovery of gardens came when she was sent back East to live with her grandparents, who had an old-fashioned, rose-filled garden in New Jersey. Later, when she attended finishing school in Baltimore, interests in art and architecture were awakened.

During her early twenties, Ellen lived in Cambridge, Massachusetts, sharing a house with Marian Nichols, who later married the landscape architect Arthur Shurcliff, whose professional path would intersect with Shipman's. Ellen's brief academic career at Radcliffe (then known as the Harvard Annex) ended when she married Louis Shipman, a dashing young playwright from New York who was then attending Harvard. They moved to the artists' colony in Cornish, New Hampshire, where they were part of a lively coterie surrounding the colony's founder, American sculptor Augustus Saint-Gaudens, who was also Marian Nichols' uncle. Years later, recalling her first visit to Cornish in 1894, she wrote, “a garden became for me the



COURTESY OF NANCY ANGELL STREETE

Ellen Biddle Shipman (1869–1950) in her New York City home on Beekman Place in the 1920s

most essential part of a home."<sup>4</sup> This would become Ellen Shipman's credo in garden design.

In 1910, when Ellen Shipman was in her early forties and the mother of three children, she turned to garden design at the suggestion of her Cornish neighbor, the country house architect Charles Platt. By then the Shipmans' marriage had deteriorated, leaving Ellen to fend for herself financially after her husband left her. Platt admired her garden at Brook Place, the Shipmans' colonial farmhouse in nearby Plainfield, New Hampshire, and the remodeling she had recently carried out there. Platt thought she had a good eye for design and no doubt felt that her plantings would be an asset for his gardens. While the Shipmans' elder daughter (also named Ellen) managed the household, Ellen studied drafting and construction under Platt's tutelage. Within two years she was collaborating with Platt as well as undertaking small, independent commissions.

Shipman's originality as a garden designer came from several different sources. The country gardens in Cornish, once dubbed "the most beautifully gardened village in all America," were the pre-eminent influence on her early years.<sup>5</sup> Gardens such as those of Thomas Wilmer Dewing, Stephen Parrish, Augustus Saint-Gaudens, and other artists brimmed with old-fashioned flowers, dirt paths, and simple ornaments and features, such as rose arbors and circular reflecting pools. As a young wife of an aspiring but penniless writer, Ellen was not able to take the grand tour of European gardens as did other prominent colleagues such as her Cornish neighbor, landscape architect Rose Standish Nichols (a sister of her friend Marian Nichols), or Beatrix Jones (Farrand).<sup>6</sup> Instead, she read *House Beautiful*, *House and Garden*, and popular gardening magazines that would later feature her own work. She consulted recent books such as Mabel Cabot Sedgwick's *The Garden Month*



COURTESY OF THE U. S. DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE, SAINT-GAUDENS NATIONAL HISTORIC SITE, CORNHURST, NEW HAMPSHIRE

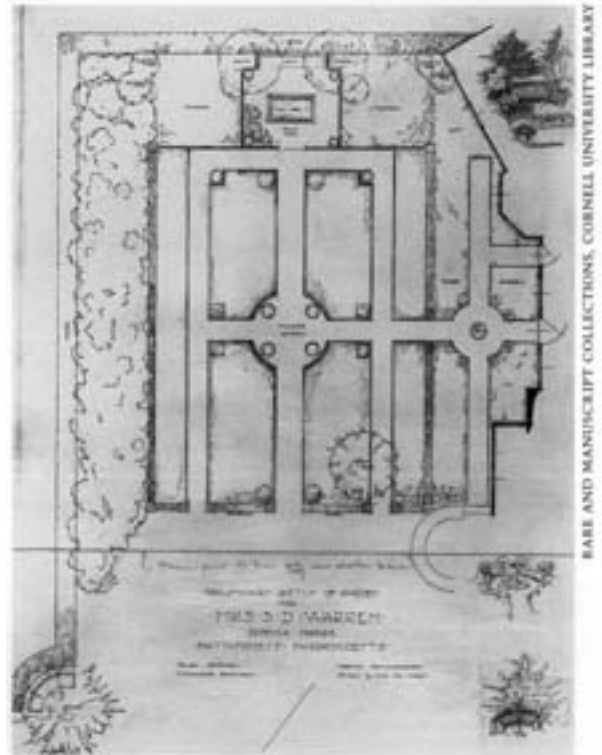
*Clusters of peonies and summer phlox with vines climbing on the pergola in Ellen Shipman's own garden at Brook Place, New Hampshire. Photograph by Mattie Edwards Hewitt, 1923*

by Month, Helena Rutherford Ely's *A Woman's Hardy Garden*, and others that promoted the revival of interest in hardy plants. As a result, Ellen Shipman's approach to garden design, in particular her planting style, was refreshingly American in spirit, escaping, for the most part, European influences that dominated the work of Farrand and Marian Coffin.

Shipman's apprenticeship with Platt strengthened her design sensibilities. She loosely adapted his basic axial garden plan and habit of placing at regular intervals features such as the tubs of plants, statuary, and clipped evergreens associated with Italianate gardens. The resulting compositions, which varied little throughout Shipman's career, balanced formality and informality, more in the manner of Colonial Revival gardens of the era. At the crux of her garden design philosophy was the close integration of house and garden, with easy transitions from one area to the next, without stiffness and artifice.

Ellen Shipman had nearly four dozen clients in Massachusetts and several gardens in the Boston area exemplify the range of her capabilities, including two designs from her fledgling years. In 1912, when she was just starting out, she designed a small seaside garden in Mattapoisett for Mrs. Samuel D. Warren as a complement to the modest shingle-style summer house. Shipman's simple, four-square Colonial Revival plan consisted of beds of phlox and lilies edged with low, clipped barberry hedging, with converging stone walks. A sundial and a Lutyens bench—at the time a novelty in America—appear to have been the two major ornaments. The garden was enclosed on one side by a dense wall of evergreens, and existing cedars (*Juniperus virginiana*) were accommodated in the plan. Shipman felt an unswerving belief in the importance of privacy: "Planting, however beautiful, is not a garden. A garden must be enclosed . . . or otherwise it would merely be a cultivated area."<sup>7</sup> In this respect she differed from Platt, whose walls and hedges defined spaces but rarely offered a sense of seclusion. The present status of this garden is unknown.

The following year, in March 1913, Shipman designed an innovative garden in Wenham, on Boston's North Shore, for Alanson Daniels. Her



*Preliminary sketch for a garden in Mattapoisett, Massachusetts, for Mrs. Samuel D. Warren, 1912. Shipman's Colonial Revival-style plan has four main beds edged in clipped barberry, a small lily pool, and a sundial on a side path.*

design for "Old Farms" harmonized with its country setting and the clapboard seventeenth-century house. At the front entrance, she designed a Colonial Revival dooryard garden with mounds of hardy plants such as peonies, phlox, and lilies in boxwood-edged beds, but behind the house she created a new-style garden that would quickly become one of her signature creations. Here she made a garden with low stone walls of native fieldstone, set in an old orchard. Happily, the "bones" of the garden still exist. The design was composed of a series of rectangular beds and walks culminating in a pool and a semicircular "apse" with a curved stone bench. Since several of the old apple trees were allowed to "stray" into the garden, its character derived directly from its setting. Screening was provided by clumps of small trees and shrubs around the perimeter. Photographs of the garden show it to be one of the earliest instances in which Shipman used more innovative plantings than the simple flowerbeds filled



*A wall of evergreens frames flowerbeds filled with phlox and lilies in the Warren garden. Fieldstone paths converge at the sundial. Photograph by Edith Hastings Tracy, 1912.*

with masses of only two or three kinds of plants. In the Daniels garden, she created a strong sculptural effect around the small reflecting pool by using clusters of bold foliage—hostas, bergenia, and iris. Her comment, that she used plants “as a painter uses the colors from his palette,” is admirably demonstrated in this garden.<sup>8</sup> In this respect, her approach to garden design was similar to Gertrude Jekyll’s. However, Shipman’s style of planting, with her structural “notes,” was more architectural than Jekyll’s, and she juxtaposed colors in fan-shaped clusters in contrast to Jekyll’s impressionistic drift plantings.

By the early 1920s Shipman’s gardens were receiving wide notice in magazines and books, inspiring many new clients to commission a Shipman garden. One editor summed up a well-publicized garden in Philadelphia: “Sheltered and friendly and livable . . . a delightful bit of artistry, so skilful and so finely balanced that one forgets the plan and is conscious only of the pervasive pleasantness of it all.”<sup>9</sup> This was the

kind of garden that appealed to her clients, wealthy women, the wives of prominent industrialists, who sought traditionalism in the form of good taste and privacy. Often her clients were gardeners themselves, affiliated with local garden clubs where Shipman was a frequent speaker.

