



**Hardy Fern Foundation
Quarterly**



Fall 2011

THE HARDY FERN FOUNDATION

P.O. Box 3797

Federal Way, WA 98063-3797

Web site: www.hardyfernfoundation.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, 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

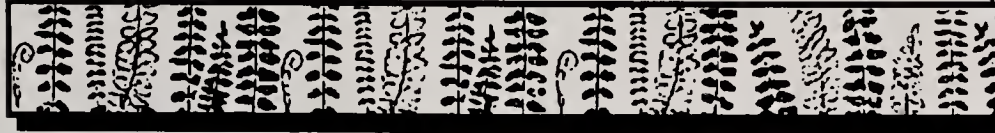
THE HARDY FERN FOUNDATION QUARTERLY

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Order your 2012 Hardy Fern Foundation Calendar!

**This years calendar will feature photos from our Affiliate
Gardens across the country.**

\$15 each - Available November 12th

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President's Message

September, 2011

Greetings one and all

As we transition into the first weekend of autumn, The Farmer's Almanac predicts "Clime and Punishment". In other words after a mild summer The Pacific Storm Tracker will guide storm systems into the Pacific Northwest, giving us a wetter than normal winter. This translates into snow!

We were very fortunate to have a cooler and moister summer, giving our plants a break. Because we suffered some plant damage in our hoop house from last winter's sustained cold streak, we will endeavor to increase protection by covering all sides and ends of the structure. We also plan to have a heater on standby.

As you'll see we have had a very active summer beginning with an excellent tour of gardens and field sites in the US Southeast. Thanks go to Naud and Wim Burnett and Kent Kratz for their good humor and successful organizational efforts.

In July a dedicated hiking group led by Michelle Bundy and Richie Steffen explored the Teanaway area of the Wenatchee Mountains in our Cascade Range focusing on the Esmeralda Basin trail and the diverse assortment of unusual ferns sited amongst their preferred and varied soil substrates.

August featured a tour of four distinct and outstanding gardens on Vashon Island. It began with an impressive woodland display, followed by a whimsically designed intimate garden, then a stumpery garden and finally a formal estate garden. Thanks to Pat Riehl for co-coordinating it all.

On September 24th Michelle Bundy conducted a fern tour at the Rhododendron Species Garden followed by a propagation class titled "Grow Your Own Ferns" with Carolyn and Jerry Doherty sharing the secrets of their spore growing success!

October is developing into a very busy month; the end of the Rhododendron Species Foundation Fall Festival, a tour of our garden by Michelle Bundy, a class by Sue Olsen rounded out by a Board Meeting plus a work party!

We will have our second annual Fall Social in November with Pat Riehl speaking on stumperies. We welcome all members and volunteers to join us for great food and "green conversation". Please take this opportunity to become more closely involved with our organization.

A deep feeling of empathy is felt for all of those so affected by the recent weather disasters in the Southeast, Northeast and central river valleys. Hopefully a complete recovery will follow.

The Board of Directors will continue to develop a line item budget plan and implement this in the coming year. We are always open to suggestions and urge all members to contribute with active participation.

Thank you, best regards

Pat Kennar

Book Review

Lakewold

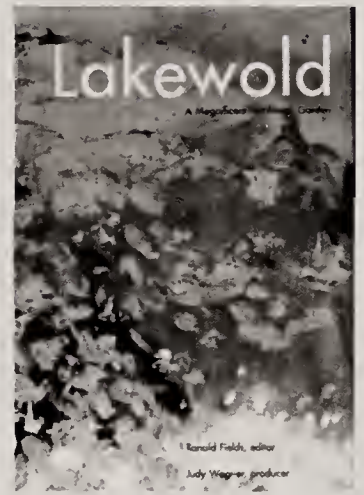
A Magnificent Northwest Garden

Ronald Fields, editor

John van den Meerendonk

Bainbridge Island, WA

Lakewold, located on Gravelly Lake just a few miles south of the city of Tacoma, WA is one of the Northwest's premier Estate Gardens. This new book on Lakewold is a compilation of several well-known horticulturists and garden writers who have each written a chapter describing aspects of the garden and its history. The book is filled with beautiful photographs of the garden through the years beginning with its development in 1948 to the present. The garden was a labor of love for its owners Eulalie and G. Corydon Wagner. In 1958, the Wagners employed the services of the pre-eminent landscape architect Thomas Church who over the next twenty years assisted in the gardens layout.



I remember visiting Lakewold for the first time in 1985. At that time I was the horticulture and grounds superintendent at the Bloedel Reserve located on Bainbridge Island, WA. Each year we would have a staff outing at one of the prominent gardens in the greater Seattle area. Mrs. Eulalie Wagner was the sister of Mrs. Virginia Bloedel who with her husband Prentice developed the beautiful gardens of the Bloedel Reserve. I recall how gracious Mrs. Wagner was in hosting our group and personally giving us a guided tour throughout the Lakewold gardens. She was very interested in the great diversity of plants that she had incorporated into her garden and how they were growing and in how they fit into the garden scheme. She was also interested in what was happening at her sister's and brother in law's garden and what future plans they had for their garden, so as to compare notes so to speak. Mrs. Wagner had introduced Thomas Church to Mr. and Mrs. Bloedel, who then also employed his landscape architectural skills. When Mr. Church came up from San Francisco he would stay with the Wagners and spend his time working at

Lakewold and then at the Bloedel Reserve on the same trip. They became close friends.

