

The Trees of Tian Mu Shan: A Photo Essay

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Tian Mu Mountain, located approximately 90 kilometers west of the city of Hangzhou, is the tallest mountain in Zhejiang Province, China. Rising 1506 meters above sea level, Tian Mu Shan is well known throughout China for its scenic beauty and for the diversity of its flora. It has a long and rich history, and has been visited by monks, herbalists, poets, botanists, and tourists for close to a thousand years. From a utilitarian point of view, the mountain is noted for exporting four comestible products: "cloud and fog tea," collected from *Camellia sinensis* growing wild on the cool slopes; "dried bamboo," derived from the young shoots of the locally abundant *Phyllostachys pubescens*; "hickory nuts," the sweet seeds of *Carya cathayensis*; and lastly the numerous medicinally important herbal plants that were once widely collected.

The most prominent symbol of Tian Mu Shan's long human history is Kaishan Temple, located two-thirds of the way up the mountain, at 1020 meters. Built by Buddhist monks in 1279, this small temple serves as a focal point for visitors, who often spend the night in order to view the sunrise the following morning. A second temple, Chanyuan, was built in 1665 and is located at the base of the mountain, at 330 meters.

The topography of Tian Mu Shan is diverse enough to support a wide variety of plant associations. The subtropical evergreen forests typical of south China commingle with the warm temperate deciduous forests of the north on the slopes of Tian Mu Shan, resulting in a flora of some 1530 species of vascular plants, one of the richest in the temperate world. Beginning in the 1920s, Chinese

botanists, recognizing the uniqueness of the Tian Mu Shan flora, collected and described many distinct species from the area. Today at least three species are recognized as endemic to the mountain, and a total of thirty species growing within the reserve are included in Volume 1 of the *Plant Red Data Book* of rare, endangered, and threatened plants of China. In 1960, the Chinese government, recognizing the uniqueness of Tian Mu Shan flora, established a 1000-hectare reserve (400 acres) on the south-facing slope of the west peak, designed to preserve and protect the plants.

In addition to its high species diversity, Tian Mu Shan is also famous for its exceptionally large trees. Foremost among them is *Cryptomeria japonica* var. *fortunei*, the cryptomeria, of which there are 398 individuals with diameters greater than one meter. The golden larch, *Pseudolarix amabilis*, also grows wild on Tian Mu Shan, with some 98 individuals larger than half a meter in diameter. Most interesting of all are the large specimens of *Ginkgo biloba*, the ginkgo, growing in isolated valleys and on steep cliffs. According to the only published report on the population, 244 trees were located, with a mean diameter of 45 centimeters and a mean height of 18 meters. Whether these trees are truly wild or are the escaped offspring of trees cultivated by monks has been debated by botanists for years. Researchers have yet to reach a clear consensus on the answer to this question.

In addition to these three rare gymnosperms, exceptionally large specimens of *Torreya grandis*, *Liquidambar formosana*, *Nyssa sinensis*, *Cyclocaria paliurus*, *Litsea*



Ginkgo biloba in silhouette at 980 meters elevation.

auriculata, and *Emmenopterys henryi* are also common. In the fall of 1989, I had the good fortune to visit Tian Mu Shan in the company of two very able Chinese botanists, Professor Ling Hsieh of the Zhejiang Institute of Forestry and Mr. Yang Guang of the Jiangsu Insti-

tute of Botany. From October 6 to 15, the three of us tramped up and down the mountain mapping and measuring all the ginkgo trees we could find. It was a memorable time for me and one that I hope is captured in the following photographs.



*Professor Ling and a large specimen of *Pseudolarix amabilis*, the golden larch, 42 meters tall, with a diameter at breast height of 112 centimeters.*



Yang Guang with the "living fossil" ginkgo in the Tian Mu Shan reserve. This ancient ovulate tree occupies an area of approximately 20 square meters and consists of 15 stems greater than 10 centimeters in diameter. The largest trunk has a diameter of 110 centimeters. The Chinese describe this tree, perched on the edge of a steep cliff at 950 meters, as "an old dragon trying to fly." The fence protecting the tree was built in 1980.



