Newsletter of the FRIENDS OF THE FARLOW

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A BRYOLOGICAL GLIMPSE OF CHINA

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Ever since the International Botanical Congress in Berlin, I have had an open invitation to visit China. However, due to the distance, expense, and peripheral professional interest, I never took advantage of the invitation. However, since I was to attend the International Botanical Congress in Tokyo/Yokohama in late August of 1993, it seemed like the perfect opportunity to visit China. Nevertheless I was reluctant to venture into a country where I speak none of the language. This problem was solved, however, since Farlow's own Benito C. Tan was scheduled to be ending a collecting trip in Xinjiang Province, China, about the same time as my arrival in Shanghai. Therefore, I requested that Ben be invited along as my interpreter, a suggestion to which my primary host, Dr. Hu Ren-liang, readily agreed. After considerable consultation, Ben and I decided that we would visit two institutions, East China Normal University in Shanghai, and the Institute of Applied Ecology in Shenyang, giving lectures at both, as well as collecting in the respective areas. Because of our different travel schedules, Ben and I met up in Shanghai on the afternoon of August 17, 1993, but left immediately that evening for Shenyang, a city of about 5,000,000 people in northeastern China (formerly Manchuria), and the capital of Liaoning Province. Shenyang is a city that gets few English-speaking visitors, so immediately Ben's Chinese was useful. On our first day we visited the Institute where we both gave lectures. We were greeted there by our local host, Prof. Cao Tong and Prof. Gao Chien. In the afternoon they took us sightseeing to a couple of old summer palaces of the former Ching or Manchu dynasty. As interesting as they were, though, we were anxious to get into the field.

Because so much of China is cultivated to feed its large population, natural areas are few and far between. We had to drive most of a day to finally reach the Bai-shi-la-ji Mountains in Kuandian County near the North Korean border. Here foreigners are virtually unknown and in the small town near the entrance to the nature preserve, some villagers were afraid to look at us since they had never seen Americans! The small restaurant there, though, had some of the best food we had anywhere in China, with cryptogamic specialties of local mushrooms and fern fiddleheads.

Prof. Cao Tong (2nd row, center), Bill Buck (1st row, right), Allan Whittemore (2nd row, right) at Bai-shi-la-ji Mountain.

The preserve is a beautiful mixed hardwood conifer boreal forest, with *Abies, Larix* and *Acer* spp. The forester who led us into the preserve

knew all the trails and the vascular plants, at least their Chinese names. Fortunately there is a florula of the area, and he was able to translate the Chinese into Latin. The mosses are an interesting mix of circumboreal mosses, old friends that I have seen in northeastern North America, and many Asiatic endemics. These latter gave the flora an exotic feel, and left one guessing whether a given moss was what you thought it was, or something entirely different. We had two glorious days of collecting on mountain slopes and ravines, hindered only by my hay fever from the *Artemisia* pollen. Since Ben had been the American coordinator for the *Moss Flora of China* (English edition), he was doing very general collecting. He has been nagging me for years to work up the Brachytheciaceae with a Chinese collaborator, and although I have not accepted, I nevertheless made an effort to collect materials of the family. The percentages of familial representation there are so different from that in North America, with some families of mosses represented by a similar range of genera that we have here, and other families that are absent from temperate America. A similar situation exists with the lichens.

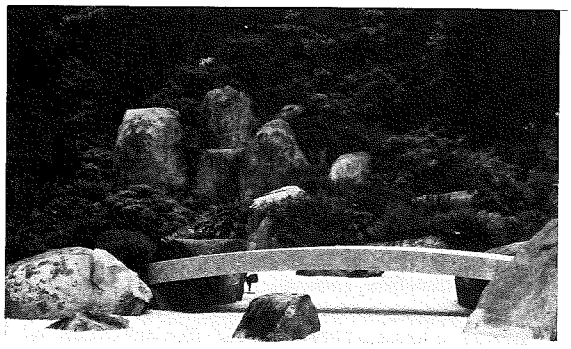
After two days of collecting, we reluctantly returned to Shenyang. From there, accompanied by Prof. Cao Tong, we flew back to Shanghai to participate in a Bryological Symposium organized by Prof. Hu Ren-liang and Mr. Liu Zhongling, primarily for young Chinese bryologists. In addition to Ben and myself, Allan Whittemore of the Missouri Botanical Garden was also present at the symposium. Allan had been in the field with Ben in westernmost Xinjiang Province of China and accompanied us also in eastern China. The symposium, which took place at the East China Normal University (a "normal university" is our equivalent of a teacher's college), had been going on for a couple of days when we arrived. During the one day we missed, there were presentations by Chinese bryologists, acquainting the attendees with various aspects of the field. The day I gave the presentation about my classification of pleurocarpous mosses, Ben acted as my translator. The talk seemed to go on forever since after every few sentences I had to pause and wait for Ben to translate into Chinese. Through out the symposium, and elsewhere in China, we were frequently offered hot water/tea to drink. This is one custom unlikely to catch on in the United States!

