



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

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K. Griffith, Editor

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**On the Trail of E.J.H. Corner -  
Collecting Mycenoid Fungi in Malaysia**

*Brian Perry*

In the early half of the last century, renowned tropical botanist and mycologist Edred John Henry Corner spent a number of years collecting plants and fungi in the forests of what are today the nations of Malaysia and Singapore. Corner began his stay in the region in 1929, upon completion of his studies at Sidney Sussex College, Cambridge, at which point he applied for and received the position of Assistant Director of the Singapore Botanic Garden. Corner retained his position in Singapore until 1941, remaining in the country and continuing his research as a civil internee during the Japanese occupation of World War II. Upon leaving Singapore, Corner spent a number of years in South America, finally returning to Cambridge in 1949 to accept a position as Lecturer of Taxonomy in the School of Botany.

Corner's time in Singapore and Malaysia, however, was by no means over. He returned to the region on numerous collecting trips, including a Royal Society expedition to Mount Kinabalu in Northern Borneo (Fig. 1), which he led in 1961.



Fig. 1. Mount Kinabalu in Northern Borneo in the morning as the rain clouds disperse.

Although Corner's research during his time in Malaysia and Singapore focused primarily on plant biology, and he is likely best known for his work on Malaysian trees (especially palms and figs), he also actively collected and studied the fungi of the region. During the later years of his life, Corner finally found the time to return to these fungi, publishing numerous taxonomic treatments of genera from the Malaysian region, including, among others: *Boletus*, *Entoloma*, *Panellus*, *Amanita*, and *Marasmius*.

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**Clara Cummings Walk**  
**Sunday, May 4. See page 7.**

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Just two years before his death in 1996, Corner finally published the beautifully illustrated *Agarics in Malesia*, which treated in two parts the tricholomatoid fungi, and, of particular interest to me, the mycenoid fungi (i.e., the agaric genus *Mycena* and allied genera) from this broad biogeographic region. Even today, many of Corner's publications remain the most comprehensive, if not the only, treatments of many genera of fungi from the Malaysian region.



Fig. 2. Catherine Aime, Brian Perry, and Andrew Wilson.

In December of last year, I was fortunate enough to have the opportunity to travel to Malaysia myself. The 2007 Asian Mycological Congress, a series of meetings designed to bring together mycologists and plant pathologists pursuing active research in regions throughout Asia, was being hosted by the University of Malaya on the island of Penang. As I was making travel arrangements to attend the meetings, my close friend and colleague Andrew Wilson contacted me to inquire if I would care to join him for several weeks of collecting in Malaysia at the conclusion of the meetings. Andrew is currently working towards the completion of his Ph.D. in David Hibbett's lab at Clark University in Worcester, MA, investigating the evolution and ecology of the genus *Calostoma* (Sclerodermatineae, Boletales). As chance

would have it, another friend and colleague, Dr. M. Catherine Aime of Louisiana State University at Baton Rouge, a specialist on rust fungi (Pucciniales) and tropical Basidiomycetes, was also planning to attend the Mycological Congress and was hoping to do a bit of collecting after the meetings (Fig. 2). Andy had already made a collecting trip to the region during the previous year, and would take care of arranging the collecting logistics and obtaining the necessary permits for the trip. All Catherine and I had to do was show up and collect our fungi of interest. How could we turn down such an offer!

Attending the Asian Mycological Congress was a great experience. The locality was beautiful, the seminars were stimulating, and the meetings provided a wonderful opportunity to meet and converse with many of the mycologists currently working in Malaysia and other regions of Asia. Every time I attend meetings such as these, I leave with an ever broadening sense of wonder at the diversity and complexity of the Fungi, and a renewed excitement about my own research. It was with these feelings that I departed the Mycological Congress and headed off to collect fungi in the forests of Borneo.

Our first stop was a brief layover in Kuala Lumpur to retrieve the collecting equipment we had stored at a hostel during the meetings, and to pick up a few necessities for the field, such as leech socks. From here we boarded a short flight from peninsular Malaysia to the city of Kota Kinabalu, capital of the state of Sabah, located in northern Malaysian Borneo. From Kota Kinabalu, it was only short drive of approximately 90 kilometers to our first collecting locality, Kinabalu National Park.