Cryptomeria japonica var. *fortunei* is the dominant tree on Tian Mu Shan. Here it is growing in association with a large specimen of *Magnolia denudata*, the yulan magnolia.



Several Cryptomeria japonica var. fortunei demarcate the stone path that leads to Kaishan Temple. About 300 years old, these trees may well have been planted for the purpose of erosion control.



Very common on Tian Mu Shan, *Liquidambar formosana*, the oriental sweet gum, is a very large tree. Here it is growing amidst a clump of *Phyllostachys pubescens*, a timber-producing species of bamboo.

NEWS

FROM THE ARNOLD ARBORETUM

Master Planning: Looking Ahead to the Next Century

Why, the letter read, are you hiring fancy landscape architects when the original design of the Arboretum by Frederick Law Olmsted is doing just fine?

The writer of this letter was probably aware of our decision to seek an outside consultant to assist us in creating a master plan, the first long-range planning effort since the original Sargent/Olmsted collaboration. After interviewing a number of local firms with experience in planning and the preservation of historic landscapes, we chose Sasaki Associates of Watertown, Massachusetts.

So why are we hiring Sasaki? I can best answer this question by recounting a conversation I had recently over the phone. A woman called me to complain about the number of cars driving through the Arboretum to exit by the greenhouse; they were endangering the many mothers and children who walk the roads during the day. In fact, she said, a schoolbus, no less, had nearly run down her daughter.

She pointed out that drivers prefer to drive through the grounds because it is so difficult to leave by way of the primary entrance on the Arborway. Traffic lanes in the opposite directions are separated by a thin island of concrete and curbing, necessitating a complicated turnaround at the Forest Hills subway station which is further complicated by ongoing constructions. Why, she asked, don't we simply put a traffic light at our entrance and cut a passage through the concrete island to let cars exit in both

directions?

This sounds like a good idea, and it may well be one. But like most good ideas, it is likely to prove more complicated than it initially appears. Should left hand turns across traffic and into the Arboretum be permitted as well? How would the light affect weekend parking that tends to cluster around the entrance? What about pedestrians? And who should pay for all this? Clearly the City of Boston, the Metropolitan District Commission and the Arboretum will all be involved.

Frederick Law Olmsted and Charles Sargent created the Arboretum in a day when the

preferred mode of transportation was the horse and carriage. The original design and circulation system has been remarkably well preserved over the years. However, the urban realities of the late 20th century could come to threaten that preservation if we continue to operate without any comprehensive planning. So it is a master plan created with the experience of a firm like Sasaki Associates that will really allow the original Olmsted design to continue doing just fine well into the next century.

Bob Cook

Robert E. Cook, Director

PLANT SALE BETTER THAN EVER



Over 8,000 plants were sold and more than \$50,000 raised as approximately 2,000 plant buyers and browsers strolled from tent to tent collecting new specimens for their gardens. The larger less crowded sales area in and around the barn and an increased number of cashiers enabled members to select their free plants without the congestion and waiting lines of previous years. Many thanks to the Arnold Arboretum Associates who organized this event and gathered the plants for the Rare and Silent Auctions.

SARGENT'S SILVA

Charles Sprague Sargent, the first director of the Arnold Arboretum, brought together a wealth of information about the known forest trees in the *The Silva of North America*. Undertaken for the Tenth Census of the United States, the fourteen volumes were published between 1890 and 1902. While changes in nomenclature and taxonomic perspective have occurred since its publication, Sargent's *Silva* remains today as the most authoritative and complete work of its kind.

Charles Faxon, botanical illustrator for the Arnold Arboretum at that time, created illustrations which were engraved by the celebrated Parisian firm of Philibert and Eugene Picart and printed by the Riverside Press in Cambridge for inclusion in *The Silva of North America*.

