Founded in 1997.
Logo art of Tall Goldenrod,
Solidago altissima,
by Nat Cleavitt, 2006.

Solidago

Newsletter of the
Finger Lakes Native Plant Society

Volume 19, No. 2 ~ June 2018

LOCAL FLORA

Eupatorium serotinum – Have You Seen This Plant? (And What To Do If You Do See It!)

by Rosemarie Parker, with lots of input from Arieh Tal, David Werier, and Mike Hough

WHEN I NOTICED A DIFFERENT-LOOKING PLANT IN MY "MEADOW" LAST YEAR, and asked for help with identification, I inadvertently kicked off an interesting dialog. In the end, I am hoping that some readers will look out for this plant, and help document where it is found within New York State.

ARIEH TAL recognized my Mystery Plant images immediately: "Your plant is ***Eupatorium serotinum*** **(Late Thoroughwort)** [1]. It is rare in central N. Y. It is present in a few of the easternmost counties of the state. How it got here is unknown. Wiegand and Eames didn't even list it in their *Flora of the Cayuga Lake Basin* (1926). Obviously, birds, squirrels, and deer didn't spread the species all the way to [Tompkins Co., N.Y.] on their fur/feathers. I collected the first and only [Tompkins County] specimen of it last year, along the railroad tracks south of Cecil Malone Drive in Ithaca. I went over there earlier in the season this year and found that the entire area around where the plants were found was sprayed and everything was killed. Perhaps some seeds germinated this summer and reestablished the population."

I asked a few experts about the advisability of collecting seed for the FLNPS seed exchange, and got mixed results. One said *too weedy*, one said *maybe*, one said *yes because it is uncommon*. In response to a question about the native status of the plant in this region, DAVID WERIER did some serious looking, starting out with this comment:

"*Eupatorium serotinum* is a relatively new addition to the flora of New York. It appears to be expanding its range from where it occurred in the recent past and clearly is native. This is mostly to the south and west of New York. A number of years ago the New York Natural Heritage Program decided to consider it a *native plant pioneer watch list* species. These are species which are thought to be increasing their range and are just showing up in New York. Since the movement into the state is considered to have occurred without human influence, they are considered native. And although they may be rare now, they are expected to become more common. *Eupatorium serotinum* is now too common in New York to be on that list.

"Previous authors have classified this species as not native in New York. I decided to classify this species as native to New York, since my definition does allow for species to naturally (*i.e.*, without human influence) increase their range. Still, I have a note to myself that further work is needed. It might instead deserve to be classified as having an unknown nativity in New York. In southeastern New York it has become quite common in the right habitats, mostly disturbed sites, but it does grow in some native habitats

like river shores. In central New York it will likely become more common in the near future. I think there is definitely an argument that could be made that it is expanding its range naturally. Still, since it likes disturbed sites, we will always find it along railroad tracks and in disturbed areas.

"*It might be best to wait for it to become common before FLNPS* [*distributes*] *seed. This way it won't be FLNPS that is considered the cause of spreading this plant around.*

"*Also please do make herbarium specimens, as these are new reports for this part of the world and should be documented. Perhaps write it up as well.*"

— **David Werier** [*italics added*]

Arieh Tal also noted: "From an aesthetic, horticultural purpose, this species doesn't seem all that special, as compared with our common *E. perfoliatum*. Its value may lie in its preference for drier, open sites; *i.e.*, as a niche plant. From a conservation perspective, one may wish to allow it

to exist and flourish where it occurs.... The plants I found in the railroad yard were not present in large numbers—maybe 4 or 5 plants, all mature. The site is, of course, a highly disturbed place, and many species colonize the ground."

Michael Hough added: "As I mentioned, I do have one of these in my yard (actually a few new ones have popped up from the parent plant). Thought you ... might be interested that of all the flowers blooming in my yard now (lots of asters, liatris, and goldenrods), the *Eupatorium serotinum* is by far the most popular with the Monarchs [*Danaus plexippus*]. It is as if the butterflies are glued to it, and if I startle them they go right back to it. When I first planted it I thought it might just turn out to be mostly a weed, but it seems to be a very useful nectar source for at least that species. It is a common species along roadsides further south in N.Y. and throughout N.J., so they probably use it a lot during their migration south."

And along those lines, "The flowers are very popular with many kinds of insects, including long-tongued bees, short-tongued bees, wasps, flies, small- to medium-sized butterflies, skippers, moths, and beetles. Most of these insects seek nectar, although bees may collect pollen and beetles may feed on it.... The caterpillars of various moths can be found feeding on various parts of this and other Bonesets." [www.illinoiswildflowers.info]

So is *Eupatorium serotinum* a nice (though not lovely) plant worth keeping? David attached a couple of articles that Steve Young, Eric Lamont, and P. M. Eckel wrote about this species (and others) in New York. One of the points made was that when populations were seen, it was often at least *near* disturbance. Arieh's plants certainly were. And I had a large dead tree removed from my yard a couple of years prior to my discovery, with heavy construction trucks driving right near the spot now occupied by *E. serotinum*. Hmmm. Young and Lamont also mentioned a possibility of two ecotypes in the eastern states, one well behaved and coastal, and one spreading inland and weedy in disturbed sites. Hmmmm, again.

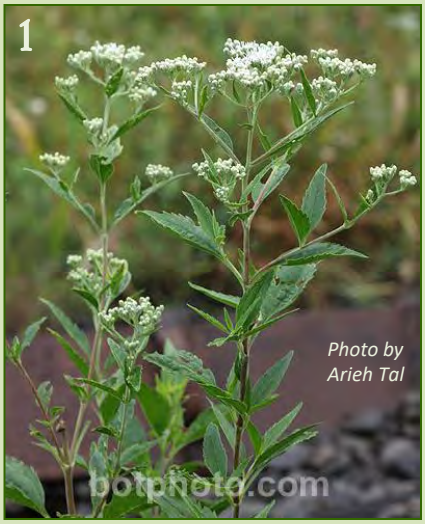
The final word, for me, was **David Werier**'s decision: "I did a review of the data I have on this species for New York and believe that the answer of nativity is indeed not clear on the state level, so have changed the status to unknown nativity for the state as a whole [in the *NYFA Atlas* —RP]." **Translation: more data needed. But don't spread the seeds.**

I will be collecting a specimen from my field this year, documenting the year I first saw the plant and the prior heavy equipment disturbance nearby, and then I will give the specimen to Cornell's L. H. Bailey Herbarium. **If *you* notice an odd-looking boneset or white Joe Pye, look closer.** If you decide it is *E. serotinum*, **please collect a specimen*** and either bring it to the Herbarium, or let me know, and I will come get it. We could change the NYFA map and status for this species!

***Collecting Specimens:** Fold a plant to fit on one or more 11 × 17 in. sheets — it is okay to cut the plant into parts if it is too tall for one sheet — and include flowers if present; arrange between thick newspapers; and put under heavy books or in a plant press until dry. Record date collected, location, collector, evidence of disturbance, and predominant nearby plants if possible.

▼**Identification:** Also known as **Late Boneset, *E. serotinum*** is 3-6 ft. tall, with a flat-topped white inflorescence in late summer or early fall [1]. The stems have indistinct lines of white hairs, and are generally pubescent. The leaves [2] are primarily opposite, although the upper leaves near the inflorescence are sometimes alternate. These leaves are up to 7 in. long and 2½ in. across, with petioles up to 1 in. long. They are lanceolate, largely hairless, with coarse teeth along the margins, and there are 5 veins that diverge from the base. These leaves tend to nod downward from their petioles, and are often dark green [2-3]. ***A similar plant*: Common Boneset (*E. perfoliatum*)** has *perfoliate* leaves (that wrap around the stem) and are without petioles [4]. [www.illinoiswildflowers.info]

***Eupatorium serotinum*: 1** (plant), **2-3** (leaves and stems).
***Eupatorium perfoliatum*: 4** (leaves & lower flower buds).



Please Contribute to *Solidago*

We welcome contributions that feature wild plants of the Finger Lakes Region of New York and nearby. We include cryptogams (bryophytes, lichens, fungi, and algae) as "flora," and recognize that green plants provide habitats and substrates for these and many animals, especially insects. We are interested in zoological associations as long as plants are an integral part of the story.

We can use a wide spectrum of material in a variety of writing styles. Our regular columns include **Local Flora** (plant lists or details of species from specific sites), **Outings** (reports of FLNPS-sponsored excursions), and **Plant Profiles** (on specific local plants). We also occasionally publish **Appreciations** (memorials to local botanists and naturalists), **Reviews** (of books, talks, meetings, workshops, and nurseries), **Letters** (commentaries and letters to the editor), **Essays** (on botanical themes), **Verse** (haiku, limericks, sonnets, and poems of less formal structure), **Art** (botanical illustrations, plant designs, pencil sketches, decorations), and **Photographs** (stand-alone images, photo essays, and full-page composite plates, or originals that can be scanned and returned). We also can always use **Fillers** (very short notes, small images, cartoons) for the last few inches of a column.

Solidago

Newsletter of the
Finger Lakes Native Plant Society

Volume 19, No. 2 June 2018

Published quarterly at Ithaca, New York, USA.

FLNPS (founded in 1997) is dedicated to the promotion of our native flora. We sponsor talks, walks, and other activities related to conservation of native plants and their habitats. *Solidago* is published as a colorful online version, and a B&W paper version that can be mailed. The online format is posted 3 months after publication. Please see ***www.flnps.org*** for details of membership, past *Solidago* issues, and updates about our programs.

Contents

Early blooms of **Trailing Arbutus (*Epigaea repens*)** near Ithaca, N.Y., 2 May 2018. Photo by Robert Dirig.

Please send *Solidago* contributions & correspondence to Robert Dirig, Editor, at editorofsolidago@gmail.com

Deadline for the September 2018 issue is August 15th !

Name That Plant Contest

The photo from last issue's ***Name That Plant Contest*** [*Solidago* 19(1), page 5] was of **Common Bluets** or **Quaker Ladies (*Houstonia caerulea*)**. It is a member of the coffee family (Rubiaceae), which is one of the largest plant families in the world. Most of the species are tropical and woody, but a few species occur in temperate climates and are herbaceous, including *Houstonia caerulea* and the bedstraws (*Galium* spp.). *Houstonia caerulea* has flowers of two kinds or morphs, some with long stamens and short pistils, and others with short stamens and long pistils. This is termed ***distyly***. Flowers with long stamens and short pistils are called ***thrum flowers***, and those with long styles and short stamens are called ***pin flowers***. Generally, effective pollination occurs only between different flower morphs. Thanks to all those who entered the contest and congratulations to contest winners: *Krissy Boys*, *Betsy Darlington*, *Bob Dirig*, *Hal Gardner*, *Susanne Lorbeer*, *Rosemarie Parker*, *Bard Prentiss*, and *Franz Seischab*.

This issue's mystery plant is shown above. Hints and suggestions are often provided to contest participants who try. Common and/or scientific names are acceptable. More than one guess is allowed. Please submit your answers to **David Werier** at

The photographs were taken by David Werier on 3 (inset) and 10 (main image) May 2018 in Tompkins County, N.Y.

Letters

[See another letter, p. 6.]

Hi Bob,

Thank you for the lovely, wonderfully poetic article on the "Spring Sunbathers" [*Solidago* 19(1), pp. 8-13]. I could visualize and sense it all as clearly as if I were standing there. That was a treat, considering that my last trips into the woods have had me wallowing through 8 inches and dodging cascades of wet snow. My dog appreciates that much more than I do!

I am going to keep an eye peeled for both the Toothwort White and the White-M Hairstreak butterflies. What an absolutely gorgeous blue on the latter!

Thanks for brightening my day!

Best,
Dorothy Stiefel
email of 7 March 2018

Bob:

Another great issue of *Solidago*. I especially enjoyed your article blending spring flora with spring butterflies, and your report of *Parrhasius m-album*. A good find — I'll keep an eye out for it this Summer.