The namesake of the park, Mt. Kinabalu, is the fourth tallest mountain in Southeast Asia (and the tallest in Malaysia)

at a height of 4095 meters. The mountain and surrounding area were designated a national park in 1964, just three years after Corner led a Royal Society expedition to study the geology and biology of the area. Later, in 2000, the park was designated a UNESCO World Heritage Site. In his comments on the general results of the expedition, Corner described the incredible diversity of habitats that are encountered as one ascends in elevation up Mt. Kinabalu, including the lowland forests of dipterocarp and durian; mid-elevation forests of Fagales spp., with southern conifers, pitcher plants, *Magnolia*, *Rhododendron* and of course *Rafflesia*; and finally at the higher elevations a sub-alpine zone of grasses, herbaceous dicots, and mosses. Corner indicated in his report that he was unaware of any other place on the planet that supplies in so short a transect of environments the plant and fungal diversity that he observed on Mt. Kinabalu (Corner 1964). Unlike the expedition of Royal Society, we had only two days to spend in the park collecting, and therefore did not have sufficient time to venture into the multiple environments the mountain has to offer.

Because the park provided what would likely be our only opportunity to visit mid-elevation forests during the trip, we decided to focus our collecting on some of the Fagales forest stands (e.g., *Castanopsis*, *Lithocarpus*, *Quercus* spp.) located at an elevation of approximately 2000 m. We were not disappointed. Within the first hour of collecting, Catherine and Andrew had located several collections of *Calostoma* and numerous other interesting Basidiomycetes.

As for myself, I was giddy with excitement as I encountered specimen after specimen of mycenoid fungi, the topic of my current research and first fungal love. This trip represented my first and very eagerly anticipated opportunity to collect several genera of mycenoid fungi known only from

tropical environments. The collections I made on Mt. Kinabalu include a brilliant scarlet-orange species of *Filoboletus*, characterized by a spore bearing surface composed of pores rather than lamellae, and a pure white poroid species of the genus *Favolaschia*.



Fig. 3. *Roridomyces* sp.

Another interesting collection from Mt. Kinabalu, a member of the genus *Roridomyces* (Fig. 3), is characterized by a thick, glutinous layer of mucilage on the stipe. For those of you who are familiar with the genus *Mycena* in the Northern Hemisphere, you have likely encountered a very closely related species, *Roridomyces rorida* (synonym = *Mycena rorida*) growing on needles and debris in our coniferous forests. These species are members of a very widely distributed group of closely related species known from both temperate and tropical regions of both hemispheres, all of which are characterized by the presence of a thick, mucilaginous stipe coating.

The following morning dawned clear and bright, providing an incredible view of Mt. Kinabalu, the summit of which had been obscured by rain clouds upon our arrival the previous day. After several more hours of collecting in the park, we met up with Mr. Ahmad Harun, our guide and host from the

Forest Research Center (FRC) of the Sabah Forestry Department. Ahmad was our main contact in Sabah, and helped facilitate access to all of our collecting localities and arrange our transportation while in Borneo. Without the help of Ahmad and his colleagues at the FRC, none of the collecting we did would have been possible, and for their assistance we are very grateful. Our original collecting plan was to head into the lowland dipterocarp forests of the Danum Valley Conservation Area, located in southeastern Sabah, but unforeseen difficulties with our collecting permits required us to cancel our plans at the last minute. Fortunately, Ahmad offered us the use of the plant pathology laboratory at the Forest Research Center in the town of Sepilok, and access to the Kabili Sepilok Forest Reserve managed by the center and shared with the Sepilok Orang Utan Rehabilitation Center.

Like the Danum Valley, the habitat in the Kabili Sepilok reserve is also lowland dipterocarp forest, but not quite so extensive and a bit more developed. Although I certainly hope to someday visit and collect fungi in the Danum Valley area, the forest at Kabili Sepilok reserve provided us with an incredible amount of fungal diversity, much more than the three of us could ever hope to document during our short stay. The additional bonus of access to the modern laboratory facilities of the FRC, complete with microscopes, plant dryers for preserving our specimens, and an air conditioned environment to work in, all comforts typically hard to come by when doing field work in the tropics, made this an ideal place for us to conduct our research.