The book opens with a foreword from plant hunter extraordinaire Dan Hinkley in which he writes of his first experience visiting Lakewold and Eulalie Wagner. Valerie Easton writes the introduction with following chapters written by Ronald Fields, Steve Lorton, Marc Treib, Katie Burki, Vicki Haushild and Bill Nobile. I enjoyed Katie Burki's chapter on the rare plants that Mrs. Wagner had incorporated into her garden. Eulalie was particularly fond in acquiring rare plants. She was one of the first to plant the then rare Dawn Redwood (*Metasequoia glyptostroboides*), which is now the largest Dawn Redwood in the State. Lakewold and Mrs. Wagner will also be remembered for the Himalayan Blue Poppy (*Meconopsis grandis*). Eulalie was successful in the growing of this difficult to cultivate species, and the title of the beautiful 1987 video on the garden is called "Lakewold, Where the Blue Poppy Grows". The book aptly showcases the garden from its development to the present day. The wonderful photographs beautifully portray the garden from the formal parterres of boxwood near the main house to the outer more natural area canopied by the large evergreen native trees of the Pacific Northwest, to the heavily and diversely planted slope leading down to the lake's edge, to the formal and natural water features, to the large collection of Rhododendron and onto the large Douglas Fir "Wolf Tree" (*Pseudotsuga menziesii*) centered in the garden not far from the sun room that houses the native fern Scouler's Polypody (*Polypodium scouleri*). Eulalie was into ferns and had a small fern garden just off the pathway leading from the main house, and incorporated ferns throughout the garden. Eulalie was also a founding member of the Hardy Fern Foundation and the Rhododendron Species Foundation. This book will make you want to visit this truly remarkable garden.

The Trail Well Trod

Jo Laskowski

Des Moines, WA

Every year hundreds of people use the Esmeralda Basin recreation area in the Cascade Mountains east of Seattle, WA. It's easily accessible, and widely known for its wildflowers. But for us—a group of fourteen spirited botanizers—the booty would be any of the less attention-grabbing ferns, and one in particular.

The Cascades are new mountains and steep mountains. Multiple plate tectonic events have given rise to a complex record of rock deformation in this region. As the leading edge of the North American plate, the Pacific Northwest geology records multiple acquisition and compression events as island archipelagos were added to the northwestwardly moving continent. One of the soils found in these mountains was formed through the reaction of a certain rock with water, in oceanic crust where water circulated in cooling rock. People familiar with gemstones would know this precursor as peridot. The product of this reaction—serpentine rock—has a characteristic greenish-gray color, and a waxy feel. Find it, and you find the point of our expedition—*Polystichum lemmonii* grows on its soil. We collected ourselves together at a lodge in a town close to the trailhead

on Friday night, 15 July. We'd breakfast as a group the next morning, then caravan to what felt like a cow trail on to our destination. That night we met for an unexpectedly superb Italian dinner. Conversations touched on different forms of the ferns we might see on the trail; the *Polystichum* complex hardcopied for us from the "*Illustrated Flora of British Columbia*;" propagation techniques; personal trips to Israel, the UK, Norway; David Lellinger's "*A Field Manual of the Ferns & Fern-Allies of the United States & Canada*;" the recent Southeastern United States field trip coordinated by Naud Burnett and the British Pteridological Society; and the gnocchi—oh wow, the gnocchi...

True to form, we breakfasted too well and off we went. On our way to the trailhead we made a couple of roadside stops. At the first, *Aspidotis densa* (photo pg. 79), nestled on the protected side of rocks on the steep roadside cut. And *Polystichum lemmonii*! It's successfully adapted to the low silicon and relatively high levels of available magnesium, iron, chromium, and nickel in serpentine soil, conditions typically lethal to plants. *Polystichum scopulinum*, too, nuzzled against rocks, even appearing in close proximity to *P. lemmonii*, a chummy relationship quite uncommon.

We drove on, and caught our first serious glimpse of wildflowers. *Aquilegia formosa*, *Lupinus* spp., *Penstemon* spp., *Achillea millefolium*, *Delphinium* spp., *Linnaea borealis*. At the second roadside stop we found shamefully lusty displays of *Adiantum aleuticum*. (photo pg.79) They were growing on serpentine soil, and looking utterly different for it. The mostly horizontal habit of the pinnae was replaced by a decidedly upright posture, a forever "arms lifted" state of exultation. Commentary wandered to a good ID characteristic to distinguish *A. aleuticum* from *A. pedatum*—it seems that *A. aleuticum* carries a "rogue" pinnule on its rachis between the fork and first pinna, a rare occurrence on *A. pedatum*. Gorgeous stands of *Pteridium aquilinum* (photo pg. 78) grew at the edge of the road, pushing up fronds impossibly close together. The density of the massing made them gorgeous! And so unlike the far flung and unpredictable single fronds from the creeping rhizome that I know. I grouchily had to reconsider my historically murderous intent toward them when they sullenly popped up in ornamental gardens.

The trail head was at 4,250 feet. We didn't gain much elevation during our climb, but always impressive is the specificity of plants about their culture and elevation; how suddenly a plant seems to appear and disappear as you negotiate the rise and fall of a trail, and blithely step on the geologic chaos that is signature of the North Cascade range.

On the trail we avoided "may apples" and horses, squished through small rivulets and wobbled across fallen logs to get over creeks. The weather was "high soggy," with a muggy, misty feel. Esmeralda Peak was still carrying snow in places on its eastern flanks. From the distance the snow fields looked dirty, heavy, tired—it was, after all, the MIDDLE of July, well beyond the time any self-respecting snow would have normally disappeared.

As I climbed I noted that the subalpine firs, *Abies lasiocarpa*, were in terrible shape, a lot of scattered dead standing. The abysmal weather patterns of the past years have thrown the trees into a state of unrelenting stress, and spruce budworm has moved in. This insect is one of the most important conifer defoliators in North America. Several of its larval

instar stages feed wantonly on trees, mining needles and attacking vegetative shoots. The dying needles turn reddish-brown, giving the firs a spooky, scorched look. We straggled along, and *Cryptogramma acrostichoides* were scattered all along the rocky slopes. Strung out along the trail we saw wildflowers everywhere:

Penstemon rupicola, cliff or brake penstemon,
Lewisia columbiana subsp. *rupicola*, columbia lewisia
Pyrola picta, white-veined wintergreen
Silene acaulis, moss campion
Thalictrum occidentale, western meadowrue
Phacelia spp.
Maianthemum racemosum, false solomon's seal
Clintonia uniflora, queen's cup or bead lily
Erigeron spp., fleabane
Phlox diffusa, spreading phlox
Xerophyllum tenax, beargrass
Arnica cordifolia, heartleaf arnica
Castilleja spp., paintbrush
Sedum spp., stonecrop
Penstemon davidsonii, davidson's penstemon
Spiranthes romanzoffiana, lady's tresses
Veratrum spp., false-hellebore - and shrubs and trees:
Taxus brevifolia, western yew
Amelanchier alnifolia, western serviceberry
Rhododendron groenlandicum, labrador tea
Physocarpus capitatus, pacific ninebark
Alnus sinuata, sitka alder
Arctostaphylos uva-ursi, kinnickinnick
Pinus monticola, western white pine
Ribes spp., gooseberry
Mahonia nervosa, cascade oregon-grape
Rubus parviflorus, thimbleberry
Abies lasiocarpa, subalpine fir

With one group on ahead, the rest of us reached a sodden, montane meadow bursting with

shooting stars, *Dodecatheon jeffreyi*, before we backtracked and gingerly settled down on pointy rocks and a barely flat outcrop for lunch. A male western tanager, *Piranga ludoviciana*, floated over us while we contorted ourselves to get camera lenses in close for shots of *Cheilanthes gracillima*.

On the way up, a couple of groups had separately noticed a certain fern, and there was question about its identity. On our return we pooled around it for the debate. It was decided to be *Woodsia scopulina* rather than *Cystopteris fragilis*. Similar in appearance, *Woodsia* gives itself away by clasping its sori to its dorsal surface with scale-like filaments that reach up and enclose them. *Cystopteris*, on the other hand, bear hood-like indusia that resemble a bladder and give rise to their common name of bladder ferns.

At one point on the return I had paused to wait. I stepped off trail and was absentmindedly gazing into a group of *Rhododendron groenlandicum*. A breeze stirred slightly, and I realized that the things that look so uncomfortable in the cultivated garden—too scraggly, scrawny, or scrappy—are bluebloods in their native environment. The shrubs weave patterns in which each leaf seems to sense its neighbor and delicately, deliberately suspends itself so they barely, rarely touch. And always, everywhere—*Pteridium aquilinum*, in prolific profusion.

The Tale of a Mystery Fern

Alan Ogden

Hopwood, Worcestershire, England

I would like you to take a look at a map of England. Where the northwest coast takes a sharp turn west to become the north coast of Wales, between two estuaries, is a rectangular peninsula called Wirral. It was here in 1898 in the village of Ness that Mr. A. K. Bulley built a house, started a garden and founded a famous seed supplier Bee's Seeds.

Mr. Bulley was a wealthy man from the cotton trade and he was able to sponsor George Forrest and later F. Kingdom Ward to make trips to China to find new plants for English gardens. Many of our garden species of rhododendron, viburnum, primula and many alpiners came from these expeditions and the words 'bulleyana' and 'forrestii' identify several species. This history may be relevant to my tale.

In 1948 Mr. Bulley's garden was given to the University of Liverpool and became Ness Botanic Gardens. This was the venue for the 2002 Annual General Meeting of the British Pteridological Society, duly reported in the Bulletin which mentions that Hugh McAllister, a member of the University staff "brought some interesting ferns . . . for us to share out and take home with us."

This is how I acquired my mystery fern, about a foot high with pinnatifid fronds springing from a rhizome covered in attractive ginger scales. It was quite vigorous and soon I was able to divide it and share it with others as "the best way to keep a plant is to give it

away". I was surprised when our daughter, who lives in the Lake District, planted it out in the garden but not only did it survive but spread quite happily.

I did not even know what genus it was and had to wait a couple of seasons before it produced any spores but when it did become fertile with round naked yellowish sori it changed from the "mystery fern" to the "mystery polypody". Every time visitors came to the garden I tried to get it identified especially by Martin Rickard who was curator of the National Collection of Polypodiums. He was the only one who suggested that perhaps it wasn't a polypody.

So there the matter rested but I did like my "mystery polypody" which is deciduous and produces new soft pinkish fronds every spring. I too planted it out in the garden as my daughter's example reassured me that it was quite happy outside. I continued to divide it when possible and give samples to friends to try in their gardens.

It was in 2005 that I was able to join the Hardy Fern Foundation and British Pteridological Society's wonderful tour of the north east United States organised by John Scott which was also reported in the Bulletin. One of the notable places we visited was the garden of John and Carol Mickel in New York State. There were many wonderful ferns in the garden but I was fascinated to see some polypoid ferns growing in containers on the veranda so I hesitantly raised the problem of my "mystery polypody". John's response was to ask me to mail him a frond and he would try to identify it for me! What a generous offer! As soon as I got back home I pressed a typical frond and posted it off.

Within a few days I received an email to say that it had arrived safely and a short while later another enthusiastic email to say that he had tracked it down at the Herbarium and, of course, it wasn't a polypody at all but was *Drynaria sinica*. (Sinica = Chinese) (photo pg. 78)

I was delighted and very surprised as I thought *Drynaria* was a subtropical genus but in the mountains of China it has apparently become quite resilient. I conjured up a fantasy that it came from one of Bulley's sponsored expeditions to the Far East but the truth I discovered recently is rather more mundane. It was probably collected by Keith Rushforth in the late 1990s or early 2000s on one of his forays to that region but the identifying label was lost and the fern became my mystery.

I have learned a lot in the course of this rather slow and inefficient process of discovering the identity of my "mystery fern". Firstly, don't jump to conclusions – just because things look similar it doesn't mean they are related. Secondly, examine your plants properly. I think it was John Mickel who pointed out that the patterns of the veins in the fronds are very different - in *Polypodium* the veins divide as they spread from the midrib to the edge of the pinna whereas in the *Drynaria* they are like the joints in crazy paving, making a network.

I also came to appreciate the value of a Herbarium, though I have never learned how to use one myself it's nice to know a man who does!