Charles R. Smith
email of 8 March 2018

Greetings Bob,

I have a good guess for the *Cladrastis* seed source for the volunteer Yellowwood trees described in the [March 2018] *Solidago*. I bet you remember it too — the huge Yellowwood that once grew near the Cascadilla Gorge where today the Performing Arts Center sits.

Best wishes,
Peter L. Marks
email of 11 March 2018

Dear Bob,

I was hiking at Buttermilk Falls State Park a few weeks ago, and it was the first time I had been out looking for spring wildflowers. I saw this beautiful **Red Trillium** (*Trillium erectum*)* that was just flowering, and knew I had to get a photo (*left*). I like how the dark ovary, an identifying characteristic of Red Trillium, makes the anthers and the stigma stand out.

Best,
Julia Miller
email of 12 May 2018

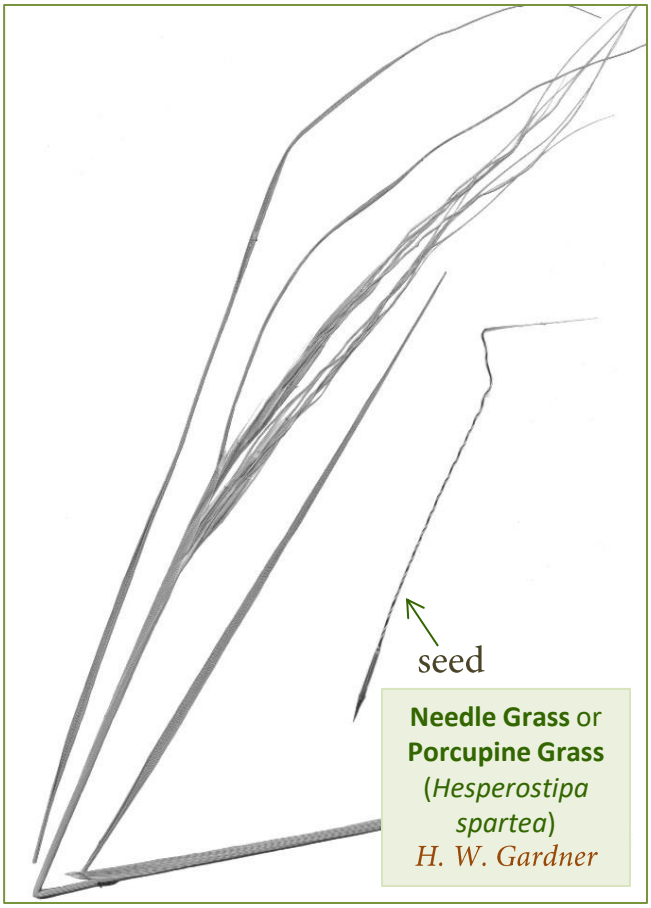
a.k.a.* **Purple Trillium or **Stinking Benjamin** in the NYFA list

Digital Images in Botany

by Harold W. Gardner

For at least 1,500 years, botanists have been either drawing or painting plants. An alternative is "smashing" and drying a plant for storage as a herbarium sample. Now we are in a digital age, in which we can capture either a newly cut flower or seed-head in great detail. This fresh sample can be placed on a computer scanner, with the lid closed, and scanned at 200 dpi (dots per inch), 300 dpi, or higher. The image can be expanded at will to easily see even minute details. Shown here is a color image of *Lilium michiganense,* scanned at 200 dpi. Also shown are a seed-head and seeds of *Hesperostipa spartea* in black and white, scanned at 300 dpi. Clearly, this technique is superior to any of the ancient methods.

Michigan Lily
(*Lilium michiganense*)
H. W. Gardner



Needle Grass or
Porcupine Grass
(*Hesperostipa spartea*)
H. W. Gardner

Thank You!

Our **STEERING COMMITTEE** [p. 3] has recently seen major changes, with the retirement of **Mark Inglis**, **Rosemarie Parker**, **Arieh Tal**, & **David Werier**, after many years of service to FLNPS. **David** produced 47 issues of *Solidago* (1999-2012), and continues his "Name That Plant Contest." **Rosemarie** has contributed regularly to *Solidago*, and performed vital organizational roles for FLNPS. **Arieh** has also regularly written illustrated articles, and has maintained our membership list. **Mark** contributed early articles, and has — like all other Steering Committee members — helped carry out the many "routine but noble tasks" that sustain such an organization. We are extremely grateful to these people for their crucial contributions over the years since our founding in 1997.

MANY THANKS to all who contributed to the **Volume 19, No. 2** issue of ***Solidago***. We thank **WRITERS** Harold W. Gardner, Mike Hough, Peter L. Marks, Julia Miller, Rosemarie Parker, Dorothy Steifel, Charles R. Smith, Arieh Tal, David Werier, & Robert Dirig. **ILLUSTRATIONS** were loaned by Arieh Tal [pp. 1-2], Rosemarie Parker [p. 2], David Werier [p. 4], Julia Miller [p. 4], Harold W. Gardner [p. 5], Dorothea D. Chase [p. 25, fig. 146], & Robert Dirig [pp. 2-3, 6-24, & 26]. **CALENDAR ITEMS** were organized by Rosemarie Parker & Anna Stalter. **LAYOUT and DESIGN** by the Editor. **PROOFREADING & REVIEWS** by Lee B. Kass, Carolyn Klass, Scott LaGreca, Rosemarie Parker, Torben Russo, David Werier, & Robert Wesley. **PRINTING** of paper copies by Gnomon Copy, Ithaca, N. Y. And **MAILING** by Gin Mistry, Rosemarie Parker, & Susanne Lorbeer. *BEST WISHES* to FLNPS members (and all others in our reading audience) for joyous revels among summer flora in delightful habitats!

— *Robert Dirig*

Finger Lakes Native Plant Society

Early Azalea (*Rhododendron prinophyllum*), June 7th 1997.

FLNPS Calendar, Late Spring & Summer 2018

Sunday ~ June 10th ~ 9:30 a.m. to 3:30 p.m. A walk highlighting Eastman Hill Flora, led by **David Werier** at Eastman Hill in Danby, N.Y. **(registration required).**

We will explore an acidic hilltop and adjacent talus slope at the south edge of Tompkins County in central New York, on the northern edge of the Appalachian Plateau. Chestnut Oak (*Quercus montana*) forests dominate the hilltop, while an interesting talus slope below the hill creates some added diversity. Expect to find some regional rarities like Rock Harlequin (*Capnoides sempervirens*) and Summer Sedge (*Carex aestivalis*), as well as some orchids and more. Some of the terrain will be rugged, so ***expect some difficult walking***. Meet at CCE* at 9:00 a.m. to carpool, or at the site at 9:30 a.m. Contact **David Werier** to register, as space is limited**.** Bring lunch and water. This is a joint trip of the New York Flora Association and the Finger Lakes Native Plant Society.

Saturday ~ July 14th ~ 10:00 a.m. A walk at Jam Pond Bog in Chenango County, N.Y., led by **Robert Wesley**.

Visit a large, diverse peatland. We are sure to see an orchid species or two! Meet at CCE* at 9:30 a.m. to carpool. Contact Anna: to register.

Jam Pond Bog, 27 May 2002

Saturday ~ August 4th ~ 10:00 a.m., a Fern Walk, led by **Audrey Bowe**. Location to be announced.† [to column 2]

***Most walks begin at CCE (the Cornell Cooperative Extension parking lot), 615 Willow Avenue, in Ithaca, N.Y.**

†Please check our website (flnps.org.) for updates and details.

We appreciate suggestions for speakers or topics, walks, outings, and rambles.

New York Flora Association Summer Workshops

Please see details at <http://www.nyflora.org/events>

Friday ~ July 27th ~ 7:00 p.m., through Sunday ~ July 29th. A Workshop on "Grasses of New York," taught by **David Werier.** Jointly sponsored by the Bailey Hortorium Herbarium at Cornell University. Fee and registration required.

Saturday ~ Aug. 11th ~ 10:00 a.m. to 2:00 p.m. A Workshop on "The Composite Family (Asteraceae) of New York," taught by **Arieh Tal** at the Bailey Hortorium and surrounds of Beebe Lake at Cornell University in Ithaca, N.Y. A new, illustrated, interactive key to the Asteraceae will be demonstrated at the workshop. Fee ($30 for NYFA members, $60 for non-members) and registration are required. Please see the website above for more details — and a list of additional NYFA workshops and walks in various parts of New York.

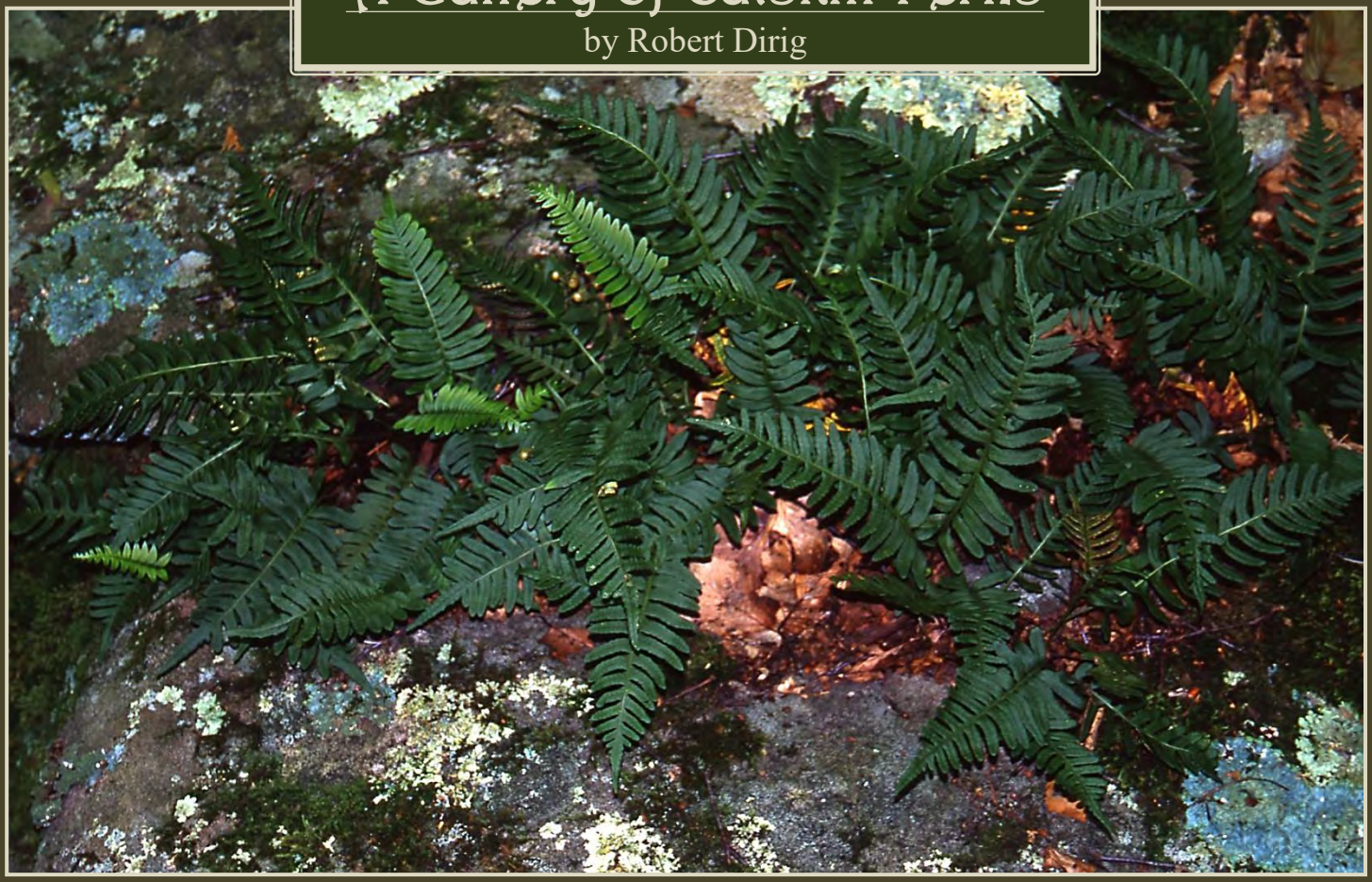
Letter I hoped that writing about "Unloved Plants" [*Solidago* 18(4): 4-5] at the FLNPS Spring Plant Sale might inspire some increased sales. We did, in fact, sell many more grasses this year, probably because we were pushing grasses as pollinator hosts. One knowledgeable FLNPS member bought the only Cut-leaved Toothwort I brought to the sale (*YES*!). We had no *Collinsonia* to offer. *Symphyotrichum urophyllum* was in short supply, but we only sold two. I did not have a good label for it, and it did not inspire very many people. This year's unloved plant was *Lysimachia ciliata*, probably because I forgot to bring the photo. It is interesting how visual most of us are in plant shopping, looking only at the big pictures, instead of reading the full list with more information. Maybe next year we will push *Lysimachia*.

