



# Newsletter of the **FRIENDS** OF THE **FARLOW**

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K. Griffith, Editor

## Following the Rake of Roland Thaxter - Unearthing the Hypogeous Fungi of South America

*Matthew E. Smith*

European explorers first sailed their boats through the Strait of Magellan in 1520. This narrow windswept passage at the southern tip of South America later became a superhighway for human ships and cargo, first wooden sailing vessels, then guilded coal-powered steamers and finally modern



Figure 1. Map of South America showing the southern portions of Chile and Argentina.

behemoth freighters. But in 1520 this was only a desolate stretch of water that connected the Atlantic and the Pacific, where wooden ships could avoid the high seas and strong currents between Tierra Del Fuego and Antarctica (Figure 1).

Early explorers of this region encountered shores cloaked by misty southern beech trees – a forest almost completely dominated by a few species of the genus *Nothofagus*. European visitors also encountered the native Patagonians, who did not sew clothes but instead covered themselves with animal skins and slathered their bodies with grease to endure the cold, rain, and wind. Very little had changed 300 years later when Charles Darwin made his infamous visit to this region in 1832 aboard the HMS *Beagle*.

Darwin documented some of the strange animals, plants, and customs of the Patagonian region during his voyage, but in these early years very little was known about the microbes of South America. That began to change when the Farlow Herbarium curator and Harvard's cryptogamic hero, Roland Thaxter, visited Argentina and Chile on a sabbatical collecting trip in 1905–1906. Although best known for his studies of insect-associated fungi, Thaxter was an avid collector. He snatched up cryptogams of all

**Boston Mycological Club to Host 2009 New England Mushroom Foray  
See page 15.**

types: lichens, mosses, algae, and many different types of fungi. Thaxter mostly avoided the obvious fleshy fungi – perhaps the mushrooms and shelf-like conchs were too bold and showy for his tastes or maybe he just figured that other biologists would collect these species. Instead of the big, conspicuous cryptogams, Thaxter gathered the smaller, hidden treasures. Thaxter was unusual among fungal collectors because he often used a rake to collect the fungi beneath the leaf litter and within the soil. Thaxter was a truffle hunter!

Why is it important that Thaxter was a truffle hunter? I will tell you. Truffle hunting is an art practiced by very few collectors, either in Thaxter's time or today. The result is that the collection records of truffles and truffle-like fungi (fungi that fruit hidden beneath the litter and soil) are constrained by the lives and travels of the truffle hunters themselves. There is a select breed of people who crawl around on the forest floor (exposing themselves to mud, snakes, slugs, ticks, and poison ivy) and claw through the soil in search of precious little "hypogeous nuggets." I want to clarify – these truffles are not the edible European *Tuber* species that fetch hundreds of euros per ounce at upscale Parisian markets (who wouldn't crawl around for that?!). I am talking about the truffles that you couldn't pay most people to touch – like the *Gautierias* that often reek of rotten milk and the *Hysterangiums* that sometimes smell of swamp gas. An additional problem is the unfortunate possibility of collecting a piece of discarded chewing gum ("Gummyangium"), a little ball of pine pitch ("Stickyfingerola"), or an animal scat ("Poopiomyces"), instead of a new and interesting truffle!

The truffles that Thaxter often collected (and the ones that I am interested in) are a diverse group of unrelated fungi that all share one morphological trait – they fruit below ground. There are truffles and truffle-like fungi

in the Ascomycota (e.g. Pezizales, Elaphomycetales), the Basidiomycota (e.g. Boletales, Hysterangiales, Gomphales, Agaricales, Russulales), the Zygomycota (Endogonales), and the Glomeromycota (*Glomus*). The vast majority of these hypogeous fungi are also ectomycorrhizal. This means that they live in symbiosis with the roots of select genera of woody plants, including *Quercus* (oaks), *Pinus* (pines) and, of course, *Nothofagus* (southern beeches). Many hypogeous fungi are also eaten by small mammals who inadvertently disperse the truffle spores in their scats.

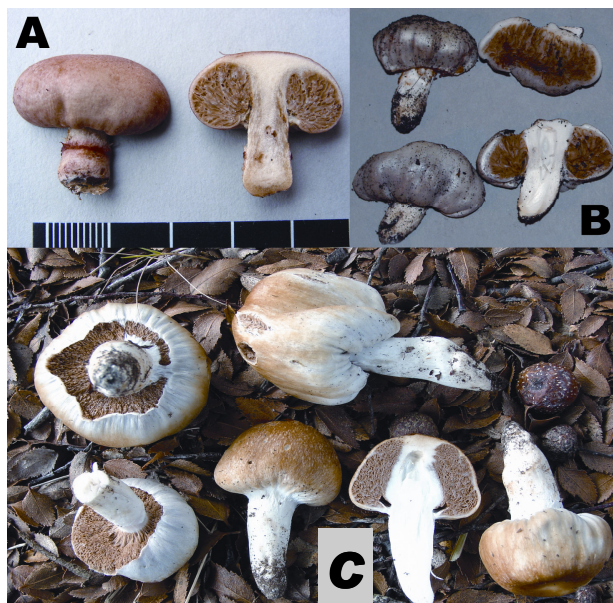


Figure 2. Morphological diversity of *Thaxterogaster* species from Chile. A. Brownish red species of *Thaxterogaster* (MES195). B. A lilac colored *Thaxterogaster* species (MES135) with soil and debris sticking to the viscid cap. C. *Thaxterogaster albocanus* Horak & Moser (MES195) arrayed on *Nothofagus* leaves. A and C were collected near Volcan Osorno whereas B was collected at the Río de las Minas near Punta Arenas. Photos by Matthew E. Smith.