Unfortunately we did not locate additional collections of *Calostoma* for Andrew's research, but the diversity of other fungal species we encountered in the Kabili Sepilok reserve was staggering. The saprotrophic fungi (i.e., those that obtain their nutrients by breaking down dead organic

matter), especially species of *Marasmius* and *Mycena*, were impressively abundant. The diversity was great enough that each day of collecting we ventured into the forest only a few hundred meters before our collecting boxes were overflowing with specimens. Once this occurred, we would have to turn back and head for the lab. Most days, upon returning to the lab we barely had enough time to take notes on the specimens, photograph them, and get them on the dryer before it was time to crawl into bed so we could repeat the process the following day. The mycenoid fungi we collected include several additional species of *Favolaschia*, *Filoboletus*, and *Mycena*, as well as species of another poroid genus, *Poromyцена*. Of great personal excitement, I was finally able to photograph and collect several beautiful specimens of *Poromyцена manipularis* (Fig. 4), a species reported from many areas throughout tropical Asia.



Fig. 4. *Poromyцена manipularis* (Berk.) R. Heim.

One of the main reasons I was so eager to collect and photograph *Poromyцена manipularis* is because the species is known to produce bioluminescent fruiting bodies, and the Malaysian specimens did not disappoint! The stipes of these specimens emitted a surprising amount of green light when viewed in a dark room (Fig. 5), enough that my eyes required less than thirty seconds to adjust to the dark enough to observe this beautiful

phenomenon. I also collected several *Mycena* species that, when viewed in the dark, also had bioluminescent fruiting bodies. The identity of both of these *Mycena* species remains to be determined; I am eager to find the time to sit down and work up these collections. Interestingly, nearly eighty percent of the bioluminescent fungi currently known are species of *Mycena*, and all of the known species are white-spored members of the Agaricales.

The presence of fungal bioluminescence is an amazing and poorly understood biological phenomenon, but that is a story that will have to wait for another FOF newsletter. After writing up and photographing the fungi from our final day of collecting, I had several additional fruiting bodies of *Poromycena manipularis* which, on their own, did not make much of a collection.



Fig. 5. *Poromycena manipularis* (Berk.) R. Heim in the dark, showing its bioluminescence.

Not wanting the bioluminescent beauty of these specimens to go to waste, I brought them back to our guesthouse and placed them on the nightstand between our beds. I woke up several times during the night to check on them, and although these fruiting bodies had been removed from their substrate almost twelve hours earlier, they continued to emit an eerily beautiful green luminescence late into the night.

Although it has been several months since our return from Malaysia, rarely a day passes that I don't think back on the trip and wish I could board a plane to return and continue collecting. Corner's observation that the habitats of Mt. Kinabalu support some of the richest fungal diversity in the world appears to apply to other forested regions of Borneo as well. In Corner's time, collecting expeditions lasted for several months or more, due, of course, to differences in transportation and a lack of roads, trails and other infrastructure. To collect in such an extended fashion is an ideal way to approach this research, as it allows one to remain in an area long enough to overlap with the fruiting of a potentially much greater number of species than short trips such as ours allow. While it is undoubtedly much simpler to travel to these distant locations today, it is unfortunately difficult for most of us to get away from work and other commitments for such extended periods. The alternative is to return to these areas on several occasions for shorter periods to adequately sample the regions diversity. I can only hope that circumstances will afford me the opportunity to return soon.

#### Sources

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Watling, R. and J. Ginns. 1998. E. J. H. Corner, 1906-1996. Mycologia 90(4): 732-737.

Mabberly, D.J. 1999. Edred John Henry Corner. Biographical Memoirs of Fellow of the Royal Society, vol. 45: 77-93.

Editor's note: The photo in the upper left corner on the first page is *Poromycena manipularis* (Berk.) R. Heim.

Brian Perry, a former student of D. H. Pfister, was awarded a Ph.D. by Harvard in 2006. He is now at the H.D. Thiers Herbarium at San Francisco State University in California.

## News from the Farlow



Witch-hazel signaling spring at the Farlow.

**Michaela Schnull** has been busy lecturing. In February she spoke to the New England Botanical Club on “Substrate Influence on Speciation in Lichenized Fungi” and in March she gave an HUH seminar entitled “The Lichen Genus *Lecidea* s. lat. (*sensu* Zalbruckner): How Widely Are the Species of this Heterogenous Group Distributed Within the Lecanoromycetes?”