Rosemarie Parker, *email of 27 May 2018*

SUMMER FLORA

A Gallery of Catskill Ferns

by Robert Dirig



Frontispiece: VIRGINIAN ROCK POLYPODY (*Polypodium virginianum*) growing on sandstone. The bluish lichens are Rough Speckled Shield (*Punctelia rudecta*).

THE DESIRE FOR INFORMATION can be a powerful motivator, and in the absence of a mentor, is most easily satisfied by a book that mirrors our questions with the answers we seek. My craving for knowledge of Catskill ferns had been growing for a year and some months before I ordered the 1961 Dover reprint of ***Frances Theodora Parsons***' wonderful 1899 classic, ***HOW TO KNOW THE FERNS***. When this slim volume arrived on July 10, 1965, I hurried from our mailbox, tore open the package, and immediately began to absorb information.

Of course, I had "known" ferns since early childhood; but that is not the same as knowing about them in detail — their names, haunts, personalities, and seasons.

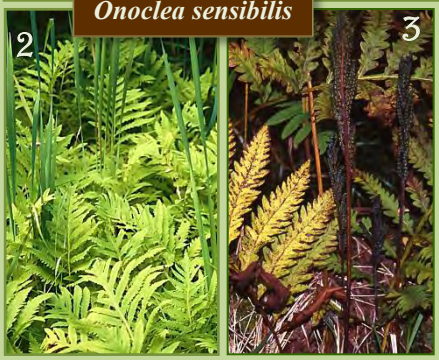
Parsons' book was perfect for a 15-year-old. It was easy to use, covered all the species of my area, was decorated with exquisite ink drawings by Marion Satterlee and Alice Josephine Smith that captured the visual essence of each fern, and was written in a delightful, late-Victorian style. While reading of Parsons' adventures in seeking and finding rare ferns near Albany and Syracuse, N.Y., I was inspired to search for local pteridophyte treasures at and near French Woods in Hancock Town, Delaware County, N.Y., at the southwestern corner of the Catskill Mountains.

I could not have picked an easier group to study as a summer project, for Parsons treated only fifty-seven ferns, and quite a number of these were so rare, or were distributed so locally, that I could not expect to find them in my territory. The season was also just right: late enough for ferns to be well developed and beginning to produce spores, but not so late that they had started to wither, or were in poor condition. Glancing through the pages, I tentatively recognized about a dozen species I had seen within a few hundred feet of our house, and several more inside the larger radius of my pedestrian reach.

Careful study of the book during the next few days enabled me to identify fifteen species I had pressed in 1964, and earlier in 1965. I made marginal notes on dates and habitats, as I named the ones I had, and with information in the book as a guide, went out to look for others I had not found. In all, I discovered twenty species of ferns that summer, and in the meantime have added eleven more, making a total of thirty-one species seen in the southern Catskills. Additionally, I have found three kinds of horsetails, and eight species of lycophytes, making a grand total of forty-two pteridophytes for the region. The following catalogue summarizes and illustrates the special features of each.

Sensitive Fern
Onoclea sensibilis

PERHAPS IT IS NOT SURPRISING **that the first fern I identified using Parsons' book was very common [1].** I had collected and pressed this one, fifteen months before, and as it was the first species in the book, and very distinct, I immediately recognized it from the drawings and description. What a thrill, finally to know its name — SENSITIVE FERN (***Onoclea sensibilis***) — after so many months of wondering what it was! Once identified, I began noticing its wavy-edged, yellow-green foliage and beaded fertile fronds everywhere: at the edge of our lawn, in ditches along the highway [2], in wet old fields, along brooks, and in the Swamp. This species' common name alludes to the vulnerability of its green fronds to frost. The elegant, brown fertile fronds [3] were evident on winter rambles, a few months later, sticking up through the snow.



IN THE HEAT OF JULY, A NEARBY SWAMP BECKONED **as a shady, cool, and moist retreat [4],** where I had already located a number of ferns, and hoped to find more, now that I had a guide, and could make a systematic search. It was exhilarating to revisit the denizens of this nearly pristine, 21-acre perched wetland, which was 1500 ft. from our house.

OAK FERNS (***Gymnocarpium dryopteris***) [5-6] hid like tiny emerald Brackens on hummocks beneath the Hemlocks (*Tsuga canadensis*), often in sight of LONG BEECH FERNS (***Phegopteris connectilis***) that also grew in small, graceful clumps in the shadows [7-8].

Oak Fern
Gymnocarpium dryopteris

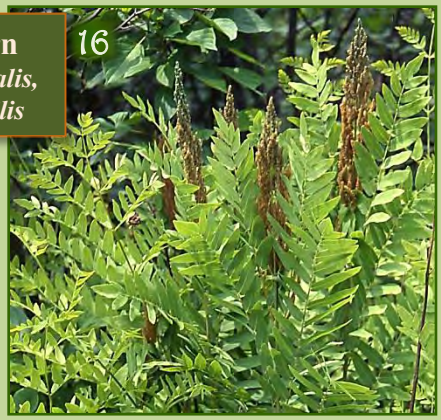
In sunnier spots, the much larger, lacy fronds of NORTHERN LADY FERN (***Athyrium angustum***) splayed in dainty clumps [9-10]; while CINNAMON FERNS (***Osmundastrum cinnamomeum*** var. ***cinnamomeum***) reached my shoulders, or even arched over my head, their resplendent toothed fronds arranged in large crowns [11-12] around the withered, rusty-orange fertile fronds from May [11]. In 2001, I found a cocoon of the huge, tawny Polyphemus Moth (*Antheraea polyphemus*), wrapped in the browned pinnae of a Cinnamon Fern in the Swamp, where the larva had found shelter after completing its growth on a nearby tree or shrub [13-14].

Long Beech Fern
Phegopteris connectilis

Northern Lady Fern
Athyrium angustum

Cinnamon Fern
Osmundastrum cinnamomeum

Ferns of the Swamp



Clumps of ROYAL FERNS (*Osmunda regalis,* var. *spectabilis*), with somewhat coarser fronds, tipped with russet fertile pinnae [15-16], liked more open spots along the edge of the beaver meadow, with their roots in a few inches of standing water.

Ferns of the Swamp

On hummocks in the Swamp, I also found the elegant INTERRUPTED FERN (*Osmunda claytoniana*) — which I had known since early childhood from two large crowns that grew naturally at the edge of our lawn. There, each spring, my brother and I watched the yellow-green fiddleheads slowly unroll, revealing their blackish fertile pinnae near the tops of the central fronds [17]. The spore-producing parts later turned chestnut brown and dried up [18], as they appeared that July day in the Swamp. This common fern is dramatic throughout the warmer months, and is always a joy to encounter. It was the first fern I ever knew.

At a later date, I noticed the CRESTED WOOD FERN (*Dryopteris cristata*) on Swamp hummocks [19-21], its leathery, yellow-green fronds persisting after frost, as do those of Virginian Rock Polypody, Christmas Fern, and Fancy and Marginal Wood Ferns. This subtle species always occupies a drier spot with dappled shade, often among shrubs, and usually has just a few fronds, in contrast to the luxurious clumps of other *Dryopteris* species. It is sparse enough that any encounter brings a smile.

Scattered single fronds of the MARSH FERN (*Thelypteris palustris,* var. *pubescens*) provided a lovely vertical texture to the tangled herbage of the beaver meadow in the Swamp. When viewed through a hand lens, most veins were forked, appearing like a stirrup at the end [22-23]. Marsh Ferns were frequent there, on pond and lake shores, and in wet ditches. Their late-season fertile fronds have inrolled margins with massed sori beneath, and a rather different look [24].

Many of the same ferns grew in fens, bogs, or other wetlands. My most important pteridological discovery in this region was made unwittingly, during a general floristic survey of a pristine *Sphagnum*-heath bog in Pea Brook (Dirig 1986) [25]. I recorded the plants, lichens, mosses, and insects of this superb wetland over a span of six years. In September 1977, I routinely pressed several fronds from the surrounding "moat," thinking they were Marsh Ferns at the time. Only when I looked closely at the undivided veins [26], five years later, did I realize what I had: **Massachusetts Fern (*Thelypteris simulata*)** [27], a new species for the entire Catskill region![1] Unfortunately, this wonderful bog was drowned by Beavers (*Castor canadensis*) within a few months of discovering this inland rarity there, and the station destroyed.

Ferns of the Swamp

WE WERE SURROUNDED BY HUNDREDS OF ACRES OF UPLAND FOREST, including some old growth, and in these steep, moist, shady, rock-strewn habitats, I found a different assemblage of ferns.

Christmas Fern (*Polystichum acrostichoides*) was one of the most common, its gorgeous, glossy green fronds growing in large clumps that persisted under the snow until the following spring [28-29]. We occasionally used a few fronds in Holiday decorations, and I thought that was the origin of their name. Years later, I heard of the fancied resemblance of the pinnae to stockings hung from a mantel, with the "toes" all pointing in one direction [30], making its name doubly appropriate. The elegant, chaffy fiddleheads of this fern unroll in the first days of May [31].

The **Rattlesnake Fern (*Botrychium virginianum*)** is another woodland species. It seems always to be sparse enough that I stop when I find one. The ***sporophore*** rears above the thrice-divided green platform of the ***blade*** (*see Fig. 67 on page 14 for a diagram*), and is thought to resemble the rattles of our resident viper (the Timber Rattlesnake, *Crotalus horridus*), hence the name. This fern thrives in rich woods, expanding in May [32-33].

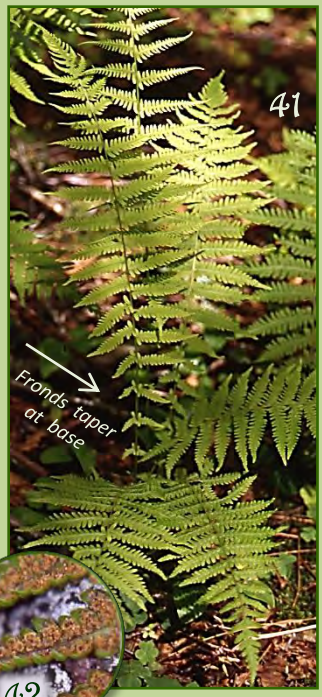
The **Marginal Wood Fern (*Dryopteris marginalis*)** graced rocky outcrops, shady stone walls, wet woods, and the roots of upturned trees with its year-long greenery, growing in rosettes. It is immediately distinguished from others of its genus by its slightly coarser aspect, and the small marginal sori on the undersides of the pinnae [34-35].

Ferns of the Forest

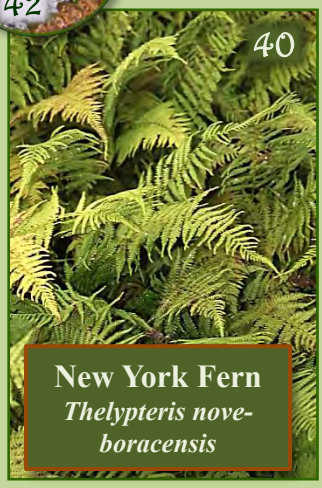
(1) Massachusetts Fern was not included in Brooks (1979). It was also found at one site in adjacent Wayne County, Pennsylvania, by an earlier fern enthusiast, William L. Dix (1936, 1965); see Appendix C.