Thaxter found many interesting fungi on his trip to South America, but perhaps his most interesting specimens were those of truffle-like fungi. He was the first to document the high diversity and abundance of truffles in South America's *Nothofagus* forests. This might seem surprising because Patagonia, with



Figure 3. *Gautieria chilensis* Zeller & Dodge, one of two *Gautieria* species described from the Southern Hemisphere. This collection (MES131) was found in Punta Arenas. Photo by M.E.S.

and the majority of truffle species are known from the world's other Mediterranean regions: 1) Mediterranean Europe and North Africa, 2) California and the Pacific Northwest and 3) Southeastern Australia. The other Mediterranean region, South Africa, lacks suitable ectomycorrhizal host plants and therefore appears depauperate in hypogeous fungi.

Unfortunately, Thaxter did not have the chance to fully document all of his South American truffle discoveries. He scribbled basic notes about his specimens in the field, wrote about the most interesting finds in his diary, and then preserved his specimens in jars for the return voyage to the United States. He described several species of microfungi from his trip (Thaxter, 1910) but the rest of his dusty specimen jars were relegated to the Farlow basement for future generations of mycologists to examine. Rolf Singer, a prolific mushroom taxonomist who worked briefly at the Farlow Herbarium, later erected the genus *Thaxterogaster* (Figure 2) based partially on Thaxter's collections from Patagonia (Singer, 1951). Several other *Thaxterogaster* species and the first known Southern Hemisphere species of *Gautieria* (*G. chilensis* – Figure 3)

its cool and moist climate, does not appear to be a very hospitable place for truffles. However, most of Chile is characterized by a "Mediterranean" climate with cool, moist winters and hot, dry summers. Mediterranean climates favor the development of hypogeous fruiting bodies

were also described based on Thaxter's Chilean specimens (Halling, 1981; Dodge & Zeller, 1934). Despite this flurry of published truffle species, Thaxter collected several interesting hypogeous Pezizales (Ascomycota) that remain undescribed because the collections were either lost or were too meager for an accurate description (Pfister, 1984).

Given Thaxter's interesting finds and the dearth of information on Chile's hypogeous fungi, it seems logical that more South American truffle collecting is needed! Luckily, in March of 2008 I had the opportunity to visit Chile and collect fungi with Prof. Donald H. Pfister (the current Farlow Herbarium curator and my cryptogamic hero) (Figures 4 and 5). Don received a grant from the David Rockefeller Center For Latin American Studies to revisit Thaxter's collecting sites and retrieve fascinating fungi for Harvard's collection.



Figure 4. The author, Matthew E. Smith, proudly displays a hefty collection of *Bondarzewia guaitecasensis* (Henn.) J.E. Wright that was growing at the base of a *Nothofagus* tree on Volcan Osorno. Photo by Donald Pfister.

Although we planned to collect any interesting fungi that presented themselves, Don and I were particularly interested in documenting the diversity of truffles and also of Pezizales (including cup fungi, truffles, and others) in the *Nothofagus* forests. We were especially hopeful that we would rediscover some of Thaxter's undescribed truffle species. Fresh specimens would enable us to accurately describe these new species and use genetic data to determine their closest relatives on other continents.



Figure 5. Professor Donald H. Pfister examines specimens in the “mobile laboratory” at the Cabañas Del Lago in the small town of Ensenada, Chile. Photo by Matthew E. Smith.

The first week of our trip was spent in the *Nothofagus* forests outside Punta Arenas, where Roland Thaxter spent more than two months of his expedition. Although the trees near town had been cut down before Thaxter's arrival, relatively intact forests were accessible via a narrow gauge railroad that led to a nearby coal mine along the Río de las Minas (Figure 6). The town of Punta Arenas depends on these forested hills for a clean water supply, so the entire Río de las Minas area has been

preserved. Most of this forest is in the Reserva Nacional Magallanes and is easily accessible by car from Punta Arenas. To maximize the diversity of our fungal discoveries, Prof. Pfister and I decided that we should collect in a completely different location during the second week of our trip. Accordingly, after a week of collecting near the Strait of Magellan we flew 1300 kilometers to the north and sought fungi in Chile's "Lakes Region" at the edge of the Parque Nacional Perez Rosales near Volcan Osorno (Figure 7).

This strategy of collecting in two disparate locations worked out quite well because Punta Arenas and the Volcan Osorno area have very different climates – but both locations had a plethora of interesting fungi!



