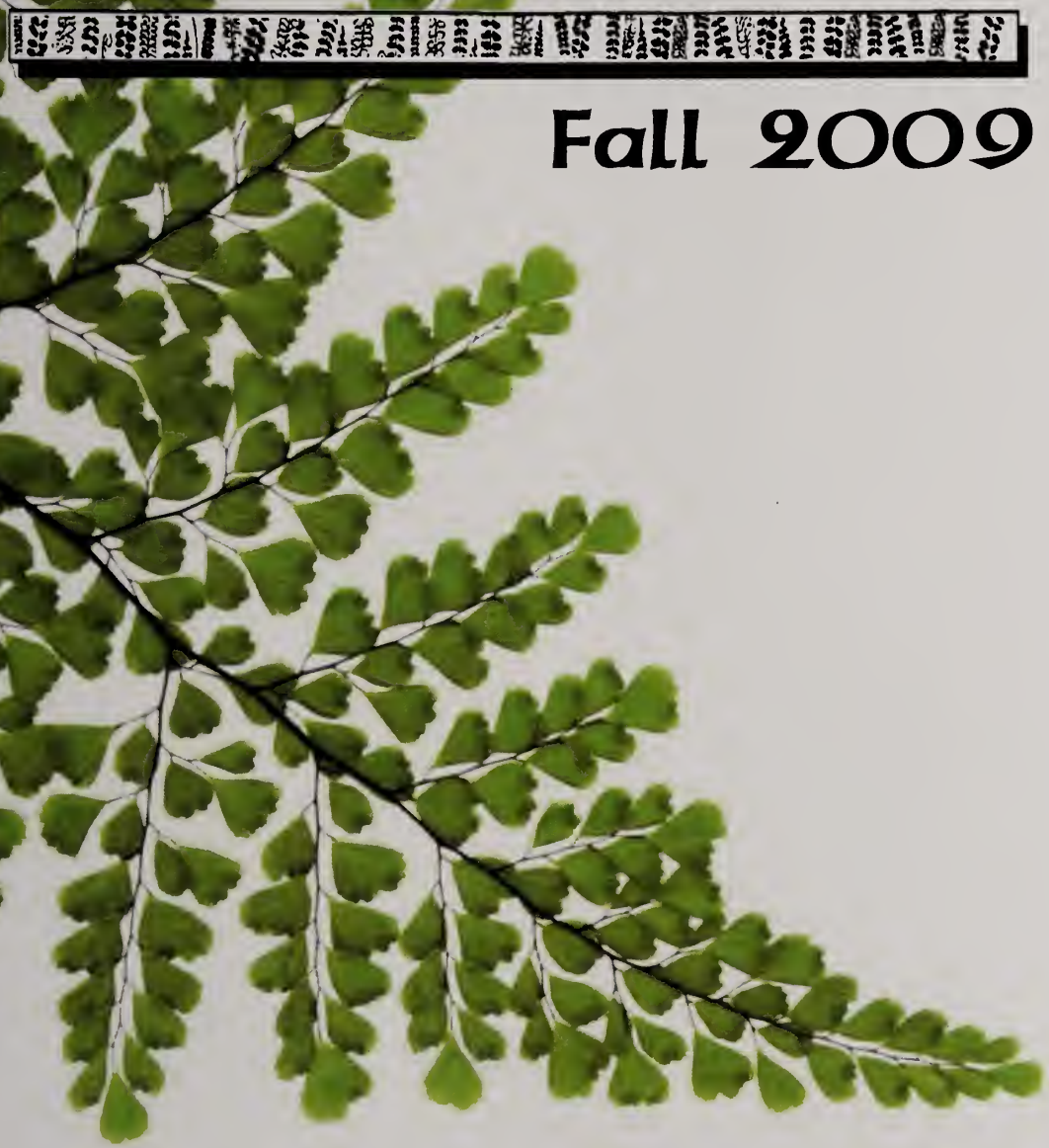
Hardy Fern Foundation Quarterly



Fall 2009

THE HARDY FERN FOUNDATION

P.O. Box 3797

Federal Way, WA 98063-3797

Web site: www.hardyferns.org

The Hardy Fern Foundation was founded in 1989 to establish a comprehensive collection of the world's hardy ferns for display, testing, evaluation, public education and introduction to the gardening and horticultural community. Many rare and unusual species, hybrids and varieties are being propagated from spores and tested in selected environments for their different degrees of hardiness and ornamental garden value.

The primary fern display and test garden is located at, and in conjunction with, The Rhododendron Species Botanical Garden at the Weyerhaeuser Corporate Headquarters, in Federal Way, Washington.

Satellite fern gardens are at the Birmingham Botanical Gardens, Birmingham, Alabama, California State University at Sacramento, Sacramento, California, Coastal Maine Botanical Garden, Boothbay, Maine, Dallas Arboretum, Dallas, Texas, Denver Botanic Gardens. Denver, Colorado, Georgeson Botanical Garden, University of Alaska, Fairbanks, Alaska, Harry P. Leu Garden, Orlando, Florida, Inniswood Metro Gardens, Columbus, Ohio, New York Botanical Garden, Bronx, New York, and Strybing Arboretum, San Francisco, California.

The fern display gardens are at Bainbridge Island Library, Bainbridge Island, WA, Bellevue Botanical Garden, Bellevue, WA, Lakewold, Tacoma, Washington, Lotusland, Santa Barbara, California, Les Jardins de Metis, Quebec, Canada, Rotary Gardens, Janesville, WI, and Whitehall Historic Home and Garden, Louisville, KY.

Hardy Fern Foundation members participate in a spore exchange, receive a quarterly newsletter and have first access to ferns as they are ready for distribution.

Cover Design by Willanna Bradner

HARDY FERN FOUNDATION QUARTERLY

THE HARDY FERN FOUNDATION
QUARTERLY

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President's Message
Fall 2009

Greetings. It was a beautiful fall day on 9/20/2009 in the twentieth year for The Hardy Fern Foundation, as we celebrated the Grand Opening of our "Fern Stumpery". A group of about 50 people assembled at the Rhododendron Species Botanical Garden on the Weyerhaeuser Corporate Campus to hear a brief history of stumperies by "Yours Truly" and a short welcome by Steve Hootman, RSF garden Curator.

As the party gathered at the entrance to the "Stumpery", a recap of how the "Project" took shape gave credit to John van den Meerendonk, Richie Steffen and Steve Hootman for their skill and artistry in accomplishing such a wonderful garden structure.

With almost one thousand ferns, numerous rhododendrons, maples and companion plants, our guests walked the chip covered, curvate pathways to view our plantings on and around 150 stumps arranged in a very artistic pattern. The numerous pockets and crevices contain exciting assortments to be viewed at waist or eye level.

Thanks to Michelle Bundy a cake adorned with photo reproductions of ferns, was served along with beverages, sandwiches and cheese.

By the response of the visitors, it appeared to be a great success.

Our Fern Fest Sale on the first weekend of June, 2009, was, perhaps, the best sale ever remembered, considering the questionable economy. We are very fortunate to have such a well organized team of volunteers.

Thanks to Sue Olsen, this year's speaker, we enjoyed a much larger audience than in the past.

Our Annual Meeting was held at the festival and we welcomed new board member Rick Peterson. After over 20 years of devoted service, founding member Sylvia Duryee has stepped down from the board but will now join us as an honorary board member. We will continue to benefit from her advice and contributions at our meetings.

There are other activities coming up, especially, the California tour September 30th to October 13, 2009. We will be joined by members from the UK and will visit numerous gardens, national and state parks as well as field areas from the redwoods to San Francisco, and southern California regions. There will be many miles traveled on a bus over the two week period.

Our late fall will be occupied with revisiting the Bellevue Botanical Garden's fern planting of winter 2008 to make some adjustments for some of the ferns exposed to too much sun or areas of sogginess. We will also continue to add to our plant assortments in the "Stumpery".

I wish everyone a lovely and healthy fall.

Best Regards,

Patrick D. Kennar
President, Board of Directors

From the Editor

This fall quarterly completes our series of special issues commemorating the 20th anniversary of the Hardy Fern Foundation. We began the year with an issue dedicated to a comprehensive index of articles carefully compiled and representing many hours of work by member Dr. Gerald Hudgens. The spring issue was a "How To" special featuring 12 contributions representing many interesting aspects of fern growing – Getting Started with Ferns by Lyman Black, Collecting and Cleaning Spores by Matt Busby, How to Propagate Ferns by Sue Olsen, Trialing Ferns by Alastair Wardlaw, Building a Limestone Cobble by Joan Gottlieb, Creating a Fern Bog by Ralph Archer, Stumped by Pat Riehl, Growing Xeric Ferns by David Schwartz, Building a Fern Table by George Schenk, Providing Winter Care for Tree Ferns by Martin Rickard, Container Gardening with Ferns by Richie Steffen and Growing Lime-Loving Ferns in Tufa by Don Avery (whose nursery Cady's Falls Nursery - jointly and enthusiastically nurtured with his wife Lela is featured in the August/September 2009 issue of *Horticulture* magazine). Summer brought Jo Laskowski's welcomed update of the Directory of Fern Gardens, Nurseries and Reserves in the United States and Canada. My apologies (and even more from our printer) for the errors that slipped in between the proof copy which was correctly produced from one computer and the final copy which was printed from (outer space?) a different computer! Meanwhile we've already received additions. Member Don Naylor of Bloomington, IL recommends The Flower Factory, 4062 County Rd. A, Stoughton, WI 53589, Phone 608-873-8329, www.theflowerfactorynursery.com and The Growing Place, 25 W 471 Plank Rd., Naperville, IL 60563, Phone 630-355-4000, www.thegrowingplace.com. Further recommendations are most welcome.

This fall issue represents the grand finale of our 20 year celebration and features interesting profiles of our primary garden as well as 12 of our affiliated gardens. All of the accounts have been kindly submitted by loyal supporters who have been dedicated, often for many, many years, to the development and maintenance of these gardens, and without whom we would be sorely lacking in detailed and specialized knowledge.

In reading these histories I am also impressed by the underlying and unifying aspects of many of these gardens as from coast to coast and state to state many were created by donations from generous benefactors and their loyal supporters with horticultural or civic interests. Many thanks are due them for their foresight and generosity in giving horticultural treasures to their community and to future generations.

The other theme that I found when reading these contributions was that many of these gardens have been exposed to serious and stressful weather events ranging from floods, raging windstorms and tornadoes to extremes of cold and heat. And, in spite of these challenges, the ferns have proved to be resilient and the gardens have survived thanks to the care and dedication of volunteers and loyal supporters who have donated hours of time and plants to further the restoration of the gardens involved and specifically to nurture the continued health of the ferns therein.

As your editor I, of course, consider all issues, while not commemorative, special.

We will welcome back Jim Horrocks and his plant profiles come winter and I look forward to contributions on all aspects of fern growing, travel, botanical reports, general observations and news, fern trivia or whatever catches your fancy from the rest of you. With this I add my sincere thanks to all who have been regular contributors over the years and who have promised future articles. I look forward to hearing from you again. And to newcomers I offer my encouragement to those of you who "might be thinking" about writing.

Many thanks and best wishes,

Sue Olsen,
Editor

History of the Fern Garden at the Coastal Maine Botanical Gardens

Catharine W. Guiles
Topsham, ME

It would be easy to begin this article with a paragraph such as: "Coastal Maine Botanical Gardens formed its association with the Hardy Fern Foundation in 1998. This organization then sent us a few ferns for trial; we planted them, and the next spring, lo and behold, with one exception, they came up. Annually this organization sends us more ferns, and they do, or do not, thrive, and now we have a garden with 56 taxa, 37 of which were sent to us by the foundation. Through the years, only seven did not make it through the first winter. On the whole, the garden looks pretty, and we are very grateful for the HFF's annual donation of plants. " All the above is true, but there is much more to say about Coastal Maine Botanical Gardens and its fern garden, and I hope the following will interest the reader.

Let me first refer to Ken Burns—surely you know of this acclaimed documentary film producer who recently brought to the public a new series on America's national parks. One of the parks he has chosen to highlight is Maine's Acadia National Park, which encompasses a large part of Mt. Desert Island, plus some nearby holdings which include islands. The park was created when John D. Rockefeller, George Dorr, and others purchased or donated land to form what has become the park. By contrast, Burns is reported to have emphasized that, in particular, the noted parks of the west were created through government intervention.

On a more modest scale, the founding of Coastal Maine Botanical Gardens repeats the Acadia National Park model. In 1991, Boothbay Harbor resident Rollins Hale and others residing in midcoast Maine agreed that the state's amenities should include a botanical garden. Maine does have an arboretum located at its capitol, Augusta, and in the years prior to World War II, Beatrix Farrand, the well-known landscape architect, created a botanical garden, library and study center at her home, Reef Point, in Bar

Harbor, a well-known vacation destination. This facility was open to professionals in her field as well as to the public. Most unfortunately, she closed it when, faced with a lack of support, she sold her home there in 1955.

Thus, the ambitious midcoast group, which had formed a board of directors and defined its mission, had to start from scratch, and the first order of business was to find some land. A search led them to 128 acres of forested land in Boothbay, on the Back River, a tidal estuary. The owner, a development company, had only modified the property by building an access road and two tennis courts! As the State of Maine would have never agreed to present this land to the Gardens' board through eminent domain, the group had to raise the money from its members and the public to buy it. Some directors, convinced of the value of their effort, even pledged their homes as collateral to complete the transaction. As there was no structure on the property, the fledgling staff, composed at first entirely of volunteers, worked out of an old, picturesque fire house in the center of Boothbay, a couple of miles from the newly acquired property.

