From the Editor

Our first issue this year was a lesson in learning to do a layout. We failed to realize the consequences of reduction — hence the amount of unused space in the first number. We trust our use of a reducing lens in the preparation of this number will lead to an improvement.

We included an illustration of the sporangium of Cheilanthes lanosa, by Don Ritchie, in the first issue this year. We intend to continue these illustrations with a different taxon for each issue. If you have a favorite, let us know, and we will include it.

We received a rather long manuscript on hardy ferns, edited by Tom Delendick, that we feel will be of interest to our readers in temperate regions. Because of its length, we have decided to run it as a sequential series so as not to completely dominate two issues.

We felt that the last issue of Vol. 11 suffered from the lack of Ed Faulkner's calligraphy. We think that calligraphy is part of the tradition of Fiddlehead Forum. Because neither of us is adept at calligraphy, we have enlisted the services of Ellen Baker, who is a student at Barnard. We thank her for her efforts and for volunteering to do this for us. - DWS & JWS

Fern Festival at Fairchild Tropical Garden

The South Florida Fern Society Inc. presents its ninth annual Fern Festival May 4 and May 5 at Fairchild Tropical Garden, 10901 Old Cutler Road, Miami, Florida 33156. Festival hours are 9:30 AM to 4:30 PM both days.

Educational exhibits, programs, lectures and demonstrations for instruction and entertainment are scheduled for both Saturday and Sunday. Ferns in the Show will be judged, and ribbons and trophies awarded.

Sale tables will offer an assortment of fine ferns, sporelings as well as mature ferns, rare collector's items and cultivated favorites, as well as unusual ferns from other parts of the world.

There is plenty of parking space, and the entire Garden will be open to visitors. Admission is $3.00 at the gate. Members and children aged 12 and under, accompanied by their parents, are admitted free.

Aurelia Haer, Publicity Chairman
South Florida Fern Society Inc.

Miami, Florida 33179

Wanted

Sources for live plants of Leptopteris, Osmunda, or Todea species other than O. regalis var. spectabilis, O. cinnamonensis or O. claytoniana, or live spores or dried specimens. Please contact:

John Knouse

as in Woodwardia fimbriata J.E. Smith, "Giant Chain Fern", of the Pacific Northwest.
Fern, in German, is
Farn or
Farnkraut

Male Fern

For five years I worked on developing a fern garden at the Dawes Arboretum in Newark, Ohio. During those years, many of the ferns proved to have notable garden uses, but one species stood out as the 'all-round' best, the male fern (Dryopteris filix-mas). Surprisingly enough, it is rarely grown in North American gardens.

In contrast, it is the single most popular fern species in gardens of the British Isles, according to British fern authority, Reginald Kaye.

Richard Rush, in a British Pteridological Society publication, describes male fern as "the easiest hardy fern to grow..." He goes on to list ten named, cultivated forms, most of which are crested.

In Dunedin, New Zealand, on the country's south Island, male fern is a common weed. As a gardener at the Dunedin Botanic Garden, I often pulled volunteer male fern out of the rather sunny knot garden. It was naturalized in the nearby bush, where it grew into magnificent specimens.

In Newark, Ohio, it proved to be particularly versatile. It grew famously in native soil, amended alkaline soil and amended acid soil. One plant even showed no adverse effects when tunnelled beneath by a chipmunk. Only when grown in a persistently wet site did the species fail.

Male fern is best used as a large specimen plant in partial to heavy shade. It is said to grow fronds up to five feet in length, although two to three feet is a more realistic expectation. At Dawes Arboretum, the spore-grown male ferns had fronds over two feet in length, four years after propagation.

The literature will list male fern as evergreen or deciduous. The tough, almost leathery fronds, persist well into the fall and winter. By winter, they are flattened, but often retain their green color. At winter's end, and well into the next growing season, dead, brown fronds persist around the base of the plant. It is said that this skirt of dead fronds, such as is especially thick on the marginal shield fern (Dryopteris marginalis), will deter slugs. Slugs were not a problem on my male ferns, nor were insects or disease. That skirt also makes an excellent mulch for the plant.