Figure 6. A waterfall tumbles into the steep canyon and joins the Río de las Minas near Punta Arenas, Chile. Roland Thaxter's diary describes his collections from this canyon bordered by *Nothofagus* forests. Today the watershed is protected as part of the Reserva Nacional Magallanes. The bent *Nothofagus* tree in the foreground is evidence of the strong winds that scour the area. Photo by M. E. Smith.

The gradient of moisture and temperature between these two sites is similar to that along the western USA as you travel from San Diego, California to Portland, Oregon. The climatic gradient between our two collecting locations allowed us to detect a wider diversity of fungi than if we had collected in only one location and it also provided insight into the broader biogeographic patterns of Patagonian fungi.



Figure 7. The sunset provides a pinkish glow to snow-capped Volcan Osorno and shimmering Lago Llanquihue. The road to a local ski area provided access to prime collecting sites in *Nothofagus* forests at the edge of the Parque Nacional Perez Rosales. Photo by Matthew E. Smith.

Probably the most obvious difference between native Chilean forests and those of the northern temperate zone is the low diversity of ectomycorrhizal host plants. Although the native forests of North America contain diverse host plants in many unrelated genera (e.g. *Arbutus*, *Salix*, *Quercus*, *Betula*, *Tilia*, and many others), *Nothofagus* species are the only trees that form ectomycorrhizae in most of southern South America. The exception to this rule is the single *Alnus* (alder) species that can be found in a patchy distribution along the Andes (Nouhra et al., 2005). Two genera of ericaceous shrubs (*Gaultheria* and *Pernettya*)

are widely distributed in Chile and Argentina, but it is unclear whether they host ectomycorrhizal fungi or not.

Despite this low host plant diversity, southern South America has lots of truffles. Prominent truffle genera of the Northern Hemisphere, such as *Tuber* and *Hymenogaster*, are conspicuously absent but a hard working truffle hunter in Chile is rewarded with a unique mix of interesting hypogeous fungi. Many genera of Chilean truffles are a special treat to those of us from the US because they are Southern Hemisphere natives whose closest relatives occur only in Australia and New Zealand (e.g. *Hallingea*). However, there are also a handful of “immigrant” genera whose ancestors migrated from North America after the formation of the Panamanian land bridge (e.g. *Gautieria*).

The most diverse and abundant genus of truffle-like fungi in Chile is probably *Thaxterogaster* (Figure 2). A truffle hunter in Chilean woods is easily overwhelmed by the dizzying array of *Thaxterogaster* species that come in all sizes (tiny to massive), colors (purple, brown, white, reddish), shapes (with prominent stipes lessening to reduced stipes) and have “caps” that range from smooth to incredibly slimy. In contrast, *Thaxterogaster* is a relatively rare genus in North America with only a handful of described species. Recent genetic analysis indicates that *Thaxterogaster* species have independently arisen many different times from ancestors within the mushroom genus *Cortinarius* (Peintner et al., 2001). Although the name *Thaxterogaster* is no longer used in the official scientific literature (all these are now species of *Cortinarius*), most truffle hunters still use the name *Thaxterogaster*. After retracing Roland Thaxter’s trail and re-collecting some of “his” *Thaxterogaster*s in the hills above Punta Arenas, I now feel even more affection for his genus, *Thaxterogaster*!



Figure 8. *Gymnopaxillus morchelliformis* Horak, an odd looking South American endemic. This collection (MES163) included a range of stipe sizes but all individuals had the characteristic “brainlike” appearance and cartilaginous veins. This species is locally abundant at some sites near Punta Arenas. Photo by Matthew E. Smith.

Perhaps the oddest fungus that we collected during our time in Chile was the enigmatic, truffle-like fungus *Gymnopaxillus morchelliformis* (Figure 8). I had never seen anything quite like this fungus in the Northern Hemisphere – it seemed like some sort of possessed morel! *Gymnopaxillus* was first described from Argentina (Horak & Moser, 1965) but a recent study described two additional species from Australia (Claridge et al., 2001), indicating that this genus is well distributed in the Southern Hemisphere. Despite its odd morphology, *G. morchelliformis* is actually a close cousin of *Austropaxillus*, one of the most common mushroom genera in Chilean *Nothofagus* forests.

Another genus that does not occur in the Northern Hemisphere is *Hallingea* (see page 1, upper left). All three of the known *Hallingea* species were originally described as South American representatives of *Hysterangium*. However, their smooth spores and odd coloration don’t fit well in *Hysterangium*, so they were recently given their own genus (Castellano, 1996). Molecular

analysis now has shown that *Hallingea* is related to another truffle genus, *Gallacea*, which is only found in Australia and New Zealand (Hosaka et al., 2008). Together these two genera make up the family *Gallaceae*. Not surprisingly, several of the described *Gallacea* species are also purple!