Ferns of the Forest

The more delicately cut **Fancy** or **Evergreen Wood Fern** (***Dryopteris intermedia***) was very abundant in shaded woods, also growing in clumps [36]. Its fine sori are not marginal [37], the ***rachis*** (main axis) has glandular hairs, and the innermost pinnules of the bottom pinnae are usually shorter than adjacent ones [38]. During and after the Great Depression (1930s-1950s), this species was harvested in large quantities by local families, and sold for use in floristry (*see details, p. 21*). The evergreen fronds [39] persist until new fiddleheads appear the following spring.

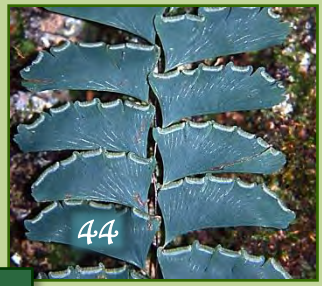


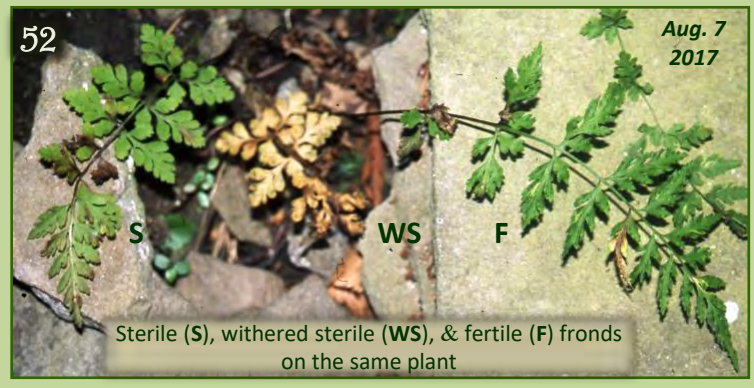
New York Ferns (***Thelypteris noveboracensis***) sometimes grew in large masses at the edges of woodlands [40], or filled sunnier areas in the forest. They are characterized by their yellow-green fronds that taper to a long point at the top *and* the base [41]. Occasionally I also saw them in small clumps on shaded, drier hummocks in the Swamp. The fronds persist into the middle of October, but are finally killed by heavy frosts. Spores are borne beneath the pinnae of fertile fronds [42].



I feel a sense of reverence whenever I enter the presence of the **Maidenhair Fern** (***Adiantum pedatum***), one of the loveliest plants in our entire flora. The stately grace of its deep bluish-green fronds, gently waving on slender black stems on a shady (often limy) knoll, is unsurpassed by any other local fern [43]. The Maidenhair was not especially common, but when found, it usually occurred in sizeable clumps. Its large, paler sori grow marginally beneath the pinnae [44].

Since childhood, I had seen the **Virginian Rock Polypody** (***Polypodium virginianum***) mantling shaded bedrock outcrops, boulders, and talus slopes [**frontispiece** (*p. 7*), **45**, **55**]. This gregarious species superficially resembles a miniature Christmas Fern in its evergreen nature and deep green fronds; but they are smaller, and the alternate arrangement of the lobes gives them an odd, zigzag design [46]. Turning over a frond in late summer reveals the large, round, salmon sori [47], which are smaller, earlier in the season [48].





(2) Karl Brooks (1979, pp. 100, 102, & 217-218) reported Mackay's Fragile Fern (as *Cystopteris fragilis*, var. *mackayii*, now called *C. tenuis*) from throughout the Catskills. A dozen specimens I collected between 1965 and 2017 in southern Delaware and Sullivan Counties all appear to be *tenuis*. *Cystopteris tenuis* and *C. fragilis* can be very confusing, with seeming plasticity of characters that may reflect an imperfect understanding of the dimorphism of the early (mostly) sterile* and later fertile fronds. Botanists tend to collect these ferns with the rhizome and fertile fronds, which can destroy a clump for later study. Ideally, collectors might observe marked clumps of *Cystopteris* throughout a season, pressing sterile spring fronds and fertile ones in summer that are attached to the same rhizome. This would yield a more comprehensive view of seasonal variation in the fronds that grow on one plant. Natural hybrids of *C. tenuis* and *fragilis* may add further confusion. **Paler & Barrington** (1995) defined characters of the pinnae and pinnules that help separate *fragilis*, *tenuis*, and their hybrid. A paper by **Moran** (1983) is also helpful in understanding *C. tenuis*. [**See also Tailpiece on page 26.*]

Ferns of the Forest

Mackay's Fragile Fern (***Cystopteris tenuis***) was a subtle species that grew along wet, shaded crevices and in soil at the base of outcropping bluestone and shale, as well as in abandoned quarries [49], and in soil atop drier, shady rock outcrops. This fern is very delicate, with rusty sori on the underside [50-51], the fronds sometimes browning and withering by August [52-WS]. The ***spring fronds*** [49-S, 52-S] emerge in May, and are quite different from the ***fertile*** ones of July and August [49-F, 52-F], having larger pinnae with round or scalloped (*crenulate*) margins, and a more graceful shape. A particularly luxuriant clump grew in a moist, sheltered nook on a bluestone cliff near the Delaware River, east of Long Eddy [53-54]. Mackay's Fragile Fern used to be considered a variety of the very similar **Fragile Fern** (***Cystopteris fragilis***), which has a more northern distribution, and differs in fine details of the fronds (Cobb *et al.*, 2005).[2]

One of the first species I actively sought was the **Walking Fern** (***Asplenium rhizophyllum***) [55-56], so-called because its very narrow, evergreen frond tips may root where they touch the substrate, allowing this fern to "walk" slowly across the rock face. I scrutinized all the boulders, talus, and bedrock outcrops within my compass, as my book suggested, to no avail — or so I thought. After moving to Ithaca in the Finger Lakes Region of N.Y., a few years later, I was delighted finally to behold the Walking Fern on the brink of a shady cliff under Hemlocks, in Six Mile Creek. Its size surprised me: glossy, emerald fronds, *4 to 8 inches long*, very slender, and *yes*! with a few rooting at the tips. I had been seeking a plant with fronds over a foot long, and more

Walking Fern
Asplenium rhizophyllum

Ferns of the Forest

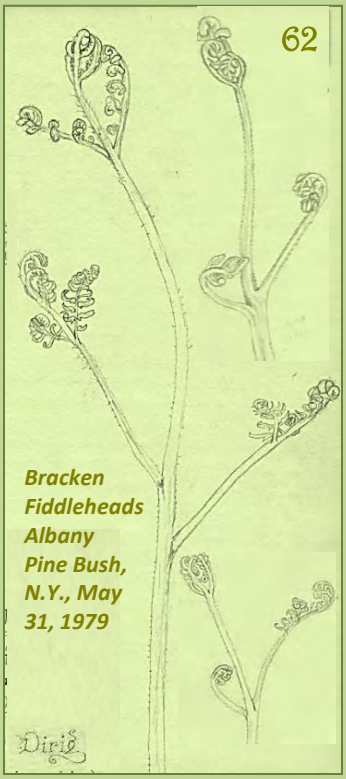
than an inch wide at the base (dimensions which the Walking Fern can attain in ideal conditions). With a more accurate search image, I later, with great excitement, did discover this quaint wilding on two of the Catskill cliffs I had examined so closely, eleven and fourteen years before [55-57]. This illustrates ***a potential failing of field guides in not providing an accurate scale*** for a species — as well as the great power of search images in helping us find (or *not* find) what we seek. Cobb *et al.* (2005: 74) considered the Walking Fern to be rarely seen on sandstone.

The HAY-SCENTED FERN (*Dennstaedtia punctilobula*) thrived in old fields, thin woods, pastures, and on sloping roadsides, spreading in large masses [63]. Its yellow-green, triangular fronds, which turn yellow and whiten as autumn approaches [64], bear small brown sori on the undersides [65]. Their woodsy fragrance conjures visions of summer's lazy comfort, with a basket of sandwiches, lemonade, and blackberry pie, spread on an old tablecloth over a horizontal boulder.

Ferns in the Sun

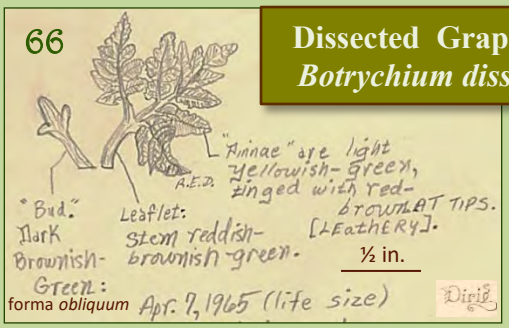
A FEW SPECIES PREFERRED SUNNIER SITES. The EASTERN BRACKEN FERN (*Pteridium aquilinum,* ssp. *latiusculum*) expanded its glossy, olive, thrice-parted fronds at the top of a single stem [58], in drier situations on roadsides, along railroad grades, on the rims of beaver dams, and in fallow fields and pastures, always in the sun. Its preference for hot, exposed edge habitats makes it a major component of the herb layer in south-facing oak-hickory woods along the Delaware River. Spores are sometimes borne along inrolled edges on the under side of the fronds [59]. Bracken's autumn coloring is first yellow, then bronzy, and finally a beautiful beige [60-61]. Expanding Bracken fiddleheads are among the most sublime floral delights of May [62].

Eastern Bracken Fern
Pteridium aquilinum*, ssp. *latiusculum



Hay-scented Fern
Dennstaedtia punctilobula

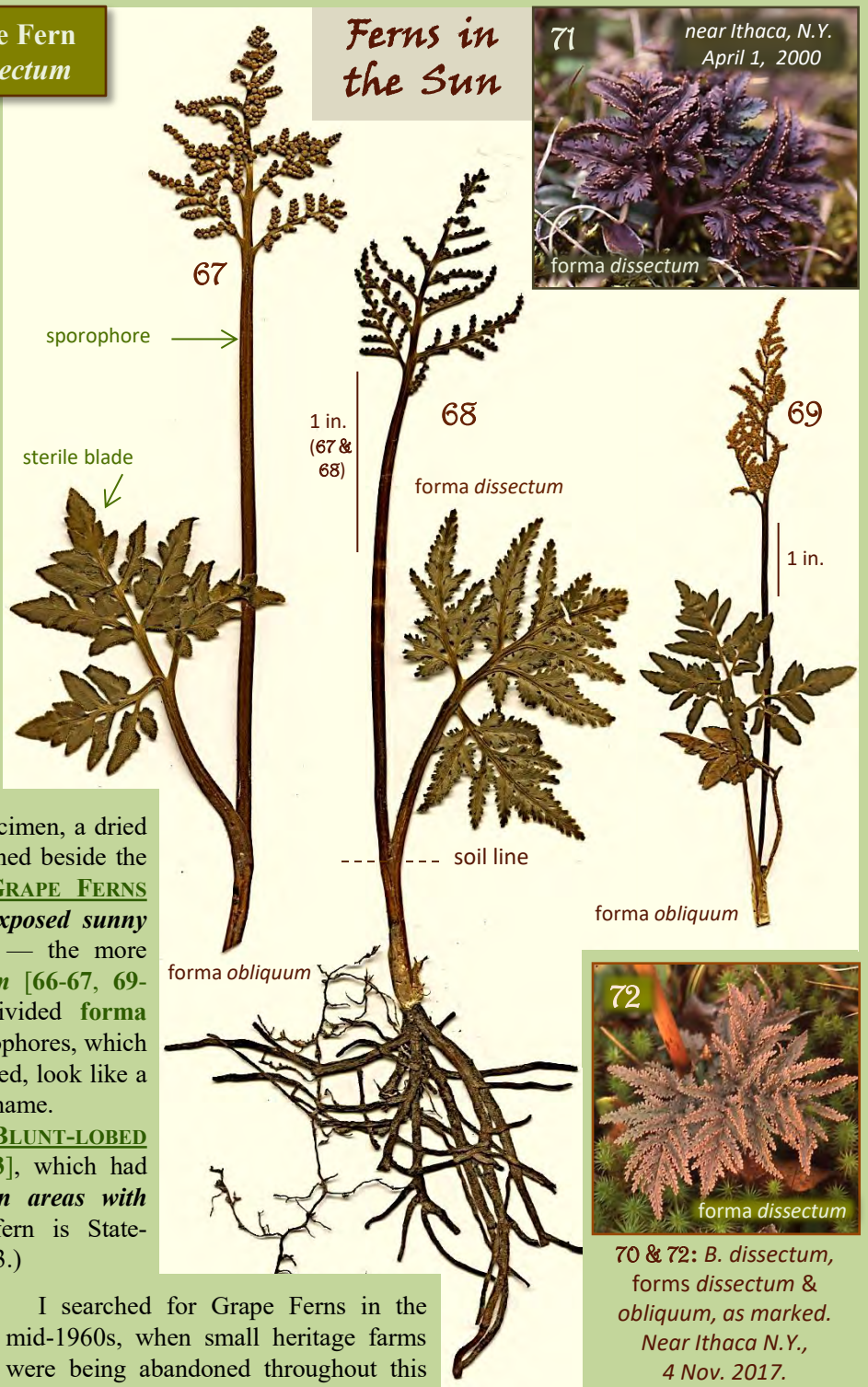
Dissected Grape Fern
Botrychium dissectum