For Mrs. Henry V. Greenough of Brookline, Shipman designed a small garden in 1926, when she was at the height of her fame. In her design—an excellent example of her facility with small spaces—Shipman skillfully combined formal and wild gardens in a compressed suburban setting. Using her prototypal layout, the garden was surrounded by high brick walls.<sup>10</sup> The plantings around the house and terraces were designed for all-season horticultural interest, with an emphasis on foliage and the color green. Juniper and pachysandra carried the garden through winter. In the adjacent formal garden, her prescription for perpetual bloom—from bulbs in spring, heliotrope and petunias in summer, and asters and boltonia in the autumn—was precisely outlined on her planting

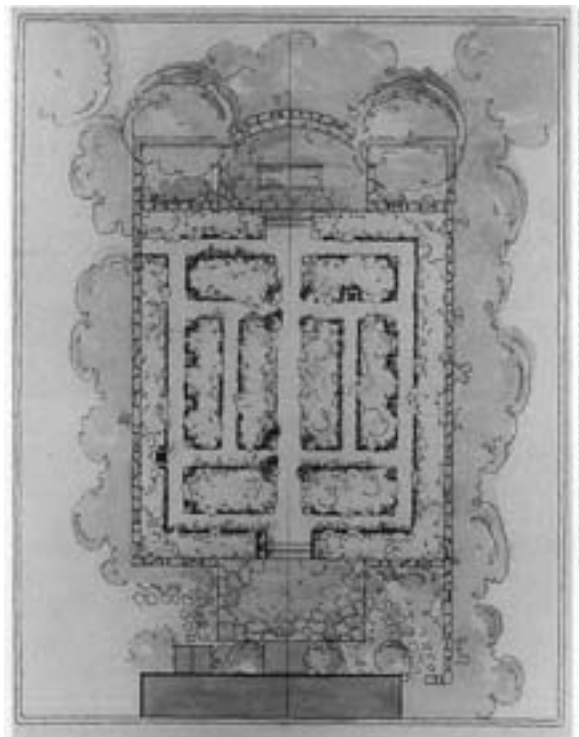




Above, low stone walls and a small reflecting pool, with plantings of bold foliage around the edges, in the Daniels garden Photograph by Edith Hastings Tracy, 1913 A plan for the garden is below

plans. One of Shipman's planting secrets was that she used no more than six to eight types of flowering plants in each design, letting "each, in its season, dominate the garden. For the time one flower is the guest of honor and is merely supplemented with other flowers."<sup>11</sup> The other flowers were drawn from lists that she maintained in her working notebooks. If the client was not a gardener herself, then Shipman helped her find a gardener who could maintain the garden to her satisfaction.

In the Greenough garden, the farthest point from the house, under a dense tree canopy, was the setting for a naturalistic garden with a pool. Although Shipman will forever be associated with flower borders, she designed a number of wild gardens, sometimes in association with Warren Manning. As in the Greenough garden, she augmented the naturalistic effect by using native stone and creating tiny rills of running water. As a formal counterpart, she also incorporated sculptures, such as a tiny frog sitting on a lily pad. The planting palette included a wide variety of native and non-native species to make





A naturalistic pool with native plants, part of a garden in Brookline, Massachusetts, designed for Mrs. Henry V. Greenough in 1926. Photograph by Dorothy Jarvis, c. 1931.

it seem as natural as possible: mountain ash, arborvitae, hemlock, dogwood, laurel, rhododendron, viburnum, big-leaf saxifrage, calla lilies, waterlilies, iris, eupatorium, shortia, and native creeping woodland and water-loving plants.<sup>12</sup>

For Mrs. Holden McGinley (Mrs. Greenough's sister), Shipman designed a large garden in Milton in 1925 that was awarded a blue ribbon by the Massachusetts Horticultural Society for its "great charm and restraint . . . planted in an unusually interesting manner."<sup>13</sup> It exemplifies the best of Shipman's approach to garden design at the peak of her career. The gently sloping site overlooking the Blue Hills to the south, with massive trees on the west and north, elicited an imaginative design solution. To take advantage of the view, Shipman created a two-part plan that coaxed visitors across the lawn and into a walled garden before glimpsing the view outward to the hills.

The enclosed garden, with whitewashed brick walls, is divided into three long, narrow gardens, each on a successively lower level and each with its own distinctive character. The uppermost garden, planted with iris and peonies in low clipped hedges, has as its centerpiece a central, bluestone-bordered lily pool extending the length of the garden. The pool itself is a classic Lutyens and Jekyll design, clearly lifted from the pages of Gertrude Jekyll and Lawrence Weaver's pivotal book, *Gardens for Small Country Houses* (1912).

The long, narrow central garden, on axis with the door of the sunroom of the house, has a central greensward flanked by perennial borders, with a blue-bronze sculpture at the far end. Hedges of Carolina hemlock and low walls, with posts covered with climbing roses, separate this area from the gardens on either side. The lower garden is given over almost entirely to roses—'Golden Salmon' polyanthus around



KARE AND MANUSCRIPT COLLECTIONS, CORNELL UNIVERSITY LIBRARY

*For Mrs Holden McGinley of Milton, Massachusetts, Shipman designed a garden of successively descending rooms. The upper one, with the bluestone rill, has yellow 'Emily Gray' roses covering the walls. A lotus fountain is the centerpiece of the middle garden, and the lower one is filled with roses. Photograph by Herbert W Gleason, 1932*



KARE AND MANUSCRIPT COLLECTIONS, CORNELL UNIVERSITY LIBRARY

*In the McGinley garden, an opening in the wall of the lower garden frames a view of the Blue Hills in the distance. Photograph by Herbert W Gleason, 1932*



*The spring border in the McGinley garden has double-flowering peach trees, pearl-bush (Exochorda racemosa), Spiraea prunifolia, daphne, Phlox divaricata, and flowering almonds. Photograph by Herbert W. Gleason, 1932.*

the central circular pool and lotus-leaf fountain, standard and bush roses, hybrid teas and perennials in apricot, copper, and yellow tones in the beds.

Another delightful bit of Shipman's artistry can be seen in the spring border adjacent to the house. Along the walls she placed double-flowering peach trees interspersed with pearl-bush, and overhead, a canopy of flowering almonds. Masses of tulips in shades of pink and lavender—"crescendos," as she called them in her planting notes—were underplanted with pansies and *Phlox divaricata*. A simple stone-lined dirt path separated the border from the lawn.

Even though the example of Shipman's career, and those of Beatrix Farrand and Marian Coffin, opened the door for women in the profession of landscape architecture, relatively few examples of Shipman's work can be seen today. One reason is that her gardens, which were unusually plant-intensive and therefore fragile, had

already begun to disappear before she died in 1950. Another aspect is that her practice was devoted almost exclusively to private gardens, and only a handful of these have been converted to public use. Had circumstances been otherwise, two Massachusetts gardens could have fallen into the latter category.

In 1925 Shipman prepared plans for replanting part of Alice Longfellow's garden in Cambridge, originally laid out by Martha Brookes Hutcheson in 1904. Hutcheson was no longer designing gardens at the time of Shipman's commission. Shipman's charge was to rejuvenate the garden by preparing planting plans, plant lists, and horticultural notes only, without any changes to the overall design of the garden.<sup>14</sup> Many other landscape architects would not have done this type of work—rejuvenating gardens designed by others—but Shipman's willingness to do so exemplifies her complaisant attitude toward garden design. It may also account for the large number of projects she car-

ried out in her career, six hundred as opposed to Farrand's two hundred. The Shipman plantings disappeared years ago and now the property is known as the Longfellow National Historic Site and managed by the National Park Service. The historic significance of the landscape, including Shipman's planting plans, is currently being evaluated with the possibility that Shipman's garden may be reinstated.<sup>15</sup>

In April 1930 Shipman sketched a preliminary design plan for Long Hill, the Beverly, Massachusetts, home of Mrs. Ellery Sedgwick (better known as Mabel Cabot Sedgwick, the garden writer), now a property of The Trustees of Reservations. Shipman proposed a series of garden rooms encircling the house and taking full advantage of the dramatic setting. All the features associated with Shipman's work can be found in this plan, including three square gardens to the east of the house, one of which was a rose garden with a serpentine wall and dolphin fountain. There were several pools, long walks, boxwood-edged flowerbeds, a series of terraces descending the hill, and woodland paths. The areas farthest from the house were to be planted with native plants, especially flowering trees and shrubs, while the areas closer to the house were more formally planted. Had her scheme been installed, we would have had a delightful example of Shipman's mature work. Mabel had her own ideas about the garden, so the project went no further.

While the "bones" of several of Shipman's private gardens in the Boston area have survived—stone walls, pools, or paths—none has yet been discovered with the original plantings and it is unlikely that they will be found. For Shipman gardens open to the public, the garden visitor must travel; one of the best examples of her work is Stan Hywet Hall, in Akron, Ohio. As in the Longfellow garden, Shipman's task was to rejuvenate a walled garden originally designed by Warren Manning. The garden was recently restored, following Shipman's 1929 plans and planting lists but using modern-day cultivars to create her precise color scheme.<sup>16</sup> Two other gardens that may be visited are examples of her late work: Longue Vue Gardens in New Orleans, designed for Edith and Edgar Stern in 1936, and the terrace gardens at Sarah P. Duke Gardens, in

Durham, North Carolina. Both of these gardens are hosting symposia in 1998 to honor the significance of Ellen Biddle Shipman.

#### Notes

- <sup>1</sup> Shipman, foreword, *Garden Note Book*, p. 4 (box 10, folder 15, Rare and Manuscripts Collection, Cornell University).
- <sup>2</sup> Manning, letter to Frank Seiberling, Akron, Ohio, 20 July 1917 (Archives, Stan Hywet Hall).
- <sup>3</sup> "House and Garden's Own Hall of Fame," *House and Garden*, June 1933, 50.
- <sup>4</sup> *Ibid.*, 1.
- <sup>5</sup> Mary Caroline Crawford, "Homes and Gardens of Cornish," *House Beautiful*, April 1906, 12–14.
- <sup>6</sup> See Jane Brown, "Lady into Landscape Gardener—Beatrix Farrand's Early Years at the Arnold Arboretum," *Arnoldia* 51 (Fall 1991): 2–10.
- <sup>7</sup> Design chapter, *Garden Note Book*, 38.
- <sup>8</sup> Preface, *Garden Note Book*, 2.
- <sup>9</sup> "Three Pennsylvania Gardens," *Garden Magazine and Home Builder*, September 1924, 11.
- <sup>10</sup> See plan and photograph in Mac Griswold, "Fairsted," *Arnoldia* 56 (Summer 1996): 11.
- <sup>11</sup> Lamar Sparks, "A Landscape Architect Discusses Gardens," *Better Homes and Gardens*, November 1930, 20.
- <sup>12</sup> "Variety of Form and Abundance of Bloom within a Small Area: The Garden of Mrs. Henry V. Greenough, Brookline, Massachusetts," *House Beautiful*, March 1931, 62.
- <sup>13</sup> Ethel B. Power, "A Blue-Ribbon Garden: The Garden of Mrs. Holden McGinley," *House Beautiful*, March 1933, 86–89, 118.
- <sup>14</sup> Catherine Evans, *Longfellow National Historic Site, Cultural Landscape Report*, Boston: National Park Service, 1993, 71–73.
- <sup>15</sup> The National Park Service is currently reassessing the garden. Shary Page Berg and Lauren Meier, *Longfellow National Historic Site, Cultural Landscape Report, Volume 2: Analysis, Significance, Integrity*, forthcoming.
- <sup>16</sup> To learn more about Stan Hywet Hall, see Judith B. Tankard, "The Artistry of Ellen Shipman," *Horticulture*, January 1997, 72–76.