As I said before, Don and I were also especially keen to re-collect some of Thaxter’s Pezizales species. The reason we were interested in pezizalean fungi was three-fold: 1) Don is one of the world authorities on the order Pezizales, 2) relatively few Pezizales have been described from South America (including only a single pezizalean truffle, *Hydnocystis singeri*) and 3) Thaxter’s diary discussed several odd fungi that we wanted to see for ourselves. With a lot of raking and a little luck, we were finally able to locate two of these interesting fungi!



Figure 9. *Underwoodia singeri* Gamundí & Horak is an odd relative of *Helvella* that is found only in Patagonian forests. It often fruits completely below the ground but occasionally its viscid tip emerges above the leaf litter. Thaxter referred to it as “Geodon” (the “Earth Tooth”) – a very appropriate name! Photo by M.E. Smith.

The first of Thaxter’s odd fungal characters that we found was *Underwoodia singeri* (Figure 9). Although this species is certainly not a truffle, it is often found deep within the leaf litter. Thaxter’s diary gives an

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excellent description of this strange fungus: **Wednesday, February 14<sup>th</sup>, 1906** – “*In digging several times I turned up something that looked like the broken end of a big root tip, viscid, cream colored, which proved to be a tooth-shaped fungus – the apex directed upward and buried in the earth quite below the leaf cover. Geodon, I christened it.*” *Geodon* means “earth tooth” which seems a perfect description for this fungus. Unfortunately, it appears that when *Underwoodia singeri* was formally named by Gamundí and Horak (1979), they did not know of Thaxter’s collections or his diary.

*Underwoodia geodon* would have been a great name for this fungus! Although we did not have an opportunity to name it, Don and I hope that DNA from our fresh collections will help to shed some light on the genus *Underwoodia*. Species of *Underwoodia* have been described from North America, South America, and Australia, but given the odd distribution of the genus and the wide morphological variation of the described species, it remains unclear whether the described species are close relatives or not.

The grande finale of our truffle collecting was the mysterious “pearly white” fungus that Thaxter described in his diary: **Wednesday, March 7, 1906** – “*Made my last visit to the Monte above the mine with very many regrets as here alone I can almost say, have I experienced anything akin to pleasure on the South American journey. My object especially was to get mature material of the pearly livid white fungus hypogeous, of which I found a lot – some in good shape.*” This was an intriguing fungus, but the Farlow liquid collection held no such specimens and there are no records of a “pearly livid white fungus hypogeous” ever having been described from South America. Approximately 98 years and two weeks after Thaxter found his “pearly white” fungus, Don and I uncovered several

collections of a small, luminous truffle at the same location along the Río de las Minas. Because of its gelatinous appearance, we knew at once that this was the same fungus that Thaxter had found. It matched his descriptions perfectly! Upon closer inspection, we realized that this truffle was actually an exothecium (the case of a “truffle turned inside out” where the spores are arrayed on the outside and without the protective rind found in most truffles). Although we have not yet formally described this strange little creature, our genetic analysis shows that it belongs in the genus *Ruhlandiella*. The only described species in this genus, *Ruhlandiella berlinensis*, is a native of Australia where it forms ectomycorrhizae with *Eucalyptus* species. Our rediscovery of the “pearly white” was an exciting find, both in terms of science and as a historical link to Thaxter’s voyage.

It was a very successful trip. After two weeks of scratching at the leaf litter and crawling around on the ground, it was time to head home. We had photographed and collected a large number of fungal specimens, including many of the species that Thaxter had found almost 100 years before and at least one species that had not been described in the scientific literature. Although I was eager to see my family and work on the specimens in the lab, I understood the “regrets” about leaving that Thaxter described in his diary. Chile is a wonderful place with beautiful forests, hospitable people, and interesting fungi – there were many things that I would miss about this place. Our exit was quick. We didn’t brave the high seas in a coal-powered schooner or take a circuitous route via Argentina to get home like Thaxter did in 1906. We simply dropped off our rental car at the airport, boarded a plane and napped our way through the night to Santiago, Miami, and Boston. I know that we only “scratched the surface” of Chile’s fungal diversity with our quick trip and I am hopeful that I can return before too long.

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## Generous Gift from Professor Goos

Thanks to Roger D. Goos, Professor Emeritus at the University of Rhode Island, the **Annual Book Sale** inventory has received a healthy infusion of materials. Prof. Goos contacted Prof. Donald H. Pfister in February and offered his personal library to the Farlow with the understanding that most of the collection would be offered in the FoF book sales. The ever intrepid Lisa DeCesare traveled to Kingston on a snowy day in early March to meet Prof. and Mrs. Goos. Together they packed and moved the books to Lisa's car, and then extricated the car from a snow drift.