GRAPE FERNS (genus *Botrychium*) also grew in old fields, pastures, and thin woods, but were not often encountered. Although they were most visible from late summer into autumn, especially after frosts had killed the surrounding herbage, the first one I saw was found in early April 1965. Its succulent sterile blades grew on a mound of Haircap Moss (*Polytrichum commune*) at the edge of a spring, the previous season's bronzed blade next to an emerging one [66]. Returning to the same spot on August 13, 1965, I found five fully developed individuals with succulent, triangular sterile blades shining below the overarching sporophores [67-68]. One specimen preserves the extensive root system [68]. In another, larger specimen, a dried blade from the previous year was still attached beside the new one [69]. These were **DISSECTED GRAPE FERNS (*Botrychium dissectum*)**, which grew ***in exposed sunny places***, and had two forms of the blade — the more common, coarsely-pointed **forma *obliquum*** [66-67, 69-70], and the scarcer, more intricately divided **forma *dissectum*** [68, 71-72]. The much taller sporophores, which released a white cloud of spores when bumped, look like a cluster of yellow grapes, hence the common name.

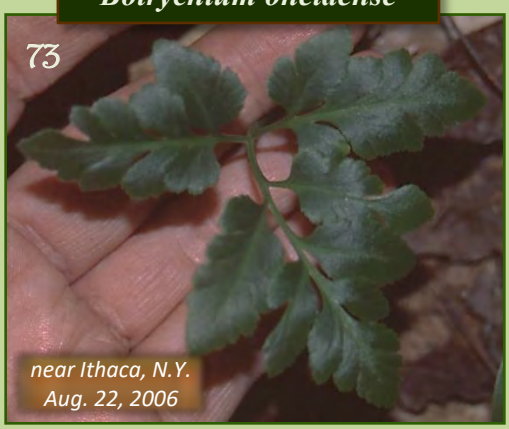
I also found two individuals of the **BLUNT-LOBED GRAPE FERN (*Botrychium oneidense*)** [73], which had less pointed blade divisions, and grew ***in areas with dappled shade***. (Fifty years later, this fern is State-Threatened in New York, with a rank of S2S3.)

Ferns in the Sun



70 & 72: *B. dissectum*, forms *dissectum* & *obliquum*, as marked. Near Ithaca N.Y., 4 Nov. 2017.

Blunt-lobed Grape Fern
Botrychium oneidense



I searched for Grape Ferns in the mid-1960s, when small heritage farms were being abandoned throughout this region. The absence of grazing livestock encouraged slow succession of trees and forbs (herbs), producing ideal habitats for *B. dissectum* in sunnier places, and *B. oneidense* in the dappled shade of shrub- and aspen-invaded pastures. As vegetational succession has continued over the intervening half-century, I have rarely encountered these ferns. See APPENDIX B for a list of additional Grape Ferns and Moonworts that are known from the southern Catskills.

Ferns Near the River

THE DELAWARE RIVER CORRIDOR [74] had its characteristic pteridophytes. Huge, vase-shaped clumps of OSTRICH FERN (*Matteuccia struthiopteris*, var. *pensylvanica*) arched in triumphant splendor in shadier spots along the bank, looking like misplaced cycads under the screen of trees [75]. They resembled the Cinnamon Fern, but their fronds were *widest near the top*, tapering to the base, where the persistent, almost woody fertile fronds grew in the center of the crown [76-77]. (In contrast, the Cinnamon Fern's green fronds were *widest near the base*, while its orange fertile fronds quickly withered [11].) Ostrich Ferns reached full luxuriance as a component of the riverside marsh [75], but occasional smaller plants were found in the uplands [76]. I first knew this species from a small colony that grew along the North Branch of Basket Creek in Rock Valley, about four air miles upstream from the River, and have also seen it on Halsey Hill (*see next section*) and at Pea Brook.

Ostrich Fern
Matteuccia struthiopteris

The Delaware cuts through the southern terminus of the Catskill Plateau, which can be seen in a dramatic rise of 600 feet above the River, east of Bouchouxville, halfway between Lordville and Long Eddy. Here the horizontally-planed bluestone ends in a very steep slope of tumbled talus, a former denning site for a large population of Timber Rattlesnakes, which basked in the sunshine of its southwestern face in warmer seasons. On the brink of this picturesque crag, I found the RUSTY WOODSIA (*Woodsia ilvensis*) in small clumps among loose talus, where it was exposed to year-long sun and winds — exactly the sort of place it inhabits on the summit of the Fall Creek gorge on the Cornell University campus in Ithaca. This locally rare species has a silvery look when young [78], but later appears browner, due to reddish hairs and chaff that cover the 6-inch fronds [79]. The spores are borne in sori on the underside [80]. Lyre-leaved Rock Cress (*Arabidopsis lyrata*), Pink Corydalis (*Capnoides sempervirens*), the rare Purple Clematis (*Clematis occidentalis*) [81], and hundreds of mature Rock Tripe lichens (Umbilicariaceae) [82, *arrow*] shared its habitat — and the best view of the River from atop the cliffs.

Rusty Woodsia
Woodsia ilvensis

Ferns Near the River

In cooler, shaded spots along the base of the escarpment, and occasionally on damp, mossy, sandstone boulders or seepy shadowed banks in the uplands, I found the delicate and reclusive **MAIDENHAIR SPLEENWORT** (***Asplenium trichomanes*, ssp. *trichomanes***). The curved fronds of this elfin fern usually press flat against a vertical bed of mosses and lichens, where water seeps down the surface [83]. This species is much smaller and greener than the true Maidenhair Fern [43], has brown angled sori beneath the pinnae [84], and grows in small cushions instead of on a tall stem. I have seen pristine clumps with more than fifty fronds, growing in the spray of a small waterfall near Hankins [85], but this is unusual.

The **EBONY SPLEENWORT** (***Asplenium platyneuron***) is a close relative with a different microhabitat. Looking like a miniature Christmas Fern with very long, erect fronds [86], this species grew in small clumps on steep, shady slopes, often near the River. Brown lines of sori are borne on the undersides of the pinnae [87]. Its semi-evergreen fronds are most easily noticed in autumn, after frost and leaf-fall [88].

Ferns of Shady, Alkaline Sites

I FOUND A GUILD OF LARGE FERNS **that were associated with calcareous soils** in the southern Catskills. When I was a small child, my younger brother and I listened to our grandmother tell about a strangely oriented rock, which her family had called "***The Meteor***" [89-90] in the Victorian Era, when she was a young girl on Halsey Hill in Rock Valley. One Sunday afternoon, we trooped off to see it, and Roddy and I were lifted to sit on top of the peculiar stone for a few minutes, swinging our feet, and enjoying the novelty. It was a black, pitted slab, unlike the native grey bluestone bedrock that outcropped nearby, standing five feet out of the ground, being about a foot thick and three feet wide on top. Its oddity made enough of an impression that we occasionally revisited the site when we were old enough to walk around by ourselves. During one of these pilgrimages, I noticed a fern that I had not seen elsewhere, growing near the rock.

Ferns of Shady, Alkaline Sites

When my fern book arrived, I remembered this unknown species — similar to but larger and lighter green than a Christmas Fern [91]. In late August that year, I trekked there, and found clumps of the **Glade Fern** (***Homalosorus pycnocarpos***) [92-93], previously called Narrow-leaved Spleenwort, the plant I had guessed it to be from pictures in my book. Returning eleven years later to collect a few fronds to press, I was delighted also to notice luxuriant clumps of the huge **Goldie's Wood Fern** (***Dryopteris goldiana***) growing with it, my first sight of that species [94-95]. While following an old logging road downhill through the woods edging adjacent meadows, I happened upon another species new to me, the **Broad Beech Fern** (***Phegopteris hexagonoptera***) [96-98], larger and wider than its more familiar congener, the Long Beech Fern of the Swamp [7-8]. Farther downhill, along a small brook that in a few hundred feet reached the East Branch of Basket Creek in the appropriately named sylvan hamlet of Fernwood, the **Silvery Spleenwort** (***Deparia achrostichoides***) [99-100] completed the quartet of unusual ferns with which I reveled that August afternoon. I had first found the latter species a few years before, growing along a brook through an old-growth forest, near a Goshawk's (*Accipter gentilis*) nest, at French Woods. It remains an unusual find. I know the other three species in this region only at and near The Meteor, and they all occur in forest shade.[3]

(3) A summer 2017 visit revealed clumps of ***Ostrich Fern*** and ***Silvery Spleenwort*** also growing near The Meteor; but I have not seen any ***Glade Fern*** there in recent years.

Ferns of Shady, Alkaline Sites

We realized that this strange monolith was not a genuine meteorite, but a glacial erratic of ***calcareous breccia*** that was carried by the ice sheet from a limy source to the northeast, perhaps as far as the mid-Hudson valley or Helderbergs (Mather 1843, p. 307), then dropped a few thousand years ago in a vertical configuration, and held by surrounding till since glacial recession. Other large erratics of the same stone are scattered throughout the region.[4] They are usually seen as dark horizontal slabs in woodlands, fields, and pastures [101], characterized by small, *angular* chips of blackish rock embedded in a charcoal grey matrix, and hosting calciphilic lichens and bryophytes on their exposed surfaces. Surrounding glacial deposits must contain enough weathered fragments of breccia or associated limy debris to have calcified the soil around The Meteor, as the Glade Fern and Goldie's Wood Fern prefer soils that are rich in lime.

(4) These stones also occur in adjacent northern Wayne County, Pennsylvania, where Dix (1939:17) described them thus: "Another peculiar rock … occurs in great numbers ranging in size from two to ten feet. None of these apparently occur in beds, but have been scattered glacially. They consist of small angular fragments of quartz, and often contain numerous small pockets of a dark gray shale. When weathered, these rocks are black, and have a curious pockmarked appearance due to uneven decomposition. Geologically they are known as calcareous breccias."

Horsetails & Lycophytes

PARSONS DID NOT DISCUSS "FERN RELATIVES," but these are often included with ferns in modern field guides, and are briefly mentioned below. Cobb *et al.*'s excellent *Field Guide to Ferns and Their Related Families* (second edition, 2005) provides detailed information and descriptions, photographs, and drawings of these beautiful plants.

FIELD HORSETAILS (***Equisetum arvense***) were ubiquitous, growing on roadsides, in old fields, in marshes, along stone walls, in springs, in gardens, and otherwise generally throughout the area. They are loveliest in early May, when the beige fertile stalks appear among the expanding, bright green sterile ones [102-104]. Once the spores have disseminated, the fertile stems quickly wither, but the soon scruffy, broom-like green stalks [105] remain until blackened by late-summer drought or autumn frosts. My family used to watch a road corner for several days each May, eagerly awaiting the evanescent cones of the Field Horsetail, one of the special botanical delights of spring.