Before the group could contemplate any landscape planning, they formed a research committee to identify the flora of the property. I'll mention three of their discoveries. First, the committee found *Nyssa sylvatica,* black gum , growing near the end of the developer's road. Botanists believe that this is one of the northernmost stations of this tree. Second, about one acre of the land abounded in *Cypripedium acaule*, the pink lady's slipper. With thinning of the forest overstory, removal of competing species, protection from deer, and other measures, this stand has thrived, becoming a popular spring attraction and the subject of ongoing research. In addition to this orchid species, there are five others on the property, though not nearly as numerous. Finally, and not surprisingly, the land abounded in ferns and fern allies. By 2001, the committee found 25 species, all of them common to northeastern North America. Though less showy than the orchids, it is impossible to deny that these ferns gracefully ornament the ledges, wetlands, and slopes of the property, so much so that the lady fern was incorporated into the garden's first logo.

Fern Trail
Coastal Maine Botanical Garden
Photo courtesy of Sue Olsen

Given this happy wealth of ferns, and given, at this juncture, the focus on researching the property's flora, the then Research Committee chairman, Joanne Sharpe, Ph.D., a local fern ecologist, suggested that the Gardens become a satellite of the Hardy Fern Foundation.

The Early Years

At the time when this test garden was created, the development of Coastal Maine Botanical Gardens was focused primarily on the creation of trails through the property

and on a rhododendron garden discussed below. One of these trails led from the existing road through the stand of lady slippers toward the shore. Since this trail crossed a wetland, volunteers had installed a bridge and had planted some spring-flowering, water-loving plants, thus creating an informal wetland garden. With these two features to attract visitors, one natural, one partly man-made, it seemed appropriate to locate the fern garden along this path, and an area backed by a ledge seemed ideal.

As recounted more fully in my article, "A New Satellite Garden," in the Fall 2000 issue of the HFF Quarterly, a volunteer who was a master gardener created an appropriate bed, and in spring of 1999, the two of us planted four of the five species sent by the foundation the previous fall and wintered over at a local garden center. (The fifth species, *Woodsia intermedia*, failed to make it through that first winter.) These four were *Adiantum aleuticum*, *Athyrium filix-femina* 'Frizelliae', *Dryopteris cristata* (the only species of the group found naturally on the property), and *D. uniformis*. They all thrived, and were supplemented by the native *Dryopteris intermedia*, already well established in the garden, and a healthy clump of *Athyrium niponicum* 'Pictum' which had been the Gardens' first donated plant, received in 1996 and nurtured in the nearby woods. Thus we were off to a good start.

Making Progress

Jumping ahead to 2005, the evaluation appearing in the Spring 2006 issue of the *Quarterly* lists 30 taxa. Perhaps it was inevitable that, with the development of this garden and publicity about it in the Gardens' newsletter, people would continue to give us ferns to help make a bigger display. Through such channels, we received *Polystichum munitum*, the western sword fern, for which we had little hope but which has done amazingly well by the Atlantic. Some of that year's star performers sent to us by HFF were, again, *Adiantum aleuticum*, as well as *A. aleuticum* 'Subpumilum', *Dryopteris x australis, D. crassirhizoma, D. polylepis, D. pycnopteroides,* and *D. remota.*

Along with the Fern Garden, the main attractions of the botanical garden itself began to take shape. The Giles Rhododendron & Perennial Garden, overlooking a pond, was established in 2000 through the donation of a large rhododendron and azalea collection by Ernie Egan, one of the Garden's founders and its first president. These plants now grow among terraced paths created under the leadership of the new horticultural director, Dick Zieg. In June of 2007, Coastal Maine Botanical Gardens officially held its grand opening, 16 years after the founders' first conversations. Thanks to vigorous fundraising from friends and foundations, most notably a $600,000 grant from the Kresge Foundation, the Gardens now have a handsome visitor center, an all-important horticultural building and greenhouse, and gardens designed by Maine landscape architect Bruce Riddell and Herb Schaal, ASLA, of EDAW, a Colorado firm with a national reputation.

Among the many gardens that beckon the visitor are the Rose and Perennial Garden, the Lerner Garden of the Five Senses, the Burpee Kitchen Garden, whose offerings are used in dishes served at the Kitchen Garden Cafe, the Slater Forest Pond, the Cleaver Event

Lawn and Garden, and the Great Lawn and Garden--all part of the central gardens. The nearby Haney Hillside Garden's switchback trail leads down to the shorefront Vayo Meditation Garden, which incorporates granite blocks from quarries throughout Maine.

As I write this, landscaping is progressing on the imaginative Bibby Alfond Children's garden. In recognition of Coastal Maine Botanical Gardens' record for exposing visitors, both local and worldwide, to the native and horticultural-botanical heritage of Maine, the Pine Tree Conservation Society recently donated 120 adjacent acres of wild land to the Gardens, thus expanding its total holdings to 248 acres and extending its shoreline frontage to almost a mile.

The Fern Garden Today

Over the years covered by this report, the fern garden has endured every kind of weather that Maine can throw at it. The 2002 summer was hot and dry; the next year offered adequate rain and moderate temperatures. The report dated 2005 cited a cool, wet spring with a summer that was increasingly hot and dry. In 2008, we had rainfall that was well above average and normal daytime temperatures. And let us not overlook winter. A good snow pack is helpful for all perennial plants, The garden had such conditions during the winters of 2002-2003, 2004-2005 and 2007-2008, Unfortunately, we neglected to record winter and snow conditions for some years.

In our latest evaluation, dated the fall of 2008, the number of taxa had risen to 56, the increase partially owing to the donation of a fern collection by a member of the Gardens. To the list of successful HFF introductions mentioned above, we can add *Blechnum penna-marina*, *Dryopteris pseudo-filix-mas,* and *Gymnocarpium oyamense.* Because the fern garden has outgrown its location in an area designated for a future native plant collection, the Gardens' long-range plans call for moving it to a hillside somewhat closer to the Visitor Center. This location will provide room for both the growing HFF collection and donated plants, and will place it in a more heavily visited area of the botanical garden.

It has been most rewarding to be involved both in the development of the fern garden and equally with the astonishing transformation of the Back River property into a widely praised botanical institution. Credit must go both to the Gardens' professional staff, led by Executive Director Maureen Heffernan, and to all the volunteers who continue to play a large role in its day-to-day operations. I hope readers of this article will feel motivated to make a trip to Maine, or if that is not possible, to visit the Gardens' web site,

Athyrium niponicum 'Pictum'

Photo courtesy of Sue Olsen

www.MaineGardens.org, for photos and lists of the many activities there. The author wishes to thank Joanne Sharpe, Ph.D. and Barbara Freeman, Director of Communication at Coastal Maine Botanical Gardens, for their help with this article.

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Whitehall Home and Gardens

Ralph Archer, Shelbyville, KY

The Woodland Fern Garden at Whitehall House & Gardens in Louisville, Kentucky was started in 1998 as a Jefferson County, Kentucky, Master Gardener fern garden project. It was intended to demonstrate fern cultivation as one part of the Jefferson County Extension Service's public display garden located at Whitehall.

In 2000, as part of a major rearrangement of garden areas, the fern garden was moved to a wooded area west of the main house. It became apparent that the lack of a close supply of water to help new plants through dry periods would significantly limit their growth. In 2001, the Whitehall Board, with a matching grant, provided a ready water supply to several garden areas, including the woodland garden. In 2002, it was decided to expand the woodland display area.

Over the years it has grown to its current size of thirteen beds, a tool shed and five raised propagation beds. It currently covers over half an acre. There are more than 150 different species and named cultivars of ferns in the garden. There are also large numbers of flowering plants from a variety of genera. The garden continues to be a Jefferson County Master Gardener project and is maintained by Master Gardeners as well as several other volunteers.

The following describes the beds in the general order of construction and planting.

1. Original planting area

This area was cleaned and planted from 1999 to 2000. It has been replanted on several occasions as well as having a wood feature added to the center of the main bed. It has many of the most mature ferns in the garden. These ferns are mainly from the *Dryopteris, Athyrium, Cystopteris* and *Cyrtomium* genera.

It also has a number of spring ephemerals such as bloodroot, *Polygonatum*, *Trillium*, twinleaf, Virginia bluebells and *Hellebore*, which include several very mature plants.

There is a large maple tree in one area, which provides an example of the difficulty of growing a woodland garden under this type of tree. It also has the only two *Polystichum setiferum* cultivars in the garden. They are both less than twelve inches in height with fronds less than eighteen inches long and both are over ten years old. This contrasts with several mature *Polystichum acrostichoides* which are eighteen inches or more tall and over twelve inches wide.

2. Main fern bed

This area was cleaned and planted starting in 2002. The initial planting was mostly *Dryopteris* species. In 2003 and later years, a wider variety of ferns was added, such as *Athyrium, Polystichum* and *Adiantum* species. It was decided to treat the garden as a natural woodland with limited water during dry spells. The bed was watered regularly

the first two years to establish the planting. It has been watered only infrequently during dry periods since planting, generally only for the watering of newly planted ferns.

Some of the species that are growing especially well are the native woodland *Dryopteris* and *Athyrium filix-femina* and its subspecies. *D. crassirhizoma, D. pseudo-filix-mas* and *Adiantum pedatum* are also doing very well. The Japanese painted ferns are not as vigorous or large as those grown in locations with regular water. The *Polystichum* species growing in a shaded part of the bed also are smaller than others that have received regular water. Most of the wetland ferns such as the *D. x australis* are smaller than in previous years, possibly as a result of the extremely dry summers the previous two years. It will be interesting to see what effect this year's unusually wet and cool summer will have on next year's fern growth.

3. Stumpery No.1

This area was built and planted in 2003 on part of the area cleaned and used as the main fern bed. It utilized the accumulation of logs and small stumps that had been dumped in the woods over the years, by making a stump and log bed. The wood was arranged in a semicircle around the east side of the main bed. A mixture of compost and soil was used to fill the spaces between the logs about half way up. Ferns and other woodland plants are planted in and around the logs in crevices as well as in hollowed out stumps. The first section was planted with a group of *Athyrium* 'Ghost' at the rear and *Dryopteris oreades* and *Brunnera* cultivars in the front. The second section was planted with a variety of fern species and cultivars, as well as flowering plants like *Tiarella, Heuchera, Astilbe* and *Cimicifuga.* The ferns are a mix of *Athyrium* and *Dryopteris* species and cultivars such as *A. f-f* 'Frizelliae', *A. f-f* 'Lady Victoriae', *A. niponicum* 'Applecourt' and *D. affinis* 'Cristata Angustata'.

Two large oak logs were brought in to provide a backdrop as well as a barrier separating the fern garden from the lawn area. A number of *Dryopteris x australis* were planted along these logs on both sides from 2004 to 2007.

4. West Bed

A portion of the west bed was cleaned and planted along with the original area in 1999 to 2000. Almost all of the plants died that were planted before 2002. Several groups of *Dryopteris celsa* died within two years of being planted. Other woodland *Dryopteris* such as *D. carthusiana, D. clintoniana, D.filix-mas* and *D. intermedia* were also planted. They lasted less than three to four years. The only fern remaining from the original planting is a bed of *Onoclea sensibilis.* It has continued to intermittently spread, but is still very sparse.

Starting in 2004, this bed was the first to have a significant number of larger and all smaller maple trees removed. The trunks of two were left to serve as supports for climbing flowering vines. As the replacement trees mature and provide sufficient shade, the two remaining maple trees will be removed. In the meantime, there has been significant growth of the woodland ferns, Hosta and flowering woodland plants that have been added to the area since the tree removal began. In 2006, it was decided to change the tree canopy in the whole garden from mostly maple, along with a variety of

trees such as wild cherry and hackberry to oak and hickory. As a result, a significant number of small trees have been added throughout the whole garden.

This area also has the first *Polypodium vulgare* planted in hollow logs. A number of *P. vulgare* cultivars as well as other *Polypodium* species were tried in log planters starting in 2004. None but the *P. vulgare* have survived in these planters.

5. Stumphenge

Starting in 2004 and continuing through 2005, a large area north of the main fern display bed was cleared and cleaned. This area was on the south side of a large glade in the woods. Pieces of large logs and stumps were collected from throughout the woodland and around the property. These were mostly placed with the cut sections parallel to the ground as if they were pillars. The name stumphenge was given to the bed. It was planted starting in late 2005 through late 2006 with a variety of *Dryopteris* and *Athyrium* species. It contains the garden's collection of about thirty different named Victorian cultivars. It also contains the majority of the wild ginger species in the garden. Finally It has a sizable number of flowering plants, mostly along the path that is the north side of the bed. These include *Dicentra, Epimedium, Phlox, Pulmonaria* and *Hosta.*

6. Nursery Bed

This area was cleared and chipped starting in the winter of 2005. In late 2006, it was planted with a variety of very young Japanese maple trees, along with some donated glade ferns and some flowering plants. At one end, some new canopy trees were planted, along with a variety of flowering perennials plus some large Hosta. The bed is currently being changed from a nursery bed to a planted area. Many of the Japanese maples will be moved elsewhere and the area replanted. Our current plan is to make this area into a Hosta display area by adding to the existing Hosta planting.

Woodland planting at Whitehall Photo courtesy of John Nation

7. Mass *Polystichum acrostichoides* and *Athyrium niponicum* bed

This area was cleaned starting in 2005 and was planted in 2006 and 2007. It is the first area where the same fern species is planted in mass. There are currently over a dozen of each massed together. We plan to add more plants over time. The bed also has a group planting of *Cimicifuga racemosa,* as well as *Hosta* and *Aruncus dioicus*.

