

The Harvard Garden in Cuba—A Brief History

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Begun in 1899, the Atkins Garden became a model for the development of many later tropical botanical gardens.

The Harvard garden in Cuba was Harvard's virtually unknown jewel. Few people, other than those actively involved in the study of tropical plants, have ever been aware of its existence. While the garden was primarily devoted to the improvement of sugar cane for commercial purposes, it was also the site of research in other areas of tropical agriculture and botany. The unique blend of economic reality and academic vision that characterized the garden produced farsighted results that subsequently served as a model for the development of tropical botanical gardens in other countries.

As a center for tropical plant research and sugar cane investigation, the Harvard Botanic Station was established on the Atkins sugar estate at Soledad, Cienfuegos, Cuba, in the summer of 1899 at a conference attended by businessman Edwin F. Atkins and Professors Oakes Ames and George L. Goodale, both of Harvard University. This meeting initiated the development of what was to become one of the richest tropical gardens in the world. Without the vision of the those who were so deeply involved in its conception and implementation, this institution would probably not have been created.

The Inception of the Garden

As a businessman, Edwin Atkins was interested in increasing the profits from his sugar cane operation. He had previously consulted Edward Wilson, then Secretary of

Agriculture, to seek his opinion about expanding the sugar cane industry in Cuba. Wilson discouraged him, believing that the climate of Cuba was not suitable for the enterprise, and warned against spending large sums of money on a wholly doubtful venture. Atkins's response at the time was, "When one lawyer gives me advice that I do not like, I go to another lawyer," and so he consulted Professor George Goodale of Harvard for his opinion, who in turn consulted his colleague, Professor Oakes Ames of the botany department. Both Goodale and Ames supported Atkins's proposal with enthusiasm, and history eventually proved Atkins right about the suitability of Cuba for expanded sugar cane cultivation.

As a result of that first meeting in Cuba in 1899, Edwin Atkins gave Harvard University a gift of \$2,500, of which \$2,000 was to be used for a traveling fellowship in economic botany. The recipient of this fund was to visit certain stations in the far eastern and western tropics where experiments on the improvement of economically important plants, particularly sugar cane, were in progress.

In these early days, there was no official connection between the Botanical Garden of Harvard University and the garden in Cuba—the latter being Mr. Atkins's personal property—nor was there an endowment or land to which the university had title. The cooperative efforts of Atkins and Harvard to further research and development in the field



Enterolobium cyclocarpum (Leguminosae) growing in the Harvard tropical garden in Cienfuegos. The tree is 50 feet tall with a spread of 100 feet. Photographed in 1928 by Alfred Rehder.

of tropical botany served their mutual benefit. The first superintendent, Robert M. Grey, was paid by the Atkins fund, chiefly for services rendered in the development of sugar cane. Both Ames and Goodale were optimistic and keenly interested in establishing a biological institute in Cuba. Goodale, whose primary interest was zoology, "adopted" the garden on his own authority. At a later date, Professor Ames was appointed its first official director.

Early History

The history of the garden is inextricably linked to the history of Cuba. Shortly after the discovery of the island by Europeans, the native American Indians were either killed or died as a result of introduced diseases. The

island became a colony of Spain, and slaves were eventually brought in from Africa to work the fields that were created by cutting down the indigenous forest. While the island was initially populated by the descendents of these slaves and by immigrants from Spain, many other nationalities settled in Cuba, including an influx of North American businessmen in the mid-1800s.

The town of Cienfuegos, located on the western side of Cuba, was founded in 1819 as a result of the development of sugar lands by Trinidadian families who had come to the island with their slaves for that purpose. Eventually the area became one of the most economically important parts of the island. An American, Elisha F. Atkins, had established



A panoramic view of the palm collection at the Harvard tropical garden. Photograph by E. G. Stillman, 1941.



A vista of the Harvard tropical garden. Photograph by E. G. Stillman, 1941.