Dr. Goos received his M.S. and Ph.D. in mycology from the University of Iowa under the supervision of George W. Martin and Constantine J. Alexopoulos. Throughout his career Prof. Goos focused his research on the biology of the fungi, with a special interest in the morphology, taxonomy, and biogeography of the Hyphomycetes (helicosporous group) and the "black mildews" (Order Meliolales). He also maintained an interest in tropical fungi and the mushrooms of Rhode Island. He donated his fungal herbarium to The New York Botanical Garden in 1995. [<http://www.nybg.org/bsci/hcol/goos/>]

These research interests are clearly reflected in the more than twenty boxes of books that Lisa delivered to the Botany Libraries. Judy Warnement unpacked them, searched the titles in Harvard's online catalog, HOLLIS, sorted everything, and created a list that totaled nearly 270 titles. About thirty titles were added to the Farlow Library or offered to Cabot Science Library and Countway Library of Medicine. The remainder will appear in future book sales so we will recall Prof. Goos' wonderful gift for many years to come.

The 2009 **Annual Book Sale** list will be mailed to FoF members around May 1.

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## Elam Bartholomew



In 1934 the fungus herbarium of Elam Bartholomew arrived at the Farlow Herbarium. The collection was purchased by D. H. Linder, then the newly appointed director of the Farlow.

Elam Bartholomew (1852-1934) was a farmer and a mycologist. From the age of 18 until his death at 82, he kept a diary – 5,600 pages of diary to be exact. His grandson, David M. Bartholomew, condensed the diary and the resulting publication, *Pioneer Naturalist on the Plains*, is a lively account of farming, business and mycological studies. He collected and identified fungi and developed a set of correspondents from across the globe. In 1901 he assumed the editorship of *Fungi Columbiani*, an exsiccata containing fungi. Exsiccatae are numbered, identified, duplicate sets of fungi. Essentially one large collection of a particular organism was broken into many smaller sets, each was given the same number and so each number was a part of a verified collection. In this way one could look at a particular number in Paris, or in Boston, or in Berlin and be assured that you knew what a particular fungus identification was. These were issued in lots of 100 specimens, a century. In the *Fungi Columbiani* series he was responsible for assembling 36 centuries. He also specialized in the rust fungi and established a series for that group, North American Uredinales that ran to 35 centuries, or 3500 specimens.

Thanks to the generosity of David Bartholomew we have some copies of his

book, *Pioneer Naturalist on the Plains*. If you would like to add it to your collection please watch for it on the list that will be mailed to members for the FoF **Annual Book Sale**.

## NEBC Nonvascular Herbarium Volunteers needed

The New England Botanical Club Nonvascular Herbarium is housed in the basement of the Farlow Herbarium. The New England collections of bryophytes, lichens, fungi and algae date back to the 19<sup>th</sup> century. Preservation work began when the former curator, Anna Reid, helped Mary Lincoln to start work on the bryophyte collections. Norton Miller and Bruce Allen helped confirm identifications and Mary developed an Excel database for many of the bryophytes in the collection.

A tremendous amount of work remains to be done on the NEBC collections. Deteriorated packets need replacing. Labels need to be made. Collections need to be entered into a database. With the help of Donald Pfister, Genevieve Lewis-Gentry, and Michaela Schull, Elizabeth Kneiper started monthly Saturday curatorial sessions at the Farlow. Doug Greene and Harold Schaefer have done work on the lichen collections and Kitty Griffith on the myxomycetes.

**Please join us for a work session!**  
Meetings are scheduled for Saturday, April 18<sup>th</sup> and Saturday, May 9<sup>th</sup>, 2009. We start at 9:00 a.m. and stop at 2:00 p.m. Bring your own lunch. We provide beverages. We meet at the entrance to the Harvard Herbaria on Divinity Ave. at 9:00 a.m. For dates of future sessions write Elizabeth Kneiper (Ekneiper@aol.com) or log on to the NEBC website at (<http://www.rhodora.org>).

## News from the Farlow

Congratulations to **Brian Perry**, formerly a Ph.D. student with Donald Pfister, who has accepted a position at the University of Hawaii at Hilo in their Biology Discipline.

Several renovations have been accomplished at the Farlow. The Phycology Room has been remodeled with a new floor. It is quite neat and tidy now. New cabinetry has also been added to house lichen collections on rocks and the liquid collections.

Visitors to the Farlow included **Lee Crane** from U. of Illinois at Urbana-Champaign, who made extensive use of the library, researching mycological publications cited by E. M. Fries; **Fred Olday** worked on the Maine Hepatic Check List; **De-Wei Li**, Research Mycologist at the Connecticut Agricultural Experimental Station in Windsor, CT, used the library and did some herbaria work on the fungal genera *Stachybotrys* and *Memmoniella*.



Judy Warnement and a conservation specialist preparing for renovations in HUH. Photo by Lisa DeCesare

Post doc **Matt Smith** taught a course entitled “Graduate Research Methods and Scholarly Writing in the Biological Sciences” at the Harvard Extension School last fall. Matt will be giving the course “Introduction to North American Truffles: Hypogeous Fungi” this summer at Eagle Hill from August 2 - 8.



Farlow basement hall as staging area during major renovations. Photo by Lisa DeCesare.

**Brian Franzone** has joined the curatorial staff of the Harvard University Herbaria and is spending 2 days a week working in the Farlow.

**Donald Pfister** presented an invited paper entitled “The North American Connection: Roland Thaxter and Carlos Spegazzini” at the Latin American Mycological Society Congress which was held last November in Mar del Plata, Argentina.