---

Judith B. Tankard teaches British garden history in the landscape design program at Radcliffe Seminars, Radcliffe College, and at the Arnold Arboretum. She has written two books on Gertrude Jekyll and a new book, *The Gardens of Ellen Biddle Shipman*, all published by Sagapress. She is also editor of the *Journal of New England Garden History Society*.

# 'Lilac Sunday'—The Cultivar

John H. Alexander III

**Lilac cultivars may be selected for fragrance, color, and abundance of flower. 'Lilac Sunday' was chosen for all these traits but even more for its very attractive habit.**

Botanical gardens and arboreta routinely share seeds with one another, which they list in publications called *Index Semina*. Reviewing the 1978 *Index Seminum* from the Botanical Garden of the Chinese Botanical Academy, Beijing, Peoples Republic of China, I checked the olive family to see what lilacs might be offered. What I found was puzzling. Listed was *Syringa persica*. The plant I knew as *Syringa x persica* is of uncertain parentage, believed to be a hybrid, and not known to produce progeny. If *S. persica* and *S. x persica* were one and the same and the Chinese plant had produced seed, the seedlings might yield evidence of the presumed parentage. Or perhaps it was no hybrid at all but an incorrectly named species native to China, in which case it was a problem for taxonomists. Whatever the parentage, I wanted to grow the plant.

We received the seeds in spring 1979. Since lilac seeds usually germinate better after a cold stratification of several months, they were so treated and were ready for sowing on August 20, 1979. By September 4, eighteen had germinated and were later potted. The seed leaves of lilacs are similar regardless of species, but when the next set of leaves appeared, the true leaves, I was surprised. Most had entire leaf margins, as do most species of lilac, but two had cut leaves like *Syringa protolaciniata* (then known as *S. laciniata* and previously as *S. x persica* var. *laciniata*).

What had happened? My own suspicion is that the seed-bearing parent was *S. protolaciniata*. When *S. protolaciniata* is crossed with *S. vulgaris*, the common lilac, the hybrid progeny are known as *S. x chinensis* (which is commonly confused and sold as *S. x persica*, or the Persian lilac). Still, the possibility exists that the male parent is *S. x hyacinthiflora*, or even *S. oblata*.

However, what is important is not the confusion in identity and nomenclature, but that one of the above-mentioned seedlings has matured into a very attractive landscape plant. The Living Collections staff of the Arboretum is pleased to introduce this new cultivar, *Syringa x chinensis* 'Lilac Sunday'.

The plant that bears the name of the Arboretum's annual celebration must be special. This time-honored Boston tradition draws thousands to the Arboretum in mid-May to experience firsthand the showy, fragrant flowers of the lilac collection. The Arboretum's lilacs were becoming a popular destination in peak bloom time even before the early 1900s when it became an official institutional event.

Added to that consideration is another: With the number of lilac cultivars approaching a thousand, the decision to add yet another can't be taken lightly, even though few collections hold more than a fifth of that number, and most of those are cultivars of *Syringa vulgaris* or *S. x hyacinthiflora*. (*S. x chinensis* can claim less than twenty cultivars.)

Truly the cultivar 'Lilac Sunday' is special, as became clear from comments made by staff members. An advantage of working at an arboretum is the ability to plant potential cultivars where other horticulturists will routinely see them. I planted the future 'Lilac Sunday' in a prominent spot at the edge of the greenhouse nursery and watched and waited. I soon learned that I was not alone in falling victim to the charms of 'Lilac Sunday'. Some of my colleagues even came looking for it after it had been relocated to a special site in the lilac collection.

The flowers of 'Lilac Sunday' are a fragrant, pale purple—78-C on the Royal Horticultural Society Colour Chart—and they produce an abundant display every year, coinciding with



Branches arching under the weight of the abundant blooms of 'Lilac Sunday'.

the earlier cultivars of the common lilac, *Syringa vulgaris*, and a few days before *S. x chinensis* 'Saugeana' and 'Alba'. Although each individual flower is small, about half-an-inch (13 mm), the flower panicles are produced not only at the branch tips, like the common lilac, but also from the lateral buds along the stems at a distance of two or more feet from the branch tips. The branches themselves are willowy, arching under the weight of the flowers and giving the impression of being two feet long. 'Lilac Sunday' should attain a size similar to other cultivars of *S. x chinensis*, about twelve feet high and as wide. With its cascading blossoms, it will make a very attractive lilac "fountain."

Easily rooted from cuttings, five hundred plants have been propagated by tissue culture for distribution at the Arboretum's fall plant sale.

Jack Alexander is Plant Propagator of the Arnold Arboretum.



Numerous inflorescences from lateral buds along a branch.

# *Leitneria floridana*: A Shrub for Wet Woodland Conditions

Gary L. Koller

**Finding shrubs that grow in wet, shaded locations poses a real challenge. Many tolerate shade and some tolerate wet soils, but tolerance of both rarely occurs in one shrub. These attributes can be found in a rare native American known as corkwood.**

*Leitneria floridana* was first discovered in 1835 in the saline marshes of Florida's Apalachicola River where it empties into the Gulf of Mexico. The genus commemorates Dr. E. T. Leitner, a German naturalist of the early nineteenth century. *Leitneria* is monotypic, meaning that the species is alone in its genus. Until recently, the genus, too, was alone in its family, Leitneriaceae. However, recent molecular studies have shown that it belongs with the Simaroubaceae, the so-called quassia family, which includes *Ailanthus* (the tree-of-heaven) and *Picrasma*.

*Leitneria floridana* is called corkwood for its light wood, one of the lightest in the New World. With a bulk density of less than thirteen pounds per cubic foot, *Leitneria* is only slightly heavier than balsawood (*Ochroma lagopus*), and its buoyancy once made stem sections useful as floats for fishing nets. The wood itself is pale yellow, soft, and close-grained, with no trace of heartwood.

Corkwood occurs naturally in three widely separated geographical areas, the largest in Missouri and Arkansas, another in Georgia and Florida, and the third in Texas. It remains rare, its range diminished due to habitat destruction. In all these locations it grows in shaded marshes in the company of other wet-tolerant species such as *Fraxinus profunda* (pumpkin ash), *Nyssa sylvatica* (tupelo), *Acer rubrum* (red maple), and *Taxodium distichum* (bald cypress). In the wild, it occurs in both fresh and brackish water. It has been theorized that *Leitneria* colo-

nizes shaded marshes in order to escape competition from aggressive dryland species. From a horticultural perspective, this tolerance of brackish water might make *Leitneria* useful in poorly drained urban planting islands or in other plantings subjected to extremes of soil moisture and salt spray.

*Leitneria* is variable in both height and habit. Some colonies are loose and open while others are full and dense. The plant has been so little grown in cultivation that it is unknown whether this diversity is due to clonal variation or environmental conditions. If it is genetic, it could be the basis from which to select superior forms for garden use.

Corkwood characteristically produces a large, multistemmed colony or thicket varying from five feet to twenty in height with an equal or greater spread. At the Arnold Arboretum the largest planting dates from the late 1800s and includes five accessions, the first originating from B. F. Bush in Dunklin County, Missouri, in 1894. It is interesting to note that Bush discovered *Leitneria* in 1892 and just two years later supplied the Arboretum with plants. Additional plants came from the Parks Department in Rochester, New York, in 1925, 1927, and 1968. All are growing in what is known as the *Leitneria* swamp, a low spot where water collects and stands most of the year. They have been allowed to spread over the wet ground and have coalesced to form a thicket twelve to fourteen feet tall, approximately fifty feet long and forty feet wide.





KAVUZ S. DEBRUZZY

*This photograph of the Leitneria swamp at the Arnold Arboretum gives an idea of the plants' trunk spacing, branching habit, and bark quality*

The colony consists of a multitude of slender stems that rise separately, unbranched to a height of four or five feet. Some trunks rise straight to the upper tips while many lean with no apparent organization. The snow of April 1, 1997, squashed our colony, turning it into a tangle of stems, and led me to suspect that the disarray noted earlier is caused by storms. It would probably benefit from coppicing to encourage growth and renewed order to the trunks.

The largest stems are three-and-a-half inches thick at one foot above soil level and twelve to fourteen feet tall. Leaves are held along the upper one-third of the trunk, creating a light and airy effect. The trunks—light chocolate in color with prominent lenticels—are slender and tapering from bottom to top. I am told that in the wild, plants that grow in standing water produce thick stems at or above the water level, but that is not the case at the Arboretum, perhaps because water pools only near the center of the



Note the density of the *Leitneria* colony and the play of light across its irregular contour

colony seasonally and is rather shallow at its maximum depth. Plants sucker from the root system, but here the spread is slow and easily contained, due in part, I would guess, to frequent grass mowing at its perimeter. In Florida, however, given the opportunity, they become one of the most rapidly spreading woody aquatics.

Flowering occurs in late April with full bloom coinciding with that of downy serviceberry (*Amelanchier arborea*). *Leitneria* is dioecious, bearing either male or female flowers. The flowers appear before the leaves as clustered, erect axillary catkins about one-and-a-half inches long; female catkins are smaller and more slender than the male catkins. Both are grayish in color and are relatively inconspicuous. Fruit occurs in clusters of two to four flattened, dry, brown drupes, three-quarters of an inch long

and a quarter-inch wide, looking like small leathery plums. Our colony has never produced fruit, but we have recently added female plants and perhaps in a few years will have a seed orchard available for northern growers.