With age, the male fern will gradually develop a clump of crowns, as the growing tips of the underground rhizome divide. Old plants can be propagated by dividing those crowns. My four-year-old plants were not ready for division. Male fern is also easily propagated by spores. They develop quickly, relative to other ferns. I was able to grow three and four inch plants in six and one half months under artificial light. When grown continuously under artificial lights, fronds reached one foot in length after fourteen months. Although the species freely spreads by spore in the cool moist gardens of Britain and New Zealand, I never saw any volunteer male fern in my Ohio fern garden.

Male fern has a cosmopolitan natural distribution. It is found growing natively in Asia, Europe, and North America. Although it has a large natural range in North America, it is rare throughout. It grows in the Rocky Mountains from Canada to Mexico, and in the east from Quebec and Ontario, south to Michigan and southern Vermont.

Throughout its world-wide range, there are genetic variants which have different cultural requirements. Edgar Wherry notes that "...stock from the Rocky Mountains is sold by dealers, who have nearly exterminated it from many a valley..." He goes on to say, "The taxon of our region thrives only in areas of very cool summer climates, and, in view of its rarity, it should not be dug wholesale for attempted culture where it is unlikely to succeed, as this could result in its near extinction."

Male fern of the central Ohio fern garden at Dawes Arboretum survived the hot midwestern summers very well. In fact, of all the some fifty North American fern species growing in the garden, male fern was the least affected by the unusually hot, dry summer of 1983. They were propagated at Dawes from spore of probable European origin. It may be safe to deduce that the provenance (native origin) of different strains of the species is important for its garden survivability. This can be true of any garden or landscape plant. It is a standard recommendation to try to buy locally grown plants that have proven adaptability to your area.

Charles T. Cleaves
Hayes Regional Arboretum

Dryopteris filix-mas
Hardy Ferns: Part 1
Notes and Possibilities, with Observations and Comments
Chuck Anderson, Tom Delendick, Gordon Foster, Carol Johnston, and Eth Williams
Edited by Tom Delendick

One of the important activities of the New York Chapter of the American Fern Society has been the introduction of new ferns. A considerable amount of information has been gained as a result of the experience of the Chapter, under the guidance of John Micke1, at the fern glen at the Cary Arboretum; of Ekh Williams and John in Westchester Co.; of Chuck Anderson, Gordon Foster and Will Morrissey in New Jersey; Carol Johnston in Nassau Co.; the Octos in Connecticut and later in Massachusetts; myself in Queens, and with Slim Zumwalt at Brooklyn Botanic Garden; and many others.

At the February, 1984, meeting of the Chapter, Carol Johnston suggested that a symposium dealing with non-North American hardy ferns would be not only of great interest but also serve as a stimulus to increased activity in hardiness trials.

Over the years, I've made notes on ferns that I've seen or read about that struck me as being worth growing. Many of the entries are of species which are hardy or potentially hardy in our areas. In the discussion with Eth and John that followed on Carol's suggestion, I was encouraged to submit my list, supplemented by notes and the experiences of several other fern enthusiasts, to the FIDDLERHEAD FORUM, with the idea that it might serve as a starting point for anyone interested in trying potentially hardy types.

The notes that follow derive from a number of greater or lesser sources. On John's advice I have included our native ferns, as well as the exotics that stimulated the production of this list. Overall, there is a definite Japanese prejudice in that flora and partly because of the availability of information on Japanese ferns (especially Ohwi and Nakaike). I only wish there were as much data for the Chinese species! I have not tried, however, to include the MANY hybrids dutifully recorded in the publications of the British Pteridological Society or by the Japanese; enough is enough!

Whether or not the ferns listed are, in fact, sufficiently distinctive to warrant cultivation is a matter wholly apart from their potential hardiness. Many of the Dryopteris or Athyrium species may prove hardly different from the ones we already know and grow. On the other hand, we might come up with something in the class of D. erythrosora or D. nipponicum.

The matter of synonyms, or alternative names, proved to be somewhat of a problem in compiling this list. Some species of Athyrium, for instance, which are mentioned in one source, were listed under Diplazium or Lunatychium elsewhere. At John's suggestion I have chosen the "easy" way out in using the most familiar genus name (e.g., Athyrium, inclusive of Diplazium and Lunatychium), unless a species is patently misplaced in the more general group.