8. & 9. Front Log Room and Center Log Room

In late 2005, a large spruce tree that had shaded the east end of the main bed and part of Stumpery No. 1 died and was removed. The logs were used to enclose two areas with large logs. These were floored using logs from a river birch. Planting started in the fall of 2006 and consists mostly of *Dryopteris* species. Most are native to the eastern USA. All are growing well in this setting.

10. Bog Garden

In 2007, a bog for ferns and flowering bog plants was built and planted in the area where the spruce tree (referenced above) was located. With the loss of the tree, the area gets approximately five hours of late morning and early afternoon sun. It contains *Osmunda cinnamomea, O. claytoniana*, both varieties of *O. regalis, Dryopteris celsa, D. cristata, Woodwardia areolata* and a variety of flowering bog plants such as swamp milkweed, cardinal flower and others. The plants are now in their third season and almost all have achieved or exceeded the maximum height listed for ferns in the wild by several authors. In the first two years, the *Dryopteris celsa* became the largest one of its species ever grown in the garden. The *D. cristata* are the first ones that have ever survived two years in the garden. The *D. x australis*, which were planted starting in 2006 along the logs separating the bog from Stumpery No.1, receive a substantial water flow from the bog. They are now the largest in the garden, exceeding some that were planted in 2002. The combination of water and sun exposure seems to be the key to growing large specimens of wetland ferns.

11. Rear log room

In 2008, a number of *Matteuccia struthiopteris* were dug from an area in the Stumphenge bed and planted in a log enclosed area that had been used for storing potted plants. A large Hosta 'Thunderbolt' was planted at one end. The fern fronds and Hosta leaves laying against and over the logs make for an effective display.

12. Rock wall bed and Cobble

In late 2008, a limestone rock wall was constructed. *Asplenium* species were planted in some areas of the wall. The only surviving plants are the *A. rhizophyllum,* which are growing very well. *A. platyneuron, A. trichomanes* and *A. x ebenoides* all died during the first winter and early spring. The ground area in front of the wall was planted with *Hepatica acutiloba* and three *Arachniodes standishii*. The bed behind the wall was planted with groups of various *Dryopteris* species, *Athyrium f-f* 'Lady in Red' and two *Polystichum* species.

The leftover rock was used to build a cobble at the north end of the bed. It was planted with *Adiantum pedatum, Asplenium* species, *Dryopteris marginalis, Cystopteris bulbifera* and other ferns. All are growing very well, except the *A. trichomanes.* Most of these have died and the remaining few are very small.

13. Mass *Dryopteris* planting bed

In 2009, the major bed expansion was the mass planting of 20 *Dryopteris* x *australis,* 12 *D. erythrosora* 'Brilliance' and 12 *Athyrium f-f* 'Lady in Red'. A group of five *Dryopteris lepidopoda* was planted along the path in front of the lady ferns, along with a bed of crested iris and several other ground cover plants. Additional area is being cleaned this summer to expand the bed. The current plan is to more than double the area planted with *D. x australis* and *Athyrium f-f* 'Lady in Red' next year.

14. Five raised propagation beds

In 2008 and 2009, five 4 ft. by 8 ft. propagation beds were constructed using 8 to 10 inch diameter red cedar logs for the frames. They have been planted with a variety of woodland flowering plants such as native wild gingers, bloodroot, foam flower and crested woodland iris. This material will be planted along the paths in various beds to provide accents during the early spring, as the ferns just start to emerge.

Each year it has been the practice to add to the garden by cleaning adjacent areas. We have one bed to finish and three are scheduled to be cleaned in the future. The uncleaned area is covered mostly by vine Euonymus, ivy of various sorts, Virginia creeper, vine and brush honeysuckle, small trees and shrubs. At first this was done by digging the woody shrubs and small trees, then cutting the ground cover with a trimmer and spraying the area with Roundup several times over a period of several months. It was then covered with woodchips and allowed to sit for six months before planting was started. Over the years, various methods of cleaning have been tried. The current method is to dig the small woody plants, cut the larger flush with the ground, cover the area with flattened cardboard boxes, spread a foot deep layer of wood chips and wait a minimum of twelve months. This has done an excellent job of killing the groundcover and woody material without the need for chemicals or extensive digging. When planting a hole is dug down into the soil below the cardboard remains. Some of the dirt is mixed into the chip compost. This is used to fill the hole.

For the first two years, a light application of a slow release fertilizer was applied in early spring, There were concerns that the woodchips, as they decayed, would deplete the nitrogen from the soil and injure the planting. The third spring, soil samples from the beds that were ready for planting showed that no fertilizer was required. Since then, no fertilizer has been applied, except to plants in the propagation beds. The leaf and small branch debris, including fallen leaves, is not removed. Larger branches are removed as necessary from the beds. This is a part of the desire to grow the woodland plants in as natural a fashion as possible.

The garden is open to the public from sunrise to sunset every day. There is no charge to visit the garden. To schedule a tour of the garden, please contact Whitehall House in Louisville at (502) 897-2944 or whitehall@historichomes.org.

Rotary Botanical Gardens
Fern Garden Report

Mark Dwyer ~ Director of Horticulture
Janesville, WI

Rotary Botanical Gardens (Janesville, WI) is celebrating its 20th Anniversary this year and is proud to continue its association with the Hardy Fern Foundation as an affiliated display garden for the past six years. In the spring of 2005, the Hardy Fern Foundation Quarterly featured an article regarding the gardens and our intent with the fern collection. This article submission is meant to serve as an update regarding this collection at Rotary Botanical Gardens (RBG) and to give readers some information regarding RBG.

Dedicated to international peace and friendship, RBG was founded in 1989 by Dr. Robert Yahr, a retired orthodontist (and Rotarian) in Janesville, WI. The two Rotary clubs in Janesville were instrumental in the early years of the gardens and continue to play a smaller role in its continued annual development. The gardens are a 501(c)(3) non-profit and receive no funds from the City of Janesville. The operating income for RBG is raised entirely from admissions, programming, grants, individual donations, corporate donations, sponsorships, memorials and from a small endowment.

The explicit mission of RBG is "To provide horticultural education and appreciation for all people". Over 100,000 visitors enjoy the gardens every year including many school children, garden clubs and other user groups. It is important to note that volunteers have always been instrumental in the development of Rotary Botanical Gardens and there are currently over 400 volunteers contributing 15,000+ hours each year to help perpetuate and improve the gardens.

Situated on 20 acres of City of Janesville land, the gardens are internationally themed and include a Japanese garden, French formal garden, Italian formal garden, English cottage garden and many others. The collections at RBG have been developed significantly over the past 20 years and include over 1000 varieties of trees and shrubs, 3,000 varieties of perennials, 1,000 varieties of spring-blooming bulbs and each year, over 800 varieties of annuals are featured as well. Aside from the fern collection, RBG is a National Display Garden for the American Hosta Society with 500+ varieties and is also a National Display Garden for the American Hemerocallis Society with 500+ varieties. RBG also displays and/or trials annuals for All-America Selections, Fleuroselect (Europe), Ball Seed, PanAmerican Seed and is a trial site for shrub roses from Bailey Nursery (MN).

The Fern & Moss Garden was conceived by Dr. Yahr in 2002 and designed and built in 2003 with the intent of displaying and trialing as many ferns as possible in an aesthetic setting. Native Wisconsin mosses are also featured. This garden was constructed by a local landscaper and the layout was meant to echo the nearby Japanese garden with waterfalls, streams, meandering paths, rockwork and this space also features an

authentic Japanese-style resting structure called a 'Ma Chii'. The garden includes six large berms with two berms each being dedicated to North American ferns, European ferns and Asiatic ferns respectively. Numerous clumping sedges, groundcovers, colorful perennials and over 30,000 spring blooming bulbs complete the garden.

RBGs' initial (and continuing) intent is to trial and display all available ferns rated to a zone 6 winter hardiness. Although situated in a zone 5 climate, we feel that there is merit in trialing all of these ferns (multiple times) as a zone ranking is one piece of the puzzle for establishment and we'd like confirmation for our climate but will also evaluate other factors including available sunlight, wind exposure and soil conditions. In 2005, there were over 250 fern taxa in that garden although we felt that there might be some replications that would need to be addressed. Our records at the time of installation were quite good.

We have had numerous Master Gardener volunteers working with this collection and each specimen has an above ground and below ground tag and is also mapped. Two local garden enthusiasts and professional photographers (a husband and wife team) have been photographing specimens, scanning fronds and verifying our maps over the past two years and their help has been instrumental. They are even replicating some of the rarer ferns in their home garden to provide additional evaluation data.

Unfortunately, in the spring of 2008, heavy snowmelt and pounding rains created flood conditions thru much of southern WI, including the Janesville area. The pond on which the RBG is situated rose 48" and flooded over 1/3 of RBG for two months, including a good portion of the Fern & Moss Garden (18" under water). We lost many ferns and are still in the process of inventorying our losses and looking for replacements. This arduous task was magnified by some unwanted visitors removing dozens of fern labels, making our task of mapping and inventorying more complicated as we dig to find our "back up" labels.

Recent work this spring by staff and volunteers has verified that we still have over 80 taxa left from the original 250 and we anticipate replacing much of the original collection in the spring of 2010. We also hope to add more specimens and continue to evaluate the collection to maximize its educational value.

We have enjoyed evaluating the ferns over the years and despite mass losses with the 2008 flooding, we anticipate returning this collection to its original "glory". The North American ferns have done exceedingly well and were situated in higher areas of that garden, thus avoiding the flood waters. Just a smattering of some exciting ferns that have appeared very robust in the collection and have survived for the entire six years thus far include the following:

Dryopteris sacrosancta
Microlepia strigosa
Blechnum penna-marina ssp. *alpina*
Woodsia polystichoides
Dryopteris filix-mas 'Linearis Polydactyla'
Dryopteris x *complexa* 'Stableri Crisped'

RBG has also enjoyed collecting most of the Japanese painted fern (*Athyrium niponicum* 'Pictum') varieties and have observed them side by side. All varieties have survived and many seem to look identical. However, we have been specifically impressed with 'Silver Falls', 'Applecourt' and 'Burgundy Lace'.

With the integrity of our collection compromised by our flooding issues in 2008, Rotary Botanical Gardens is committed to continuing its goal of accumulating, planting, observing, trialing and recommending ferns for our climate. We continue to be honored by our affiliation with the Hardy Fern Foundation and are proud to continue our efforts in promoting the merits of ferns in the natural and contrived landscape.

Please feel free to view the Rotary Botanical Gardens website at and my daily blog at www.rotarygardens.blogspot.com. Any additional enquiries regarding Rotary Botanical Gardens or the fern collection can be directed to me at mark.dwyer@rotarygardens.org or at (608) 754-1779.

Palmer Ferndell Garden, Dallas Arboretum

Naud Burnett, Dallas, TX

As the designer of the Palmer Ferndell Garden we were given little information or criteria for it or the larger adjacent Jonsson Color Garden. It was to encompass an open sunny site for the color garden and adjacent wooded dry creek for the ferndell. The arboretum's basic request was to make the finest color garden possible and use plants that would survive in Dallas with its long hot summers and variable winter temperature swings. The site was 6+ acres and directly below the original Degoyer estate homestead that had been built in the 1930's. There was a 12 foot fall across the site which overlooked Whiterock Lake. The Dallas skyline, 6 miles away, was visible from the upper Degoyer terrace.

Our conceptual plans were shown to two potential donors. The eventual donors of the Palmer Ferndell and Jonsson Color Gardens gave their comments and desires. The ferndell was to be a wonderful, quite shady garden with soft textures, foliage and a sprinkling of colorful flowers. Two distinctive features helped the ferndell to become the most popular garden in the arboretum. A high pressure fog system gave a theatrical effect to the garden and raised the humidity as well. The fog system also would lower the temperature on a hot 100° F. day to a comfortable 80° F. A recirculating babbling brook, lined with limestone boulders and bedded with tumbled river stone, was installed along what was a dry creek. It looked very natural and the flow of water gave a gentle tinkling sound. Benches were strategically placed for quiet contemplation.

Ferns, azaleas, camellias and a long list of shade loving companion plants keep the ferndell interesting throughout the year. Initially, 37 species of ferns were tried in the garden and some 20 species of that original planting have done well. Since its installation in March 1990, there have been many ferns donated by the Hardy Fern Foundation and Casa Flora. It is an ongoing fern test garden for plants that will survive the extremes of hot and cold, low and high humidity, the attentions of professional and volunteer gardeners and untold thousands of school children.

In 2004, a new entry and headquarters facility for the arboretum was built adjacent to the ferndell, 8 feet higher than the existing ferndell grade. It was necessary to remove plants along that side to build new tiered limestone retaining walls. New plantings of evergreens on the upper level were used to maintain the privacy of both gardens. New walkways, planting beds and drainage upgrades gave the opportunity to try many new varieties of ferns. Life is not without challenges though. As you might expect with major structural changes, a few existing trees died or were removed making it too sunny for some of the shade plants. A contractor left a leaky underground pressure joint and excess ground water killed plantings for two years before the cause was discovered. Over a period of time, arboretum personnel dedicated more time to the high maintenance color garden and less time to the woodsy, natural ferndell. In some ways, the realization of the design objectives works against the upkeep of the ferndell. It looks so tranquil and balanced that busy staff don't see it as they rush to maintain more demanding seasonally replaced areas. Hopefully this has been resolved.