Leaves are simple and entire with an even edge, smooth and leathery in texture, dark green and glossy above and narrowly elliptical in shape. The gray-green undersurface has a prominent midrib and pinnate secondary veins that stand out or away from the underside. Larger leaves in the Arboretum's colony reach nine inches from the tip of the leaf to the distal end of the petiole and measure half-an-inch at their widest.

Foliage emerges just after flowering—early May in Boston. In midsummer the leaves have an attractive luster, glimmering as they reflect sunlight. The foliage is among the most persistent of the deciduous autumn leaves, remain-

ing green till late November, then becoming greenish-yellow or falling still green by early December. In 1995 the Arboretum colony was thick with leaves through November 29 when the weight of a snowfall wrenched the majority of leaves from the stems.

The northern hardiness range of *Leitneria* has yet to be determined. Plants under good snow cover have survived minus 19 degrees Fahrenheit in Rochester, New York, and gone on to produce fruit. In an area of Missouri where the normal winter low falls in the range of minus 10 to minus 20 degrees Fahrenheit, a *Leitneria* colony survived unscathed an abnormally early cold snap with temperatures of minus 35 degrees Fahrenheit. Another planting in Missouri grows in a habitat very different from those found in the wild. While it is in partial shade, it grows on a five-percent slope in dry-mesic soil. It has survived serious drought and summer temperatures of 110 degrees Fahrenheit; in these conditions, it is not surprising that the colony does not spread.

It has also been reported from Missouri that when springtime roadside fires kill back the stems of *Leitneria*, plants resprout vigorously and return to their original height in about three months. Periodic mowing also stimulates new growth. Seedlings often spread into wet fields, and they thrive in areas of disturbance but are threatened by encroachment from competitors such as persimmon (*Diospyros*) and sweet gum (*Liquidambar*).

There is currently little documentation regarding corkwood's predators. Reports from the Missouri Botanical Gardens indicate that their plants suffered minor damage from the *Ailanthus* webworm (*Atteva punctella*): caterpillars attack the young growth—leaves and young fruit—making small holes. However, spraying has not been required for control. The Missouri Department of Conservation reports that in its natural habitat, corkwood develops cankers on trunks of old plants. The causative organism has not been identified. Neither problem has occurred in the Arnold Arboretum's planting.

A grower in Florida who specializes in establishing breeding colonies of native plants col-



The flower buds of *Leitneria floridana*, which expand in mid-April, are beautiful viewed close up.



This inflorescence, photographed near the end of April, is at the peak of flowering



*The dark, glossy green leaves of Leitneria are smooth and leathery in texture.*

lected wild seedlings of *Leitneria* some years ago. The young plants were gathered from a ditch with brackish water in the Big Bend area of the Florida Gulf Coast, growing under a thin canopy of sweetbay magnolias and cabbage palms. In three years a test colony of *Leitneria* grew twenty to thirty feet in every direction, sparse at first but quickly filling in and spreading faster than sweetspire (*Itea*) or chokeberry (*Aronia*). The planting so quickly overgrew its

neighbors that he cut it down and treated it with herbicides, but not before male and female plants were identified and rescued to establish a new planting for seed production.

In the more northerly climate of Massachusetts, I have lifted small divisions soon after spring thaw, well before any new growth has started. These divisions were pencil thin, twelve to eighteen inches in length, each with a small section of root. The potted propagules

took only two to three months to develop a strong root system, and by the second spring they were sending up new shoots. *Leitneria* is also easily reproduced from layers; in Florida, one layer planted in autumn will produce eight to twelve new suckers by the end of the next fall.

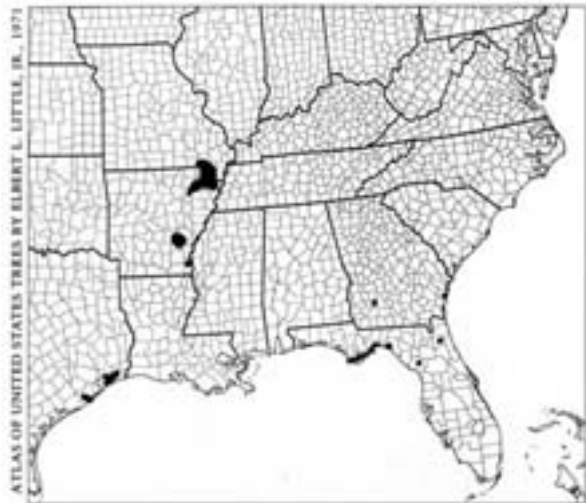
What makes corkwood worthy of special attention to gardeners is that it occurs naturally in standing water, up to two or three feet in depth. In a 1940 *Gardeners' Chronicle* article, Donald Pasfield notes "that there are few other trees so strictly aquatic in distribution, *L. floridana* thrives best in permanently inundated swamps and deep sloughs where its roots are constantly wet and where to inspect it closely one must either go in a boat or wade through mud and water. Should any specimens be growing in less permanently inundated localities, where the water supply is less constant, they plainly suffer the deprivation and, under such conditions seldom exceed five feet in height."

In New England there are many cultivated sites with poor drainage or naturally wet conditions, often with some degree of shade. One of my recent challenges was to select plants for a shaded kettlehole pond, five to six feet deep, whose only source of water is from surface drainage. It has no natural outlet so in very wet years the pond fills up completely. It has, in fact, overflowed its banks on two occasions in the past quarter century. At the other extreme, during the drought of 1995 the pond dried up completely except for some muck at the lowest point. Few plants will survive a fluctuation of this magnitude. The owners considered their muddy oval to be an eyesore during times of low water and wanted its edge enhanced with a planting. I decided to experiment with *Leitneria*.



*Leitneria floridana* drawn by C. E. Faxon for C. S. Sargent's *The Silva of North America*, 1890.

During the fall of 1995 when the pond remained almost dry, I planted dormant layers, two to two-and-a-half feet tall, two to three feet away from the water's edge. To my surprise, several of the young plants, anchored only by a poorly developed root system, were quickly dislodged by waterfowl and pond-dwelling animals. Spring rains caused the water level to rise two feet, almost swamping the new plants and leaving only a few inches and a small tuft of foliage above the waterline for the whole summer of 1996. Nonetheless, the corkwoods survived, producing sparse growth as they struggled



*Leitneria floridana* occurs in the wild in disjunct populations in just five states—Florida, Georgia, Texas along the Gulf Coast, Arkansas, and Missouri. Nowhere is it very common, and due to habitat destruction has been placed on the federal list of threatened plants.

to take hold. Were we to begin again, we would certainly select well-rooted container-grown stock. In the past months rain has again been abundant, and as of mid-May, 1997, the plants remained completely submerged by three to four feet of water. Will they survive? Only time will tell.

**Bibliography**

Brown, C. L., and L. K. Kirkman. 1990. *Trees of Georgia and Adjacent States* Portland, OR: Timber Press, 69–70.

Channell, R. B., and C. E. Wood, Jr. 1962. The Leitneriaceae in the Southeastern United States. *Journal of the Arnold Arboretum* 43(4): 435–438.

Clewell, A. F. 1985. *Guide to the Vascular Plants of the Florida Panhandle* Tallahassee: Florida State University Press

Day, J. N. 1975. The Autecology of *Leitneria floridana* Mississippi State University, Department of Botany: Ph.D. Dissertation.

Dunbar, J. 1910. *Leitneria floridana* *The Gardeners' Chronicle* 47: 228.

Fernando, E. S., and C. J. Quinn. 1995. Picramniaceae, A

New Family, and a Recircumscription of Smaroubaceae. *Taxon* 44(2): 177–181.

Kral, R. 1983 *A Report on Some Rare, Threatened, or Endangered Forest-Related Vascular Plants of the South*. Volume 1—Isoetaceae through Euphorbiaceae. Atlanta: USDA Forest Service, Southern Region, Technical Publication R8-TP 2, 271–275.

Pasfield, D. H. 1940. *Leitneria floridana*. *The Gardeners' Chronicle* 107: 185.

Pfeiffer, W. M. 1912. The Morphology of *Leitneria floridana*. *The Botanical Gazette* 53(3): 189–203.

Readel, K. E., D. S. Seigler, and D. Young Alkaloids of *Leitneria floridana* Urbana. Department of Plant Biology, University of Illinois. In preparation.

Sargent, C. S. 1947. *The Silva of North America* Vol. VII. New York: Peter Smith, 109–112

Steyermark, J. A. 1940 *Spring Flora of Missouri* St. Louis: Missouri Botanical Gardens, and Chicago: Field Museum of Natural History, 116.

Swink, F., M. T. Hall, and W. J. Hess. 1978 Orphans in the Plant World: Examples of Monotypic Families. *The Morton Arboretum Quarterly* 14(2): 28–32.

Trelease, W. 1895. *Leitneria floridana* Report, Missouri Botanical Gardens 6: 65–90.

Vines, R. A. 1977. *Trees of East Texas*. Austin: University of Texas Press, 40–42.

Vines, R. A. 1960. *Trees, Shrubs and Woody Vines of the Southwest* Austin: University of Texas Press, 121.

**Acknowledgments**

The author extends special thanks to all those who provided information or reviewed this manuscript prior to publication: Kay Havens and John McDougal, Missouri Botanical Gardens; Donald Kurz, Timothy Smith, and George Yatskievych, Missouri Department of Conservation, Jefferson City; Lanny Rawdon, Arborvillage Nursery, Holt, Missouri; Robert Macintosh and Robert McCartney of Woodlanders Nursery, Aiken, South Carolina; Charles Webb, Superior Nursery, Lee, Florida; and Robert Hoepfl, Department of Parks, Rochester, New York.

Gary Koller is Senior Horticulturist at the Arnold Arboretum.