**Bob Edgar** has been making frequent visits to the Farlow to identify types in the diatom collection and continues to build a digitized data base.

**Lisa DeCesare**, our archivist, has mounted another wonderful exhibit outside the Farlow Library entitled “Fragile Science,” which chronicles the problems that face curators of herbaria collections.

**Dr. Michaela Schnull** and former intern **Daphne L. Brown** published “*Pseudevernia furfuracea*, the Mummy’s Lichen at the Farlow Herbarium” in *Opuscula Philolichenum* 6: 45-50. You can find this on the Web.

## 2009 Collecting Commences with Clara Cummings Walk



Left to right, front row: Brandon Seah, Hal Schaefer, Elizabeth Kneiper, Qingying Zhang, Zaiwei Ge; back row: Doug Greene, Anita Sebastian, Elizabeth Lay, Deb Lievens, Daniel Schott, Nicki Croghan, George Davis, Marcia Jacob, Karen Davis, Brian Franzone, Pam Chamberlain, Linda Berard, Nancy Coffey, Donald Pfister, Martha Finta. (Missing from picture, photographer Genevieve Lewis-Gentry.)

An eager band of 21 Friends and Farlowites, including Harvard undergraduate Brandon Seah, inaugurated the collecting season on April 5, a beautiful Sunday, with a walk at Dogtown Common. This unique area, on Cape Ann in Massachusetts, features the unusual carved Babson Boulders, some ancient cellarholes, and not surprisingly,



One of many Babson Boulders.  
Photo by Gen Lewis-Gentry.

quite a few cryptogams. Thomas Dresser, author of *Dogtown: A Village Lost in Time*, met our group and gave a brief historical overview of the area, which includes features that predate the Revolutionary War. Doug Greene documented the impressive number of lichens found, which included the following: *Acarospora fuscata*, *Amandinea punctata*, *Arthonia caesia*, *Arthonia radiata*, *Aspicilia caesiocinerea*,

*Aspicilia cinerea*, *Buellia stillingiana*, *Cetraria arenaria*, *Cladonia apodocarpa*, *Cladonia boryi*, *Cladonia caespiticia*, *Cladonia cariosa*, *Cladonia coniocraea*, *Cladonia cristatella*, *Cladonia furcata*, *Cladonia grayi*, *Cladonia macilenta* var. *bacillaris*, *Cladonia mitis*, *Cladonia pleurota*, *Cladonia squamosa*, *Cladonia subulata*, *Cladonia uncialis*, *Dibaeis baeomyces*, *Dimelaena oreina*, *Diploschistes scruposus*, *Evernia mesomorpha*, *Flavoparmelia baltimorensis*, *Flavoparmelia caperata*, *Fuscidea arboricola*, *Graphis scripta*, *Hypocenomyce scalaris*, *Hypogymnia physodes*, *Julella fallaciosa*, *Lasallia papulosa*, *Lasallia pennsylvanica*, *Lecanora cinereofusca*, *Lecanora dispersa*, *Lecanora hybocarpa*, *Lecanora minutella*, *Lecanora strobilina*, *Lecanora subpallens*, *Lecanora symmicta*, *Lecanora thysanophora*, *Lepraria incana*, *Lepraria neglecta*,

*Melanelia subaurifera*, *Micarea erratica*, *Ochrolechia arborea*, *Parmelia sulcata*, *Pertusaria xanthodes*, *Phaeophyscia rubropulchra*, *Physcia millegrana*, *Physcia stellaris*, *Placynthiella icmalea*,

*Platismatia tuckermanii*, *Polysporina simplex*, *Porpidia albocaerulescens*, *Psilolechia lucida*, *Punctelia rudecta*,

*Pycnothelia papillaria*, *Pyrrhospora varians*, *Ramalina Americana*, *Rhizocarpon obscuratum*, *Rhizocarpon rubescens*, *Rhizoplaca subdiscrepans*, *Sarcogyne clavus*, *Sarea resinae*, *Scliciosporum chlorococcum*, *Trapelia glebulosa*, *Trapeliopsis flexuosa*, *Tuckermannopsis Americana*, *Umbilicaria mammulata*, *Usnea strigosa* subsp. *Major*, *Xanthoparmelia conspersa*, and *Xanthoparmelia viriduloumbrina*.



Elizabeth Lay examines a few *Usnea* thalli on a *Prunus* branch.  
Photo by Gen Lewis-Gentry.



## The History of the Farlow Part III

### Financing the Farlow

*Lisa DeCesare, Botany Libraries Archivist*

Other sections of this series discuss Farlow's diligence in searching out and purchasing important and rare books as well as specimen collections from influential botanists both here and abroad to build cryptogamic studies at Harvard. However, these purchases offer just the barest glimpse into the financial support offered by William Gilson Farlow to Harvard for the growth and upkeep of the cryptogamic collections.