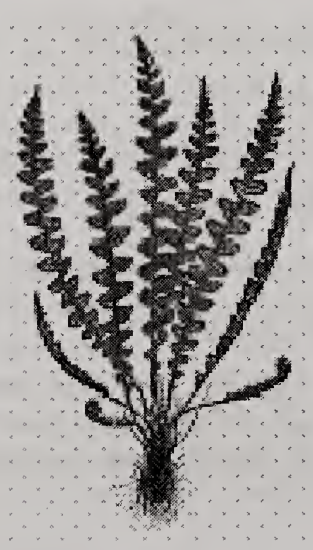
There are over 200 fern species and cultivars that have been tested for hardiness but the ferns that have been showiest include:

Adiantum capillus-veneris
Adiantum x mairisii
Arachniodes simplicior 'Variegata'
Athyrium 'Ghost'
Athyrium filix-femina
Athyrium niponicum 'Pictum'
Athyrium otophorum
Cyrtomium falcatum 'Rochfordianum'
Cyrtomium fortunei
Dryopteris celsa
Dryopteris x complexa
Dryopteris crassirhizoma
Dryopteris cycadina
Dryopteris erythrosora
Dryopteris erythrosora 'Brilliance'
Dryopteris filix-mas
Dryopteris labordei
Dryopteris ludoviciana
Dryopteris marginalis
Dryopteris pseudo filix-mas
Dryopteris remota
Dryopteris tokyoensis
Dryopteris x *australis*
Matteuccia struthiopteris
Microlepia strigosa
Onoclea sensibilis
Osmunda cinnamomea
Osmunda regalis
Polystichum acrostichoides
Polystichum makinoi
Polystichum polyblepharum
Polystichum tsus-simense
Thelypteris decursive-pinnata
Thelypteris kunthii

It is interesting what has survived but unfortunately I am not there often enough to know about malfunctions of equipment, weather etc. which could cause plants to die. We will keep trying old and new varieties in the varied microclimates we have to see what will live and keep records as to how they fare.

Welcome New Members!

Catherine Aufdenkampe
John Barbaro
Anita Bond
James S F Boyd
Deborah Campbell
Forrest Campbell
Julia Cencebaugh
Jean Chin
Bob Clark
Judy Cohen
Tanya DeMarsh-Dodson
Janet Dorow
J John Flintoff
Jeannette Franks, PhD
Kathy Fries
Jane Heaton
Cari Hill
Susan Hornbostel
Guy Huntley
Thomas Johnson
Michael Justice
June Kerseg-Hinson
Karin Kravitz
Nick Kristensen



James Lambert
Bosse Liden
Conrad Mahnken
Ginger Marel
Bruce Mcconachie
Cecilia McGowan
Donna and Monty McGraw
Sarah Kathryn Moore
Sue Mooseker
Margot Navarre
Hilda Packard
Rick Peterson
Phil Richards
Marji Sabol
David Schwartz
Peter L.Shea
Michael Sidell
Gillian and Bryan Smith
Nancy Strahle
Cindy Stockette
Jody Thomson
Grahame Ware
Randy Wulff
Dan Yansura & Patricia Tanttila
George Yatskievych
Abbie Zabar
Brian Zipp

Fern Glade at the Birmingham Botanical Garden

Daniel D. Jones
Birmingham, AL

The Birmingham Botanical Gardens (BBG), located on 67 acres in Alabama's largest city was established in 1960 by Birmingham Mayor James W. Morgan. Mayor Morgan deemed its establishment an important step in furthering development of the city and commissioned Dr. Henry E. Teuscher, curator of the Montreal Botanical Gardens, to design a master plan for Birmingham's new garden. The plan consisted of 24 different garden areas, including a "Fern Glade." About ten years passed before members of a local Garden Club (Edgewood) who had special interests in ferns began to actively pursue developing an area to showcase native ferns. The collective efforts of the volunteers initially focused on clearing privet interwoven with honeysuckle from a wooded, gently sloping hillside punctuated by shelves of exposed bedrock. Unwaveringly, an overgrown slope on the north boundary of the BBG that was strewn with chaotic undergrowth was transformed almost magically into a naturalistic setting of serene beauty. The energy and enthusiasm of the volunteers and the fruit of their labor, a new evolving Fern Glade, attracted even more attention and in 1975 the Birmingham Fern Society was formally established. Two years later membership of the Fern Society exceeded 80 members.

The dedicated cadre of volunteers worked steadily on improving the Fern Glade by increasing both the number of different species planted and by enhancing the quality of the displays in which visitors to the Garden could better appreciate the delicate, intricate patterns and airy textures of ferns. A small stream was carved into the landscape as a way to better direct flow of water down the Glade's gently sloping hillside. The percolating water from the rock outcropping on the uphill side of the Glade now tumbles downstream into a small pool at the Glade's lower level. Through sales of ferns, membership dues, and donations, the Fern Society generated monies for installing pipe to recycle water to the flow's source so that even during the driest periods the trickling stream's soothing, soft splashing sounds could be enjoyed. Also, much of the Glade was equipped with an automated underground irrigation network to provide supplemental water during dry periods which frequently last several weeks in Birmingham's variable weather patterns.

In 1983, a second master plan confirmed the Fern Glade's prominent place in the BBG with an allocation of approximately four acres of the Gardens. Two local landscape architects with keen interests in ferns, Charles Greiner and Rip Weaver, gratuitously provided their professional expertise to develop plans for further enhancements of the Glade. Paths and walkways were strategically woven through the naturalistic displays of ferns. Benefiting from almost twenty years of dedicated efforts of many, the Fern Glade matured into a shady, cool retreat featuring an array of artistic ferns growing lushly in the shade of numerous trees.

Then predawn Good Friday morning, March 29, 1991, disaster struck when a squall line from the west came sweeping down onto Birmingham's south side. Within five minutes more than 1500 trees in the Gardens were snapped and uprooted by hurricane-like winds. Toppling trees crushed shrubs, ferns, arbors and water lines. Damage occurred throughout the Gardens, but the Fern Glade was especially battered by the wind's wrath. The Glade looked spectral as sixty to seventy-year-old stately oaks were uprooted and tall regal pines broken in half. The once shady Fern Glade had abruptly become one of the Garden's sunnier sites, now appearing as if it had been clear-cut.

Understandably, the devastation was initially shocking, but an outpouring of concern and help from the Fern Society and community quickly engendered a mood of optimism. Very quickly the monumental task of clearing debris was underway. Heavy machinery was used initially but was causing considerable damage to the Glade. Belgium draft horses were therefore brought in and though cleanup slowed, further damage of the ferns and desirable undergrowth was minimized. After several months, more than 1500 damaged trees were cleared from the Gardens at a cost of $146,000. Volunteers, such as the Rotarians and boy scout troops, helped with the cleanup and replanted dozens of trees donated by local nurseries and landscape companies. In only a few years Nature has reaffirmed its resilience.

Today, as one enters the Glade a welcoming walkway imprinted with fern fronds and tree leaves ("instant fossils") is mantled by nature's flowerless wonders as it stretches upwardly through the Glade. Under the protective canopy of maturing adolescent trees, masses of ferns cover the shady hillside. Spreading colonies of sensitive fern (*Onoclea sensibilis*) and southern shield fern (*Thelypteris kunthii*) intermingle with the attractive plume like fronds of the ostrich fern (*Matteuccia struthiopteris*), which typically struggles in our hot summers but finds the shady, rocky, slopes moistened by seep from uphill genuinely accommodating. From on an elevated boardwalk that overarches the trickling stream and extends across the shallow ravine, photographic options from tree-canopy level abound. Visitors can look down between magnolia (*Magnolia macrophylla*) leaves onto beckoning ferns where dappled, morning sunlight may light tiny sparkles dancing on morning dew droplets. The renewed Fern Glade again offers a feeling of seclusion and peace.

Adjacent to the green drifts of ferns covering the sloping incline, two collections of ferns offer opportunities to studiously inspect the unique and intriguing characteristics of the varied ferns introduced. A synoptic area, established in 1987, includes a labeled sample of every hardy fern growing in the Fern Glade. Although plants die and new ones are constantly added, about 175 species, hybrids, and cultivars of ferns and fern allies from around the world are found in this collection. One unruly member of this collection, *Lygodium japonicum*, had to be removed intentionally. It was introduced into Florida as an ornamental plant in the 1930's but in 1999 it was added to Florida's Noxious Weed List. Prolific sporulation enables it to spread rapidly and when not killed back by freezing temperatures its dense fronds reach 90' high and form living "walls" that smother seedlings and native vegetation. Birmingham's winter freezes limit frond length but its rapid spread via spores undeniably identifies it as an invasive rogue – albeit an architecturally attractive one.

Polystichum braunii
Photo courtesy of Pat Holloway
Georgeson Botanical Garden

Water feature at
Birmingham
Botanical Garden
Photo courtesy of
Daniel Jones

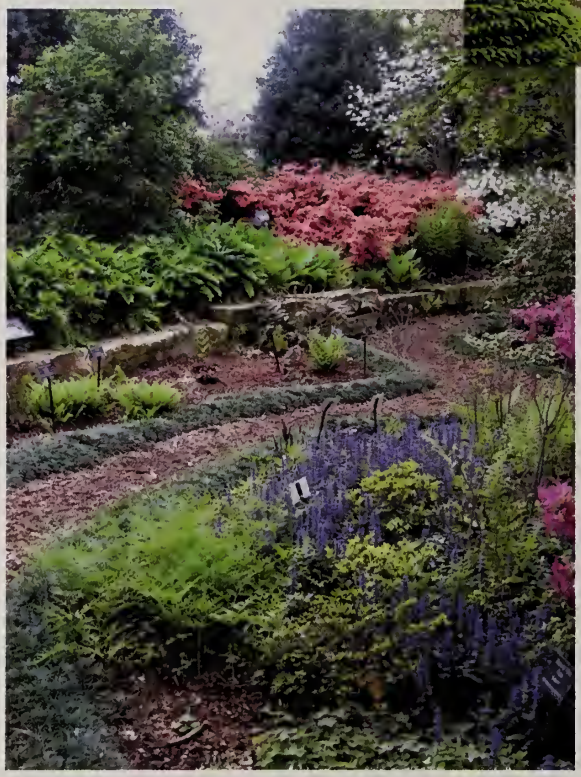
Polystichum aleuticum
Photo courtesy of Pat Holloway
Georgeson Botanical Garden

Dryopteris x *australis* and
Hosta 'Golden Tiara'
Photo courtesy of John Nation
Whitehall Gardens

Path running through the fern garden

Photo courtesy of
Mark Dwyer
Rotary Botanical Garden

Alpine garden and gazebo at the Rhododendron Species Garden

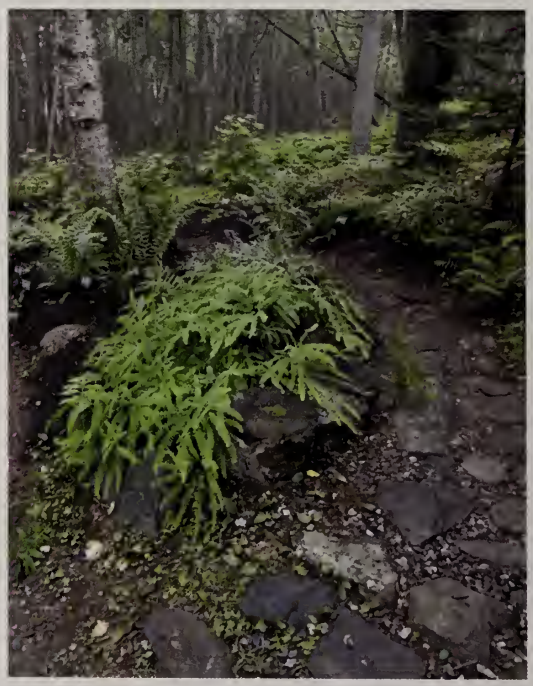


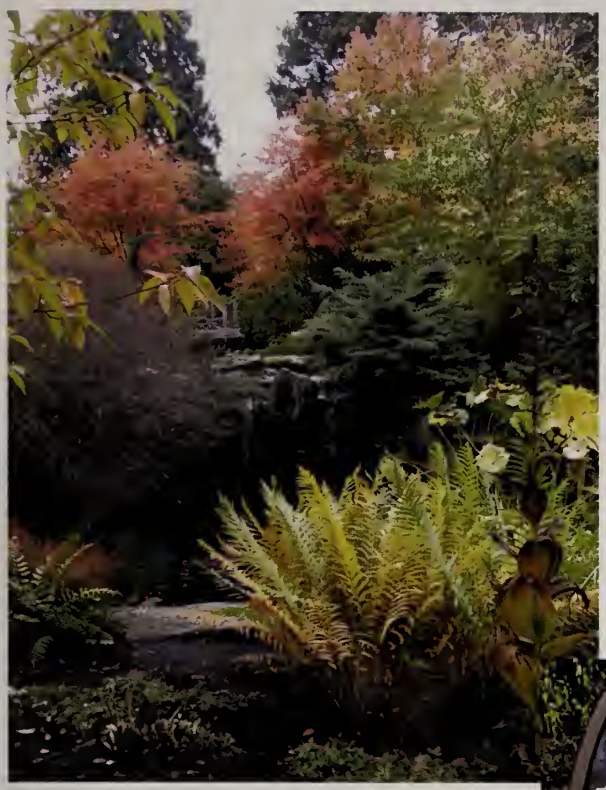
Fern garden, Dallas Arboretum

Photo courtesy of
Michelle Bundy

Adiantum aleuticum

Coastal Maine Botanical Garden
Photo courtesy of Sue Olsen





Osmundastrum cinnamomea

Bellevue Botanical Garden

Photo courtesy of Sue Olsen

HFF interpretive signage at Bellevue Botanical Garden

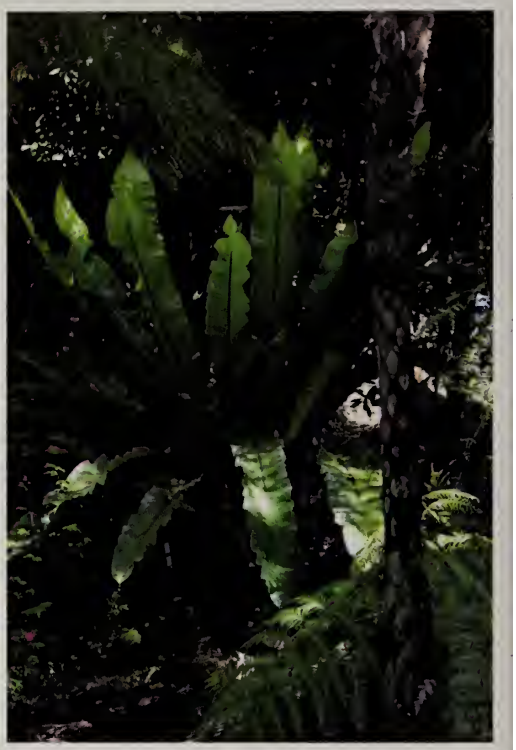
Photo courtesy of Sue Olsen

Stumpery Garden

Photo courtesy of Michelle Bundy
Rhododendron Species Garden

Athyrium niponicum 'Pictum'