Field Horsetail
Equisetum arvense

The WOOD HORSETAIL (***Equisetum sylvaticum***), a graceful, yellow-green plant with exquisitely arched tips above delicate whorls of branches, was much less often encountered [106-109]. I have seen it in only four places in this region — on a seepy hillside in French Woods; at the edge of a large Hemlock swamp (now a beaver meadow) in Pea Brook; between the hummocks of another

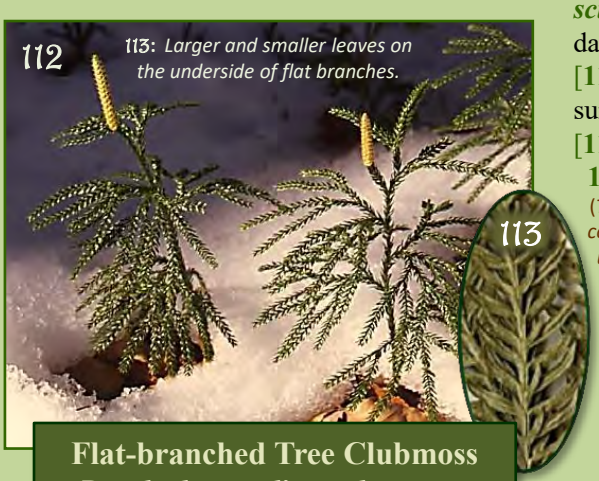
Wood Horsetail
Equisetum sylvaticum

Common Scouring Rush
Equisetum hyemale

swamp in Hancock; and on the margin of a damp woodland near Basket Brook — always in partial shade, in a cool or boreal situation. This most beautiful horsetail is at its best when its tan cones crown the stems in mid-May [106-107]; but it is easier to spot in late summer, when the yellowing plants contrast sharply with surrounding vegetation [109].

The COMMON SCOURING RUSH (*Equisetum hyemale,* ssp. *affine*) was a rarity in this area, being much more abundant on damp, sandy soils near Albany, and on wet clay banks in the Finger Lakes Region of N.Y. Its pine-green, vertically-ridged stems are as thick as a lead pencil, conspicuously banded with black and white at each node, reaching two feet in height, with cones at the top [110]. I have seen large colonies along the railroad at Bouchouxville and on a sloping, seepy bank near Fishs Eddy [111], both close to the River. Their rough, siliceous stems were used by our forebears to scour pots, hence the common name.

CLUBMOSSES AND GROUND CEDARS have been familiar since early childhood, primarily due to their historical use in Holiday wreaths and other decorations. When I was in tenth grade (in winter and spring 1965, a few months before obtaining Parsons' book), I completed a biology class project on these beautiful evergreen plants, collecting, pressing, and identifying all the lycophytes I could find in the region, writing descriptions of their habitats, and mounting them in an album. I found five common species in the Swamp: FLAT-BRANCHED TREE CLUBMOSS (*Dendrolycopodium obscurum*) [112-113], locally known as "Princess" or "Prince's Pine" [in dappled shade]; SOUTHERN GROUND CEDAR (*Diphasiastrum digitatum*) [114] and STAGHORN CLUBMOSS (*Lycopodium clavatum*) [115-116] [in sunnier spots]; and COMMON BRISTLY CLUBMOSS (*Spinulum annotinum*) [117-119] (Text continues on next page.)



Flat-branched Tree Clubmoss
Dendrolycopodium obscurum

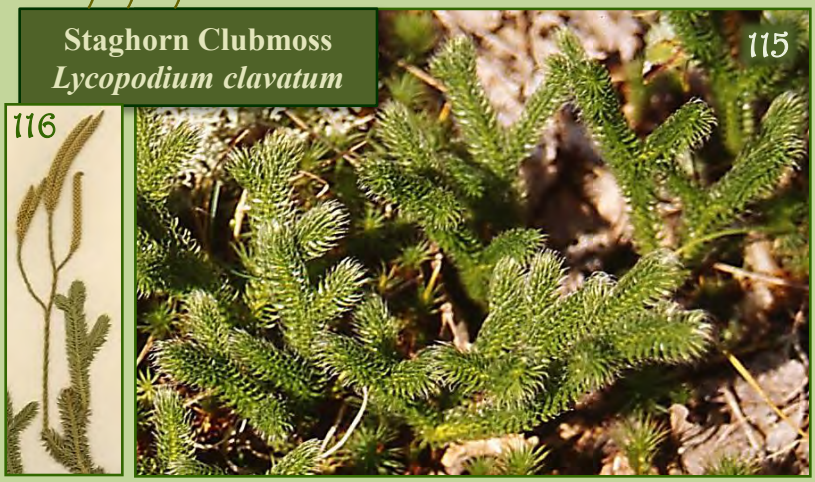
Common Bristly Clubmoss
Spinulum annotinum

119: *Triangles show winter buds.*

Southern Ground Cedar
Diphasiastrum digitatum

Horsetails & Lycophytes

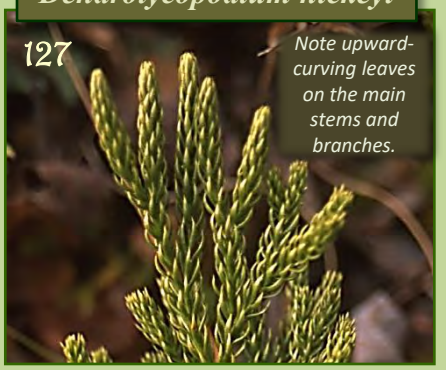
Staghorn Clubmoss
Lycopodium clavatum



Lycophytes

Shining Firmoss
Huperzia lucidula

Hickey's Tree Clubmoss
Dendrolycopodium hickeyi



and SHINING FIRMOSS (***Huperzia lucidula***) [120-121] [in deep shade]. We knew that *D. obscurum* was best for wreaths, with the "candles" (*strobili*) removed, and were always very careful to take only a few plants from each site, so as not to harm a population. Although Staghorn and Common Bristly Clubmosses and Shining Firmoss were less frequent, they were widely distributed in moist woodlands and openings, adding a charm and beauty unlike any other plants.

It was a nice surprise to discover BLUE GROUND CEDAR (***Disphasiastrum tristachyum***) on an exposed hummock on Halsey Hill in 1972, growing with Common Lowbush Blueberry (*Vaccinium angustifolium*), bluish-grey cushions of Grey Reindeer Lichen (*Cladina rangiferina*), and several other clubmosses. The site had just a few plants at that time (another visit in 1996 disclosed only two tufts, but others may have been masked by succeeding vegetation). I have seen this scarce species at two other places in the region: along an abandoned railroad grade through a marsh in Apex, and on the shore of Delaware Lake in Pea Brook [122]. It is similar to Southern Ground Cedar [114], but is denser, has a bluer-green color [123-124], and lacks the long vine along the surface of the ground. In this region, it occurred in hot, exposed microhabitats adjacent to water.

An even rarer species, found luxuriating with Round-leaved Sundews (*Drosera rotundifolia*) on a sandy lawn edging Delaware Lake, was NORTHERN BOG CLUBMOSS (***Lycopodiella inundata***), a delicate yellow-green plant with erect sporophylls [125-126]. It is one of the botanical highlights of this area.

In a drier, sunnier habitat (at the edge of an oak woods) near the River, west of Callicoon, I found HICKEY'S TREE CLUBMOSS (***Dendrolycopodium hickeyi***), which differs from *D. obscurum* [112-113] in having all its scale-like leaves curved upward along the stem and branches [127-128] in a distinctive, immediately recognizable weave; and branches with a *circular* (*vs.* flattened) cross-section [128].

Blue Ground Cedar
Diphasiastrum tristachyum

Northern Bog Clubmoss
Lycopodiella inundata

Fern Study and Harvesting

MY QUEST FOR FERNS AND THEIR RELATIVES has taught me a great deal about this group of plants — but more about my region, and how to approach the study of something that interests me. ***One can recognize species without knowing their names***, as I did with the Interrupted Fern, Christmas Fern, and Flat-branched Tree Clubmoss; but seeking them outdoors, and identifying them from a book, brings a special satisfaction, and builds one's confidence for more difficult botanical challenges, like grasses and sedges. Observational ability, note-taking habits, a plant press, and a good memory help. The *game* of matching the fern at hand with a picture and name in a book is the theory behind any field guide — or technical manual — and has proved endlessly fascinating, not only with ferns.

My study of Catskill ferns involved four cycles. The ***first***, in the mid-1960s, was finding them and learning their names and habitats, including pressing and mounting ten specimens for a 4-H booklet [129]. A ***later*** project, in 1975-1984, was revisiting their stations and collecting, pressing, and labeling voucher specimens of each [130]. The ***third*** cycle, which proceeded in summer 1996, while drafting this account, was a return to the sites to photograph these beautiful plants where they grew. During a single weekend, it was a great thrill to see twenty-five species in 1996 (and thirty-three species in one weekend in 1984, during the collecting cycle), still thriving in the same places after twenty and thirty years! The ***final*** effort was a series of reconnaissances in 2017, to check details of subtle species-groups (*Dryopteris, Polypodium, Cystopteris*, and *Dendrolycopodium*), while this article was in process.

In 1996, my mother and aunt recounted ***local methods of harvesting Fancy Wood Ferns*** (*Dryopteris intermedia*) ***from the 1930s to 1950s*** at Livingston Manor, Rock Valley, and Pea Brook: In autumn (when it was cold enough to wear gloves), perfect evergreen fronds were picked and stacked in piles of one hundred, then tied around the stems. Care was taken not to remove every frond from any clump. The piles were sandwiched between Hemlock branches that were bound with coarse twine. Howard Kaufman came from East Branch every day to buy the bundles, which were shipped by train to New York City, and kept in cold storage there for months, to use in floristry. Neither remembered exactly how much they were paid for these (their father, who picked about 5000 fronds per day, dealt with the agent); my aunt suggested 10¢ per 100 fronds.[5] "Princess Pine" (mostly *Dendrolycopodium obscurum*) was also tied in bunches, and sold for the Holiday season. Clubmosses grow slowly, showing winter bud constrictions [**119**, *triangles*]; a six-inch stem can be several years old. Thus they are vulnerable to heavy harvesting. Today, most ferns (with the exception of Hay-scented, Sensitive, and Bracken) and lycophytes are protected by law, and do not appear in modern commercial floristry (Brooks 1979: 19-20, 39, 44, 46, 50, 128; Mitchell & Sheviak 1981: 94; Anon. 2017).

(5) Older literature stated that about 4¢ per 100 fronds was paid in Vermont in 1916 (Winslow & Benedict 1916: 19).

Please see the sidebar on *Ferns Outside the Catskills* on the next page.

I still have not found a few of Parsons' most elusive ferns outdoors, among them the legendary **AMERICAN MOONWORT** (***Botrychium neolunaria***). There are likely to be a few other species in the southern Catskills, especially among *Dryopteris*, *Botrychium*, and *Dendrolycopodium*, as well as Quillworts (*Isoëtes* spp.) — see APPENDIX B. That's good! I welcome an excuse to explore bedrock outcrops, steep ravines, talus slopes, shady woods, and other remote habitats in search of their lacy beauty.

This article pays homage to the early fern guide I had at hand, which taught me what I wanted to know at a critical juncture. Different eras have different books, and each generation has its favorite. Current fern enthusiasts are blessed by Cobb, Farnsworth, & Lowe's (2005) excellent, accessible — indeed, indispensable — fern guide, which features stunning color photographs and pen-and-ink illustrations, the most recent nomenclature, and detailed information on identification, habitats, and distributions for all northeastern North American ferns and fern relatives. While admiring the thoroughness and helpful spirit of this triumph of modern book-making, I still cherish the quiet grace and charisma of Frances Theodora Parsons' lovely first field guide to North American ferns, which helped me so easily to learn about these elegant plants in my youth, and catalyzed quests to see them outdoors over the intervening fifty years.

This account of Catskill fern hunting is an adventure story — as truly as any tale about a pirate crew, keen on finding a glorious buried treasure on a remote isle of the Caribbean. Parsons' book was my treasure map to delicately cut emeralds that lay fully exposed, diamonded with dew, on cliffs, in forests, and in glens, waiting to be found. By distilling the spirit and essence of a subject, such field books become timeless classics, created by generous teachers with a touch of genius, who continue to educate and inspire, many generations after they are gone.