# Book Review

*Peter Del Tredici*

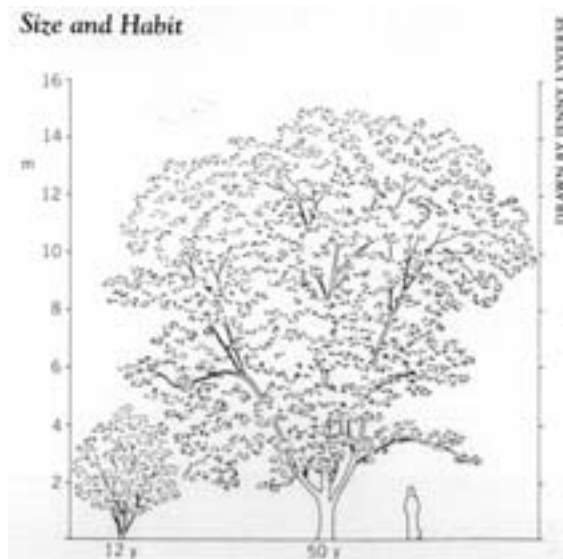
*Landscape Plants for Eastern North America*, 2nd edition. Harrison L. Flint. John Wiley and Sons, 1997. 852 pages. Hardcover. \$95

When the first edition of Harrison Flint's *Landscape Plants for Eastern North America* appeared in 1983, it offered an alternative to many other books in the field. In particular, its strong graphic display of plant adaptation as well as its excellent line drawings by Jenny Lyverse provided a visual approach to how plants might fit into the landscape and what their habitat requirements are. The excellent graphics made the book particularly useful to landscape architects who need to visualize the forms of the plants as part of the design process.

After being out of print for a number of years, the long-overdue second edition of Professor Flint's classic work is again available. While the "Cultivars" and "Related Species" sections for most of the one thousand entries have been greatly expanded over the first edition, the book retains its primary focus on the horticultural characteristics of the species themselves. Compared with other, more cultivar-focused books, Flint maintains a measure of objectivity about the plants he describes and presents a refreshingly nonjudgmental portrait of a given plant's horticultural strengths and weaknesses.

One of the most useful features of the first edition was the twenty-four appendices at the end of the book, which categorized species according to their various horticultural attributes—size, shape, function, adaptation, and seasonal interest. The number of appendices has been expanded to forty-seven, and they cover a much broader range of plant attributes. Again, for landscape architects and designers, these lists should prove extremely useful.

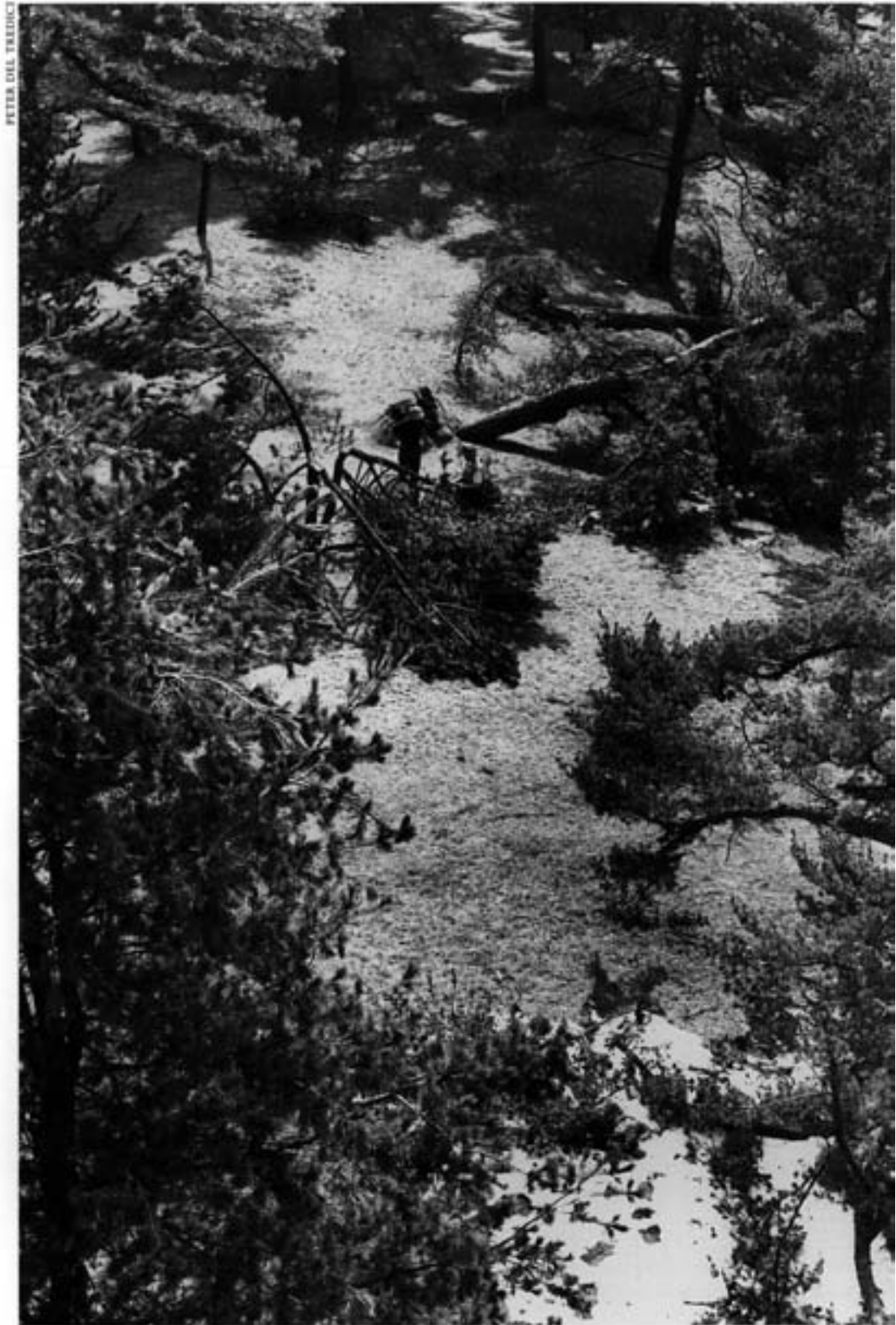
On the negative side, the second edition still retains a small selection of about twenty-five herbaceous "groundcovers," included, I suspect, for the sake of completeness. The decision



*Magnolia virginiana.*

to include herbaceous plants may have made sense in 1983, but given the book's overwhelming concentration on woody plants, and the subsequent emergence of perennials as a subject area in their own right, their inclusion makes little sense.

I was also disappointed that not all of the author's comments appear to have been updated since 1983. For example, the entry on *Eleagnus umbellata*, the autumn olive, reads: "This shrub is trouble-free, requiring no maintenance other than pruning to develop fullness and to control size when necessary." Nowhere is it mentioned that the species has become a serious pest throughout much of the East because of its invasive tendencies. On the other hand, the entry on the Bradford pear has been updated to include a thorough discussion of the problems associated with the plant's upright structure. All in all, the publication of the second edition of *Landscape Plants for Eastern North America* is an opportunity not to be missed by anyone who missed the book the first time around.



PETER OUL TREIDING



# Storms and the Landscape: 1938–1997

*Susan Kelley*

**The ice and snow storms that occur in late spring after a few unseasonably warm days come as sharp, cruel surprises, and for trees and shrubs in which the sap is rising and buds are beginning to break, the damage can be severe and even permanent. Its extent may not be seen for months or even years.**

The blizzard that dumped 25 inches of snow on Boston and the surrounding area on April 1, 1997, is the most recent in a long series of weather events that have affected the trees and shrubs of the Arnold Arboretum. Although it did not pack the destructive winds typical of hurricanes, the damage incurred by this storm—the worst since that of the 1938 hurricane—has altered the Arboretum's landscape just as significantly. Indeed, each storm inflicts its unique wounds on the contents, scope, and shape of the collection. Evidence of these past events remains in the form of asymmetrical or distorted crowns, wounds incurred by massive branches ripped from trunks, cracks in trunks and branches, and insect and disease infestations that result indirectly from storm damage. Mature specimens, especially, bear the scars of past storms, and as often as not, individual trees have been touched more than once. Following are some facts and figures from the major storms, 1938 to 1997: together they add up to dramatic changes in the Arboretum's collections and overall structure.

## 1938—The Great Hurricane

With a sudden change of course off the coast of North Carolina, the hurricane of 1938—the first to hit New England since 1815—took the North Atlantic states by surprise. Instead of curving out to sea, the storm turned and headed up the coast. When it was over, furious winds and heavy rain had caused 400 million dollars in property damage, the deaths of 608 people, and the destruction of 730 million board feet of com-

mercial timber across New England.<sup>1</sup> In the Arboretum collections, where wind velocities at times exceeded 100 miles per hour and 60 mile-per-hour winds were sustained for four hours, approximately 1,500 trees were uprooted or snapped off, with the majority of the damage occurring on the tops and exposed areas of Hemlock Hill, Peters Hill, and Bussey Hill. On Hemlock Hill alone at least 400 hemlocks (*Tsuga canadensis*), some of which dated back nearly two hundred years, were uprooted, and on Peters Hill most of the poplar collection was leveled. The conifer collection and several small flowering trees behind the Hunnewell Building were also severely damaged, and along South Street 100 red and white pines were destroyed, leaving exposed the 1,000 torch azaleas (*Rhododendron obtusum* var. *kaempferi*) and 750 mountain laurels (*Kalmia latifolia*) that were planted by E. H. Wilson in 1929 and 1930.<sup>2</sup>

Because most of the damage occurred in the natural woodland areas of the Arboretum, only 12 accessioned specimens destroyed by this "Great Hurricane" were not duplicated in the collections. Except for obvious gaps on exposed sites, much of the remainder of the collections was left unscathed. By late spring of 1939 most of the fallen timber had been cut and hauled away, and 625 two-foot to six-foot Canadian hemlocks and red and white pines had been planted on Hemlock Hill and along South Street. Several Carolina hemlocks (*Tsuga caroliniana*) were transplanted from the Walter Street tract to the slope behind the Hunnewell Building. Today, Hemlock Hill's pit-and-mound

---

*Arborists John Del Rosso and Todd Byrnes begin the removal of Pinus leucodermis amidst uprooted P. rigida, P. cembra, and P. banksiana in the Arboretum's conifer collection.*

formations remain as subtle reminders of the hurricane of 1938.