Photo courtesy of Mark Dwyer, Rotary Botanical Gardens



Asplenium australasicum

Photo courtesy of Virginia Hayes, Lotusland

Blechnum chilense

Photo courtesy of Virginia Hayes, Lotusland

Spring Croisers

Photo courtesy of Katie Burki, Lakewold Gardens

Fern Glade at the Birmingham Botanical Garden

continued from page 96

The BBG Fern Glade has benefited as an affiliate test garden for the Hardy Fern Foundation (HFF). During the past 16 years (1993 – 2008) 90 ferns received from HFF have been planted in the synoptic area and tested for vigor in and adaptability to the Birmingham climate. Twenty-four of the 90 have been planted two or three times. Fourteen of those tested have succumbed. They include *Adiantum aleuticum*, *Asplenium trichomanes*, (planted twice), *Blechnum penna-marina* (planted twice), *Doodia media* (planted twice), *Dryopteris dilatata* 'Jimmy Dyce' (planted twice), *Dryopteris scottii*, *Dryopteris wallichiana* (planted twice), *Polypodium amorphum*, *Polypodium interjectum*, *Polypodium scouleri*, and *Polypodium vulgare*. Predictably, some such as *Doodia media* (marginally cold-hardy), never survived their first winter, whereas others such as *Dryopteris wallichiana* (preferring uniform coolness of high elevations), underwent a slow demise over a span of three or more years both times trialed. Besides low winter temperatures and uncomfortably high annual temperatures two other factors appear to play a significant role in several of the ferns' deaths: inadequate dormancy and susceptibility to soil pathogens. Belated, hard freezes are especially devastating and kill tender non-dormant crowns and growth that prematurely develops during mild periods of waning winters. High populations of ever-present pathogenic fungi supported by humid summers of the South weaken or eliminate some species even when special efforts (e.g., Perma Till soil amendment) are employed to improve drainage.

Species that have proven to be superb specimens over an extended time in the Birmingham garden include ones tested near the beginning of the annual trials but now commonly available from retail nurseries, such as *Cyrtomium falcatum* Rochfordianum', *Cyrtomium fortunei*, *Dryopteris cycadina*, *Phegopteris decursive-pinnata*, *Polystichum acrostichoides*, and *Polystichum polyblepharum*. *Dryopteris* x *australis* and *Dryopteris championii* are likewise becoming increasingly available and grow well in the South. Other ferns proven to be garden-worthy in the Birmingham climate but unfortunately not yet commonly available in area retail outlets include *Dryopteris affinis*, *Dryopteris lacera*, *Dryopteris polylepis*, *Dryopteris sacrosancta*, *Dryopteris stewartii*, *Dryopteris tokyoensis*, and *Polystichum neolobatum*.

Fern Fossil
Photo courtesy of Daniel Jones
Birmingham Botanical Garden

Another area of collections within the Glade is the Alabama Native Fern Garden. Although only ferns growing naturally in the state qualify for this assemblage, Alabama's rich flora (ranked 4th most diverse in the continental U.S. with 200 plant associations) offers a generous pool of ~85 different ferns.

Widely distributed species as *Pteridium aquilinum* var. *pseudocaudatum*, *Polystichum acrostichoides* and *Athyrium filix-femina* var. *asplenioides* grow in all 67 counties. Uncommon ones such as *Asplenium* x *ebenoides* and *Trichomanes boschianum* occupy very limited areas as dictated by fastidious habitat requirements. *Trichomanes boschianum*, for example, wants vertical or overhanging rock outcrops in deeply shaded grottoes constantly moistened by seepage or spray from waterfalls.

Specialized habitat requirements may make it unrealistic to grow all of Alabama's native ferns successfully in the limited area of the Alabama Native Fern Garden, but the goal, and challenge, is to successfully accommodate as many as feasible. Early this year, major landscape work was performed on the Native Fern Garden for the purpose of better directing drainage from downpours that caused undue erosion resulting in ferns being repeatedly "washed out" or crowns being buried under the eroding soil. One feature of the two newly installed drainage swales is the incorporation of large natural rocks strategically spaced to allow for integrated pockets and crevices for planting ferns. These concavities provide more micro habitats of varying depth and drainage that help fulfill the diverse soil preferences of the state's native ferns. An initial replanting this spring of 40 species in the re-landscaped area establishes a framework for additional introductions planned for this fall.

The contributions and ambitions of many have converted a weedy, vine-entangled hillside into an alluring haven for ferns. Ginny Lusk, a charter member of the Birmingham Fern Society, has earned special recognition. For four decades she has been on the front line with those involved in the planning, maintenance and improvement of the Fern Glade. Ginny has also sought to enrich the Birmingham community's knowledge of ferns by reaching out to leading pteridologists and fern enthusiasts (e.g., John Mickel, Robbin Moran, Alan Smith, Herb Wagner, Barbara Joe Hoshizaki, Judith Jones, and Sue Olsen), who have graciously shared their expertise via presentations at the Fern Society's Annual Lecture and provided feedback on plantings in the Glade.

If opportunity leads you to Birmingham, consider visiting its Botanical Gardens. Admission is free and a walk in the Fern Glade promises to be instructive and relaxing, even in winter when many ferns evergreen in the Birmingham climate will extend their welcoming fronds.

The Hardy Fern Foundation Main Display Garden

Richie Steffen
Federal Way, WA

Soon after the establishment of the Hardy Fern Foundation the affiliate garden program began with the planting of ferns at the Rhododendron Species Botanical Garden, subsequently chosen as the primary test garden. Originally started in a wooded one acre site in the lower part of the garden it now encompasses plantings throughout the 22 acre

garden with the crown jewel being a half acre stumpery recently installed. The first plantings were primarily study collections where plants from each genus were grouped together so similar species could be closely observed to distinguish their differences. As the HFF collection grew it became clear that while taxonomic plantings were important, plantings that showed the aesthetic beauty of ferns in a garden setting were also very necessary. The alpine garden, built by the famous Kubota Gardening Company, features several treasures including long thriving plants of *Cryptogramma acrostichoides*, *Asplenium trichomanes*, *Ceterach officinarum*, and a spectacular stand of the choice and rare dwarf Western maidenhair, *Adiantum aleuticum* 'Subpumilum'. In the late 1990's a wooded area that was just shy of an acre was renovated to improve the soil. This area now is the home to the HFF *Dryopteris* collection. Mass plantings were made of this genus and now well established plantings show the true horticultural value of these plants. Some of the most striking examples are large stately *Dryopteris wallichiana*, with some plants nearly reaching five feet in height. This spring showcased the brilliant reddish pink new fronds of *Dryopteris decipiens*, an undeservingly rare species from Japan and China.

Many other additions to the collection reflect more casual plantings integrated among rhododendrons and other woody shrubs. As you enter the garden you are met with an awe inspiring stand of *Osmunda regalis* 'Purpurascens'. These towering giants reach over six feet tall with an upright frame like sentinels standing guard near the entry gates. For those interested in groundcovers, the huge sheet of *Adiantum venustum* rambles through a stand of douglas firs, interrupted only by the lesser trunks of rhododendrons. An equally amazing forest floor covering is an enormous patch of *Blechnum penna-marina*. Typically thought of as a low covering for small areas, this expanse has to be seen to be believed.

Our most recent project was the building of a dramatic stumpery using over one hundred fifty mature tree stumps and logs. Created through the inspirations of several board members, the stumpery houses a wonderful new collection of ferns. Tree trunks and roots rise from the ground and eventually will be host to a number of epiphytic ferns as well as a lush carpet of moss. Many mature ferns were added, including several large specimens of *Woodwardia unigemmata*, a wonderful large fern known for it long new fronds that emerge blood red!

Currently the HFF's main display garden houses 36 different genera represented by approximately 225 species. A new hoop house nursery structure was just completed in early summer and we are looking forward to an increase in production and in a greater diversity of plants from our growing facilities. With time this will not only add to the garden collection but make more plants available to all of our affiliate gardens as well as our membership.

Bellevue Botanical Garden

Nancy Kartes, Manager
Bellevue, WA

The Bellevue Botanical Garden celebrates the relationship between plants and people in 53 acres of display gardens, woodlands, meadows and wetlands. The garden is centrally located in the heart of Bellevue, providing a peaceful yet ever-changing place to explore and learn. The Garden is free, open year-round daily from dawn to dusk, and welcomes an estimated 300,000 visitors per year. Our focus is on horticultural display, education, and demonstration, with the goal of developing residential-scale gardens, allowing visitors to apply our garden's design lessons to their own gardens.

While governed in partnership between the City of Bellevue and the Bellevue Botanical Garden Society, eight other horticultural groups participate at the Bellevue Botanical Garden, including the Northwest Perennial Alliance, Eastside Fuchsia Society, Puget Sound Dahlia Association, East Lake Washington District of Garden Clubs, and Hardy Fern Foundation. Nearly 800 volunteers provide 20,000 hours of assistance annually: as grounds maintenance aides, docents, gift shop staff, educators, and other essential functions. Our robust volunteer programs make the garden a place where community flourishes along with the plants.

The great wind storm of December, 2006 heavily damaged the Rhododendron Glen at the Bellevue Botanical Garden. This provided an opportunity for us to take another look at this site and develop a new design with better access and new collections. This Garden's history has its roots in showcasing Cal and Harriet Shorts' rhododendron collection, featuring the work of local rhododendron hybridizers. While it would be impossible to recreate their collection, we wanted to honor their legacy by planting species rhododendrons as well as locally developed hybrids. We also recognized this as a great opportunity to expand our partnership with the Hardy Fern Foundation. The extensive fern collection was planted by the Hardy Fern Foundation on January 12, 2008 to demonstrate the use of ferns in the landscape in several different exposure and soil conditions. In the spring of 2009, the Hardy Fern Foundation worked with Partners in Design to develop an interpretive sign specific to the fern collection. This lovely sign is located near one of the benches in the eastern section of the garden.

As our garden grows and we plan for its future, we remain focused on providing the best visitor experience possible. We seek to balance our display and educational goals by finding innovative ways to connect visitors to our plant collections and to provide visitors opportunities for deeper understanding of the plant world in immersive and engaging ways. To that end, all of the ferns have been accessioned and are tracked in the BBG plant records database. The database is available on the Bellevue Botanical Garden website at www.bellevuebotanical.org , and is accessible from computer kiosks in our visitor center and at the entrance to the Rhododendron Glen. The next step is to develop an electronic page for the outdoor interpretive kiosk which will give visitors more information about hardy ferns and their cultivation in our region.

Bellevue Botanical Garden

The Hardy Fern Foundation Garden in the Rhododendron Glen

Pat Kennar
Bellevue, WA

It was a bleak winter day in the Pacific Northwest on January 12, 2008 when fourteen "Hardy Members" of The Hardy Fern Foundation gathered at the Bellevue Botanical Garden to plant ferns.

Thoughts of a cozy fireplace with wine and dialogue were forgone for this much anticipated ritual. At long last we were offered a location designated as "The Fern Garden in the Rhododendron Glen".

This would be the culmination of a ten, or more, year odyssey to fulfill a legacy to Cal and Harriet Shorts whose generous gift of the family home with 7.5 surrounding acres, to the City of Bellevue, Washington, became the "core" of a soon to be dedicated, City Park.

In the early years, this future home of the Bellevue Botanical Garden, was part of a logging community. Gracing the hill and skirting the meadows was a dense collection of mature douglas firs, big leaf maples and our ubiquitous sword ferns. This tranquil scene with a log cabin, farm land and a fruit orchard, was what the Shorts were looking for when they purchased the property and settled there in 1946. It was their home for thirty years, although in 1957 the log cabin was replaced by the present home, now serving as the Visitor's Center.

During these years, they raised cows, goats and other livestock, but, an interest in bees, and plants, especially rhododendrons and shade lovers became a new pastime. Harriet Shorts developed a love of ferns and it was her wish to have a fern garden established at this site. Thus it was that following the donation of the property to the city of Bellevue the Hardy Fern Foundation received a generous donation $25,000.00 from the Shorts family to create a fern garden at the former family home.