Ferns Outside the Catskills

LIFELONG EXPLORATIONS AFIELD *have acquainted me with most of the other species in Parsons' book.* I have seen the VIRGINIA CHAIN FERN (*Anchistea virginica*) in a bog on the east shore of Lake Ontario, and the NETTED CHAIN FERN (*Lorinseria areolata*) near the Atlantic coast (in the New Jersey Pine Barrens [131] and on eastern Long Island, N.Y.). I have witnessed the rare CURLY GRASS FERN (*Schizaea pusilla*), which suggests a large-fruited bryophyte, on Long Island and in New Jersey [132]; the breathtaking HARTFORD or CLIMBING FERN (*Lygodium palmatum*), carpeting the floor of a wet woodland in Saratoga County, N.Y. [133] (I experienced an exalted "*Lygodium* glow" for hours afterwards!); and the tiny MOUNTAIN SPLEENWORT (*Asplenium montanum*) in Shawangunk faults, growing on shaded quartzite conglomerate near New Paltz, N.Y.

Also, the odd and rare LOBED SPLEENWORT (*Asplenium pinnatifidum*) on Ohio sandstone outcrops; and the abundant BULBLET FERN (*Cystopteris bulbifera*) [134] and scarcer, ephemeral SLENDER CLIFFBRAKE (*Cryptogramma stelleri*) [135], on damp, shaded, limy cliffs in Ithaca gorges. I also saw the SMOOTH CLIFFBRAKE (*Pellaea glabella, ssp. glabella*) in the Helderbergs, a limestone ridge south of Albany [136]; and the lovely, naturalized WATER CLOVER (*Marsilea quadrifolia*) in quiet Ithaca pools [137]. The NORTHERN ADDER'S TONGUE (*Ophioglossum pusillum*) rarely revealed itself near Ithaca, on Long Island, and in the St. Lawrence River valley, north of the Adirondacks [138]. And colleagues took me to see the famous AMERICAN HART'S TONGUE (*Asplenium scolopendrium*, var. *americanum*), perhaps the rarest North American fern, on humid, shady, cobble-strewn limestone slopes near Syracuse [139] and Chittenango Falls, N.Y., where its robust fronds glowed with a deep emerald beauty, unlike anything else in our flora. A special thrill came in finally beholding two lifelong botanical grails, the WALL RUE (*Asplenium ruta-muraria*) [140] and PURPLE CLIFFBRAKE (*Pellaea atropurpurea*) [141], growing side-by-side on a limy boulder in the Helderbergs, in 1999. ***Seeing any of these requires targeted searching.***

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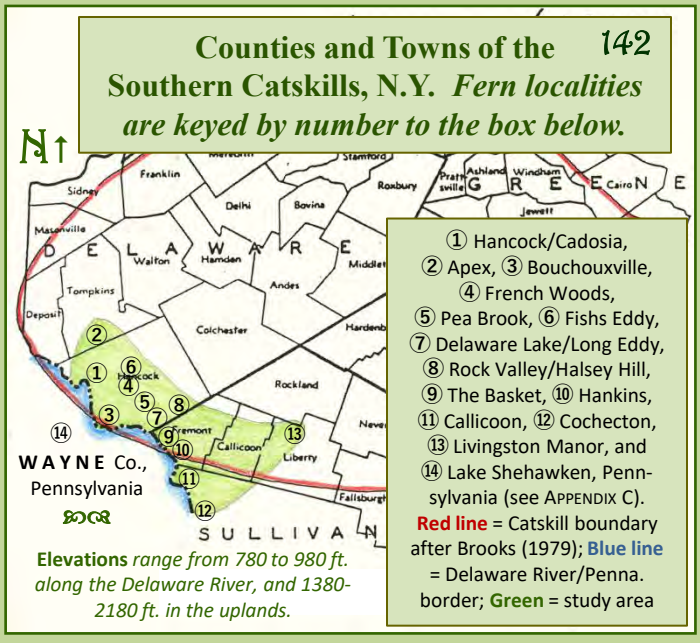
Appendix A:
Checklist of Ferns, Horsetails, & Lycophytes from the Southern Catskills

Common and scientific names follow the online *New York Flora Atlas* (Weldy *et al.* 2017) and Werier (2017). Species appear in the order presented above, sorted by habitat. The map [**142**] pinpoints ***major study sites*** in the southern Catskills. Green numbers inside square brackets in the checklist refer to illustrations in this paper, *e.g.* [**27**].



My herbarium vouchers for the ferns, horsetails, clubmosses, ground cedars, and firmoss mentioned above have been deposited as follows: **BH** = Bailey Hortorium Herbarium, Cornell University; **NYS** = New York State Museum Herbarium, Albany; **GH** = Gray Herbarium, Harvard University; **HHH** = Hartwick College Herbarium, Oneonta, N.Y.; and **R.D.** = author's herbarium. All are cited by specimen number, with depositories indicated, *e.g.* (*3372*, R.D., BH).

WLD at the end of entries in Appendices A & B indicates a species also found in adjacent Wayne County, Pennsylvania, by William L. Dix (1939, 1940); his specimens are in BH.

Ferns of the Swamp

***1. Onoclea sensibilis* L. [Sensitive Fern]: French Woods:** Swamp (*1*, R.D., BH; *389*, R.D.; *forma* **obtusilobata** (*391* & *8697* [143], R.D.); aberrant frond with both vegetative and fertile portions (*1236*, BH); Pierce Pond (*269*, R.D.); Sand Pond (*849,* R.D.). **Pea Brook**, Hungry Hill Bog (*340*, R.D., BH, GH); Delaware Lake (*776*, BH). *WLD*

***2. Gymnocarpium dryopteris* (L.) Newman [Oak Fern]: French Woods:** Swamp (*2*, BH; *9* & *424,* R.D.; *395*, R.D., BH) [5]. **Pea Brook:** Log Cabin Marsh (*356*, R.D.). *WLD*

***3. Phegopteris connectalis* (Michx.) Watt. [Long Beech Fern]: French Woods:** Swamp (*30,* BH; *31* & *396*, R.D.) [8]. **Pea Brook:** Log Cabin Marsh (*358*, R.D.). *WLD*

***4. Athyrium angustum* (Willd.) C. Presl [Northern Lady Fern]: French Woods:** Swamp (*2717*, R.D.; *2718*, R.D., BH). *WLD*

***5. Osmundastrum cinnamomeum* (L.) C. Presl, var. *cinnamomeum* [Cinnamon Fern]: French Woods:** Swamp (*5*, R.D.; *768*, R.D., BH); plant with incised pinnules [144] (*387*, R.D., BH, NYS, GH); [12]. **Pea Brook:** Hungry Hill Bog (*218* & *220*, R.D.). *WLD*

***6. Osmunda regalis* L., var. *spectabilis* (Willd.) A. Gray [Royal** or **Flowering Fern]: French Woods:** Swamp (*170*, R.D., BH). **Pea Brook:** Log Cabin Marsh (*8669*, R.D.) *WLD*

***7. Osmunda claytoniana* L. [Interrupted Fern]: French Woods:** Swamp (*403* & *756*, R.D.); **elsewhere in F.W.:** *8668* (R.D.). *WLD*

***8. Dryopteris cristata* (L.) A. Gray [Crested Wood Fern]: French Woods:** Swamp (*986*, R.D.) [19]. **Pea Brook:** Log Cabin Marsh (*23*, R.D., BH); Elm Swamp (*957*, BH). *WLD*

***9. Thelypteris palustris* Schott, var. *pubescens* (G. Lawson) Fernald [Marsh Fern]: French Woods:** Swamp (*2930*, R.D., BH, NYS); Sand Pond (*867* & *909*, R.D., BH); Pierce Pond (*782*, R.D., BH). **Pea Brook:** Hungry Hill Bog (*797*, R.D., BH); Delaware Lake (*790*, R.D., BH, NYS); Log Cabin Marsh (*798*, R.D., BH, NYS). **The Basket** (*784*, R.D.; *785*, BH) [22]. *WLD*

***10. Thelypteris simulata* (Davenp.) Nieuwl. [Massachusetts Fern]: Pea Brook:** Hungry Hill Bog [*783*, R.D., BH, NYS; cited by Werier (2017: 41)] [26]. *WLD*

Ferns of the Forest

***11. Polystichum acrostichoides* (Michx.) Schott [Christmas Fern]: French Woods:** (*19*, R.D, BH; *8665*, R.D.). **Long Eddy:** Hoolihan Brook Rd., *with aberrant fronds* (*985*, BH). *WLD*

***12. Botrychium virginianum* (L.) Sw. [Rattlesnake Fern]: French Woods** (*452* [33] & *8666*, R.D.). *WLD*

***13. Dryopteris marginalis* (L.) A. Gray [Marginal Wood Fern]: Rock Valley:** Halsey Hill (*24*, R.D., BH; *8664*, R.D.). *WLD*

***14. Dryopteris intermedia* (Mulh. *ex* Willd.) A. Gray [Fancy** or **Evergreen Wood Fern]: French Woods:** Swamp (*18* & *1013*, R.D., BH; *8694*, R.D.) [38-39]; **elsewhere in F.W.:** *2713* & *8694* (R.D., BH). **Pea Brook:** Log Cabin Marsh (*3090*, R.D. [36]). *WLD*

***15. Thelypteris noveboracensis* (L.) Nieuwl. [New York Fern]: French Woods:** Swamp (*20*, R.D., BH); *8667* (R.D.) [41]. **Pea Brook:** Hungry Hill Bog (*799*, R.D., BH); Elm Swamp (*1003*, R.D., BH, NYS). *WLD*

***16. Adiantum pedatum* L. [Maidenhair Fern]: French Woods:** (*199*, R.D.). **Rock Valley:** Halsey Hill (*8708*, R.D., BH) [44]. *WLD*

***17. Polypodium virginianum* L. [Virginian Rock Polypody]: French Woods**: (*21* & *8679*, R.D.) [48]. **Rock Valley:** Halsey Hill (*3077*, *8680*, *8706*, R.D.) [45]. **Bouchouxville:** obs. [47]. *WLD*

***18. Cystopteris tenuis* (Michx.) Desv. [Mackay's Fragile Fern]: French Woods:** dry rock outcrops in forest shade (*8693*, R.D.). **Bouchouxville**: obs. **Rock Valley:** Halsey Hill, in and near bluestone quarry (*1258*, *8662*, *8677,* & *8691*, R.D.; *2148*, BH; *2149*, NYS) [49-52]. **The Basket**: E of Long Eddy (*3073*, *8684*, *8690*, & *8692*, R.D.) [53-54].

***19. Asplenium rhizophyllum* L. [Walking Fern]: French Woods:** (*84*, R.D.; *1857*, BH) [55-56]. **Rock Valley:** Halsey Hill (*1253* & *3076*, R.D.) [57]. *WLD*

Ferns in the Sun

***20. Pteridium aquilinum* (L.) Kuhn, ssp. *latiusculum* (Desv.) Hultén [Eastern Bracken Fern]: French Woods:** Swamp (*410*, R.D.); Pierce Pond (*703*, BH). **Pea Brook:** Log Cabin Marsh (*348*, R.D.); Delaware Lake (*746*, BH). *WLD*

***21. Dennstaedtia punctilobula* (Michx.) T. Moore [Hay-scented Fern]: French Woods:** (*934*, R.D.; *1014*, R.D., BH). **Pea Brook:** Elm Swamp (*2716*, R.D., BH); Delaware Lake (*772*, BH). Also *987* (NYS). *WLD*

22. Botrychium dissectum* Spreng. [Dissected Grape Fern]: French Woods:** (*art, 8775*, R.D. [66]; *2714*, *2715, 8505**, *8507**, *8670* [67], *8671* [69], & *8672** [68], R.D.). **Pea Brook:** Log Cabin Marsh (*4*, R.D.). [*Asterisks mark *forma* ***dissectum, *WLD*; others are *forma* ***obliquum***, *WLD*.]