Cryptomeria trees on Mt. Tian-mu

We had a field trip organized to Zhejiang Province as a supplement to the symposium. Once again, it took most of a day just to get there, driving past fields of rice, millet, soybeans, melons and hemp. We stayed at a hotel within the Tian-mu Mountain Nature Preserve, a subtropical broadleaf evergreen forest with huge trees of *Cryptomeria* and *Cunninghamia*. Most spectacular, though, are the large *Ginkgo* trees that are purportedly native to the area. The reason its forest has remained uncut is that it had originally been a Buddhist monastery, and the ruins are still present as a tourist attraction. We had a single day of collecting on Mt. Tian-mu, so we tried to get an early start. The next day, looking out from my hotel window, the mountain was engulfed in low-hanging clouds, giving it an exotic, mystic appearance. Most dramatically, the trail up the mountain is paved with large stones, a project that must have taken decades of labor. Although the trail is steep, the slow process of collecting gives one numerous chances to rest. I was escorted up the mountain by Mr. Liu and his young daughter. After we were well along and had been collecting for a couple of

hours, Liu mentioned to me that we didn't have permission to collect on the mountain, and that we needed to keep an eye out for the park ranger. At just that moment, as I was bagging a large lichen specimen, the ranger came upon us. Naturally I couldn't follow the interaction, but eventually the ranger and Liu reached an agreement whereby our group could continue to collect without danger of a legal prosecution. It turned out that we were to pay a per specimen price. This may not have seemed unreasonable, but I alone collected over 125 specimens that day, and I was only one of about a dozen bryologists collecting that same day on this lofty mountain! We were told not to carry food with us that day since near the top of the mountain, in an old monastery building, was a restaurant of sorts that served bowls of hot noodles. After several hours of continuous uphill hiking in cool, humid conditions, a hot lunch was most welcome. The mosses here are very different from the boreal Bai-shi-la-ji Reserve in Liaoning Province. Many more pendulous mosses were draped over rocks and the branches of shrubs, and there was a decidedly greater tropical element. These features at the micro level, added to the magnificent large trees, make Mt. Tian-mu a very special place.

We left China two days later on a flight to Tokyo. Throughout the visits we were treated as very honored guests. Repeatedly, banquets were held for us, with special foods and beverages. Although the hospitality couldn't have been better, my richest memories are of the three short days in the field, getting a glimpse of the rich moss flora of China.



Tenshin-en

THE LICHEN OF TENSHIN-EN

Elizabeth Kneiper

On October 24, 1988, the Museum of Fine Arts dedicated Tenshin-En, The Garden of the Heart of Heaven, to the memory of Okakura Kakuzō, curator of the MFA Department of Asiatic Art from 1906 to 1913. Mr. Yosōji Kobayashi, Chairman of the Board of the Nippon Television Network Corporation, made the generous gift of the garden to the Museum of Fine Arts, thus enabling Kinsaku Nakane of Kyoto to design and install a dry landscape garden comparable to a fifteenth century Japanese Zen temple garden in the heart of Boston.

Nestled against and easily viewed from the windows of the North Gallery of the West Wing, the quarter-acre garden abuts the Back Bay Fens. A short path from the museum parking lot leads to the roofed cypress gate (*kabukimon*) which opens into the walled garden. A stone path inside the gate crosses a portion of the gravel "sea" onto an "island" with a cleansing stone water basin and a stone terrace with low wooden benches from which one can quietly contemplate the beauty and the design of this "dry mountain water" garden.