**David Hewitt**, formerly a graduate student with Don Pfister, has been awarded an AAAS (American Association for the Advancement of Science) Fellowship to work on policy issues related to agriculture and land use. This year David has been working in the department of Organismic and Evolutionary Biology as a preceptor organizing laboratory and course materials for two courses.

**Matthew E. Smith**, post-doctoral fellow in the Farlow, and **Don Pfister** spent two weeks in March in Chile looking at fungi and forests. Part of the time was spent in Punta Arenas on the Strait of Magellan where Roland Thaxter collected from January to March in 1906. They were able to see some of the collecting areas that Thaxter described in a diary that is housed in the Farlow archives. The trip was supported by a grant from Harvard’s David Rockefeller Center for Latin American Studies.

**Don Pfister** was appointed Dean of the Harvard Summer School this past January. He is responsible for academic programs in Cambridge, as well as the 24 courses offered abroad by the Summer School. The first Summer School course at Harvard was given by **Asa Gray** in 1871, making this the oldest academic summer school in the country. Don continues to teach and remains the Curator of the Farlow Library and Herbarium.



Michaela and Gen at work.

**Genevieve Lewis-Gentry** attended the Integrated Pest Management Working Group (IPM - WG) in February at the American Museum of Natural History in New York City. The Farlow’s collections are vulnerable to pests and the IPM - WG equips Gen to help us stay ahead of the game with management strategies.

As part of the project to digitize significant portions of Harvard’s libraries, many books in the Farlow have been, and continue to be, processed by the **Google Book project**. This will be discussed more fully in future issues of the newsletter.

Ten mycorrhizal ecologists from across the country visited Cambridge on March 28 and 29 to attend a Radcliffe Institute Symposium hosted by **Professor Anne Pringle**. An interactive exhibit and talk was designed by **Michaela Schnull** and **Lisa DeCesare** to highlight the Farlow collections for the visitors. Their display featured a series of books spanning the years from 1560 to 1885, together with original photographs, drawings, notes, camera lucida sketches, and type specimens of Roland Thaxter’s works.

## The 2008 Clara Cummings Walk

### DCR Middlesex Fells Reservation

Sunday, May 4, 10:00 a.m. – 3:00 p.m.



Botume House Visitor Center.

Please join us for the FoF rite of spring. This year's Clara Cummings Walk in the east side of the Middlesex Fells Reservation aims to document the diversity of fungi, bryophytes, and lichens along the trails leading from the Botume House Visitor Center on Spot Pond to Melrose Hill on the eastern edge of the reservation. Bring a hand lens, a bag lunch with drinks, and a friend. For further information on the 2,600 acre reservation please go to:

The Middlesex Fells Reservation:

<http://www.mass.gov/dcr/parks/metroboston/fells.htm>

Friends of the Fells:

<http://www.fells.org/>

Doug Greene's Bibliography on Geology:

Bibliography\_Geology\_Boston\_North.doc

Meeting Site: Botume House Visitor Center, 4 Woodland Road, Stoneham, MA.

Please pull into the Botume House Visitor Center for parking. Overflow parking may be available in the former Boston Regional Medical Center just south and across the street from the center. Don't leave valuables in your car.

Directions: (taken from <http://www.fells.org/>)

From the North on Interstate 93 South take exit 35. At stop sign go left under the highway. At next stop sign go right. Follow signs for the Stone Zoo.

Go straight at first set of lights. The Botume House Visitor Center is 0.5 miles past Stone Zoo on the right.

From the South on Interstate 93 North take exit 33 (Route 28N). At the rotary continue on Route 28N a short distance to Elm St. on the right. Follow Elm St. to a small rotary and go north on Woodland Rd. Follow this to the former Boston Regional Medical Center on the right. At the rotary turn around and return to the Botume House Visitor Center on the right. If you reach the Stone Zoo you've gone too far.

Contact phone # 781-801-2734.

### Mailing Address of the Farlow

We would like to call your attention to the fact that even though the address of the Farlow building is 20 Divinity Avenue, our mail is delivered to **22 Divinity Avenue**. In this day of computerized mail sorting, incorrectly addressed mail may be diverted or be deemed undeliverable. Please use **22 Divinity Avenue**.