Hura crepitans (Euphorbiaceae) growing in front of the Harvard house at the Harvard tropical garden in Cienfuegos. Photographed in 1928 by Alfred Rehder.

a sugar business in Cuba in 1838, heading the firm called E. Atkins & Co. Initially he had started a banking commission business for Cuban sugar producers, advancing money on sugar crops and molasses to be shipped to the United States. Through purchases and foreclosure proceedings, the Atkins Company eventually acquired many sugar estates, including Soledad, the most important one developed prior to 1850.

When Elisha Atkins first came to Cienfuegos, practically all the sugar business was in the hands of Spanish merchants. This situation changed during the 1870s when beet sugar produced in Europe first provided serious competition to cane sugar. To counteract this situation, Elisha's son Edwin expanded his father's commission business to include the actual cultivation and production of sugar.

At the age of sixteen, Edwin had left the family home in Boston on January 24, 1866, and had sailed from New York to take charge of his father's business interests in Cienfuegos. Initially a receiving clerk, within two years he was given responsibility for the management of the business, his father having assumed the vice presidency of the Union Pacific Railroad, a post he held until his death in 1882.

The year 1882 marked the beginning of the Atkins sugar-producing business in Cuba. Soledad, the primary plantation, which consisted of 4,500 acres of beautiful land isolated by hills and mountains, was taken over by Atkins by foreclosure in 1884. With Edwin assuming active supervision, the mill was ready for production within a year with a labor force comprised of Africans and

Chinese. He gradually acquired more land and, within twenty-five years, had one of the most modern and progressively managed sugar estates on the island.

In 1892, Edwin took over another large plantation in the city of Trinidad on a long-term lease and became president of the Trinidad Sugar Company, eventually acquiring many adjacent sugar estates. The success of these ventures attracted a large colony of Americans to the area.

In 1894, general political unrest spread throughout Cuba, due primarily to Spain's increasingly repressive presence on the island. Serious problems existed in the form of low production, unemployment, theft, hunger, and poverty. Because of these persistent difficulties, Atkins kept plantation employment at a low level. Fostered by American business interests, there was a growing sentiment in the United States to encourage the independence of Cuba. The island was still under Spanish military rule in 1896 when Atkins lobbied Washington to protect American properties. The political tensions ultimately led to the Spanish-American War, which Spain lost—along with Cuba, her last colony. A brief American occupation of the island followed the conclusion of the war, and in 1898 the United States recognized the independence of Cuba.

The Growth of the Garden

The original Atkins fund, established in 1899, was to be used to support the garden after Edwin's death. In 1901, the Harvard Botanic Station for research and sugar cane investigation was formally inaugurated, situated in the area called Colonia Limones, a barren but picturesque site.

Robert M. Grey, a renowned horticulturist employed by Professor Ames, was commissioned to visit Soledad in December 1900 to investigate the cane-flowering conditions and to locate a site for the new garden. He had lived in the warm tropics of South America and was admirably qualified for this new task in subtropical Cuba. In 1901, he was

appointed superintendent of the garden, with his salary paid out of the Atkins fund. His tasks were to lay out trial beds for vegetables and to produce new varieties of sugar cane by hybridizing different strains. The overall purpose of the project was to develop cane that not only was resistant to the fungal diseases but also had a higher sugar content. Perfecting his own techniques with great success, Grey remained in Cuba for over thirty years, maintaining a record of distinguished service until his retirement in 1936.

During the first few years, operations at Cienfuegos were largely devoted to the sugar cane work; however, Grey also imported many other plants and fruit trees from Florida for experimentation, developing one of the largest collections of tropical plants in the Western Hemisphere. An additional purpose of the garden, beyond the study of sugar cane, was to introduce as many different kinds of plants as possible and to experiment with their cultivation. Letters from 1901 to 1902 sent to Professor Ames by Hugo Bohnhof, an assistant to Mr. Grey, reported good results with lettuce, tomatoes, cabbage, beans, cucumbers, and artichokes. In later years, experiments with bananas, cocoa, coffee, and rubber proved successful; however, cotton and tea crops were failures.

In the early days of the garden, many of the best-known tropical fruit trees were established on a trial basis. Citrus was one of the early subjects of the research program; hundreds of hybrid mango seedlings were produced and tested. A choice collection of ornamental plants from Professor Ames's conservatories in North Easton, Massachusetts, were also sent to the garden in 1901, along with seeds and plants from the Harvard Botanical Garden in Cambridge.