More of a problem are the species synonyms. Many ferns have "alter egos," names by which they may have

In general, larger plants are likely to survive better than smaller ones (or, perhaps, "established" plants rather than "young" ones). But not in every case - Gordon Foster recounted a time when he set out a number of nature-sprouting American hart's-tongue ferns in a barren site with lots of lime in the soil; the plants simply perished out -- but were succeeded by sporelings which found sites which were to their liking in the habitat he had provided.

The spring is the time I prefer for planting out anything new or choice, regardless of size. Plants always seem to have a better chance at surviving when set out in spring with a full season to get established.

Mulching makes a big difference, and may even be critical for many plants in their first winter. Japanese climbing fern is reported hardy in parts of Westchester where it's heavily mulched (a two to three foot thickness of leaves in fall); this species has never made it outdoors in Brooklyn, but on the other hand we've never been able to give it a covering of that magnitude. Polystichum munitum is praised by Gordon as being "self-mulching" with its cast of fronds of years past. The reliability of snow cover -- that cheap and highly effective natural mulch -- may be one reason why some have been well known before and which may still have currency (or occasionally be resurrected), such as Athyrium goeringianum and A. isaeum for the fern correctly known as A. nipponicum. Some wholly innocent but hardy fern might be overlooked simply because it is available under an incorrect name, and thus not listed here. In such an event, I'd suggest that any species which is native to, or grown in, an area which makes it seem likely that it may be hardy -- well, it's worth trying. You just hope that the name doesn't turn out to be a cover for bracken!

Success with hardy ferns depends on a number of unrelated factors, some of which are touched on below.

The provenance -- where the plant or spores came from -- is important. Many of the ferns included here are widely distributed, in some of the Asian species from the tropical southeast Asia to Siberia! Material from the northern end of the range may naturally be expected to do better as far as the cold is concerned, but even that may involve repeated trial. Polystichum tus-sinense took in Queens on the first try, but it required several attempts at Brooklyn Botanic Garden before a winter-hardy clone was found.

Hardiness is not just a matter of "north" vs. "south." There are warm temperate ferns for which the winter temperatures around New York are just too cold. On the other hand, some boreal species find our hot moist summers unbearable. Some potentially hardy Cheilanthes or Notholaena perish from the excessive (to them)
fers have done better at Cary than in Brooklyn or the Bronx where the snow cover is erratic, at best. This lack of reliable snow cover may also be contributing to the lack of success in New York of some New Zealand and Tasmanian ferns (and flowering plants too) that grow into the alpine zones in the mountains of their homes, often within feet of glaciers.

The microhabitat may also mean the difference between success and failure. An exposed situation may be worse than one up against the house. Carol reported that the pink shield fern, Dryopteris cristata, did better with more sun than with more shade. In Queens, Thelypteris pinnatifida was happy but discretely rampant among English ivy and plantain-lilies in my garden in Queens; but it passed out completely when given a pole spot at B.B.G.

Animal interference can complicating the task of determining hardness. At B.B.G., squirrels are a particular bane, digging at random and scattering even established plants, though they seem to concentrate their activities in areas of new plantings. Dogs, by virtue of their size, can be mighty and indiscriminate offenders; and despite protections of their innocence, I am not willing to exempt cats from complicity. Deer, according to Gordon, love hart's-tongue, but avoid the western sword and marginal shield ferns. And several people have noted that the walking fern is the choice of slugs everywhere.

A lesser problem, but one just as frustrating, is that of reversions. It doesn't happen to species, of course, but there are chance forms of hart's-tongue and common polypody which, just as they are getting established, revert to the wild state. Gordon recalls how his Phyllitis scolopendrium 'Marginatum' reverted after two years; likewise in 'Hoy's Translated'. In Queens, I have had persistent problems with forms of Polypodium vulgare, but at least with that I can clip off the offending reversions and expect most succeeding fronds to come true.

Finally, Gordon points out that it takes at least two years to establish hardiness ratings. He mentioned that on a number of occasions ferns came through their first winter, only to pop out in the second summer or during the ensuing winter: Woodwardialegroundicum and W. erosa, Polystichum lonchitis, Ceterach officinarum and Campylosorus sibiricus fall into this category, while Asplenium septentrionale disappears for him in its third year. Curious — but it seems to be a phenomenon not at all restricted to ferns.