In addition to complete sets of this work in our library, the Arnold Arboretum has the printer's over-run copies of these 10" x 14" Faxon drawings which are suitable for framing. Beginning in January, 1991, members at the Benefactor level (\$1,000 and up) will be offered one of these prints as an annual gift from the Director.

THE CONTRIBUTORY PORTION OF MEMBERSHIP DUES

Internal Revenue Service regulations require that in determining the tax deductible status of a charitable contribution, the "fair market value" of benefits received must be taken into account. Beyond the value of these benefits, your membership dues may be claimed as a charitable, tax deductible contribution.

Previously this contributory portion was determined by subtracting the "fair market value" of all benefits offered to each category of membership. This produced great complexity and confusion. Today only the value of *Arnoldia*, which is available to nonmembers for a yearly subscription rate of \$20 (\$25 foreign) must be considered "fair market value" of membership benefits and therefore not tax deductible. For members who elect not to receive *Arnoldia*, the total amount of membership dues is tax deductible. Payments for classes, symposia or Book-store purchases are not tax deductible.

For more information call the Membership Department at 617-524-1718.



Faxon's drawing of *Rhododendron Maximum, L.*, an illustration from Sargent's *Silva*.

NEW CASE ESTATES MAP

A new Case Estates information brochure and grounds map is available at the Case Estates and the Hunnewell Visitor Center. This brochure includes more information about the history of the Case Estates as well as descriptions of the new display areas.

The new map, adapted from an accurate and detailed base map drawn by Janis Wedmore and John Quinn, was created by Mapworks, Inc. of Norwell, MA. The attractive new representation of the grounds provides clear graphic orientation to the entire grounds.

If you haven't been to the Case Estates in recent months, please accept our invitation to use this new guide map for a winter walking tour of the new display areas and woodland paths.

Arnold Arboretum Logo



Created in 1980, our logo is an adaptation of the Chinese character for forest. The character contains three identical elements, each meaning tree. The slight variation in the three elements, permissible artistic liberty, is used to achieve a more esthetic overall character.

Although our logo has stylized the original Chinese character almost beyond recognition, it does carry on the tradition of graphic representation so important to the written Chi-



nese language. Where as a reader of Chinese would recognize each of the three elements of the original character as a picture of a tree, untrained American eyes would not. The Arboretum logo recreates the basic elements of the original Chinese character within the more triangular graphic design which Americans have come to recognize as an ever-green tree. If you would like another logo window decal, please contact the Membership Department.



Al Fordham, formerly Chief Plant Propagator at the Arnold Arboretum, admires the restructured stream bank and new waterfall where the eroded stream bed had been.

THE Linda J. Davison Rhododendron Path

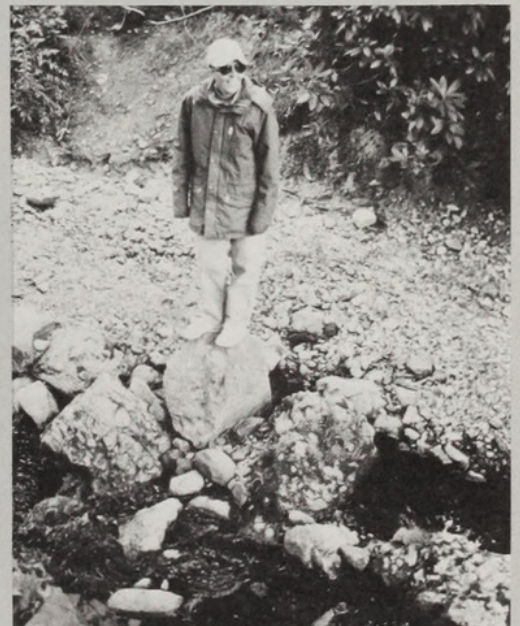
As a result of a memorial trust given by Terence Colligan in memory of his wife Linda J. Davison, the portion of Bussey Brook at the foot of Hemlock Hill has been transformed into a beautiful dell where visitors may enjoy the sounds and sights of water rushing through the rocky stream bed. Boulders and tree trunks gathered from around the Arboretum have been woven into the landscape to stabilize and define the banks of the brook and create contemplative sitting areas and a bridge sensitive to Olmsted's design. Additional rhododendrons will be planted next spring to enhance the collections and the view.