Lastly, ask the opinions of all the experts you meet. On a later HFF/BPS tour which was in California I met Tom Stuart (a *Polypodium* expert) who was interested in my fern and sent me some reprints – it now seems likely that my mystery fern will become an *Aglaomorpha*. What an ugly word, perhaps I took things a bit too far!

References:

Ness Gardens – Bulley's beginnings to the present day (1987) J.K.Hulme, University of Liverpool Botanic Gardens, Ness, South Wirral.

The British Pteridological Society Bulletin. (2002) Volume 6 No.1

The British Pteridological Society Bulletin. (2005) Volume 6 No.4

Post Script – If you would like to see more pictures of this fern open Google on your computer, select Images and search for *Drynaria sinica*.

Lastly I would like to thank all the true pteridologists who helped this bumbling amateur in identifying this fern.

Hardy Fern Foundation Fall Social

Saturday, November 12th

12:00 - 3:00 pm

The Center for Urban Horticulture



**Join us for a delicious catered lunch,
fern sale and fabulous lecture!**

Guest speaker, Pat Riehl will teach us all about stumpery gardens. She will share the successes and challenges she's had with her own stumpery on Vashon Island.

Cost: \$20

Please RSVP to Michelle Bundy

hff@rhodygarden.org or 206-271-7470

Center for Urban Horticulture, 3501 NE 41st Street, Seattle, WA 98105



Woodwardia unigemmata

Carhart Garden

Photo courtesy of Sue Olsen

Pteridium aquilinum

Photo right courtesy of
Sue Olsen



Drynaria sinica

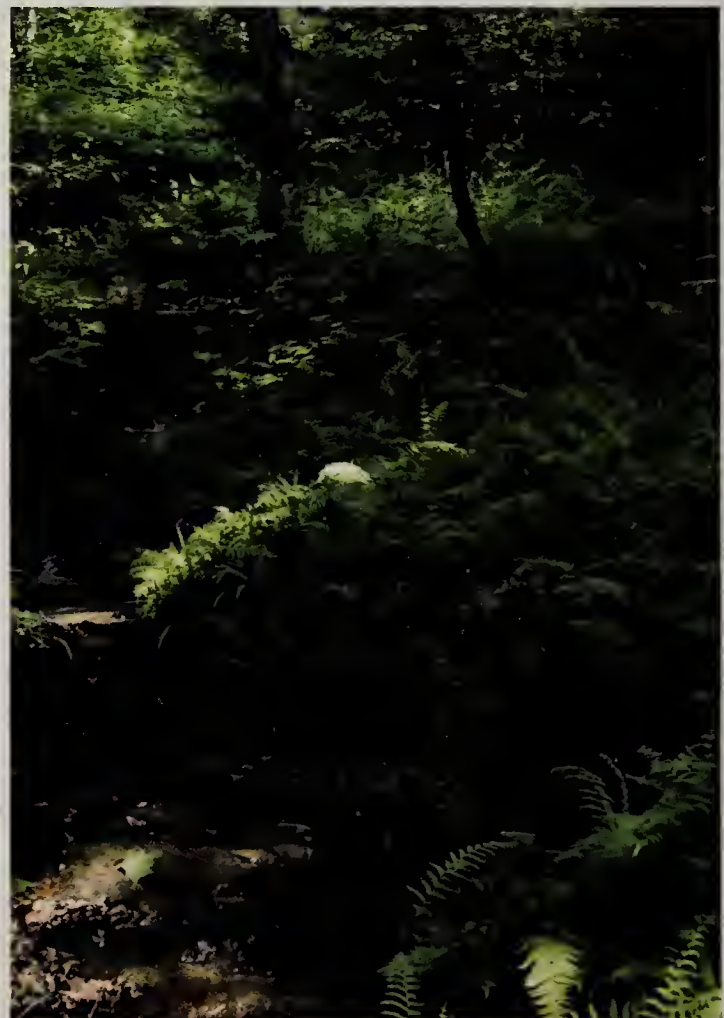
Photo left courtesy of Alan Ogden

Birmingham Botanical Garden

Photo below courtesy of Richie
Steffen

Trichomanes boschianum

Photo below courtesy of Sue Olsen





Adiantum aleuticum

Photo courtesy of Sue Olsen



Riehl Stumpery

Photo right courtesy of Sue Olsen



Woodwardia areolata

Georgia Perimeter Garden

Photo courtesy of Sue Olsen



Aspidotis densa

Photo right courtesy of Sue Olsen



**Happy ferners at
Huntsville Botanical
Garden**

Photo courtesy of
Sue Olsen

The Spell of the Island

Jo Laskowski

Des Moines, WA

Vashon Island is one of many islands in the San Juan group, strung up and down the Puget Sound (PEW jut) in Western Washington. For years the small island—within easy reach of metropolitan Seattle or Tacoma by ferry—was predominately farm land and, in fact, a primary supplier of produce in the early 1900's. Despite its proximity, Vashon has maintained its rural and idyllic tone, to the point that a trip there can eerily disrupt your sense of time. I entered that realm when I joined the Hardy Fern Foundation's 2011 garden tour. We'd gather at an island nursery, make carpool and caravan arrangements onsite, and go on a four-garden tour from there.

As I waited for the ferry the morning of Saturday, August 13th, I watched pleasure boats putting out to fish. It was a gorgeous day, with calm water. The tide was out. At DIG nursery we sorted ourselves and got underway with the chaos and good humor common to these events. We cheerfully failed to split into two groups as we should have. We took off after the one island resident along on the tour like ducklings after their mama, and thus we made it to our first destination. Skirting a cove on our way, I saw a couple of boats beached by the retreating tide. They waited on their sides, tethered to their useless buoys, for its return.