Sugar Breeding

Before the inception of the garden, and during its early years, the principal variety of sugar cane grown in Cuba, 'Cristalina,' was performing badly because of a combination of factors, primarily fungal diseases, exhausted

soil, and climatic problems. A small collection of newer cane varieties was immediately planted, but these produced little or no improvement over the older cultivars. Between 1902 and 1904, the first improved cane seedlings were produced as a result of the successful hybridization experiments initiated by Grey.

During the cane breeding season of 1906-07, 320 clones, mostly hybrid seedlings produced by Grey, were retained for use in the cane-breeding program. Several varieties, superior to 'Cristalina' in size and sugar content, were selected for large-scale commercial cultivation. They proved drought resistant, disease tolerant, and high yielding under a variety of soil types. The best all-round performer was Harvard #12,029.

In 1908, experimental hybridizing between the best varieties of these commercial canes and Japanese canes took place. Eventually these seedlings were crossed with Chinese and North Indian varieties, and they too proved to be commercially successful.

By 1912, at the second Cuban National Exposition, the Atkins garden exhibited thirty distinct varieties of the new Harvard seedlings. These plants had the distinction of being the only canes of Cuban origin among the many others exhibited. Subsequently, cane breeding on other estates in Cuba was successfully carried out.

Building the Collections

By 1903, the garden contained some 243 genera and 400 species of plants. The growing collection, constantly augmented by imported plants as well as native species from different parts of the island, necessitated the construction of a second greenhouse in 1907.

Also in 1903, eighteen Cuban-grown banana varieties were brought together to form a collection, which was still being maintained in 1926. There were, in addition, a few species of cycads, a large palm collection, and a fine assemblage of bamboo and other grasses. Leading varieties of strawberries and their hybrids were successfully cultivated for many

years. Grey also hybridized oranges, grapefruit, mangos, and many other fruit trees that flowered in the garden. But sedges, planted experimentally, grew so rapidly that they were a costly nuisance and were eventually eradicated. Forage legumes and grasses also gave unsatisfactory results.

In 1908, experiments with flowering and ornamental plants (northern annuals, herbaceous perennials, bulbs, and roses) failed because of the hot, damp summer weather and the prevalent fungal diseases. The rose collection brought together in 1908 was discontinued in 1925, at which time there were about seventy different varieties.

On June 3, 1911, a forty-five minute cyclone severely damaged or destroyed buildings, trees, and crops. Replanting was initiated immediately and recovery was rapid. The following years were devoted to planting new species and increasing the garden area. By December 31, 1925, the garden contained 144 families, 629 genera, and 1358 species—exclusive of native species.

Stronger Ties with Harvard

Pleased with the sugar cane research and other developments at the garden, and by this time deeply interested in the scientific approach to tropical agriculture, Atkins, on December 9, 1919, gave \$100,000 to perpetuate the project. From the beginning, the Harvard Botanical Station in Cuba and Harvard University had maintained a hazy relationship, as Atkins had never passed any land to Harvard and had paid only for the expenses of the garden.

In 1920, the connection between the garden and Harvard was cemented by this large gift of money, and the garden became a recognized part of the university. Edwin Atkins died in Cuba in 1926 at the age of seventy-four; his wife continued the family interest in the garden throughout her long life.

In 1924, the Harvard Biological Laboratory was constructed at the garden, along with a house for the use of scientists who came to study. Scholarships were available to Harvard

students interested in tropical biology. A new section of several acres was added to the garden in the spring of 1929, devoted to the cultivation and preservation of native hardwoods and timber trees. Unfortunately, this project was short-lived; most of the trees were destroyed when the land was cleared for cane cultivation and other agricultural pursuits.

In 1932, administration of the Harvard Experimental Station in Cuba was transferred to the Arnold Arboretum and renamed The Atkins Institution of the Arnold Arboretum, as voted by the Harvard Corporation; interest then shifted from commercial crops to the planting of tropical tree species imported from Florida, Jamaica, the East Indies, Australia, tropical Africa, and Central America.