Arnold Arboretum staff consult with Landscape Architect Julie Messervy and contractors. Maurice Sheehan, working Foreman of the grounds crew (second from left), designed the hen's tooth puddingstone wall which replaced the metal fence and supervised the project throughout.



The Donald B. Curran company of Ipswich, Ma. did a superb construction job. Standing on the bridge they built are from left: Front row: David Gordon, Stephen Talbot, Frank McLaughlin; Back row: Donald Curran, Sean Curran, Nobby Mawby, Jere Trask, Henry Vaillancourt.



Sheila Connor, Horticultural Research Archivist, examines the eroded stream bed prior to work on the project.

"THE ROMANTIC GARDEN"—A NEW SYMPOSIUM

Romance is in the air for gardeners in the bleak month of February, when the Arnold Arboretum presents the first symposium to focus on the new Romantic Design movement. Fashionable, fragrant, and luxuriant, the style is claiming the attention of gardeners throughout the country.

The all-day slide-lecture symposium is being presented in four cities: on Thursday, February 21, at the Chicago Botanic Garden, Glencoe, Illinois; on Saturday, February 23, at the Denver Botanic Gardens, Denver, Colorado; on Tuesday, February 26, at the New York Botanical Garden, Bronx, New York; and on Thursday, February 28, at the Arnold Arboretum, Jamaica Plain, Massachusetts. This is an opportunity for *Arnoldia* readers outside the Boston area to get up-to-date information on the history, philosophy, design elements, and color schemes of "The Romantic Garden." Registration fees are \$106 for non-members, \$96 for members of the participating institutions, and \$53 for students with proof of full-time status. For further information or to receive a detailed brochure, call the Arnold Arboretum Education Department at 617-524-1718 or FAX your request to 617-524-1418.



BECOME A DOCENT

If you would like to join our group of knowledgeable docents and have the opportunity to lead adults on tours of the Arnold Arboretum, consider attending the Docent Training Program this spring. The five three-hour sessions will be given on Wednesday mornings beginning on March 15th. Contact our Tour Coordinator, 524-1718, for more information.



School children learn about the ecosystems of the Arnold Arboretum during school curriculum-based Field Study Experiences. They delve into the structure of a flower with hand lenses, use compasses and maps to hunt for unusual trees from other parts of the world, observe the interplay of plants, animals and man, and feel they have had a wonderful adventure.

Children's Program Guides Needed

Renew your sense of adventure and learn to teach children as they explore the grounds of the Arnold Arboretum. Guide training for spring begins on Thursday, March 21 and continues for five consecutive weeks.

Newly trained guides will join the program's staff of 39 volunteers in leading 3rd- to 6th-grade school groups through the Arboretum. Volunteers make their own schedules and teach during the morning.



Jim Gorman, Arnold Arboretum Committee president, presents a check for \$4500 to Diane Syverson while visiting students from the Joyce Kilmer school look on. The committee's donation will provide scholarships for students from Boston Public Schools to participate in the Arboretum's Field Study Experiences.

Bookstore Offerings

WILDFLOWER CLASSICS:

Growing and Propagating Wild Flowers by Harry R. Phillips, \$14.95. A complete and expert treatment of wild flower propagation and cultivation.

How To Know The Wild Flowers by Mrs. William Starr Dana. boxed edition, \$19.95. A guide to the names, haunts and habits of our common wild flowers; richly illustrated.

The Natural Garden by Ken Druse, \$35.00. This volume emphasizes low maintenance and natural beauty; filled with colorful photographs.

Visit the Bookstore daily 10 a.m. to 4 p.m. or call (617) 524-1718 to order these or other books.



At lower elevations on Tian Mu Shan, between 200 and 400 meters, *Trachycarpus fortunei*, the widely cultivated windmill palm, commonly grows on dry soils in full sun.



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