The property of Mary and Whit Carhart—some eighteen acres—runs from the main road and crests a hill before sloping down to the water of Quartermaster Bay. The view is stunning. As we descended to the house to park, I noted that a lot of nice pruning had been done to the Douglas firs to limb them up. Closest to the house, planting beds were packed with shrubs and perennials that offered a crisp **POP!** of color. Lots of purples and yellows. *Crocsmia* 'Lucifer,' violey-pink monarda, spent allium heads, hostas, hostas, hostas, tiny-flowered fuchsias, *Wiegela*, epimediums.

We fanned out to explore the acreage. A trail plunged down an overgrown slope to stairs to the beach. Climb up—as indeed you must—and we found a moon gate. *Dryopteris lepidopoda*. *Rhododendron yuefengense*?!—this rarely encountered rhody told me the Carharts participated in the biannual sales at the Rhododendron Species Botanical Garden, where HFF is also headquartered. I stopped where water dropped over boulders and river rock to a wide, shallow cement pond. It was nice to see a water feature that could be big, and still in scale. *Athyrium otophorum*, *Dryopteris crassirhizoma*, *Phyllitis scolopendrium*, *Polystichum munitum*, cyrtomiums. Moving still farther up, ornamentals became less frequent in the mix of plants, and native plants subtly dominated. When we reached the edge of the maintained acreage the scene was very different, a dismal clearcut. How to explain this discrepancy?

The Carharts recently purchased this acreage, previously slated for development. It has joined most of the rest of their land in stewardship. Stewardship is a program offered by Washington state and the Department of Natural resources that encourages and enables

owners of larger parcels—minimum of three to five acres to qualify—to make land use decisions other than development. Once through the hoops and with plan approved, owners choose between two options. Land can be put into timberland, or let alone to provide needed habitat, and to maintain and protect endangered or declining bird, animal, or plant populations. A beautiful *Rosa rugosa* hedge bordered the new acquisition, and it was setting amazing hips, just starting to color. Descending, I saw rain breaks along the steep drive. They were little piles of river rock, spaced at consistent intervals to keep rivulets from forming and eroding the graveled road surface. *Matteuccia struthiopteris*, *Woodwardia unigemmata*, (photo pg. 78) *W. fimbriata*, phormiums, hellebores, bergenia, *Blechnum spicant*, *Dryopteris affinis* ‘Crispa Gracilis.’

We caravanned to the property of Anita Halstead and Kelly Robinson. Their old house had been extensively restored, and the garden created on a naked lot. Our host, Anita, was a fabulous historian, very knowledgeable about her property and the house and the community of Dockton, where they were located. A small lot separated the property from the beach. We parked in the circular driveway, which was surrounded with a boxwood hedge, and hostas, aquilegia, epimediums, lilies, *Adiantum venustum*, berberis, hydrangeas, fruit trees. In the center of the driveway, a work-in-progress—an impressive boxwood serpent was growing on and taking shape.

The lot was completely and efficiently used. Anita had created both a gigantic chessboard in the lawn, and a boxwood-enclosed labyrinth. Many of us walked the labyrinth, and then strolled through the shade garden. An immense fruiting pear tree soared above the house and above an enclosure made of living *Pyrus* sticks. Anita relayed that the sticks had been used with no thought to their sprouting, but when—inevitably—they did, it only enhanced the original intention by framing the space with cooling, green foliage. As we departed, a license plate declared “This isn’t a garden, it’s a botanical masterpiece!” Absolutely.

We were heading to Pat and Walt Riehl’s stumpery, and lunch. (photo pg. 79) We passed a sign that said “Midlife Crisis Farms.” Eating sidetracked us only momentarily, and soon we were in the stumpery. The origin of the stumpery dates to the mid-1800’s, and can be laid firmly at the feet of the (then soon-to-be fern fanatical) Brits. At that time, when land was cleared it left large piles of tree stumps and roots. Edward Cooke saw a potential use for these, stacking them and arranging them and tucking soil into and around root wads, planting ferns. Prince Charles resurrected the concept when he built a secret stumpery in the 1980’s, and today both concept and Highgate are receiving attention.

Pat’s stumpery was designed, and the stumps and root wads placed to form its backbones, by Martin Rickard, noted British pteridologist. It’s situated in a shallow gully, where paths move you through a root wad tunnel and groupings of ferns and companion plants. Stumps are scattered and stacked on the sides of the gully, root wads rise and recline, and the trees overhead provide shade and the timeless sense of being in a grotto. Time is softening the outlines of the wood, and ferns are filling in. Hostas are flourishing. It’s comforting, cool, dim. During the first year deer and slugs ravaged young plants. A fence was installed to manage the deer. Slugs were discouraged judiciously. Pat’s

tenacity in acquiring all possibly, remotely, or anecdotally hardy ferns for her stumpery is unmatched, and the crowning glory for her is the tree ferns—*Dicksonia antarctica*, *D. squarrosa*, and *D. fibrosa*. They've reached impressive heights in their short time in the ground, and their foliage reflects their good health. Pat, of course, goes out each fall and carefully, attentively, methodically wraps them in protective layers to winter them over.

Then it was mid-afternoon, and our last garden waited. The wrought-iron gate to Cindy and Steve Stockett's property said "Frogsong Gardens." Cindy Stockett has the formidable organizational skills and energy typical of her former occupation, teaching. It shows in her garden, a series of spaces reflecting the formal elements of English estate gardens. The continuing project began in 1995, and was re-energized when 35 trees came down in a windstorm in the winter of 2006, abruptly removing deep shade and replacing it with full sun. Two and a half of approximately sixteen acres are intensely planted in a style Cindy calls "Northwest formal."