In March 1879 Farlow was appointed Professor of Cryptogamic Botany at Harvard University. His salary was low, \$1,500 per year, and he was not provided with lab/research space by the University. Bills from these years show that Farlow himself paid for much of the materials he needed. In 1878, the year before he was appointed a full professor, he was given a budget of \$13.13. Once he became a full Professor he negotiated with the

University for an appropriation of \$350 per year for the upkeep and growth of the collections. This amount, even in the late 1800s, was not nearly enough to cover what was needed. New collections were often purchased by Farlow himself or acquired by donations and gifts.

Besides the \$350 (equivalent to approximately \$7,300 today) for the upkeep of the herbarium, Farlow received a small portion of a general Harvard Botany Department fund. The University provided him with no other additional funding, although sometimes they forgot that fact. In an amusing series of letters from October 1893, the University President, Charles Eliot, writes to tell Farlow that they are not able to award him their usual appropriation. Farlow responds:

Thank him for letter of the 26<sup>th</sup> stating that "your usual appropriation for cryptogamic botany will have to be reduced for this year." Would you kindly inform me as to the interpretation to be put on the words "usual appropriation." I was not aware that any appropriation had usually been made for cryptogamic botany.

In the late 1880s, Farlow wished to hire an assistant but was told that there was no money for that purpose. Therefore, beginning in 1886 Farlow paid the University \$450 per year to be used to pay the salary of an assistant for the Cryptogamic Botany Department. When Farlow wished to hire Professor Thaxter to teach cryptogamic botany in 1891, he also had to pay the majority of his salary as well. In a letter from President Charles Eliot to Farlow dated November 23rd, 1897, Eliot writes, "By vote of the Corporation May 12th, 1891, Dr. Thaxter's salary was \$2,000 a year

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until September 1st, 1896, \$1,500 coming from your salary."

The President and Fellows were aware of Farlow's contributions. The Annual Report from 1887-1888 reads:

To the zeal and knowledge of Professor Farlow the University is indebted for an herbarium of cryptogamic botany which has already become of great value, and which grows steadily under his assiduous care...The Corporation would gladly prevent such sacrifices on the part of Professors; they would gladly relieve scholars capable of the highest work of all the mechanical or clerical labor which expert assistants might do under their direction...

Farlow did, at times, get frustrated with the University for not providing more financial support. He writes to Thaxter on June 4, 1890:

Now I am very gloomy. There appears to be no money to fit up my laboratory and I will not pay for it myself. It is enough that I give what I made out of my Lowell course to provide cases for the Tuckerman collection and other plants and I am not going to spend any more in fitting up a class laboratory. If the college cannot give that they can go without.



Farlow Herbarium, circa 1923

In addition to supplying funds for purchasing collections, building his personal library, sharing his appointment with Thaxter and paying the salary of their assistant, Arthur Bliss Seymour, Farlow also presented Harvard with a large gift in 1898, the John S. Farlow Memorial Fund.

The John S. Farlow Memorial Fund, or the Unknown Memorial as it was known until after Farlow's death, was a gift of \$100,000, to which was added a little over \$23,000 after his death. Farlow had very specific guidelines on the use of this fund. He asked that it be added to the general investments of Harvard University and that proportionate interest should be devoted to the care and increase of the collections of cryptogamic plants. He specified that no part of this money could be used to pay for lectures or instruction of any kind.

The conditions of the fund also specified that Farlow would have charge and direction of the cryptogamic collection during his life and be relieved of all other university duties. He specified that he should receive \$4,000 annually from the President & Fellows of Harvard College until his death.

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He also specified that the name Farlow Collection would be given to the collection of cryptogams that were located in the Botanical Museum at that time (with the exception of the Tuckerman collection). The President and Fellows would be required to provide \$3,000 each year for support of the Farlow Herbarium. This money would include salaries for assistants and clerks with, once again, no money earmarked for teaching.

Once this agreement was accepted, Farlow would release Harvard from the previous agreement dated April, 4, 1879, to pay \$350 annually to support the Cryptogamic Herbarium. The income from this fund would be credited annually to the College account and all payments would be charged as College expenses.

The University agreed and the John S. Farlow Memorial Fund went into effect August 1, 1898. This was an excellent agreement for the University because they "obtained permanent support for the cryptogamic collection; and secondly, it obtained from the same fund a partial support for a competent director of the collection, not at all as a teacher, but as a director and investigator." (letter from Eliot to Farlow, 1905).

The next large financial undertaking for the Farlow Herbarium happened after Farlow died on June 3, 1919. In his will Farlow offered Harvard University his world class library if the Corporation met certain very detailed provisions within three years. If they did not meet these criteria, his collection would go to another institution. Farlow's will also requested that Dr. Roland Thaxter oversee the proceedings and be given the power to approve Harvard's proposals or to choose another university to receive the collection.