### Last December's Holiday Card

The FoF holiday card for 2007 featured an image from *Svenska Lafvarnas Färghistoria* by Johan Peter Westring (1753-1833), who was a Swedish physician and lichenologist, and one of Linnaeus's last disciples. He earned his doctorate from Uppsala in 1780 and then worked as a practicing physician, spending his spare time studying botany, chemistry, and mineralogy.

He also spent several years researching the use of lichens for textile dyeing, publishing his results between 1805 and 1808 in eight installments, bound together as the above mentioned book.

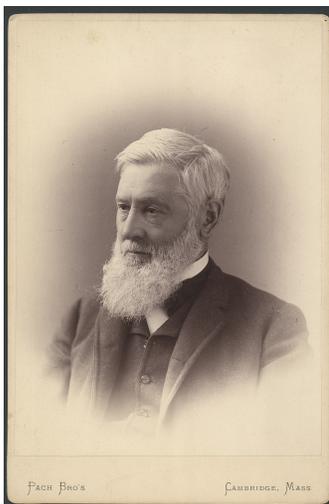


## The History of the Farlow Part I

### The Origins of the Farlow Library and Herbarium of Cryptogamic Botany

*Lisa DeCesare, Botany Libraries Archivist*

Asa Gray could be described as the person who established systematic botany at Harvard and, to some extent, in the United States. Gray's ties with European botanists, developed by correspondence, exchange of specimens, and visits to Europe, combined with his network of collectors, allowed him to serve as a sort of central clearing house for the identification of plants from newly explored areas of North America. By this process, Gray was able to build a major herbarium, which became the nucleus of the current Gray Herbarium at Harvard, and eventually the Harvard University Herbaria.



1888 photo of Asa Gray.

It was during one of his European trips, from September 1868 - November 1869, that Dr. Gray's assistant Dr. Horace Mann Jr. died. Gray needed to find a replacement and chose a promising pupil of his, William Gilson Farlow.

Farlow, who had completed his medical degree, accepted and in 1870 became Gray's assistant. Until this point, the only cryptogamic instruction offered in the United States was a few general lectures focused mostly on ferns, bryophytes, and mosses. According to Farlow in his *A Sketch of Cryptogamic Botany at*

*Harvard University*, Gray felt that there should be more thorough instruction and asked Farlow to be responsible for this.

Farlow speculated that part of the reason for Gray's desire to strengthen cryptogamic knowledge at Harvard might have been the addition of some valuable collections of cryptogams to Gray's herbarium. These included marine algae donated by Prof. W.H. Harvey of Dublin, Charles Wright's Cuban lichens and fungi, and Phillip Hepp's European lichens.

Harvard was the first institution in the United States to make special provisions for instruction in cryptogamic botany. Farlow writes: "...at the time when such instruction was first offered, it was almost necessary to apologize to the public for teaching anything but phaenogamic botany, the only branch of science hitherto recognized in our colleges." Here in Cambridge, Farlow worked to expand his own knowledge of the subject but found it almost impossible.

To learn more, he needed to study in Germany and France, where modern research was being done. In June 1872 Gray wrote to Alphonse de Candolle: "My youthful assistant of the past two years goes in a week or two to Europe, to study in some German University for a year or two; to Strasbourg, I think, unless he first should go to Sweden, and there study Algae, with Agardh, if he will receive him. He takes a fancy to lower Cryptogamia. His name is Farlow, an honest, good fellow. He will most likely be in Switzerland for the summer; and I shall give him a letter of introduction to you, whom he will wish to know. But take no trouble on his account, except to introduce him to Dr. Mueller, from whom, as a working lichenologist, he could learn much." Farlow left Cambridge during the summer of 1872 and settled in Strasbourg in October 1872 to study with Anton de Bary.

While in Europe, Farlow secured some important specimen collections, including the mycological herbarium of M.A. Curtis. This collection contained original material from M.J. Berkeley, Lewis David von Schweinitz, and Elias Fries, among numerous other luminaries in the field of mycology.