The thirty-five-year old house was surrounded by deep, curvilinear beds, and a trellis that bore a vigorous—and vigorously blooming—wisteria. Cannas, nicotianas, ornamental grasses, *Athyrium niponicum* 'Pictum,' *Robinia pseudoacacia* 'Twisty Baby,' the latter provoking the nursery manager beside me to comment upon its rarity in the trade. Open expanses of lawn were broken by large beds that blazed with color, textural contrast, and thoughtful combinations. Dwarf conifers, peonies, daisies, rhododendrons, sambucus, pink roses, globe thistles. *Juniperus squamata* 'Blue Star'—paired with a puckered, blue-leaved hosta—was next to a purple *Berberis*, next to a variegated *Cornus*, next to a purple sedum, next to liatris, next to a sea kale, next to *Perovskia atriplicifolia*, next to lavender, next to a dark-leaved allium, next to a *Rosa glauca*. A lot of succulent material was interwoven to nice effect. The star in one bed was the variegated *Agave*, offsetting lustily at its base. Cindy had sunk a metal ring around it and filled it with gravel, a clever and attractive way to accommodate its requirements. A narrow, stone-lined channel flowing with recirculating water cut a 150 foot long course through the garden. It ran past a lily-filled pond, beyond which the margins of the property are less rigorously maintained or remain pasture. Focal points in the spacious garden helped tie it together, fill space, and provide incentive for your next step—arbors, pots, fountains, seating walls, architectural plants. The exuberant profusion was uplifting, the vistas serene.

We dispersed for home. I dawdled along toward the dock. The beached boats of that morning were afloat. My time on Vashon was ending. Reluctantly I shook off the spell, and boarded the ferry.

International Field Meetings

South East, USA – 14 June – 27 June, Introduction, Pat Acock

Naud Burnett approached me on one of our recent tours with the Hardy Fern Foundation and said that he was willing to do a reconnaissance of the SE United States of America taking in the Appalachian Mountains. As I had always wanted to visit this area since reading about Herb Wagner's work on the Appalachian spleenworts, I was more than

enthusiastic about the tour. Naud and Wim set out in 2010 to work out the logistics and to meet the experts in both field and garden who would guide and interpret for us. For this we owe them both, immense gratitude as the distances were great. The research to find just the right gardens, wild places where these plants grow, well informed guides and the places to stay must have been very time consuming and wearisome, crossing six US States.

Two of the gardens visited, the Birmingham Botanical Gardens, and the Ralph Archer Woodland Garden at Whitehall Manor serve as test sites for the Hardy Fern Foundation. The Foundation's satellite test gardens¹ are located in diverse climates throughout the US from Florida to Alaska and Maine to California. Selected hardy ferns are tested in different regions to determine their adaptability and ornamental garden value in various climates. Data collected at these gardens is sent to Michelle Bundy at HFF for analysis.

The geology of the region² is mainly that of Paleozoic origins with principally Appalachian folded belts to the north giving way in the north-west to the stable North American Craton through a subduction boundary and to the south to the passive coastal plain also of Paleozoic origin. We were often on calcareous rocks but interestingly also at boundaries between calcareous and acidic rocks leading to interesting plant groupings.

The climate³ is affected by the tropical airstream from the Gulf and is described in the southern three states as permanently humid with hot summers and to the north of this permanently humid with warm summers. It was this humidity that we discovered on first arrival.

14 June – Georgia Perimeter College Fern Garden and Don Jacobs Garden Martin Rickard

Given the unpleasant side effects of jet-lag quite a few of us arrived in Atlanta 24 hours earlier than necessary. Of course we could not afford to totally waste the extra day so we visited the city's Natural History Museum. Passing the time of day, as one does, with local volunteers they soon realized why we were there! They had only one piece of advice – we must go and visit George Sanko at the Georgia Perimeter College Garden on the outskirts of town. Curiously enough that was the first site on the itinerary for the Tuesday!

The locals were right! What a garden, what a fern garden! Rarely would you ever see so many unusual ferns thriving in one place. On arrival we soon realized how the garden was the 'baby' of George Sanko. He greeted us surrounded by a host of unpaid volunteers who as a team maintain the garden to a very high standard. All were available to answer our many questions.

Initially I was blown away by the beds of xeric ferns, all beautifully grown. However, it was explained that quite a few of the more tender species were only planted out for the summer. During our visit the whole region was basking in 90°F+ temperatures but over winter it can be very cold. Some of the ferns I had never heard of, such as *Cheilanthes yavapensis*. Other more familiar, but beautifully grown plants, included *Cheilanthes*

buchtienii, *C.wrightii*, *C.eckloniana* and *Astrolepis sinuata*.

In a swamp garden it was a pleasure to see *Woodwardia areolata* (photo pg. 79) thriving with various species of sarracenia along with various osmundas.

The main fern area was under woodland where ferns were planted in a semi-natural system of island beds. It was very attractively laid out. Of great value to all the visitors were the wonderful clear labels placed in front of every plant. There was not always unanimity about the names – but that's half the fun! Lots of ferns were new to me with highlights being *Coniogramme intermedia* 'Yoroi Musha' – (pinnae dark green and deeply lacerated), *Pyrrosia porosa*, *Lepisorus bicolor* and a dwarf crested lady fern dubbed 'Lady in Lace'. Better known, but rarely seen elsewhere were *Arachniodes miqueliana*, *Pyrrosia lingua* 'Variegata' and *Coniogramme gracilis*.

Before we had really had a chance we were all called to lunch which consisted of a packed lunch eaten amongst the ferns. A very pleasant break as it gave us a chance to mingle with the numerous local volunteers and catch an occasional word with the inspiration behind the whole venture – George Sanko. Available space does not permit a fuller description – far better make the effort, go to Atlanta, and see it for yourselves!

While in Atlanta we had time for just one more garden. More a plant collection than a garden but a veritable plants man's paradise. This was the home of Don Jacobs and formerly Eco-Gardens – a nursery specializing in native plants. We did not have long here and Don kindly led us around some of the highlights of his collection. Not all were ferns of course. I was disappointed we were too late for many of the flowering plants. Don's collection of slipper orchids looked outstanding – judging by the leaves!

Easily the most interesting plant here for me was *Thelypteris palustris* 'Pufferae' – the crested marsh fern. I do not think a crested form has ever been spotted in the UK. So this North American treasure takes on extra significance. We saw a very small plant in a Philadelphia garden a few years back but here we had more than a square yard. Elsewhere *Pyrrosia polydactyla* was looking good as was *Lygodium palmatum* (seemingly naturalized) and *Asplenium rhizophyllum*.