Excitement and enthusiasm led to the development of a Master Plan with provisions for a fern garden. Unfortunately, this initial surge gave way to indecision with potential reasons attributed to budget cuts, maintenance requirements and priorities concerning recreation. Consequently efforts to move ahead with the proposed garden dedicated to ferns, met resistance from the City Parks Department. Lack of necessary funding and delays to an integrated approach using woodland understory plants to create a naturalistic community with plants of similar cultural requirements brought our project to a halt.

As years went by, changes occurred in funding and priorities. But, perhaps, the greatest

event was the return of a former Garden Manager, Nancy Fonk Kartes, a person of great vision and creativity. She brought a breath of fresh air and renewed hope.

When a new park bond was passed and the Master Plan was upgraded with renewed priorities, our project was resuscitated. A quotation circa 1909, states "to make a great garden, one must have a great idea or a great opportunity". We had both!

So, as we gathered on this particular day in January, 2008, we felt a sense of accomplishment was at hand.

The area designated was mostly level and trapezoidal in shape and slightly less than one half acre. Recently cleared, after the December 2007 storm damaged a couple of large cedar trees, it was evident that we faced a definite exposure challenge. However, as most gardens evolve through the years, our goal was to have more than a collection or smorgasbord of ferns, but to place the right plant in the correct spot. We sought to predict problem areas ahead of time, with thoughts of moving plants later, if necessary.

In, approximately, three hours we were able to plant over 750 ferns representing close to 100 taxa. We hope that this sizeable "Biologic Footprint" continues to reflect on our primary goal of demonstrating how ferns can add beauty and harmony to a garden.

Close monitoring over the first few years will be essential, and shifting may be required; but this is what gardening is all about.

Our sign featuring "The Incredible Hardy Fern" (see picture page 103), is quite distinctive and informative. A combination of pictures and graphic descriptions, provide an alluring entrée to the garden.

This October we will have a work party revisiting some of the areas of concern with regard to exposure and will move and replant where necessary.

On behalf of myself and The Hardy Fern Foundation, I want to thank all of those who generously gave their time and wisdom to this project. Especially: Nancy Kartes and the Bellevue Botanical Garden staff; Our loyal Board Members: Lyman Black, Michelle Bundy, Katie Burki, Sylvia Duryee, Randall Hitchin, Jo Laskowski, Sue Olsen, Rick Peterson, Pat Riehl, Buzz Smith, Richie Steffen, Diane and Paul Thompson, John van den Meerendonk and friends of the garden.

It has always been a pleasure and an honor working with such a learned group. I can't wait for the next project.

Ferns Planted in the Fern/Rhododendron Glen by the Hardy Fern Foundation at Bellevue Botanical Garden, January 12, 2008

#	Species/Cultivar	Evergreen/Deciduous	Height
8	*Adiantum pedatum*	Deciduous	2-3'
8	*Adiantum pedatum/aleuticum* 'Imbricatum'	Deciduous	18"
12	*Adiantum venustum*	Evergreen	15"
6	*Arachniodes simplicior*	Evergreen	2'
8	*Asplenium (Phyllitis) scolopendrium*	Evergreen	15"
8	*Asplenium (Phyllitis) scolopendrium* 'Angustata'	Evergreen	12"
8	*Asplenium (Phyllitis) scolopendrium* 'Cristata'	Evergreen	12"
12	*Asplenium trichomanes*	Evergreen	8"
9	*Astrolepis sinuata*	Evergreen	12"
6	*Athyrium filix-femina*	Deciduous	3-5'
8	*Athyrium filix-femina subs/ angustum f. rubellum* 'Lady in Red'	Deciduous	2'
6	*Athyrium filix-femina* 'Plumosum Axminster'	Deciduous	2'
6	*Athyrium filix-femina* 'Cristatum'	Deciduous	2'
8	*Athyrium filix-femina* 'Frizelliae'	Deciduous	15"
8	*Athyrium filix-femina* 'Minutissimum'	Deciduous	6-18"
6	*Athyrium filix-femina* 'Victorian Dagger'	Deciduous	12-18"
8	*Athyrium* 'Ghost'	Deciduous	2'
6	*Athyrium niponicum* 'Pictum'	Deciduous	12-18"
6	*Athyrium niponicum* 'Apple Court'	Deciduous	12-18"
5	*Athyrium* × Branford Rambler	Deciduous	12"
8	*Athyrium otophorum*	Deciduous	18-24"
	Blechnum chilense	Evergreen	5-6'
54	*Blechnum penna-marina*	Evergreen	6-8"
18	*Blechnum penna-marina* 'Cristata'	Evergreen	6-8"
24	*Blechnum spicant*	Evergreen	2'
8	*Cyrtomium caryotideum*	Evergreen	2'
16	*Cyrtomium falcatum* 'Maritimum'	Evergreen	10"
8	*Cyrtomium falcatum* 'Rochfordianum'	Evergreen	2'
8	*Cyrtomium fortunei* var. intermedium	Evergreen	2'
3	*Cyrtomium macrophyllum*	Evergreen	2'
16	*Dryopteris affinis* 'Crispa Gracilis'	Evergreen	8"
6	*Dryopteris affinis* 'Pinderi'	Evergreen	2-3'
6	*Dryopteris affinis* 'Polydactyla Dadds'	Evergreen	3'
3	*Dryopteris affinis* 'Revolvens'	Evergreen	3'
8	*Dryopteris affinis* 'The King'	Evergreen	3'
6	*Dryopteris* × *australis*	Semi-evergreen	4-5'
6	*Dryopteris blanfordii*	Semi-evergreen	30"
6	*Dryopteris carthusiana*	Deciduous	2'
3	*Dryopteris celsa*	Semi-evergreen	3-4'
8	*Dryopteris championii*	Evergreen	2'
6	*Dryopteris crassirhizoma*	Evergreen	2'
6	*Dryopteris* × *complexa* 'Robust'	Evergreen	4-5'
8	*Dryopteris cristata*	Semi-evergreen	2'
5	*Dryopteris cycadina*	Evergreen	2'
8	*Dryopteris dilatata* 'Crispa Whiteside'	Evergreen	30"

#	Species/Cultivar	Evergreen/Deciduous	Height
8	*Dryopteris dilatata* 'Jimmy Dyce'	Evergreen	15"
3	*Dryopteris dilatata* 'Lepidota Cristata'	Evergreen	18"
8	*Dryopteris dilatata* 'Recurvata'	Evergreen	18"
8	*Dryopteris erythrosora*	Evergreen	30"
8	*Dryopteris erythrosora* 'Brilliance'	Evergreen	2'
8	*Dryopteris erythrosora* 'Prolifica'	Evergreen	18"
8	*Dryopteris expansa*	Deciduous	18"
6	*Dryopteris filix-mas* 'Barnesii'	Deciduous	2'
3	*Dryopteris filix-mas* 'Cristata Jackson'	Deciduous	2'
5	*Dryopteris filix-mas* 'Cristata Martindale'	Deciduous	30"
4	*Dryopteris filix-mas* 'Grandiceps'	Deciduous	2'
8	*Dryopteris filix-mas* 'Linearis Polydactyla'	Deciduous	2'
8	*Dryopteris filix-mas* 'Crispatissima'	Deciduous	18"
3	*Dryopteris goldiana*	Deciduous	3-4'
8	*Dryopteris lepidopoda*	Evergreen	2'
8	*Dryopteris pycnopteroides*	Evergreen	18"
6	*Dryopteris remota*	Evergreen	2'
8	*Dryopteris sieboldii*	Evergreen	30"
6	*Dryopteris tokyoensis*	Deciduous	2'
6	*Dryopteris wallichiana*	Evergreen	3-4'
16	*Gymnocarpium dryopteris*	Deciduous	8-12"
12	*Gymnocarpium dryopteris* 'Plumosum'	Deciduous	8-12"
3	*Gymnocarpium oyamense*	Deciduous	8-12"
3	*Onoclea sensibilis*	Deciduous	12-18"
3	*Osmunda cinnamomea*	Deciduous	3'
3	*Osmunda regalis*	Deciduous	3-5'
6	*Osmunda regalis* 'Purpurascens'	Deciduous	3-4'
6	*Osmunda regalis* 'Undulatifolia'	Deciduous	3-5'
8	*Phegopteris decursive-pinnata*	Deciduous	12"
11	*Polypodium scouleri*	Evergreen	12"
16	*Polypodium vulgare*	Summer deciduous	12"
16	*Polypodium vulgare* 'Cristatum'	Summer deciduous	12"
7	*Polystichum acrostichoides*	Evergreen	18"
8	*Polystichum aculeatum*	Evergreen	2-3'
8	*Polystichum makinoi*	Evergreen	18"
8	*Polystichum neolobatum*	Evergreen	2'
8	*Polystichum rigens*	Evergreen	18"
6	*Polystichum setiferum*	Evergreen	2-3'
4	*Polystichum setiferum* 'Congestum Cristatum'	Evergreen	12"
8	*Polystichum setiferum* 'Dahlem'	Evergreen	30"
6	*Polystichum setiferum* 'Divisilobum'	Evergreen	2'
6	*Polystichum setiferum* 'Herrenhausen'	Evergreen	2'
8	*Polystichum setiferum* 'Plumosum-densum'	Evergreen	2'
8	*Polystichum setiferum* 'Plumoso-multilobum'	Evergreen	2'
6	*Polystichum setiferum* 'Proliferum Wollaston'	Evergreen	2'
8	*Polystichum tsus-simense*	Evergreen	15"
13	*Polystichum × dycei*	Evergreen	30"
Many	*Woodwardia areolata*	Deciduous	12"
3	*Woodwardia fimbriata*	Evergreen	30"
3	*Woodwardia unigemmata*	Evergreen	4-6'
3	*Woodwardia virginica*	Deciduous	2'

Celebrating Twenty Years of Horticultural Success'

Katie Burki - Garden Manager, Lakewold Gardens
Lakewood, WA

When the Hardy Fern Foundation was organized in 1989, Mrs. Eulalie Wagner was one of its most ardent supporters. She too was also turning her ten acre garden estate, Lakewold Gardens, just south of Tacoma, Washington, over to The Friends of Lakewold a nonprofit group; who would eventually take over the day to day management of the garden into perpetuity. It was also her wish to see that a Hardy Fern Foundation Display Garden be located at Lakewold Gardens for the public to enjoy. Mrs. Wagner hired scientific advisor, John Mickel, Curator of Ferns, from the New York Botanical Garden, to assess the site where she wanted the garden to be located. The chosen location has all the components necessary for a fern garden. It had over-story protection, enriched woodland soil, and adequate moisture. In turn the Hardy Fern Foundation engaged Don Armstrong, a fern expert and landscaper from Vancouver, B.C. to work with past HFF board members Mareen Kruckeberg and Jeanette Kunnen to design and plant the garden. Over the winter of 1989-'90 the garden was designed and then planted with the help from Mareen and Jeanette, as well as other HFF volunteers. The purpose of the garden was to demonstrate how diversity in ferns can be incorporated into the Northwest landscape.

Over the years the display garden fell under neglect. More aggressive species took over most of the garden, so in 2002 the Fern Foundation helped reestablish plantings in the newly renovated fern garden. With continued support from the Hardy Fern Foundation and horticultural staff at Lakewold Gardens, the fern garden continues to delight visitors with its wonderful array of foliage and texture.

This year, 2009, marks the 20th Anniversary for both Lakewold Gardens and The Hardy Fern Foundation. Both have seen a rise in the popularity of gardening and will continue to see success in coming years. This year Lakewold Gardens had more visitors than ever before, be it even more impressive under the current state of economics. We are happy that visitors from all around the world will be able to view the gardens because of the foresight that the Wagner family and The Hardy Fern Foundation had some twenty years ago.

When visitors come to tour the grounds they are able to view ferns in a naturalistic habitat. There are some notable species of ferns in the Display Garden at Lakewold worth mentioning. First is the stand of Himalayan Maidenhair, *Adiantum venustum* under a specimen maple. It covers about 100 sq. feet. Each year I grow more and more fond of the Long Eared Holly Fern, *Polystichum neolobatum*. It never seems to fade or look tarnished and has such minimal requirements. Sensitive Fern, *Onoclea sensibilis* is another great fern, similar to the venustum, it is great at filling an expanse of space. Although it dies back in the winter it cannot be beat in the summer as it portrays itself with grace, thus living up to the name of sensibilis. I have found one of the most photogenic ferns to be the Autumn Fern, *Dryopteris erythrosora*. At Lakewold we have

it under-planted with *Oxalis oregana*. The contrasting texture of the two, while the autumn colored crosiers are emerging, is delightful. Many species of ferns have found that this space is so habitable that they have "seeded" themselves on the masonry of the surrounding walls of the fern garden. The Hart's Tongue Fern, *Asplenium scolopendrium* and the native Licorice Fern, *Polypodium glycyrrhiza* can be found through out the garden as they venture out making new colonies.

One of the best parts about seeing a garden grow is watching what it does on its own- something that wasn't planned or designed. This to, is true about fern gardening in general. Ferns are so natural in their qualities that they never look out of place. I believe that new gardeners generally pass up ferns in the northwest because they do look so natural, but when they begin to appreciate the subtleties of the architecture of ferns, they quickly become enthusiasts.

Here at Lakewold, we are proud to offer visitors the educational opportunities that they can bring home to enhance their own gardens. From the most formal patterns of design to the naturalistic woodland gardens, visitors can be invigorated by what can be done in the northwest world of horticulture. We are all very thankful to organizations like The Hardy Fern Foundation for their involvement in the success of northwest horticulture. The garden continues to mature in every passing season-and while Lakewold is the great life work of Mrs. Wagner-it is also a historical record of the many people who had a hand in its creation.