#### 1954—Carol and Edna; 1960—Donna

On the morning of August 31 Hurricane Carol blew through the Arboretum destroying 300 trees in its path. Of the specimens removed, 46 were from the conifer collection and an additional 40 from Hemlock Hill. Spruce (*Picea*) and fir (*Abies*) were the most heavily damaged of the conifers; more than half of the specimens had trunks of 15 to 36 inches in diameter. The oak (*Quercus*) and poplar (*Populus*) collections also lost 13 and 18 trees, respectively. Several specimens from the tulip tree (*Liriodendron*) grove on Peters Hill were downed as well as 5 ashes (*Fraxinus*), 7 hickories (*Carya*), and 6 trees in the maple (*Acer*) collection. Only 7 of the destroyed trees were not duplicated in the collection. New gaps introduced new vistas, but some areas, such as the base of Hemlock Hill where the hill itself was exposed, were for years a constant reminder of the force of this hurricane.

Hurricane Edna hit eleven days later, on September 11, but caused just 15 percent of the damage to the collection as Carol had. Only 24 accessioned plants had to be removed plus several nonaccessioned Douglas firs (*Pseudotsuga menziesii*). Of the 24 trees destroyed, 8 were not duplicated in the collection. Hurricane Donna, which struck the Northeast on September 12, 1960, was even less destructive. It damaged only 40 trees and shrubs in the Arboretum, and of these, 8 were removed.

#### 1966

In February, heavy wet snow fell throughout the eastern part of the United States, causing many branches of trees and shrubs to bend and break. Arboretum horticulturist Donald Wyman, who devoted much of his writing to plant hardiness, reported on the effects of the heavy snow on woody plants. Without making specific reference to trees in the Arboretum collection, he noted the damage to willows, red and silver maples, and lindens, which are weak-wooded species and thus more likely to break under such conditions. Specimens of Douglas fir, another weak-wooded species, and dogwood

### Pulling Back Trees

In the midst of post-storm clearing of broken branches and downed trees, the Arboretum's grounds crew has often gone to great efforts to salvage as many trees as possible. After the 1938 hurricane, some of the smaller trees that were blown over were pulled back into position, and in 1954, within ten days of Hurricane Carol, the grounds crew was able to upright and stake 100 young, immature trees that were uprooted or tilted. Of these 100, 24 remain in the collection today, including a stately *Magnolia acuminata* (494-40\*B) dating from 1940 and standing next to the Arborway wall; a large *Magnolia kobus* (141-41\*A) from 1941, growing near the Hunnewell Building; a *Tsuga caroliniana* (19447\*D) planted on Peters Hill in 1926; and 20 of the crabapples and hawthorns on Peters Hill.

Twenty-seven individuals that were either blown over or loosened at the base in Hurricane Edna (1954) were straightened and staked, but only 3 of those remain in the collection today: *Cedrus libani* (5-42\*C) on Bussey Hill, dating from 1942; *Juniperus communis* (792-41\*A), from 1941; and a *Crataegus crus-galli* (14015\*A) on Peters Hill that dates from 1903. Interestingly, 10 of these 27 plants had been uprighted after Carol. These 10, along with the other salvaged trees from Edna, were dead within two to ten years of the date of the storm.

After Hurricane Donna (1960) 25 plants were pulled back and staked; 8 of those had been pulled back after Carol in 1954. Today 12 of those damaged by Donna survive in the Arboretum's collection, including 2 that were uprighted in 1954—*Carya laciniosa* (12898\*P) and *Malus glabrata* (11165\*B).



Arboretum crew "pulling back" a box elder (*Acer negundo*) after Hurricane Carol in 1954.

apparently also broke up under the weight of heavy snow that winter.

### 1969

Reports of record-breaking snow in the *Boston Globe* likened the destruction from the nor'easter on February 9 to that of the hurricane of 1938. Yet another storm, February 24 through 28, was touted as the worst in Boston's history. In all, an estimated 50,000 trees in Boston alone were damaged by the storms, including approximately 100 trees in the Arboretum. Most were damaged from the wet, heavy snow that fell early in the month. Although no trees were uprooted or felled, many in the beech, hornbeam, maple, and magnolia collections and several crabapples on Peters Hill were broken up, as were 8 of the prominent magnolias growing in front of the Hunnewell Building. Three of those magnolias were removed in 1992 for the construction of the new access ramp. Three others suffered major damage in the storm of 1997 but remain in the collection today.

### 1976, 1977, 1978

No one living in New England at the time can forget the winter of 1978. January brought 40 inches of snow to Jamaica Plain with another 27 on February 6 and 7. The February blizzard was so severe that the governor of Massachusetts declared a state of emergency. Traffic was halted, businesses were closed for days, and citizens were advised to stay at home. Several weeks passed before the grounds of the Arboretum were accessible to clean-up crews. Clear skies and harsh winds desiccated many broadleaved evergreen plants. That year the flowers of spring-blooming shrubs and trees were confined mostly to lower branches since the buds on the top portions, injured by the winds, did not fully develop. Nonetheless, although great drifts accumulated, the snow was light and powdery, and there is no recollection, verbal or written, of any lasting damage to the trees and shrubs in the Arboretum.

In Boston the events of the blizzard of 1978 certainly overshadowed the harsh winter of 1976–1977, but for the plants in the Arboretum, the cold temperatures, snow accumulation, and high winds of 1976–1977 had lasting effects.

Whereas Arboretum plant records contain no reference to the 1978 blizzard, no less than 42 entries note damage to plants from the January 1977 snow. Several groups of plants located between the Hunnewell Building and Bussey Hill experienced especially severe damage: the maples, amelanchiers, birches, hackberries, magnolias, lindens, and elms.

### 1985—Gloria

On September 27, the Arboretum staff prepared for what was predicted to be the worst hurricane since the Great Hurricane of 1938. Fortunately, Gloria traveled inland and northwesterly through the Connecticut River Valley. Although wind velocities in the Boston area never reached hurricane force, sustained winds of 50 to 60 miles per hour were recorded and the damage to the Arboretum was significant. A total of 45 accessioned trees were destroyed and another 100 sustained major damage. Two taxonomically important plants were lost in Gloria: *Euptelea polyandra*, the only remaining individual of that taxon of C. S. Sargent's Japan collection, and *x Crataegosorbus miczurinii*, which was severed at its base. It was during Gloria that the "sibling" of the silver maple (*Acer saccharinum*) on Meadow Road, which is the tallest deciduous tree currently on the property, was destroyed. Four plants of the 45 destroyed were the only representatives of their taxon—including *Abies concolor* 'Glenmore' and *Carya x laneyi*, the type specimen collected in 1895 by John Jack on the shores of the St. Lawrence River—and have not been replaced since.<sup>3</sup>

### The Blizzard of 1997

The 1990s have seen their share of hurricanes, snow, and ice, but in terms of damage to plants, none compare to the blizzard of 1997. Indeed, no single weather event since the 1938 hurricane has altered the Arboretum's landscape as did the blizzard of April 1, 1997. Coming after a mild and essentially snowless winter, the freezing rain followed by more than 25 inches of heavy, wet snow that accumulated during the afternoon of March 31 and into the next day was truly a surprise. The grounds maintenance crew worked quickly to clear roads and pathways and



KAREN MADSEN

*Although the spring flow of sap makes branches more flexible, the weight of the snow from the April 1 storm was too great for many trees. This *Carpinus betulus* is one of six hornbeams scheduled to be removed.*

to remove the hazardous trees and branches. Within three weeks the curatorial staff had surveyed the entire Arboretum property (except for the Walter Street tract) and identified a total of 1,705 damaged plants, or 13 percent of the Arboretum's total accessions.

We defined various categories of damage: trees with more than 50 percent crown damage or large stress fissures in the trunk are considered "removals"; trees with 25 to 50 percent damage sustained "major" damage; and trees with less than 25 percent have "minor" damage. Of the total, 584 trees suffered major damage, another 836 had minor damage, and 285 are removals. Thirty trees were uprooted. An additional 200 nonaccessioned trees growing on Hemlock Hill experienced damage: 12 were uprooted, 28 had major damage, 40 had minor damage, and at least 85 were either snapped off at one to fifteen feet from the base or had the very top broken out and are considered removals.

Although the extent of the damage rivals that of the Great Hurricane, wind did not play a

major role in this storm. Out of almost 2,000 damaged trees, there were relatively few blowdowns, as would be typical of wind damage. Rather, the damage was mechanical, more a function of how branches caught and held the wet snow. The evergreen foliage of conifers provided a large surface area for accumulation, and small flowering trees with horizontal branching structure bent to the ground under the weight of the snow, which was greater than the branch size could accommodate. In many cases, evidence of previous damage, disease, or rot was apparent in broken branches, but what was surprising was that many of the trees damaged appeared to be healthy, adding to our determination that the sheer weight of the snow was the primary cause of destruction.