Of course, to give any fern species a trial, we have to have spores and plants. This is the biggest stumbling block to further progress in generating information on hardy ferns. Perhaps someone will volunteer to transplant in Manchuria? Spend a weekend in Siberia or the mountains of Taiwan? There's a whole world out there!

(The recent appearance of Richard Ruhl's "A Guide to Hardy Ferns" provides a great deal of information on ferns which can be grown out-of-doors in Great Britain. It should prove a stimulus to hardiness trials in the different regions of the United States and, we hope, eventually culminate in a similar publication on ferns hardy here.)

FERN CANDIDATES FOR HARDINESS TESTING:

One note on hardiness information derived from Chapter members: The area covered by the Chapter is rather considerable, and the range of weather and climate conditions no less so. The map presented here shows the locations of some of our contributing members so that their observations may be evaluated in the light of one's own location.

ADIANIUM capillus-veneris. Taiwan to China, Japan, Manchuria (Nakaie, 1975).
A. hISPIDUM. Tasmania. New South Wales, New Zealand, etc. (Best, 1960-61). Naturalized from La. to s. Ga. (Hoshizaki, 1970; Mickel, 1979a); grown in cool greenhouses in England (Swindells, 1971) though Kaye (1960) says it will grow outdoors there in a sheltered spot.
A. pedatum. No. America (Mickel, 1979a). Variety subumtileum (Vancouver Is.: Wagner & Boydston, 1978) is hardy in Bklyn.; 'Klonakite' & 'Aleticum' are recorded as hardy in England (Swindells, 1971); forma lacinatum (Fernald, 1950) & 'Byce's Dwarf' (Boydston, 1980) are also listed.
ALEUROPTERIS dubloxi. Sichuan, China. Did not make it during one trial (White Pleins); worth trying again (L. Williams).
A. standishii. Korea (Nakaike, 1975); hardy in Western Canada (Mickel, 1979b).

ASPLENION adiantum-nigrum. Europe, Asia, rare in w. U.S. (Mickel, 1979a); crested var., have been recorded from time to time (Kaye, 1969).
A. anagrammatodes. Manchuria, Korea, Ussuri (Far Eastern USSR) (Fomin, 1968).
A. antinum. Taiwan to Japan & Korea (Nakaike, 1975).
A. bilitiic. W. Europe east to W. Germany & S. Italy (Crabbe et al., 1964).
A. dareinodes. America; reported hardy in England (Rickard, 1992).
A. fontanum. S. & cent. Europe, on calcareous rocks (Crabbe et al., 1964).
A. fissa. S. central & southeastern Europe into Germany (Crabbe et al., 1964).
A. forsonense. West cent. Europe (to n. France) (Crabbe et al., 1964).
A. incisum. Taiwan, Kamchatska, Japan, Manchuria, Korea (Nakaike, 1975; Oh, 1982); Ussuri (Far Eastern USSR) & Sakhalin (Fomin, 1968). "Minusculissum" & "Albovariegatum" are noted in Nakaike (1975).
A. lepidum. SE Europe to se. France (Crabbe et al., 1964; Kaye, 1969).
A. marinum. W. Europe, n. to Ireland, Britain, France & Norway (Crabbe et al., 1964).
A. montanum. E. U.S.: non-calcareous rocks (Mickel, 1979a); f. shawshankense was mentioned in the FIDDLEHEAD FORUM (1976, 3(6): 3).
A. platynuron. E. North America (Mickel, 1979a); certain varieties are worthy of cultivation: f. furcatum (f. multifidum), f. hortenae (f. dissectum) (Taylor, Foster, 1976; Boydston, 1969).
A. prolomatum. E. Asia, n. to Korea (Nakaike, 1975).
A. ribes. Taiwan to Japan, Korea (Nakaike, 1975).
A. sarellii. Himalayas to Japan, Korea, Manchuria (Nakaike, 1975); var. altaissima: from Siberia (Fomin, 1968).
A. trichomanes. North America, Europe, Asia (Mickel, 1979a); the following forms are known: "Cristatum", "Multifidum", "Ramosum" (Moore, 1863); "Bipinnatum" (Kaye, 1969); "Incisum Moule" (Rickard, 1982). "Cristatum" & "Incisum" are hardy in s. Mich. (Boydston, 1960).
A. viride. N. North America, Europe, Asia: on calcareous rocks (Mickel, 1979a); hardy in s. Mich. (Boydston, 1979); "Cristatum", "Incisum" are noted in Kaye (1969).
A. wilfordii. Taiwan to Japan, Korea (Nakaike, 1975).
A. wongowii. Caucasus, on calcareous rocks in alpine zones (Fomin, 1968).
A. x aspersenosor plumiferus. (Asplenium septentrionale X Coptosorus rhizophyllum). (Mickel, 1979a).