***23. Botrychium oneidense* (Gilbert) House [Blunt-lobed Grape Fern]: French Woods:** (*8506* & *8661*, R.D.). *WLD*

Ferns Near the River

***24. Matteuccia struthiopteris* (L.) Tod, var. *pensylvanica* (Willd.) C. V. Morton [Ostrich Fern]: Rock Valley:** (*450*, R.D.; *777*, BH); Halsey Hill (*8705*, R.D. [76]). **Hancock**: (*830*, R.D.). **Cadosia**: (*1207*, BH). *WLD*

***25. Woodsia ilvensis* (L.) R. Br. [Rusty Woodsia]: Bouchouxville**: obs. [78-79].

***26. Asplenium trichomanes* L., ssp. *trichomanes* [Maidenhair Spleenwort]: Hankins**: (*40*, R.D. [85], HHH; *43*, BH). **Long Eddy**: (*202*, R.D.). **Rock Valley:** Halsey Hill, obs. near quarry [83]. *WLD*

***27. Asplenium platyneuron* (L.) Britton, Sterns, & Poggenb. [Ebony Spleenwort]: Rock Valley**: Halsey Hill (*22*, R.D.). **Long Eddy:** (*200*, R.D.). **The Basket**: tufts of fronds on wet rock in shade (*1287*, BH). **Cochecton**: edge of oak woods atop red shale bank (*997*, BH [86]). *WLD*

Ferns of Shady, Alkaline Sites

***28. Homalosorus pycnocarpos* (Spreng.) Pic Serm. [Glade Fern]: Rock Valley:** Halsey Hill [*230*, R.D., BH; cited by Werier (2017:37)] [91-93]. *WLD*

***29. Dryopteris goldiana* (Hook. *ex* Goldie) A. Gray [Goldie's Wood Fern]: Rock Valley:** Halsey Hill (*1259*, R.D., NYS; *1260*, BH; *8481*, R.D.) [94-95]. *WLD*

***30. Phegopteris hexagonoptera* (Michx.) Fée [Broad Beech Fern]: Rock Valley:** Halsey Hill (*231*, R.D., BH) [96]. *WLD*

***31. Deparia achrostichoides* (Sw.) M. Kato [Silvery Glade Fern]: French Woods:** (*1269*, R.D., BH; *1336*, R.D.). **Bouchouxville**: obs. along shaded brook atop cliffs. **Rock Valley:** Halsey Hill near Fernwood (*1240*, R.D.). *WLD*

Horsetails & Lycophytes

***32. Equisetum arvense* L. [Field Horsetail]: French Woods**: (*462*, R.D.; *1310*, R.D., BH). **Pea Brook:** Log Cabin Marsh (*203*, R.D.). **The Basket:** (*3065*, R.D.). *WLD*

***33. Equisetum sylvaticum* L. [Wood Horsetail]: French Woods**: (*447*, R.D.; *448*, R.D., BH, NYS; *449*, R.D., BH). **Pea Brook:** Log Cabin Marsh (*1123*, R.D., BH, NYS) [109]. **Hancock**: (*345*, R.D., BH, NYS). **The Basket**: (*1087*, BH; *3050*, R.D.) [106-108]. *WLD*

***34. Equisetum hyemale* L., ssp. *affine* (Engelm.) Calder & Roy L. Taylor [Common Scouring Rush]: Bouchouxville**: (*2107*, R.D., BH). **Bouchoux Brook:** (*7527*, R.D.). **Fishs Eddy**: (*788*, R.D., BH; *789*, NYS; *3074*, R.D.) [110-111].

***35. Dendrolycopodium obscurum* (L.) A. Haines [Flat-branched Tree Clubmoss]: French Woods**: Swamp (*13*, R.D., BH) [112]. *WLD*

***36. Diphasiastrum digitatum* (Dill. *ex* A. Braun) Holub [Southern Ground Cedar]: French Woods**: Swamp (*16*, R.D., BH); *263* (R.D.). **Pea Brook:** Delaware Lake (*747*, BH). *WLD*

***37. Lycopodium clavatum* L. [Staghorn Clubmoss]: French Woods:** Swamp (*415*, BH); Cooper's Hill (*892*, R.D.); Pierce Pond (*291*, R.D., BH); *14* (R.D.). **Pea Brook:** Delaware Lake (*761*, BH, NYS). *WLD*

***38. Spinulum annotinum* (L.) A. Haines [Common Bristly Clubmoss]: French Woods:** Swamp (*17*, R.D., BH) [117]; Cooper's Hill (*893*, R.D., BH). *WLD*

***39. Huperzia lucidula* (Michx.) Trevis. [Shining Firmoss]: French Woods:** Swamp (*15*, R.D.; *407*, BH) [120]; *262* (R.D.). *WLD*

***40. Diphasiastrum tristachyum* (Pursh) Holub [Blue Ground Cedar]: Pea Brook:** Delaware Lake (*759*, R.D., BH [122]; *760*, R.D., BH, NYS). **Rock Valley:** Halsey Hill near Fernwood (*12* & *69*, R.D.). **Apex:** (*837*, R.D., BH). *WLD*

***41. Lycopodiella inundata* (L.) Holub [Northern Bog Clubmoss]: Pea Brook:** Delaware Lake (*725*, R.D., BH, NYS). *WLD*

***42. Dendrolycopodium hickeyi* (W. H. Wagner, Beitel, & R. C. Moran) A. Haines [Hickey's Tree Clubmoss]: Callicoon:** Tower Rd. 28 (*1029*, BH, *det. John T. Mickel*).

Appendix B: Additional Ferns, Horsetails, Lycophytes, & two Quillworts of the Southern Catskills

Common and scientific names follow the online *New York Flora Atlas* (Weldy *et al.*, 2017) and Werier (2017). These eighteen species were also recorded from the southern Catskill region (Delaware and Sullivan Counties, N.Y.) by Brooks (1979), Mitchell (1984), Weldy *et al.* (2017), and via specimens collected by W. C. Muenscher & O. F. Curtis, Jr. (in BH), making a total of sixty species known from the region:

***43. Botrychium angustisegmentum* (Pease & A. H. Moore) Fernald** [Narrow Triangle Moonwort] *WLD*

***44. Botrychium multifidum* (S. G. Gmel.) Rupr.** [Leathery Grape Fern] *WLD*

***45. Botrychium matricariifolium* (Döll) A. Braun *ex* W. D. J. Koch** [Daisy-leaved Moonwort] *WLD*

***46. Botrychium rugulosum* W. H. Wagner** [St. Lawrence Grape Fern]

***47. Botrychium simplex* E. Hitchc.** [Least Moonwort] *WLD*

***48. Ophioglossum pusillum* Raf.** [Northern Adder's Tongue] *WLD*

***49. Anchistea virginica* (L.) C. Presl** [Virginia Chain Fern]

***50. Cystopteris bulbifera* (L.) Bernh.** [Bulblet Fern] *WLD*

***51. Dryopteris campyloptera* (Kunze) Clarkson** [Mountain Wood Fern] *WLD*

***52. Dryopteris carthusiana* (Vill.) H. P. Fuchs** [Spinulose Wood Fern] *WLD*

***53. Dryopteris clintoniana* (D. C. Eaton) Dowell** [Clinton's Wood Fern] *WLD*

***54. Polypodium appalachianum* Haufler & Windham** [Appalachian Rock Polypody]

***55. Polystichum braunii* (Spenn.) Fée** [Braun's Holly Fern] *WLD*

***56. Equisetum fluviatile* L.** [River Horsetail] *WLD*

57. Equisetum variegatum* Schleich. *ex* F. Weber & D. Mohr, ssp. *variegatum [Variegated Scouring Rush]

***58. Dendrolycopodium dendroideum* (Michx.) A. Haines** [Prickly or Northern Tree Clubmoss] *WLD*

***59. Isoëtes echinospora* Durieu, ssp. *muricata* (Durieu) Á. Löve & D. Löve** [Spiny-spored Quillwort]

***60. Isoëtes engelmannii* A. Braun** [Engelmann's Quillwort] *WLD*

Appendix C: Mentors in Pteridology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Frances Theodora Parsons (1861-1952) was my first mentor in fern studies, as detailed above. A portrait and short biography appeared in *The Fern Bulletin* (Clute 1902). Frances Theodora Smith was born in New York City, where she was privately educated. Her first husband, Commander William Starr Dana of the U.S. Navy, died abroad in 1890. In 1896, she married Professor James Russell Parsons, Jr., who was Secretary of the University of the State of New York, and they resided in Albany. As ***Mrs. William Starr Dana***, she authored three popular botany books — *How To Know the Wildflowers* (1893), *According to Season* (1894), and *Plants and Their Children* (1896) — before *How To Know the Ferns*, which she signed as ***Frances Theodora Parsons***, was published in 1899. Referring to the latter, Willard Nelson Clute, Editor of *The Fern Bulletin* (which was then published in Binghamton, N.Y.), wrote that she was "without a doubt the writer who has done the most to popularize ferns in America." The rather stiff portrait [145] included as a frontispiece in that issue does not hint at the exuberance and warmth of Parsons' writing. The wide success of her fern book is evident from its frequent availability from out-of-print book dealers, the Dover reprint, and from my ease in using it, more than sixty years after it was published. Parson's essay on "Ferns as a Hobby" in her *How To Know the Ferns*, pp. 1-14, provides further biographical details. This Wikipedia site contains additional information on her life:

https://en.wikipedia.org/wiki/Frances_Theodora_Parsons


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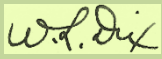

William L. Dix (1875-1972) [146], a Yale graduate, teacher, local historian, Latin scholar, and avocational botanist and lichenologist (Christian 1975-1976), found many of the same ferns, horsetails, and lycophytes in the 1930s near Lake Shehawken[6] in adjacent Wayne County, Pennsylvania [142], ca. 20 air-miles from French Woods (Dix 1939, 1940). These are indicated by *WLD* at the end of checklist entries in Appendices A & B. Dix's personal herbarium of 763 sheets was accessioned at the Bailey Hortorium Herbarium, Cornell University, in the 1980s, from Wiegand Herbarium backlog provided by Curator Emeritus ***Robert T. Clausen***. In 1978-1979, Clausen and then-Hortorium Curator ***Margaret H. Stone*** kindly made his herbarium available to me for study and cataloging.

(6) *Shehawken* is an alternate English translitertion of ***Chehocton***, the Lenape name for "The Wedding of the Waters," their historical village, where the East (Pepacton) and West (Coquago) Branches of the Delaware River and Shehawken Creek converge, on the south end of Point Mountain, at present-day Hancock, N.Y.

KARL L. BROOKS (1912-1990), the "Catskill Botanist" (Barbour 1984; Galusha 1984; Mitchell 1990), grew up in northern Delaware County, N. Y., where his interest in botany developed. After a long career as a teacher and book editor, he published an invaluable baseline on Catskill pteridophytes (Brooks 1979): a 276-page book that included 63 species, with identification keys, descriptions, illustrations, distributional maps, and locality lists. After Karl and I met at French Woods in July 1980, we were both excited to share letters, specimens, localities, field work, and stories about plants of this region. Karl had very little field experience in the southern Catskills, so my pteridophyte records, which started in 1964 (Appendix A), provided new distributional information. Having his friendship and encouragement enhanced my development as a botanist. Brooks' early pteridophyte vouchers were deposited at the New York State Museum Herbarium (NYS) in Albany, where ***Stanley J. Smith***, their Curator of Botany, inspired and guided his work. Two years after Smith's death in 1978, Karl decided to deposit his additional vouchers of Catskill plants at the Bailey Hortorium Herbarium at Cornell.

Parsons and Dix were historical mentors, through their legacy of publications and specimens. I was very fortunate to have known Brooks personally. This article is dedicated to him, with grateful appreciation for his friendship and lifelong work on the Catskill flora.

Tailpiece:
A Cascade of Vernal *Cystopteris*
at the base of a shaded, dripping cliff near Long Eddy, Sullivan Co., N.Y. These are luxuriant sterile fronds of **Mackay's Fragile Fern** (*C. tenuis*) in early spring, before the trees were in leaf (17 May 2017).