On March 13, 1922 the President and

Fellows of Harvard College voted to turn over the Divinity Library Building to the Farlow collections. [*More details to follow in the next installment*]

The University offered to buy the building from the Divinity School but offered no money for anything else. Thaxter was informed that he needed to raise the money for all the building renovations and to build the addition that was needed to house the herbarium. Thaxter was in an unenviable position. He needed to raise \$21,500 (equivalent to approximately \$235,000 today) and needed to do it rather quickly. He was forced to spend much of his time writing letters to Farlow's colleagues and former students with hat in hand, requesting donations for the needed work, a task that he clearly did not enjoy. He writes at the bottom of one appeal:

Owing to certain clauses in Dr. Farlow's will I am so unfortunate as to be personally involved in the solution of the difficulty, and have been asked by the Corporation to procure such assistance as may be possible. I hope therefore you will pardon me for writing to ask whether you might yourself be interested to give some assistance in this connection, or whether you may possibly know of anyone to whom I might apply for a similar purpose.

While many former students and associates came through with small gifts, many others were not able to contribute. Thaxter had two staunch allies during this time; individuals who gave gifts and also offered support. They were Farlow's widow, Lillian Horsford Farlow and J.P. Morgan, Jr.

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When looking at the archival collections of Roland Thaxter, one realizes that hardly a week went by without Mrs. Farlow sending a gift of \$200, \$500, even up to \$5,000 to be used toward the renovations. She also set up two separate funds. The Lillian H. Farlow Library Fund was a gift of \$20,000 with the income to be placed at the disposal of the curator for the purchase of books and pamphlets.

Lillian Farlow reiterated her husband's wishes with her gift and requested that the books be non-circulating. She also set up a Lillian H. Farlow Herbarium Fund with a principal of \$5,000. The income from this fund was to be used to purchase collections of cryptogamic specimens.

The second major benefactor was J.P. Morgan, Jr. John Pierpont Morgan, Jr. (1867 - 1943) graduated from Harvard in 1886 and was a student of Farlow's. Upon his father's death in 1913, he inherited the major portion of his great fortune. Much like his father, he was a strong believer in philanthropy. Thaxter contacted him even before the University had granted him the Divinity Building.

Morgan was happy to help and by June of 1923 he agreed to provide Thaxter with \$30,000 for both the renovations and the upkeep of the library collections. His lawyers approached the University and set up The William G. Farlow Memorial Fund. This anonymous gift of \$40,000 from a "friend and pupil of Professor Farlow" was to be used mainly for the librarian's salary.

These generous gifts were wonderful but did not make the Farlow Herbarium a rich department by any means. The department survives on the endowment money, and occasionally receives a small part of a general botanic fund and money from gifts and donations.

## BMC hosts NEMF Foray

The New England Mushroom Foray, otherwise known as The Annual Sam Ristich Foray, or the NEMF Foray, will be held this coming fall on Cape Cod in Eastham, MA from October 15 to October 18.



**NEMF 2009**  
Mushrooming Weekend  
October 15-18  
Eastham, Cape Cod

Expand your knowledge in a beautiful setting

- renowned experts give talks discuss your finds and ID all mushrooms
- daily fieldtrips to gather mushrooms in a variety of habitats
- workshops in mushroom dyeing, cooking, and more
- comfortable accommodations near the National Seashore

For more about the Northeast Mycological Foray:  
<http://www.nemf.org/files/2009/2009.html>  
Space is limited - register early!

For those seeking a break from mushrooms...

- enjoy the Wellfleet Oyster Festival
- stroll beautiful beaches
- collect seashells
- observe shore birds
- absorb the beauty of a Cape autumn
- people-watch in Provincetown
- shop the quaint boutiques
- bike or jog the bikepath
- fish for stripers
- go whale-watching

Photo courtesy <http://philipgreen@att.net>

The NEMF Foray faculty will include the Farlow's Professor Donald Pfister, Dr. Michaela Schnull and FoF members Bill Neill, Moselio Schaechter, Anne Pringle and David Hibbett. In addition to walks and lectures, workshops are planned on beginning mushroom identification, dyeing, cooking, microscopy, mushroom cultivation, and photography. There will be evening presentations as well.

For further information about this event, log on to <http://www.nemf.org>.

*Join us!*

Receive the FOF Newsletter, notification of the annual book sale, discount on Farlow publications and services, invitations to the annual meeting and other events, and a special welcome when visiting the Farlow.

Name \_\_\_\_\_

Address \_\_\_\_\_

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Country \_\_\_\_\_

Telephone / Fax \_\_\_\_\_

E-mail address \_\_\_\_\_

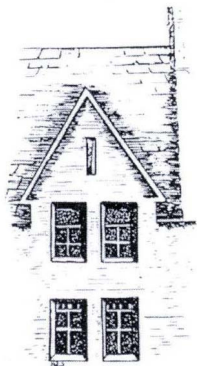
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Please make checks payable to: Friends of the Farlow  
 Applications should be sent to: Friends of the Farlow, Harvard University Herbaria  
 22 Divinity Avenue, Cambridge, MA 02138 USA

**Visit the Friends of the Farlow Website today!**  
[www.huh.harvard.edu/collections/fof/fof.html](http://www.huh.harvard.edu/collections/fof/fof.html)

FARLOW  
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