ATHYRIUM. Some species may be listed under Lunatium, Diplazium or Coropteris in some plant or spore TICS.
A. australis. (Diplazium australe). Queensland, New South Wales, Tasmania, New Zealand (Best, 1980); semi-tender in Calif. (Hoshizaki, 1976).
A. brevifrons. Hokkaido, Korea, Manchuria (Nakaike, 1975; Oh, 1982).
A. chinense. (Diplazium c.). Japan, China (Nakaike, 1975).
A. crenuloterriculatum (Coropteris c.). Japan, Korea (Nakaike, 1975); hardy at B.B.G. since 1975.
A. decurrentii-alatum (Coropteris d.). Japan, China, Korea (Nakaike, 1975).
A. deltoldifrons. Japan, Korea, China (Nakaike, 1975); also f. acutissimum.

There are several naturally occurring varieties: var. angustum (n.e. U.S.); var. rubellum; var. asplenifolius (n.e. U.S.); var. filix-femina (nw & w U.S.); var. cyclosorus (nw U.S.); var. (Mickel, 1979a); Fernald (1950) mentions f. cristatum from our area. Large numbers of TICS are listed and described in Moore (1963), Kaye (1969, 1968), Swendels (1971), Hoshizaki (1973), Parrish (1973), Rickard (1962) & Dyce (1965). "Percristatum" (Foster, 1971) & "Kaloactis" (Dyce, 1963) seem particularly worthwhile.

A. hakonhornsii (Diplazium h.). Ryuku Is. to Japan, Korea (Nakaike, 1975).
A. henryi (Lunatium h.). Japan, Korea, China (Nakaike, 1975; Oh, 1982).
A. japonicum (Diplazium j.). Lunatium j.; Japan, China, Korea (G. Foster), Hardy in Queues for a number of years; hardy according to Hoshizaki (1975). Occ. escaped in Fla. (Mickel, 1979a).
A. niponicum (A. goeringianum, A. iseana; Diplazium n.).
A. otophorum. Japan, Korea, China (Nakaile, 1975).
A. pycnosorum (Lunathyrium p.). Taiwan, Japan, Korea, Manchuria (Nakaile, 1975).
A. reflexifolium. Taiwan to Japan & Korea (Nakaile, 1975).
K. Sheareri. Japan, Korea, China (Nakaile, 1975).
K. SIDRICUM (Diplazium s.). Japan, Sakhalin, Siberia, Korea, Manchuria, Europe (Nakaile, 1975; Fraser-Jenkins, 1976).
K. spinulosum. Sakhalin, Siberia, Manchuria, Korea, China (Nakaile, 1975).
K. squamigerum (Diplazium s.). Japan (ohwi, 1965).
K. vidalii. Taiwan to China, Japan, Korea (Nakaile, 1975).
K. viridifrons (Lunathyrium v.). Japan, China, Korea (Nakaile, 1975).
K. wardii. E. Asia to Japan, Korea (Nakaile, 1975) & Ussuri (Far Eastern USSR; Fomlin, 1968).
K. wuchurae (Diplazium w.). Taiwan to Japan, Korea (Nakaile, 1975).
K. yokosense. E. Asia to Japan, Korea, Manchuria (Nakaile, 1975).
A. ZOALA. At least three species are potentially hardy: A. caroliniana, A. filiculoides & A. mexicana. They are difficult to tell apart & there is little information on hardiness. They require an aquatic habitat (Mickel, 1979a).

B. chilense. South America (Rush, 1982b).
B. magellanicum. South America (Rush, 1982b).

To be continued...

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