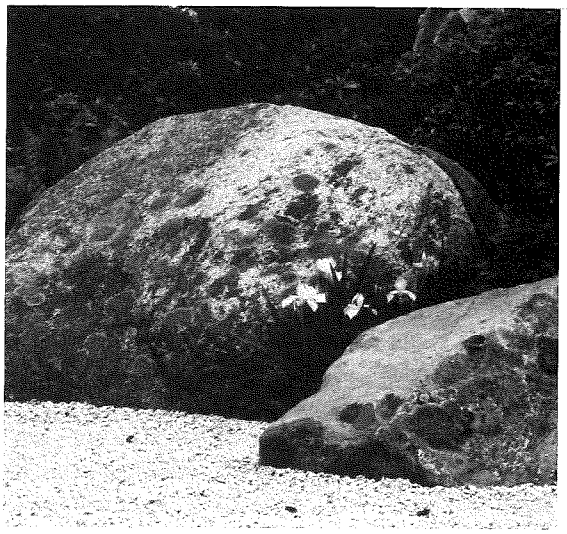
On a Sunday in April, 1993, I revisited Tenshin-en with my family. We studied the diagram of the garden. We located the rocks representing Mt. Sumeru, the mythic mountain thought to be the center of the universe, and its "dry" stone waterfall. We visually crossed the impressive arched granite bridges to Tortoise Island and to Crane Island, symbols of prosperity and longevity. I tried to impress on my young daughters that gravel is used in the garden to create the illusion of rivers flowing under the bridges and of vast seas and that the rocks and islands embedded in the gravel sea convey a sense of the New England coastlines and mountains in the garden landscape.

My lesson in Japanese garden design came to an abrupt end when it occurred to me that in making the Zen garden Kinsaku Nakane had also undertaken an enormous saxicolous lichen transplant project. The sense of serenity engendered by the setting was lost to the lichen checklist taking shape in my mind. The richness of the granite lichen assemblages and the health of the thalli on the rocks across the "sea" in

comparison with similar urban outcrops were most striking. In fact, the lichens are an integral component in the garden, lending a richness of color and texture to the surface of the rocks. The large thalli of the foliose *Xanthoparmelia conspersa* colonizing the boulders and rocks are healthy, robust, less fragmented and more fertile than most urban and suburban specimens. *Xanthoparmelia* on rocks used as footpaths in the garden have thalli that more closely resemble the fragmented and sterile colonies found on abraded rock surfaces in city parks. The yellow-green thalli of *Xanthoparmelia conspersa* contrast vividly with the greys of the granite boulders, as do the numerous lemon-yellow thalli of the crustose lichen *Dimelaena oreina* covering a small rock island. The greys of the colonies of *Aspicilia cinerea* and *Aspicilia caesiocinerea* are so extensive and interwoven on some rocks that they appear to be the lichen equivalent of urban graffiti in the garden. The isolated foliose and crustose lichen colonies on the largest boulder of Crane Island facing the benches are reminiscent of large colonies that start in and ultimately blur the lettering on tombstones across New England. Here, their color clashes strongly with the bare red granitic patches, creating a mottled crazy quilt pattern on a surface of the boulder that might otherwise be dull and dirty in an urban environment.

Inhibited by the watchful guard at the gate and by my sense that crossing the gravel sea would truly violate the spirit of Garden of the Heart of Heaven, I strained to identify the lichens on the far rocks from the terrace. The most exciting find was what appeared to be *Lasallia papulosa* growing on two large boulders of Mount Sumeru. This easily fragmented umbilicate is still found on glacial erratics in protected woods in Peabody and in the Blue Hills Reservation, but not in city parks.

I sought and was granted permission to study the lichens in the garden. I accompanied the crew from Curran's Landscape Company that helped to install and currently maintains the garden. I learned that the newly cut granite stones and arched bridges in the garden came from Deer Isle, Maine. The 178 boulders in the garden came from several sites in Essex County: Johnson's Quarry, in Pigeon Cove on Cape Ann; Topsfield; and Boxford. Various boulders were selected at each site, dug out and lifted without scratching the above ground surfaces. Don



Johnson, the owner of the quarry, mentioned that each rock was covered in moistened protective wrapping for transportation to the MFA site. Using a crane and following Kinsaku Nakane's directive, the Shaughnessy Crane Service lowered each transplanted rock to its permanent site in the garden. A total of 400 tons of rocks were thus transplanted.

No floristic work was done on the Essex County rocks prior to their move five years ago, but comparison of current lichen assemblages on the rocks at both sites is beginning to suggest some ways in which the transplant has impacted the lichens. Don Johnson kindly pointed out precisely where all the rocks were taken from his property. Most came from the shaded, very moist, mixed hardwood forest surrounding the quarry. At the quarry site most of the smaller boulders are low to the moist ground and covered with a thick mats of mosses and liverworts. These mats support robust colonies of *Cladonia squamosa, Cladonia coniocraea* and *Cladonia chlorophaea.* Maintaining the lichen-supporting moss mats in the garden has been problematic. Only fragments of *Cladonia squamosa, Cladonia cylindrica* and sterile *Cladonia* squamules remain in the most sheltered crevices on the boulders. Terricolous Cladonias are credited with surviving the most depauperate urban environments, but in the garden only a small colony of *Cladonia chlorophaea* was found in moss near the lantern at the end of the path off the terrace.