Touring Information:
(253) 584-4106
Lakewoldgardens.org

Summer Hours: April 1st-September 30th, Wednesday-Sunday 10 AM to 4PM
Winter Hours: As dates and times vary in the winter months, we suggest you call ahead or visit our website for current information.

The Bainbridge Island Library Fern Display Garden

John van den Meerendonk
Bainbridge Island, WA

In 1997 the Bainbridge Library completed a total renovation and addition to the library building itself, including the layout and enlargement of the adjacent parking areas. The Fern Display Garden is one of three gardens that encircle the Library. The first garden installed is the Japanese Haiku Garden "Haiku no Niwa" or the Garden of Haiku. This garden is a gift of the Japanese America Community. The installation of the garden was done completely with the volunteer efforts of the Island community. This award winning garden lies on the west side of the library and flanks the main street and entry. The Haiku garden was completed in the fall of 1997. The second garden is the mixed perennial garden that takes up the south side of the library and the areas

flanking the parking areas. The perennial gardens were installed and are maintained by the library garden volunteers 'The Friday Tidies', led by local garden guru, Anne Lovejoy. The third garden, which completes the landscape around the Library, is the Fern Display Garden.

The Fern Display Garden takes up the east side of the Library stretching some four hundred feet from north to south and varying thirty to sixty feet wide from east to west. A good portion of the garden is situated under a canopy of second growth douglas fir. In the fall of 1998 this 'back' area of the building was a dark and damp area beneath the towering firs, full of brambles and other weeds and an eyesore. Having been involved with the installation of the Haiku Garden and familiar with the grounds, I was asked what could be done to improve this area. Looking at the canopy of beautiful tall douglas firs and additional shade provided by the library building itself, I could see that this site would provide the conditions needed to put in a fern garden. The entry to the lower Children's Library is also accessed on this side of the library. I started thinking what a golden opportunity it would be to put in an educational garden like a fern display garden on public grounds like this library. At the next Hardy Fern board meeting I presented my fellow board members with this opportunity of putting in a HFF affiliated Fern Display Garden at the Bainbridge Island Library, and received their support. Jack Doctor and Anne Holt, fellow HFF board members and Islanders, with myself, presented the Bainbridge Island Library Board with a landscape proposal and plan for a Fern Display Garden. We received their enthusiastic support.

In February of 1999, with the help of volunteers, the installation of the Fern Display Garden began. First was the clearing of the blackberry, brambles, unwanted vegetation and weeds, and the limbing up of the dead branches of the trees, all of which was chipped up and returned to the soil. Paths were installed and rock walls flanking the Children's Library entrance with rock entry steps were built. An open aired, rustic, octagonal, Gazebo was built and is situated in the center of the Fern Garden. An existing bio-swale that runs for eighty feet through the central part of the garden was modified into a curving boulder enhanced natural looking stream with two bridges. Next we installed the irrigation system. A few select flowering trees and shrubs were planted in the larger open areas. Last we mulched the entire garden. We were ready for the fern planting. In April of 1999, with the help of many volunteers, five hundred ferns representing sixty species were planted. The fern garden provides a diversity of micro-climates and habitats such as heavier shade and more winter warmth nearer the building foundation to open, full sun, from dry, fast draining soils along the eastern half of the garden to heavier soils near the building and wetter soils along the margin of the stream/bio-swale. This habitat diversity presented the opportunity to plant a large diversity of fern species. With the predominant canopy of douglas fir, the space gives the wonderful feel of a woodland garden.

It has been ten years since the initial planting of the fern garden. Through the years, some fern plantings have been lost, many re-planted and new ferns added. The garden itself has gone through some changes. Some of the large douglas firs closest to the building have died, most likely through root disturbance during the time of construction. Also the ill-advised higher limbing of many of the douglas fir occurred. These changes

provided for a much more sunny exposure and caused the demise of the more shade loving ferns in this area. Subsequent trenching work through the fern garden for electric work also resulted in some fern loss. The invasion of invasive ground covers planted by well intended garden volunteers has also caused problems, overwhelming smaller less robust ferns. A number of ferns were also lost due to lack of enough water during our legendary dry summers. Plans are underway to renovate the garden and to make the garden more educational to the community. Many of the fern species are doing well such as a nice clump of *Dryopteris sieboldii*, a wonderful, robust group of *Polystichum neolobatum* in fairy heavy and moist soil and *Matteuccia struthiopteris* is well established at the end of the bio-swale. The Fern Garden is a beautiful and cherished community treasure providing quiet space and a wonderful walk through woods with fern gems to admire and learn all along the way.

Inniswood Metro Gardens

Carolyn Stamm
Westerville, OH

Inniswood Metro Gardens, located in Westerville, Ohio, is a special facility of Franklin County Metro Parks. Since its establishment in 1945, the Park district has grown to encompass 23,500 acres of land and water in seven central Ohio counties. The parks provide a variety of educational experiences in the study and appreciation of nature, history, ecology and horticulture as well as opportunities for physical activity and relaxation. Many people choose to support the parks and widen their horizons and knowledge by volunteering.

Inniswood was the home of sisters Grace and Mary Innis who donated their 37 acre estate to Metro Parks in 1972. It is now a botanical garden and nature preserve, in accordance with the sisters' wishes, and has expanded to include 121 acres of featured and theme gardens, plant collections, and woodlands. Feature gardens include the Conifer, Cutting, Herb, Rose, White and Woodland Rock Gardens, and of course, the Fern Garden. The Sisters' Garden, a 2.8 acre children's garden includes such attractions as a Secret Garden, Tree House, Granny's House, a story maze, pond, wooded and planted areas and statuary. In the Memorial, Brookwood Trail and Circle Gardens are found mixed plantings of trees, shrubs and perennials, as well as some plants, including annuals, that vary according to yearly and seasonal themes. Trails and paths invite visitors to enjoy the more than 2000 plant species found in the gardens and wooded areas.

Approximately 300 dedicated and enthusiastic volunteers help to maintain the gardens and special collections. The Fern Interest Group, (FIG) is just one of many Interest Groups volunteers may join in order to study and assist in the care of favorite plants, such as the ferns, wildflowers, herbs or roses. Some volunteers belong to groups which engage in specific activities. The Design Interest Group (DIG) members design, plant, and maintain the many beautiful container plantings placed throughout the garden, and produce lovely and clever decorations appropriate to the seasons or holidays. The

Taxonomy Group studies, well, taxonomy, especially of plant families found in the garden. There is a group that supervises and operates the Garden Railroad, and one that helps maintain the non-circulating library at Innis House. Some volunteers prefer to help in garden maintenance, working where they are needed - some do that and also belong to one or more Interest Groups. Volunteer workdays are Thursdays and Saturdays during the growing season, and most groups meet regularly for study and planning, some throughout the year. Volunteer assistance in maintenance is planned and supervised by members of the staff. The volunteer organization, Inniswood Volunteers, Inc. (IVI) helps to support the Interest Groups financially. Each year, this organization holds an eagerly awaited plant sale in the spring. Popular and unusual perennials, herbs, and a few excess ferns grown by the Fern Interest Group, are available to the public and draw buyers from all of Central Ohio and beyond. Volunteers serve as officers for the Inniswood Volunteers Inc., the volunteer organization, and join other members of the community as officers and board members of the Inniswood Garden Society, a support group.

Inniswood is the site of educational activities for all ages. The Inniswood Garden Society sponsors well known speakers at its annual garden party meeting in the summer, and a very well attended series of classes in horticulture in the winter. Staff members, often assisted by volunteers, hold popular and innovative activities in nature, horticulture, ecology and science for children as well as adults. The volunteer organization also sponsors speakers at its quarterly meetings. Several horticulture, nature and ecology related organizations meet regularly at Innis House, and artists exhibit in the main meeting room.

The main fern garden at Inniswood is designed around the scenic Spring Run Trail Bridge: on the banks of the run and along both sides of the entrance to the trail through the woods. The Hardy Fern Foundation ferns are located there along with other ferns grown at Inniswood from spores, and purchased from local and mail-order sources. Ferns also are seen in other areas of the garden as well as in the containers. Our fern nursery is located in the basement of Innis House. Spores obtained from spore banks, private collections, or collected at Inniswood are germinated there. Sporelings are grown under lights until large enough to harden in the greenhouses or outdoor holding areas until ready to be planted in beds.

Every species, variety or cultivar occurring naturally or introduced into the gardens is given an ID number. We are now up to 184. Of course, all of the introductions have not adapted to our variable weather, clay, and alkaline soil (however much amended), but many have. We now have around 100 species, varieties and cultivars. We continue trying with some of the less successful ones, especially those that are listed as growing in zone 5. We really appreciate the efforts of the HFF in making so many beautiful ferns available for testing and growing.

The Inniswood Fern Collection includes most of the ferns native to Ohio. We take pride in the fact that we have identified beautiful ferns from other areas of the state, country and world. They can become valuable additions to central Ohio gardens, with the level of care given to other plants. *Cyrtomium fortunei* and *Dryopteris erythrosora*, along with native *Polystichum acrostichoides*, (found, it is said, in every county in

Ohio) carpet one bank of Spring Run. A few of our other successes are *Dryopteris oreades* 'Crispa', *D. pseudo-filix-max*, *D. wallichiana, D. filix-mas* 'Linearis Polydactyla', *D. clintoniana*, *D. affinis* 'Cristata Martindale' and *D. x australis*. Several varieties of *Phyllitis scolopendrium* appreciate being tucked up close to the large limestone rocks holding the banks of Spring Run. A "river" of *Athyrium otophorum* flows down the west bank of the run, along with along with *Dryopteris wallichiana*, *D. cycadina, Athyrium filix-femina*, and species native to Ohio, but not often found in our area.

We can easily grow the less exotic members of *Athyrium filix-femina*. The fancier ones require the application of acidifying fertilizers even more than the Hollytone and leaf compost supplied to most of our ferns. Even then success is difficult. *Athyrium niponicum* 'Pictum' flourishes at Inniswood, as it does most places it seems, volunteering in the beds around Innis House. In the White Garden, a ring of the dwarf 'Pictum' completely surrounds a huge shingle oak tree, enclosing a planting of other ferns and shade plants. We grew the original dwarf 'Pictum' from spores, and divided the plants until we had enough to do the job. This variety has also been used as a spectacular ground cover in the main fern garden. We have found that *Camptosorus* species do better when mulched with mosses, but are difficult for us, as are other small aspleniums and species that require very acid soil. Species from zone 6 or warmer often do well until we have an unusually cold or difficult winter, then succumb to the climate. Some resent our frequent prolonged summer droughts. During these times no amount of watering by staff and volunteers seems to suffice. Some species have persisted for many years, and although they do not reach stated sizes, are appreciated anyway. We showcase some of these semi-hardy ferns, as well as interesting tropical species in pots and troughs grouped on the bridge, where their needs can more easily be met. Our large pots of trellised Japanese climbing ferns have been featured in an article in *Columbus Magazine*.

Since the members of the Fern Interest Group grow ferns from spores, we work year round. At our monthly meeting we sometimes work on fern related crafts, or go on field trips. We also assist in choosing and obtaining ferns from other sources and planting and caring for them in beds. To help us in the record keeping and evaluation of Inniswood ferns, we have developed a database. Mapping the location of the ferns and labeling them is another activity. We also plan and prepare educational materials about ferns, and present programs for other volunteers and the public. And, of course, we delight in learning more about the ferns ourselves.

A Subarctic Fern Trial Garden

Patricia S. Holloway
Fairbanks, AK

Since 1992, the University of Alaska Fairbanks Georgeson Botanical Garden has been a satellite test garden with the Hardy Fern Foundation. When Guy Huntley contacted our

garden about becoming a test site, he was interested in getting the broadest range of temperatures and conditions possible. No doubt, Fairbanks provides an interesting extreme in the mix of satellite test gardens. During the last 17 years, we have watched a lot of ferns die or at the very least, struggle to produce one or two fronds then finally succumb (Table 1). When a fern survives, it is usually approached with a bit of disbelief and a healthy skepticism that it couldn't possibly last another year!

Fairbanks is located in the central interior of Alaska (64°51'N, 147°52W) and experiences a continental climate with some of the hottest summer and coldest winter temperatures in the state (climatic zones 1 & 2). The average annual temperature is a balmy 32F, but daily temperatures can range from the mid 90s in June and July to -60s in winter. Despite these extremes, we are fortunate to have the moderating effect of ample snow cover. The Interior can grow a diversity of perennial ornamentals, many rated in zones 3 and 4 because snow cover buffers the temperature around the roots and crown. In Fairbanks, snow begins the first or second week of October and usually does not melt until April.

Ferns often fail because they do not harden off quickly in the fall after a very short growing season. Many plants do not adapt to our long photoperiods, and they are actively growing when winter arrives. In addition, if sufficient snow has not fallen by the end of October, there will be a lot of death in the garden the next spring. Of course, mulches help, but we don't use any protection in the botanical garden choosing instead, to weed out the wimps from the truly hardy plants. Most winters are characterized by a long, cold season with an average of 50 inches of dry, powdery snow.

Even if a fern survives our brutal winter, summer conditions can prevent growth. The average summer soil temperature in a sunny garden at a 4-inch depth is 50F. Shade gardens are colder, and it is not uncommon to dig through ice especially in organic soils. Plants may survive winter but cannot grow well because their roots are cold or encased in ice for up to half the growing season! Consequently, our list of hardy ferns is fairly small and includes mostly native Alaska ferns. The frost-free season is about 115 days with less than 10 inches of rainfall. Short growing seasons, cold soils, and dry conditions all combine to make gardening with ferns a challenge.