Accordingly, damage was not uniform throughout the collection. Most affected were the conifers, beeches, hornbeams, oaks, Japanese maples, and lindens. Conifers were the hardest hit group: 698 of the total 1,705 experienced some form of damage. Of these, 141 will be removed. A walk along Conifer Path reveals

the devastating effects. Although not necessarily of significant taxonomic importance to the collection, many trees, long a part of the defining character of that section of the Arboretum, are either gone or their typical forms destroyed. Pines in particular suffered tremendous damage. Throughout the collection nonaccessioned specimens of our native white pines (*Pinus strobus*) lost numerous massive branches, and at least 16 of those accessioned were damaged. Eight of the 16 damaged Japanese black pines (*P. thunbergii*), which are so distinctive in the landscape, may have to be removed. Scots pines (*P. sylvestris*) planted within the main conifer collection and elsewhere on the property also broke up under the weight of the snow: 14 had major damage, 10 minor damage, and at least 6 were removed. In all, 208 specimens of *Pinus* were damaged; 109 *Picea*; 67 *Abies*; 52 *Tsuga*; 40 *Chamaecyparis*; and 36 *Thuja*. Included in the damaged conifers are several original collections of C. S. Sargent and E. H. Wilson.

Even the most casual observer walking along Valley Road cannot help but notice the devastating effects of this storm. Massive limbs were

ripped from 80- to 90-foot oaks, and the hornbeam collection may never look the same. Their densely spaced branches, made more limber by the spring flow of sap, bent to the ground and in many instances snapped. In all, 27 of 78 hornbeams were damaged: 6 will probably be removed, 15 suffered major damage, and 6 minor damage.

The oak trees adjacent to the walnut collection were basically unhurt, but those growing at slightly higher elevation farther down Valley Road toward the beeches experienced some of the worst damage in the entire Arboretum collection. Hundreds of fallen branches littered Valley Road and the ground below the oaks, while many other broken limbs hung precariously above. No fewer than 62 oaks bear the scars of this storm, and an additional 12 will be removed. The beech collection, weakened by disease and previous storms, was also ravaged by the weight of the snow. At least 51 were damaged. The stately *Metasequoia glyptostroboides* that graces the intersection of Valley Road and Hemlock Hill Road also could not withstand the load of the snow: several branches broke



*Pinus leucodermis*, one of three removed from the conifer collection. Another specimen of the same accession sustained major damage in the 1997 blizzard.



PETER DEL TREDICI

*A variety of Japanese white pine (Pinus parviflora var. pentaphylla), a graft from a scion taken by Charles S. Sargent in 1881 from a plant on his estate in Brookline.*



*Arborists from the Bartlett Tree Company helped for a week in the clean-up after the April 1 storm, using their alpine aerial lift. Several of the black oaks (*Quercus velutina*) visible from Valley Road had to be heavily pruned or removed*



about 4 feet out from the trunk. Five other dawn redwoods growing in the conifer collection and near the Hunnewell Building experienced similar damage.

Throughout the landscape, small flowering trees such as magnolia, crabapple, dogwood, hawthorn, witchhazel, pear, and cherry—230 in all—suffered. Thirty-two of this number were magnolias, of which 4 had to be removed. The gap left by the removal of the *Magnolia* 'Leonard Messel' that grew in front of the *Leitneria* swamp constitutes a significant change to that section of the Arboretum. Twenty-two magnolias growing around the Hunnewell Building had limbs broken by the snow; 3 of these prominent trees also suffered broken limbs in the snow storm of 1969.

In this blizzard, unlike the hurricane of 1938, the exposed areas of Bussey Hill and Peters Hill were spared. Birches that are prominent on the slopes of Bussey Hill were untouched, but those that were planted within the conifer collection were at the mercy of the many branches falling from the evergreens. On Peters Hill over 200 specimens of conifers and small flowering trees growing in more protected areas at the base of the hill on the north and northeast sides experienced heavy damage: 40 trees were identified as removals, 73 had major damage, and 94, minor damage.

A major loss to the collection is a venerable specimen of *Styrax japonica* that was grown from seed collected by C. S. Sargent in Japan in 1892 and planted near the Centre Street gate. After the ice storm of March 1995, a large limb was removed from this specimen, and several cracks formed in some of the remaining limbs so it was only a matter of time before another storm would strike the final blows. *Carya x brownii*, a hybrid of the native pecan (*C. illinoensis*) and bitternut (*C. cordiformis*), was completely uprooted in the same Centre Street gate area. It is the only tree lost in this storm that is not represented elsewhere in the collection.

The heavy, wet snow of the April 1 blizzard clearly wrought an enormous amount of damage on the Arboretum collections. The grounds maintenance staff along with summer interns

will spend many months cleaning up from this storm, and the greenhouse staff will attempt to repropagate severely damaged species. The arborists and curation staff no doubt will continue to uncover damage from this latest storm, and plant records will be amended and maps edited to reflect the changes in the collections. The gaps left by the lost specimens and the scars on those that remain will for years serve as reminders of the effects the Blizzard of 1997.

#### Endnotes

Curatorial staff can draw on a variety of resources for historical data on plants. Plant records, which have been maintained since the Arboretum's inception, offer invaluable information on the condition (current and past) of individual plants. Daily weather records maintained by greenhouse personnel and dating back to 1918 give concise meteorological data. Arboretum directors' reports and articles published in *The Bulletin of Popular Information*, *Arnoldia*, and local newspapers describe the severe damage suffered by groups of plants and individual specimens in the collection as well as the not-uncommon inconsistencies of New England weather and its effects on trees and shrubs. In addition, photographic images of individual specimens and portions of the collection that have been affected by storms are maintained in the Arboretum's archives and provide a unique perspective of the landscape over time.

<sup>1</sup> Leonard Ware, *New York Times*, Sept. 24, 1939; Donald Wyman, letter to Charles F. Irish, Nov. 29, 1938, Arnold Arboretum Archives.

<sup>2</sup> Ida Hay, *Science in the Pleasure Ground* (Boston: Northeastern University Press), 1995, 213.

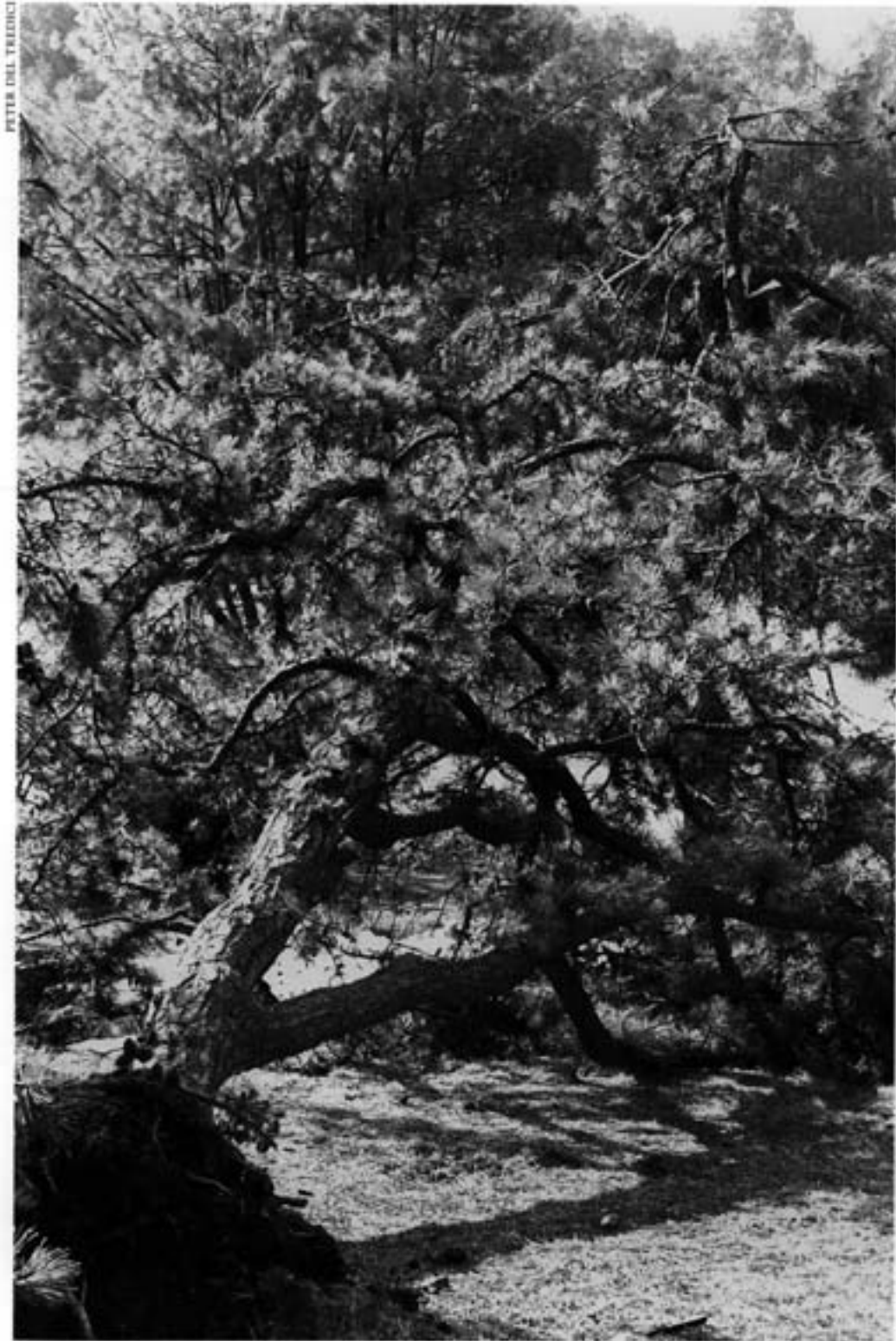
<sup>3</sup> *Carya x brownii*, like *C. x laneyi*, a plant lost in Hurricane Gloria that was also unduplicated in the collection, are both taxa named by Charles S. Sargent: in the first instance, from a plant he saw growing near a small grove of *C. illinoensis* near the Arkansas River, and in the second, from a single tree growing in dense shade with *Carya cordiformis* and *Carya ovata* in Quebec. Because the identity of each of these new species was based upon single individuals, one could perhaps question the taxonomic merit of such plants.