Mostly moss-free now, the surfaces of the rocks are being colonized by lichens capable of adhering to the bare rock surface, such as

Xanthoparmelia conspersa and *Flavoparmelia baltimorensis,* to a degree not seen at the quarry, where the foliose and crustose lichen assemblages are more diverse. The grey foliose lichens *Parmelia sulcata, Parmelia saxatilis* and *Punctelia rudecta* are fragmented and depauperate in the garden and most likely will not survive except on the more shaded, moist rocks. The brown *Melanelia stygia,* a new collection from Boston for the Farlow Herbarium, is found at both sites and appears to have been transplanted successfully.

The colonies of umbilicates on the larger boulders at the quarry site are very large. Not found in Tenshin-en, *Umbilicaria mammulata* thalli are palm-sized and dense on the largest boulders around the quarry. Lacking data from the time of the transplant it can only be conjectured that the size the boulders on which this species is commonly found may have precluded their being transplanted into the garden. The colonies of *Lasallia papulosa* in the garden are small in comparison with those of the Cape Ann site. The larger thalli are characteristically red and fragmented by time. Clusters of small thalli among the older ones might indicate the re-establishment on the boulders, but their low numbers suggest that, if it does occur, the process of recolonizing will be slow.

The saxicolous crustose lichens identified to date in the garden belong to genera commonly associated with granitic substrates. The lichen colonies on each isolated boulder highlight the variety of microhabitats on a single boulder. Behind Crane Island a boulder has a single expansive grey black colony of *Lecidea erratica* on the surface exposed to sun somewhat comparable to a single colony one would expect to find on a small pebble. On the shaded portion of this same boulder, *Trapelia coarctata* appears to be expanding on the rock.

Humidity levels and light regimes vary tremendously in the garden. *Scoliciosporum umbrinum* is growing on the damp walls of the water basin. *Rhizocarpon plicatile* on a boulder set deeply into a moist soil bank. The dark apothecia of *Sarcogyne clavus, Polysporina simplex* and *Porpidia tahawasiana* are intermixed with the quartz crystals of the larger, less shaded boulders. Brown *Acarospora fuscata* and several species of *Lepraria* are scattered among the boulders, especially those colonized by foliose lichens.

Identifying the maritime *Lecanora contractula* on a boulder intended to be a mountain in the garden serves as a reminder that the garden was designed not to recreate nature, but to simulate it. In John Robinson's *Flora of Essex County,* published in 1880, Charles J. Sprague lists 164 lichen species for the county, only eight of which are represented in the garden. Floristic comparisons are of limited use here because the rocks moved were selected for their size, shape, color and surface texture, not for their lichen assemblages. However, the protected nature of the garden provides an excellent opportunity to monitor the growth and dispersal of the lichens transplanted into an urban environment. Within the garden several rock islands, the granite bridges and pathways are devoid of lichens. When and by what lichens they are first colonized will be of interest, as will the nature of succession on these and other rocks in the garden. The appearance of new lichens not currently in the garden will also be of interest. Changes in lichen assemblages on individual boulders might reveal something about competition between saxicolous species. Extinctions will be especially noteworthy.

Regaining the quiet mind set Kinsaku Nakane intended for visitors to his garden will be difficult. Sitting on the bench overlooking the garden I keep wishing I could both rewind and fast forward a tape on the progress of the slow growing lichens. Having to settle for baseline data for now feels both incomplete and prosaic.