One surprising survivor in our HFF trial plots has been Braun's holly fern, *Polystichum braunii*. (picture page 97) This species is native to coastal Alaska mostly in the temperate rain forests of the southern panhandle. Our plants were one of the first from the HFF trials in 1995 and are still growing well. They form beautiful vase-like rosettes from thick fiddleheads. They have not spread vegetatively but produce abundant spores annually. We will try this species from a variety of sources to learn more about its hardiness based upon plant source.

A more recent surprise is the Branford Beauty fern, *Athyrium* 'Branford Beauty' with its beautiful reddish rachis and silvery blade. Our three plants have survived since 2002. They do not emerge until mid June, very late by our standards but not unlike a lot of shade plants such as hostas and bleeding heart which are probably slowed by cold soils. Every season, we think it is gone, but wait long enough and tiny fiddleheads emerge followed by very ornamental foliage reaching 18-24 inches in height. Even in very low

snow years when death reigns supreme in the garden, this little fern has returned.

Only one other plant from the HFF trials remains in our garden: one lone, three-fronded plant of Clinton's wood fern, *Dryopteris clintoniana*. Every year, we expect that poor plant to disappear completely, and every year one of the four originally planted, sends up three fronds. They produce spores that do not mature in our short season. We have moved it twice to find a more likeable site, but it grows no bigger or stronger.
Favorite native ferns include the ostrich fern, *Matteuccia struthiopteris* which is so tough and spreads so well it ignores most landscape barriers except steel drums. Despite its far-spreading habit, Fairbanksans love it because it brings a bit of lush green, almost tropical appearance to shade gardens. Gardeners preferring a less rampant fern choose the northern wood fern *Dryopteris expansa* or the lady fern, *Athyrium filix-femina*. The lady fern is not entirely hardy in the Interior and requires mulching, an upland garden, or warm south-facing slopes to grow well. A shorter fern (12-15 inches) sometimes grown in Interior gardens is the northern beech fern, *Phegopteris connectilis* that spreads slowly into large clumps of crowded, upright fronds. Next to the ostrich fern, we consider this plant nearly indestructible in our shade and semi-shade gardens.

Rock gardeners search rocky ledges for the diminutive (6-8 inch), *Dryopteris fragrans* that requires well drained, gravelly soils and only partial shade. It is difficult to grow and often dies out after a few years. Some don't like it for the mat of dead fronds that persist at the base of the plant for many years. Not as well know but easy to grow is the fragile fern, *Cystopteris fragilis*, also grown in rock gardens. Most woodland gardens host one or two species of oak ferns, *Gymnocarpium dryopteris* or *G. jessoense*, mostly because the long, thin rhizomes rapidly grow from nearby woodlands and appear in shady gardens with no help from the gardener. In partly sunny gardens, the rhizomes are more compact, and the plants form sizeable clumps that spread slowly.

Besides evaluating ferns for gardens, the Georgeson Botanical Garden has contributed to the recovery plan for Alaska's only endangered plant species, the Aleutian shield-fern, *Polystichum aleuticum*. (picture page 97) Fewer than 140 plants are known to exist on Adak Island, Aleutians and their precarious state is believed to be a due to habitat degradation through rock falls possibly triggered by caribou climbing on rocky outcrops. They are tiny ferns, and finding them in the rocky grottos and ledges is difficult. Biologists have searched other islands since at least the 1970s to find more populations with little success.

Through aseptic micropropagation techniques we showed that the fern spores are viable, and DNA and isozyme analysis showed very little variation among individuals. Its closest relative is *P. lachenense*, and scientists have speculated that, like a lot of Aleutian flora, spores were carried by wind from Asia. No one knows if the plants growing on the side of Mount Reed, Adak, are the remnants of a more extensive historic population or part of an Asian populations that never became well established in the Aleutians. We have developed an aseptic micropropagation protocol that will allow for vegetative reproduction as a last resort should the need arise. For now, the populations are monitored, plants are counted, and the search goes on for more wild populations. Once propagated, the plants are very slow to grow, and keeping them alive under

controlled conditions is very difficult.

Despite the small number of ferns deemed hardy in Interior, Alaska gardens, they remain very popular in home gardens and public landscapes. Hardiness trials are important, even though most plants die, simply for the list of plants that did not make it. Fairbanks, Alaska hosts many large retailers who import perennial ornamentals including ferns for Alaska gardens. The plants available for purchase have been chosen at corporate headquarters far removed from the realities of a subarctic garden. Our lists, even the long "did not survive" list, provides valuable information to make better informed consumers. These trials also have expanded our knowledge of native ferns and their ability to adapt to gardens. No doubt the list of "don't bother" ferns will expand, but the few that survive are treated like royalty.

Ferns that survived at least one year but eventually died.

Cyrtomium caryotideum
Cyrtomium fortunei
Cystopteris bulbifera
Dryopteris sp. lacera type
Dryopteris affinis 'Crispa Barnes'
Dryopteris dilatata 'Jimmy Dyce'
Dryopteris hondoensis
Dryopteris remota
Dryopteris sabae
Dryopteris scottii
Dryopteris stewartii
Polypodium scouleri
Polypodium virginianum
Polystichum aculeatum

Ferns that did not survive one winter

Adiantum aleuticum
A. aleuticum ssp. *subpumilum*
Adiantum venustum
Asplenium trichomanes
Athyrium otophorum, Athyrium filix-femina 'Frizelliae'
Blechnum penna-marina
Blechnum spicant
Cheilanthes argentea
Cryptogramma acrostichoides
Cyrtomium falcatum 'Rochfordianum'
Cyrtomium macrophyllum
Dennstaedtia punctilobula
Dryopteris affinis var. azorica
Dryopteris arguta
Dryopteris bissetiana
Dryopteris blanfordii
Dryopteris campyloptera
Dryopteris celsa
Dryopteris championii
Dryopteris corleyi
Dryopteris crassirhizoma
Dryopteris crispifolia
Dryopteris cristata
Dryopteris cycadina (atrata)
Dryopteris dilatata 'Lepidota Cristata'
Dryopteris filix-mas, D. filix-mas Undulata Robusta'
Dryopteris kashmiriana
Dryopteris lepidopoda
Dryopteris marginalis
Dryopteris oreades 'Crispa'
Dryopteris pseudofilix-mas
Dryopteris sacrosancta
Dryopteris sieboldii
Dryopteris sublacera
Dryopteris wallichiana
Lygodium japonicum
Onoclea sensibilis
Osmunda regalis, O. regalis 'Undulata', *O. regalis* 'Purpurascens'
Phegopteris decursive-pinnata
Phyllitis scolopendrium
Polypodium interjectum
Polystichum acrostichoides
Polystichum andersonii
Polystichum munitum
Polystichum neolobatum
Polystichum polyblepharum
Polystichum setiferum, P. setiferum 'Divisilobum'
Pteris excelsa
Thelypteris viridifrons
Woodwardia fimbriata
Woodsia intermedia
Woodsia polystichoides

Lotusland's Fern Garden

Virginia Hayes
Santa Barbara, CA

Lotusland is the 37-acre estate of the late Madame Ganna Walska, the well known operatic singer and socialite, who created a botanical display garden featuring tropical and sub-tropical exotic species. The estate is now owned and operated by the non-profit educational Ganna Walska Lotusland Foundation, which she established to carry on her work after her death in 1984. Guided tours are available nine months of the year by reservation only.

Madame Walska purchased the estate that had had several earlier owners dating back to 1882 and renamed it Lotusland. She made no major changes to the buildings on the estate except for converting the stables to a studio. However, she did make extensive changes to the grounds, creating many new gardens, often through complete changes to earlier period landscaping. Mme. Walska passed away in 1984, leaving her garden and her fortune to the Ganna Walska Lotusland Foundation.

The fern garden was developed and designed under Madame Walska's direction by William Paylen in 1969. Madame Walska had an Australian tree fern "forest" prior to 1968 when she hired Paylen to create a fern garden around it. The design of this garden (referred to as the "old" fern garden, extending from the swimming pool westward) began with the serendipitous placement of the first large boulder when a crane became stuck. Many of the original begonias, which were added for color, were purchased from local grower and hybridizer Rudolph Ziesenhenne. After Madame Walska's death in 1984, the Foundation asked Mr. Paylen to extend the fern garden, and the extension was completed in 1987. In the midst of this garden is a swimming pool built in 1947 and renovated in 1990. Several oak trees in the fern garden have succumbed to severe winter storms and have had to be removed. Young oak trees have been planted for future shade. In the interim, several Australian tree ferns provide shade for the understory plantings. The two notable plant collections are of ferns and begonias. Other shade-loving species of plants include *Brugmansia* or Angel's Trumpet, *Farfugium*, *Zantedeschia*, *Ruellia*, palms, gingers, and *Impatiens*.

Lotusland's fern garden deviates from the subdued woodland design concept of many other fern gardens by focusing the limelight on the ferns themselves. A forest of tree ferns (*Sphaeropteris cooperi* and *Dicksonia antarctica*) shades large swaths of chain fern (*Woodwardia fimbriata*), hummock fern (*Blechnum orientale*) and holly fern (*Cyrtomium falcatum*). Many other specimens are planted throughout, but the overwhelming impression is of ferns, ferns and more ferns.

The selection of ferns commercially available at the time the garden was first planted was slim, but Paylen managed to find among his plant collector friends, a wider array. He added a particularly robust form of the Australian tree fern that had been located in a garden in Brentwood, the Tasmanian tree fern (*Dicksonia antarctica*), chain ferns

(*Woodwardia fimbriata* and *W. radicans*), the still rather rare Mexican tree fern (*Cibotium schiedei*), an interesting hybrid known as *Aglaonaria robertsii* 'Santa Rosa' and the more common bird's nest fern (*Asplenium australasicum*), several species of sword ferns (*Nephrolepis*) and maidenhair ferns (*Adiantum*) among others. By the time that the Ganna Walska Lotusland Foundation assumed stewardship of the garden and commissioned Paylen to expand the garden, there were a few more available, but many of the new ferns, even then, came from Paylen's personal collection.

The world of commercial fern production has continued to grow, but the diversity of ferns available to growers is still a fraction of the known species. Fern societies and botanical gardens remain in the forefront of growing and introducing new ferns to their members. Lotusland's collection in recent times has benefited from the efforts of these fern enthusiasts. Spores have been received from the Los Angeles International Fern Society and as far away as the Botanic Garden in Nancy, France. Plants have come to us from fern researchers such as Barbara Jo Hoshizaki and the Hardy Fern Foundation. The University of California, Santa Barbara and Los Angeles State and County Arboretum have contributed plants, as well. In all, the collection now comprises about 150 taxa.

One of the favorites of visitors to the garden is *Blechnum occidentale*. The pink new fronds are unusual and eye-catching. Several areas have been given over to it and it forms a lush ground cover. Large staghorn fern balls (*Platycerium bifurcatum*), as much as six feet in diameter, hang from the branches of the coast live oaks and a number of bird's nest ferns (*Asplenium australasicum*) with eight-foot long fronds confound guests from colder climate zones. *Pyrrosia lingua* has consumed some of the tufa landscaping boulders and along with *Cyrtomium falcatum*, which spreads by spores throughout the garden, needs constant removal and thinning. Mass plantings of *Pteris cretica*, *Polystichum polyblepharum* and *Diplazium esculentum* are characteristic of Madame Walska's penchant for drama, but many other specimens attest to her other desire to collect the best and rarest plants.

Fernwood Botanical Garden and Nature Preserve

Ann Desenberg
Niles, MI

In 1933, Walter and Kay Boydston were living in Glen Ellyn, Illinois when Kay was asked to supervise the construction of a fern and alpine diorama for the Century of Progress Chicago Exposition. She corresponded with experts from around the country seeking advice and plants. This led to her life long love affair with ferns.

In 1938, Walter and Kay rented a house south of Niles, Michigan and spent weekends driving around country roads looking for property to purchase. One day they turned down a narrow dirt lane to discover a summer retreat of a Chicago family. They came

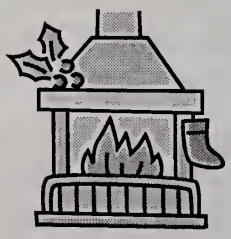
back often to visit and roam the wooded area. Then one day in 1941, they were told that the property was for sale. They rushed back to the Chicago area to put in a down payment on the original 14 acres. If they had been an hour later, Fernwood might have been a Girl Scout camp instead.

In 1952, Matt Mann, the treasurer of the American Fern Society, introduced Kay to fern propagation. The natural hybrid *Asplenosorus x boydstonae* is named in her honor as she propagated it years before it was found in the wild. One of her most unusual crosses appears to be between *Asplenium* and *Dryopteris*. It remains today nestled below the bedroom windows of the Winter House.

In 1964, Walter and Kay retired and finances were tight. They were introduced to the Plym family, local philanthropists who purchased the property and turned it into a not-for-profit corporation. Additional purchases and donations of land brought Fernwood to its present 105 acres. The property includes a 40-acre arboretum, 5-acre restored tallgrass prairie, 8-acres of gardens and 52-acres of natural area with walking trails. In the Kay Boydston Fern House, there are over 100 different tropical ferns. When the Boydstons purchased the property, there were only six or eight types of ferns growing here. Kay herself planted over 10,000 ferns. Another 40,000 have been added over the years. One woodland trail is home to many of Kay's *Dryopteris* hybrids. Elsewhere, ferns are incorporated into shady garden areas, the Hardy Fern Foundation's Test Garden and the Home Fern Garden that shows ferns and companion plants. Fernwood is home to all of the ferns native to Michigan plus many from Europe, Asia, and both North and South America.

Serene Woodland
Photo courtesy of Ann Desenberg, Fernwood

Wishing everyone a warm and happy Holiday Season



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