It was also during this time away that Farlow began to gather the foundations of his personal library and herbarium. He wrote to Gray on 4 January 1873 about building his personal book and collection. "If I felt sure of getting a permanent position at Cambridge, I should limit my purchases of books to those which, as far as I know, are not in the library at Cambridge. But, as it is, in consequence of losses by the fire\*, I suppose the college will not feel like increasing the numbers of its instructors for some time to come, so I must buy books which will be necessary if I go to a place where the library is not so well stocked as at Cambridge. The same feeling interests me in collecting. I don't want to preserve the phanerogams which I may collect but the knowledge that I have a collection of flowering plants will help me in getting a position in some place other than Cambridge."

Upon his return Farlow was appointed Assistant Professor of Botany and stationed at the Bussey Institute in Jamaica Plain, Massachusetts. His first work there was the study of certain diseases caused by fungi. This led to the publication of a paper entitled "The Potato Rot" (Bull. Bussey Inst.) in 1875.

\*He is referring to the University's monetary losses from the Great Boston Fire of 1872. This was Boston's largest urban fire and still one of the most costly fire-related property losses in American history. The fire began at 7:20 p.m. on November 9, 1872, in the basement of a commercial warehouse on Summer Street. It was finally contained twelve hours later, after it had consumed about 65 acres of Boston's downtown, 776 buildings, and much of the financial district and caused \$73.5 million (well over \$1 billion today) in damages.

More papers followed on similar plant pathology topics such as grape mildew and black-knot.

During this time Farlow taught special students at the Bussey. Most of his teaching dealt with diseases of plants caused by fungi. He also taught a general cryptogamic botany class for Harvard undergraduates. Their lab was very primitive and was located in the Lawrence Scientific School, which opened in 1847, and was run separately from the College until 1906. The school focused on engineering and the physical sciences. Besides teaching at these two locations during the summer, Farlow also taught classes at Harvard's Botanic Garden in Cambridge and at a primitive lab in Woods Hole.



Botany classroom in the Botanical Museum, circa 1900.

Farlow left the Bussey Institute in 1879 and was appointed a full Professor of Cryptogamic Botany at the University. He was given a room for a lab and it served as his lab/herbarium. He must have been very flexible, however, because his lab was first located in Lawrence Hall, then moved to Boylston Hall, then put in the basement of the east wing of the Museum building, then moved to an upper story of the main Museum building. The space he was given was never sufficient for his needs but some spaces were much worse than others. He writes to Roland Thaxter (who was working in Connecticut at that time) on August 19, 1889: "I have fulfilled many

functions in my time but next year, it appears, I am to perform the office of an entry or corridor. A door has been cut through from my laboratory to Dr. Mark's room and my room is to be used as a general passageway."

Finally, once the botanical wing of the museum was completed in 1890, Farlow moved his collections and staff into the upper level. There they had separate rooms for a herbarium, a lab, two class rooms, a room for the assistants, and several work rooms for instructors and staff.

In the late 1800s the Farlow budget was very tight. Farlow writes: "In regard to our financial condition, little need be said. We have no endowment of any kind. The Herbarium receives annually from the Corporation \$350 of which \$150 is paid out as a salary and \$300 additional is also given for that purpose. The equipment and material used in the class laboratories are paid for with fees received from students and an annual grant of about \$100."

By 1896, Farlow estimated that the herbarium numbered several hundred thousand specimens. The centerpiece of the fungi collection was the Rev. M. A. Curtis's specimens, purchased during Farlow's study in Europe during the 1870s. The lichens were represented by Edward Tuckerman's collection, purchased in 1888 with funds from friends of the University. Now the Farlow herbaria had the largest lichen and algae collections in the United States.

#### Sources

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## 2008 FoF Book Sale

Preparation for the 2008 FoF book sale is underway. A generous contribution from the family of the late **Walter Litten** and the arrival of several boxes of books from FoF founding member **Elio Schaechter** will make this a particularly rich selection.

Have you ever wondered how the book sale works? Several people take part in the process to keep it functioning year after year. Judy Warnement accepts donations, maintains the inventory, selects the items, drafts a list, searches the web for current values, sets prices (usually 10-20% below the average market price), notes the condition of each book, and then turns the list over to Don Pfister.