#### Acknowledgments

Special thanks to Kyle Port, Curatorial Assistant responsible for plant records, for his energy, expertise, and wit while assessing storm damage, and to Beth Bardon, mapping and labeling intern, who saw and touched more plants in the Arboretum in three weeks than do most interns in an entire summer.

---

Susan Kelley is Curatorial Associate in charge of mapping and labeling at the Arnold Arboretum



*This pitch pine (Pinus rigida) was one of 30 accessioned trees uprooted in the 1997 blizzard. The heavy, wet snow, poor soil, and shallow roots all contributed to this tree's demise.*

# The Arnold Arboretum

S P R I N G • N E W S • 1 9 9 7

## Harvard University Herbaria Open House

*Robert E. Cook, Director*

It seemed like an interesting idea for a birthday party, but would anyone come?

Last fall, as we planned activities to celebrate our 125th anniversary in 1997, a staff member suggested that we might have an open house at the Harvard University Herbaria. The Herbaria are the repository of five million plant specimens from around the world that, with its library holdings, constitute the most important

resource for Asian botanical research in North America. The Arboretum collections are integrated with those of four other former botanical institutions: the Gray Herbarium, the Oakes Ames Orchid Collection, the Botanical Museum, and the Farlow Herbarium of Cryptogamic Botany. We thought possibly a few people might be interested in what goes on behind the scenes, so we set the date for the evening of May 8, 1997.

The exotic menu of exhibits would include a wide range of posters and presentations such as Molecular Systematics—DNA: How You Get It, How You See It, What It Means; The Baobabs of Madagascar; Clusiaceae and HIV—The Medical Connection; An Interactive Rainforest Key; Botanical Illustrations—Linking Past and Present; The Flora of China and the World Wide Web; Biodiversity Mapping Tools;



Long-time volunteer Bob Reed, right, and friends look on as Jinshuang Ma discusses the distribution and conservation of the flora of his native China.

Mangroves, Figs, and Chocolate. Professor Mike Donoghue, the director of the Harvard University Herbaria, and I would host the evening.

At five in the afternoon the doors opened and more than four hundred friends of botanical studies at Harvard, many of them members of the Arboretum, enjoyed the displays and talks over the next four hours. The staff were astounded at the large numbers and the level of interest shown by all in the more arcane recesses of botanical research. The visitors were enthralled, and many left with the recommendation that we hold an open house every year.

Scientists often underestimate the appetite of the general public for genuine scientific information, especially when it is presented by the researchers themselves, who cannot help but communicate their excitement with the process of discovery. Our 125th Anniversary Open House brought the truth of this home to me again; and we shall indeed find an occasion before long to bring our friends together around the botanical research that is the mission of the Arboretum.



A good friend of the Arboretum, Mrs. F. Stanton Deland, Jr., and Lisa Hastings, Arboretum Director of Development, view botanical prints in the reading room of the Farlow Herbarium.

## Best Wishes for a Loyal Friend



Patrick Willoughby, Superintendent of Grounds for the past thirteen years, has left the Arboretum to become Assistant Director of Physical Plant at Wellesley College. With a staff of twenty-one, Patrick will be in charge of maintaining Wellesley's 300-acre campus, including natural areas, athletic fields, and a nine-hole golf course.

Patrick came to the Arboretum in 1980 as Assistant Superintendent of Grounds. Soon after, he received a Garden Club of America scholarship for study in Great Britain. As Superintendent of Grounds since 1984, he has nurtured the Living Collec-

tions through droughts, ice storms, and blizzards, errant visitors and rampant dogs. Patrick's last month here was spent putting the Arboretum back in order after the Blizzard of '97. He's been a valuable colleague and a good friend; we will sorely miss his wit and good humor.

## First Call for the Annual Fall Plant Sale

Mark your calendar for the Arboretum's Annual Fall Plant Sale, scheduled for Sunday, September 21, 9 a.m., at the Case Estates in Weston. A well-established Arboretum tradition, the fall sale is our largest membership event. Last year, over eight hundred members attended the sale with its live and silent auctions and Plant Society Row. Unusual plants this year will include a new introduction, *Syringa x chinensis* 'Lilac Sunday' (see Jack Alexander's article), the golden larch (*Pseudolarix amabilis*), and *Cornus kousa* 'Milky Way'.

Arboretum members will be mailed plant sale catalogs in August and vouchers for free plants in early September; members also benefit from special members-only hours and dis-

counts on all purchases made in the barn on the day of the sale. Members at the sustaining level (\$100) receive an invitation to the plant sale preview beginning at 8:30 a.m. This year we will be

adding a new feature: thirty-minute education sessions on planting, pruning, and overwintering plants. Mark your calendar for this horticultural happening and plan to join us!

## Storm Recovery Appeal

*Lisa Hastings, Director of Development*

Response to the special appeal following the dramatic April storm has been tremendously positive. We received swift and very strong support from many loyal members and donors and also an overwhelming number of donations from new supporters. This generous and broad-based support is most appreciated, especially by the Living Collections staff.

To date, members and friends have made gifts totaling \$122,102. All gifts are directed to the Storm Restoration Fund, which was established to help defray immediate costs associated with the cleanup as well as to support the long, deliberate process of rebuilding the Living Collections.

Our spring visitors have also shown great support for our cleanup efforts. In the two months

following the storm, nearly \$6,000 was collected from the donation canisters located on the grounds. Beautiful weather and extensive media coverage brought record numbers to Lilac Sunday. Special tables set up to offer information about the storm's effects on the Living Collections increased donations on the grounds, bringing the total to \$8,400. We were heartened not just by the donations but also by notes applauding the Arboretum's speedy cleanup.

The work associated with replacing trees that were lost will continue long after media and public attention subsides. From this great natural disturbance, however, came a show of support that will motivate and inspire Arboretum staff for months to come.

## Dogwood Collection Named for Mrs. Fessenden



Mrs. David L. Ferguson and Mrs. Karl Riemer, both longtime members of the Friends of the Arnold Arboretum, recently made a very generous gift to endow and name the *Cornus* collection in memory of their mother, Elizabeth Taylor Fessenden. Mrs. Fessenden, who died last year at age 89, graduated from the Winsor School and served as trustee of the Women's Educational and Industrial Union, president of the Chilton Club, and member of the Ladies Visiting Committee at Massachusetts General Hospital. Mrs. Ferguson commented, "Mother had great appreciation for the gardens of Boston; we felt that endowing a collection at the Arboretum was a wonderful way to honor her memory."

The dogwood collection—284 plants strong—is one of the Arboretum's most attractive spring features. Unlike most of the plant collections, the dogwoods have been sited throughout the grounds. One of the earliest harbingers of spring is *Cornus mas*, the cornelian cherry, which produces clusters of small, delicate yellow flowers along its leafless branches even before the forsythias



Record numbers of visitors on Lilac Sunday were overwhelmingly generous.

have begun to bloom. Our oldest and most beautiful specimen stands next to Rehder Pond, across Bussey Hill Road from the forsythia collection; it came to us from France in 1883. Then, when spring in the landscape is no more than a subtle green haze of emerging leaves, the snowy white and salmon pink bracts of our native *Cornus florida* arrive to enliven it. And just as they are beginning to fade, the pointed white bracts of the Japanese dogwoods begin to open. We are pleased that this special collection will be supported by a generous endowment.

For information about endowment opportunities, contact Lisa M. Hastings, Director of Development, at 617/524-1718 x 145.

## Meeting the Arboretum's Public

Many friends of the Arboretum have already come to know Joseph Melanson, who came to us from Harvard's Natural History Museum. As part of the Arboretum's public programs department, he provides guidance to visitors at the information desk in our new exhibit space. Joe answers inquiries ranging from basic facts about Arboretum history to the location of both collections and specific plants. He also works closely with the membership and adult education departments to ensure that visitors are aware of all that the Arboretum has to offer



## PROGRAMS & EVENTS

The Arboretum's Education Department offers a wide variety of courses, programs, and lectures in horticulture, botany, and landscape design. A selection of summer courses is shown here. For a complete catalog of programs and events at the Arboretum, please call 617/524-1718 x 162. Note that fees shown in **boldface** are for Arboretum members. For information about becoming a member, call 617/524-1718 x 165.

### **HOR 338 Basic Care for Trees and Shrubs**

*Joseph J. Camilliere III, Consulting Arborist*

Trees and shrubs are key structural elements in the landscape. In three sessions, learn the basic techniques used to care for and enhance woody ornamental trees and shrubs—from identifying stresses to pruning and feeding.

**Fee:** \$45, \$54

**3 Wednesdays, July 9, 16, 23/ 6:30–8:30 pm (CE)**

### **HOR 182 The Art of Hybridizing Perennials**

*Darrell Probst, Horticultural Consultant and Landscape Designer*

Many of the perennials grown in American gardens are hybrids, created by intentional pollination or selected from observation of suitable species. Using the Case Estates perennial garden, Darrell Probst will demonstrate the basics of perennial plant hybridizing. He will identify flower parts, show

what to look for to determine when to pollinate, and speak about helpful tools and record keeping.

**Fee:** \$20, \$24

**Thursday, July 24/ 6:30–8:30 pm (CE)**

### **HOR 292 Summer Flowering Trees and Shrubs**

*Chris Strand, Outreach Horticulturist, Arnold Arboretum*

After the great burst of bloom in spring, what trees and shrubs delight the viewer's eye? Such handsome lesser-known horticultural stars as *Aesculus parviflora*, the bottlebrush buckeye; *Albizia julibrissin*, the silk tree; *Hydrangea quercifolia*, the oakleaf hydrangea; *Koeleruteria paniculata*, the golden rain tree; *Oxydendrum arboreum*, the sourwood; *Clerodendrum trichotomum*, the harlequin glory bower—all these are summer standouts. On this walk you will see the trees and shrubs themselves and learn about their natural history, habitat, and landscape uses.

**Fee:** \$12, \$15

**Wednesday, July 30/ 6:30–8:00 pm (DG)**