After 45 minutes it was back to the bus for the 152 mile journey to our overnight stop in Birmingham, Alabama. Funny, the locals did not recognize my pronunciation!

15 June – Birmingham Botanic Garden and Huntsville Botanical Garden Graham Ackers

Birmingham Botanical Gardens, formed in 1960, prides itself on being Alabama's largest living museum, with more than 10,000 different plants within 25 garden areas in 67 acres. However, although we did get chance to see some of the "living museum" areas, our visit was of course focused on their ferns. Our host for the morning was Dan Jones, who walked us to the Fern Glade, en route describing various aspects of the gardens, in particular recalling the devastating effects of a storm in 1991 which ruined 1500 trees and many rhododendrons. The Fern Glade is a beautifully laid out woodland area having its own stream, and attractively fashioned beds bounded by sympathetically designed

walkways with imprinted fern and leaf designs. (photo pg. 78) The glade was started around 1970, and is maintained and enhanced by volunteers from the Birmingham Fern Society, many of whom welcomed us on our arrival at the glade. The fern society was started in 1975, having in 1977 80 members (but rather fewer now). The ferns in the garden numbered about 175 taxa, some of which were laid out thematically, for example “Alabama Native Ferns” and “Synoptic Fern Garden (a collection of ferns arranged by genus which will grow in central Alabama)”. Dan mentioned some of the taxa which do well in Alabama, including *Dryopteris stewartii*, *D. championii*, and *D. x australis*. In their attractively produced leaflet, 15 ferns are listed as being easy to grow in the Birmingham area. However, some other taxa are more problematic, particularly so if exposed to late frosts and cold spells, such as the one experienced in January 2011.

Coincidentally on the day of our visit, the Birmingham Fern Society were staging their 35th Annual Fern Show and Sale, which we were allowed to preview before our departure for lunch and our second stop of the day, which followed a two hour journey north on Interstate 65 to Huntsville.

At the Huntsville Botanical Garden, we were met by our guide Stu Clifton, who initially gave us a little history of the garden, which was only founded in 1988. In some ways this visit echoed our morning experiences. We were escorted to their Fern Glade, maintained by volunteers from the Huntsville Fern Society, set up in 1993, and now with 24 members. Once again we were warmly welcomed by several of the volunteers/members with whom we could discuss the plants and exchange views. The ferns, of which there were about 150 taxa, were laid out in attractively designed beds containing striking mass plantings. Common SE native species were much in evidence. Imaginatively, a colony of *Pleopeltis polypodioides* had been attached to a tree trunk. There were numbers of *Ophioglossum vulgatum* and *Botrychium virginianum*, genera of which most fern gardeners find difficult to establish. Non-natives such as *Dryopteris pacifica* and *D. bissetiana* were also well represented. The whole of this area of the garden was wooded, and the Fern Glade merged into a Nature Trail, with more ferns planted along a stream. Walking the Nature Trail one passed the National Trillium Collection with an astonishing 6000 taxa! Sadly of course we were too late for their flowering. Once having had our fill of the ferns, we explored the rest of the garden, including an impressive butterfly house, open to the elements, but having the inhabitants contained by a canopy of fine mesh netting. Later in the afternoon our hosts kindly put on a BBQ for us in their Murray Hall. (photo pg. 79) On finally leaving the gardens, we journeyed to our hotel via the Huntsville NASA Space Centre to view and photograph some enormous replicas of space hardware.

16 June – Cane Creek Nature Preserve, Tennessee - Sue Olsen

Today’s destination, Cane Creek Nature Preserve was our first of a number of scheduled trips to field sites and while the weather was sweltering and bathed in humidity, we were all eager to see an assortment of native ferns in situ. We were not disappointed as some 19 fern species greeted us during our hike including the day’s hoped for prize, the filmy fern *Trichomanes boschianum*. (photo pg. 78)

We were welcomed by the owners Faye and Jim Lacefield who have preserved this 413

acre site as a sanctuary dedicated to protecting its varied and unique habitats. The area with some 15 miles of trails is open year around and has recently been granted well deserved permanent protection by the Alabama Nature Conservancy.

Our hike took us down to the canyon floor passing en route the great plant diversity for which the Preserve is justly renowned. References laud the great variety of tree species as well as shrubs, particularly azaleas, and “the flashier flowers of early spring”. All of this is possible because the topography was shaped by eons of life as the ocean floor where ancient water movement created great sandstone walls, carved cliffs, shaped waterfalls and created microclimates that protect and encourage the growth of the Preserve’s broad collection of native plants.

The Christmas fern, *Polystichum acrostichoides*, was the dominant fern of the forested site and was to be the ubiquitous native fern of the entire two week foray. Its evergreen fronds greeted us with their “acrostichoid” fertile tips midway between productivity and deciduous departure from the parent plant. Favorite finds included the walking fern, *Camptosorus rhizophyllus*, (syn. *Asplenium rhizophyllum*) spreading like a living mural. But even better a climb up to view permanently frost free crevices in the canyon walls brought us to a luxurious spread of *Trichomanes boschianum*.

Meanwhile as our enthusiasm and cameras were focused on this highlight of our wild fern sightings, John Acock, our specialist in outstanding nature photography, discovered a small rat snake quietly stretched out and observing us from a comfortable (to it) nearby branch. To the best of my knowledge this was the only snake we found on the trip.

We continued along a gentle downhill trail heading for yet another rock outcrop where we scrambled up in the hope of finding signs of another filmy, *Vittaria appalachiana*. This is a species that never develops beyond the gametophyte stage and is not exactly easy to distinguish. Armed with ID info and Michelle Bundy wielding Jack Schieber’s helpful torch we searched the walls but truth outweighed optimism and sightings were not to be confirmed. While, yes it would have been delightful to add it to our growing list of native finds, the *T. boschianum* was a memorable treat not to be diminished by the absence of a second filmy sighting.