References

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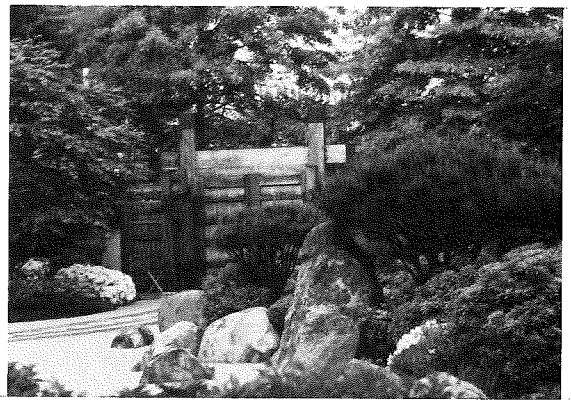

FARLOW VISITORS

(October 1993-April 1994)
Excluding members of the Harvard University Community

R. A. Andersen (W. Boothbay Harbor), S. Andrei (Moscow), A. Backlund (Uppsala), P. Banerjee (Albany), L. Clarke (Portland, ME), R. Coleman (Prairie Village, KS), T. Coleman (Baltimore), A. Comas (Cienfuegos, Cuba), R. Cook (Rochester, NY), R. Cox (New York), M. Douglas (Amherst), R. Fogel (Ann Arbor), A. Gerenden (Afton, MN), A. & J. Ginns (Ottawa), I. G. Gordon (Cambridge), P. Griffith (Belmont), R. Griffith (Belmont), E. Hebre (South Brunswick, ME), M. F. Heerbeas (Victor, NY), J. Hinds (Orono), D. & R. La Fontaine (Hartland, VT), S. Landry (Arlington, MA), P. Meyer (Clifton, NJ), P. E. Noell (Baltimore), A. Passman (Beltsville, MD), B. Sergei (Moscow), I. Sprecher (Cambridge), B. Strack (Chicago), N. Taras (Walnutport, PA), E. Thier (W. Boothbay Harbor), E. Varney (Somerset, NJ), R. & H. Wagner (Utica), M. Watkins (New York), A. Weir (Newcastle-upon-Tyne, UK), E. Yetter (New York), T. Zanoni (New York)

Lichen Grants Awarded

Five Friends of the Farlow have received small Research Contracts from the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries & Wildlife to pursue their varied interests in lichens. Dr. Sam Hammer will continue his taxonomic work on the genus *Cladonia* at Myles Standish State Park, where he is also studying the environmental impact of off-road vehicles. Elizabeth Lay, Phil May, Linda Berard and Elizabeth Kneiper will be inventorying the lichens of the Westover Air Reserve Base and the Katama Plains grasslands on Martha's Vineyard. From literature and herbarium specimens at the Farlow Elizabeth Kneiper will beto attempt to reconstruct the distribution of twenty rare Massachusetts macrolichens.

Activity in the Farlow Archives

The Farlow Archives benefited from the services of Archivist, Claire Goodwin this winter. Claire arranged and described the Carroll W. Dodge Papers, some of which date back to the days when Dodge oversaw the renovation of 20 Divinity Avenue to receive the newly bequeathed Farlow Library & Herbarium. A new finding aid for the Dodge Papers will make it easier for researchers and curatorial staff to consult the collection of correspondence, notebooks and manuscripts. Furthermore, the entire Farlow Archives has received a thorough inspection by Claire who has produced an inventory with detailed notes for small archival projects, such as rehousing older correspondence files in archival quality enclosures, that can now be delegated to library assistants and student interns.

"RECON" Update for the Farlow Library

The Harvard University project to "RECON" or reconvert the paper library records to an electronic format is keeping the Library staff busy as they prepare card sets to send to OCLC in Dublin, Ohio. The Farlow has cataloged all new acquisitions in electronic format since 1978, but will now add records for all prior holdings. The serial records for the Farlow's extensive collection of 18th and 19th century natural history journals went "online" this winter. Friends with Internet access may search Harvard's Union Catalog by telnet to HOLLIS.HARVARD.EDU. The records also appear in the OCLC catalog which compiles catalog information for libraries throughout North America and parts of Europe. Electronic cataloging makes it far easier for the world's libraries to know where to go to locate the obscure and rare publications of interest to cryptogamic botanists.

Friends of the Farlow is an international group of amateur and professional botanists concerned with supporting the programs and resources of the Farlow Reference Library and Herbarium of Cryptogamic Botany of Harvard University. Membership categories are: Associate member, $5-25; Full member, $25; Sponsor, $50-100; Benefactor, $1000 or more. To join please make your check payable to the **Friends of the Farlow** and send to the address below. The membership year runs from January 1st to December 31st. Members receive a discount on Farlow publications and services, participate in book sales, annual meetings and other events, and receive a special welcome at the Farlow. This newsletter is published twice a year, in the Spring and Fall. For more information, contact the Farlow Reference Library, Harvard University, 20 Divinity Avenue, Cambridge, MA 02138 USA (*Tel.* 617-495-2369; *Fax* 617-495-9484).