Don often makes recommendations on pricing and occasionally changes the composition of the list. Judy finishes the list, creates the lottery form, and passes the documents on to Ingrid McDonough. Ingrid corrects the final draft and mails the lists to members in good standing. She logs all of the returned forms and holds them until the deadline passes.

Our intrepid president, Elizabeth Kneiper, arrives with calculator in hand to implement the mysterious lottery formula devised over many years and then create invoices for the lucky winners. She sorts, packs and prepares the books for shipping. Ingrid collects the money and helps send out the packages. This team effort supports the largest source of income for the FoF, and we truly appreciate the generosity of our donors and our buyers who make the whole endeavor so worth our time.

You should receive the 2008 selection and lottery form in early May - that is, if your dues are up to date.

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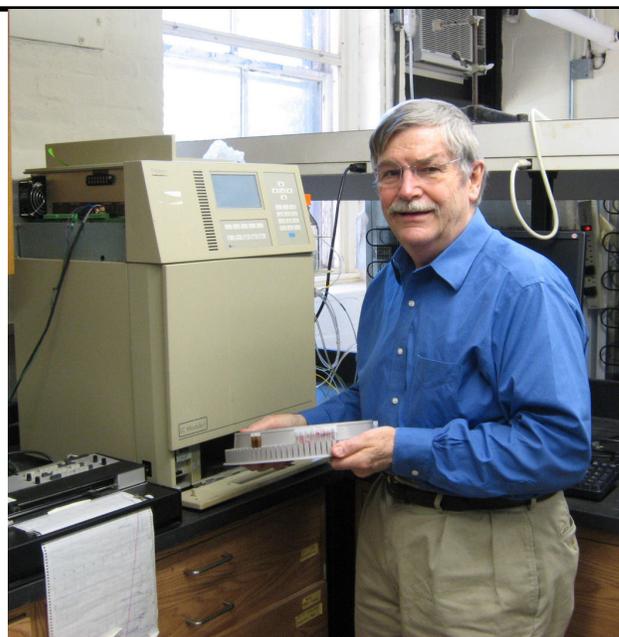
## HPLC at the Farlow

*George Davis, FoF member*

When working as a pharmaceutical analytical chemist, my goal was to develop analytical methods for the identification and quantitation of all the components in samples related to the active pharmaceutical ingredients. These samples were often complex and required powerful separation techniques in order to succeed in the analytical objective. For the last twenty years, the technique most often used for analytical separation of pharmaceutical samples has been high performance liquid chromatography (HPLC). HPLC has the separation capability and sensitivity necessary to analyze trace amounts of organic compounds in “dirty” samples.

HPLC has been used extensively for the identification of lichens by detecting lichen substances characteristic of the lichen species being examined. Several thousand of these lichen substances have already been characterized by both thin layer chromatography (TLC) and HPLC. HPLC is generally more sensitive, produces a much better and more reproducible separation and is more easily documented than TLC. TLC is more often used because the system is much less expensive than HPLC.

Following my recent retirement, when I was helping out at the Farlow, I found that there was no HPLC for Don Pfister’s staff to use, and none easily available at Harvard. (The price for a new instrument is in the range of \$30,000 to over \$50,000.) I considered building an HPLC from parts discarded by my former employer, Forest Laboratories. My former supervisor encouraged me to make a request for one of the older HPLC instruments that are donated to non-profit groups when they no longer meet the state of the art requirements of the pharmaceutical industry.



George Davis operating the Farlow’s new HPLC.

Forest Laboratories approved this request and after many months of waiting, last summer Dr. Michaela Schnull and I picked up two HPLC instruments at Forest Laboratories on Long Island. Since then they have been installed in the laboratory in the basement of the Farlow.

Dr. Michaela Schnull and I are now using the HPLC for lichen taxonomy and identification. We are able to compare the chemical profiles of the lichen substances produced by lichens to confirm their identity or establish differences based on their chemistry rather than morphology. Relatively little research has been done on the chemistry and chemical compounds found in fungi. There are many other problems in mycology that can be solved with the powerful separations of organic chemical compounds that are possible using HPLC. We hope to work on some of them in the future.

Our thanks to Forest Laboratories for the donation of the HPLC systems. They have greatly facilitated the identification of lichen substances at the Farlow laboratory.

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*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.

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