We retreated back to the trailhead and enjoyed a delightful picnic before busing on north through rural Alabama with its corn, cotton and wheat fields and depressingly sad sights of great recent tornado damage.

Our night’s lodging was at The Best Western Smoke House Lodge in Monteagle, TN where the cooking at the adjacent restaurant was decidedly “Southern”.

References:

¹Laskowski J. et al (2009) Directory of Fern Gardens, Nurseries and Reserves in the United States and Canada. *Hardy Fern Foundation Quarterly* 19:3 p1-39

^{2,3}*FLORA OF NORTH AMERICA* Introduction (1993) p15-21 & p22-27

Dryopteris carthusiana

Toothed wood fern, Spinulose wood fern, Narrow buckler fern

James R. Horrocks

Salt Lake City, Utah

Dryopteris carthusiana is a medium-sized, sub-evergreen to deciduous fern named after the 18th century botanist Johan Cartheuser. It grows mainly in acid to sub acid soil in moist, rich, humusy woodlands and even in swampy areas, and at higher elevations among rocks and trees. It is a classic circumboreal fern, very common in Europe and also found in Asia and the subarctic to northeastern North America, but rare further south and sporadic in northwestern North America. It was reported in error from the western Himalaya. It seems a genuine specimen of *D. carthusiana* was mistakenly labeled as being from the Himalaya-Kashmir, but it was almost certainly of European origin. Also, small plants of the Himalayan *D. ramosa* have been mistaken for this species. *D. carthusiana* is not known from the Indian subcontinent. (Fraser-Jenkins 1989).



Dryopteris carthusiana is a fertile tetraploid (Wherry 1961) produced through the natural hybridization of *D. intermedia*, a fertile diploid, and an unidentified species, probably now extinct, that was most likely diploid as well. Foliose forms of *D. carthusiana* have been labeled in error as *D. stewartii*, another denizen of the Himalaya. *D. intermedia* can be distinguished from *D. carthusiana* by the small glandular hairs that are absent in the latter and also by close inspection of the basal pinnae. In *D. intermedia*, the longest pinnule on the lower side is the second from the rachis. In *D. carthusiana*, the pinnule closest to the rachis on the lower side is the longest, being less than twice as long as the pinnule above. Also, *D. intermedia* is evergreen while *D. carthusiana* is not. *D. carthusiana* has been confused with *D. dilatata*, but the latter has bicolorous scales as opposed to the uniformly brown scales of *D. carthusiana*, and the lower basal pinnules next to the rachis are much longer, two to two and a half times longer than the opposing pinnules above. *D. expansa* has lower basal pinnules adjacent the rachis that are two to three times longer than the upper corresponding pinnules and the stipe scales have a dark central stripe. *D. carthusiana* hybridizes with a number of species including *D. clintoniana*, *D. cristata*, *D. intermedia*, *D. marginalis*, and *D. goldiana*. A crested form is grown in Europe.

Dryopteris carthusiana is the fern from which Robbin Moran painstakingly estimated the number of spores a single frond could produce. After counting the number of sori and multiplying by the average number of sporangia per sori, he then multiplied the number of sporangia by 64, the number of spores per sporangium. The total number of spores turned out to be a staggering 7,305,216 (Moran 2004) Imagine how many spores are produced by an entire plant!

Description: The rhizome is short and horizontal, mostly below the soil surface, but with an ascending exposed crown from which the fronds are produced in circular clumps. The medium to light-green fronds can be from one to three feet long, occasionally longer, and deciduous, although Wherry (1961) considered them subevergreen. The fronds are, for the most part, bipinnate pinnatifid but approaching tripinnate toward the lower portion, narrowly triangular lanceolate to deltate-ovate and smooth, lacking any glandular hairs. The stipes exhibit pale brown scales and are nearly as long as the blade. There are several lower pairs of obliquely triangular pinnae and, as has been mentioned, the lower basal pinnule next to the rachis is one to one and a half times longer than its upper counterpart. The pinnae grow upward at an acute angle to the rachis. The pinnules are divided partially into serrate segments or lobes that are finely spinulose or ending in bristles, the tips of which curve slightly inward. The sori are in rows at the base of the segments. The kidney-shaped indusia are medial and glabrous.

Culture: This is a rather attractive fern for the shady areas with medium light. It grows best in acid to subacid soils but seems to resent alkaline conditions. Plenty of leafmold is to its liking and it appreciates a boulder or large rock to nestle up to. This species is not always easy to acquire as it is so often confused with other species. Wherry (1961) considered it “less attractive” than some of its close relatives. It is very cold-hardy, doing well from Zone 2 through 7 but unsuited for warmer subtropical climates. It should be given protection from wind as the fronds tend to be somewhat brittle, especially new growth. All in all, it is a nice addition to the woodland garden if its requirements are met.

References:

- Fraser-Jenkins, Christopher R. 1989, *A Monograph of Dryopteris in the Indian Subcontinent* Vol 18 No.5, pp 428, 469 British Museum Natural History, London
- Wherry, Edgar T., 1961, *The Fern Guide*, p. 120, Double Day, New York
- Moran, Robbin C., 2004, *A Natural History of Ferns*, p.31, Timber Press, Portland
- Lellinger, David B., 1985, *A Field Manual of the Ferns and Fern-Allies of the United States and Canada*, p.289, Smithsonian Institution Press, Washington D.C.
- Olsen, Sue, 2007, *Encyclopedia of Garden Ferns*, p. 217, Timber Press, Portland
- Hoshizaki, Barbara Joe & Moran, Robbin C. 2001, *Fern Grower's Manual (Revised)* p.302, Timber Press, Portland
- Foster, F. Gordon 1984, *Ferns to Know and Grow*, p. 126, Timber Press, Portland
- Mickel, John T., 1994, *Ferns for American Gardens*, pp.177-178, Macmillan Publishing Company, New York
- Durand, Herbert, 1949, *Field Book of Common Ferns*, p.156, G.P. Putnam's Sons, N.Y.

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