In the following years, the collections grew, more land was purchased, and numerous researchers came to the Atkins Institution to pursue botanical field work. The garden

reached its zenith of beauty and diversity at this time. The travel restrictions imposed during World War II, however, made it difficult for botanists to travel to Cuba, and the number of foreign visitors declined.

In 1946, the garden was divorced from the Arnold Arboretum, and the name, once again, was changed—to the Atkins Garden and Research Laboratory, with Dr. Arthur G. Kevorkian as the first resident director. His job was to convert the garden to a tropical agricultural research facility, concentrating on crops specifically adapted to the environmental conditions prevailing in Cuba. Dr. Kevorkian resigned in 1949, and Dr. Duncan Clement (Ph.D. Harvard '48) became the new director. Under his aegis, the garden assumed greater significance as a scientific institute.

The garden flourished during the ensuing years, benefiting tropical research and horticulture, and advancing the welfare of Cuba.



Some of the damage caused by a severe storm at an unknown date.



Professor J. G. Jack, of the Arnold Arboretum staff, at work pressing specimens in the Harvard house laboratory at the Harvard tropical garden in Cienfuegos. Photographed in 1928 by Alfred Rehder.

By 1957, the garden's influence extended well beyond the confines of the island.

In 1958, Cuban society was disturbed by political unrest, and by 1959, the Communist revolution was in full progress. Initially this had little effect on the garden, and work there continued as before. By 1961, however, increased uncertainties and difficulties caused a breakdown in the operation. Dr. Clement left Cuba in January 1961, financial support was terminated by Harvard in August of that year, and all plant records were transferred to Cambridge. Satisfactory operation of the garden had become a casualty of the deteriorating political situation.

When diplomatic and consular relations between the United States and Cuba terminated, traveling to Cuba from the United States became very difficult, requiring a visa from a third country such as Mexico, Canada,

or Jamaica. Those botanists who recognized the growing importance of tropical botany and who had made use of the garden's facilities felt a tremendous loss. Harvard University's operation of the Cuban garden was suspended indefinitely on September 1, 1961.

The Garden Today

With improved political conditions, it was hoped that the Atkins Garden and Research Laboratory would be reactivated and would resume its former position in the Institute of Plant Sciences at Harvard. To date, this has not come to pass, but the monies set aside to support research in the garden are still used to support research in tropical botany through the Atkins Fellowships administered by Harvard.

According to Dr. Duncan Clement, who wrote to the author on February 9, 1991, from Pembroke Pines, Florida, the garden survives

Oakes Ames—A Harvard Botanist

Oakes Ames and his critical role in the history of the Cuban garden's development and its absorption into the Harvard administration.

Oakes Ames was an instructor in botany at Harvard from 1899 to 1909, and almost concurrently (from 1900 to 1910) was director of the Harvard Botanical Garden in Cambridge. A practical botanist, Ames had an extensive knowledge of plant growth and form. Shortly after he became director of the Arnold Arboretum, he interested President Lowell in transferring the administration of the Cuban garden to the Arnold Arboretum, and with the financial support of Edwin F. Atkins, the garden in 1927 became known as the Atkins Institution of the Arnold Arboretum. It had been Ames's wish to endow a professorship at the garden and thus give it worldwide academic stature, but this never occurred.

Although Oakes Ames was involved in the development of a variety of economically important plants at the Cuban garden, his prime interest was in orchids, which he collected from many sources, including Cuba, and cultivated in his greenhouses in North Easton, Massachusetts. His estate, called Borderland, consisted of some twelve hundred acres and included a stone house (completely fireproof for the protection of his books) over which still hangs a huge bronze and gold bell he purchased from the sugar estate at Limones, once used to call the slaves to and from work. This tract of land and the imposing stone house were transferred to the Commonwealth of

Massachusetts in 1971. Now called Borderland State Park, it is open to the public.

Oakes Ames was a sensitive man with the mind of a scholar and the soul of a poet. He was deeply disturbed "by holding in bondage one's fellow man and driving him to and from work by the note of the doleful bell, a kettle drum aided by the stinging of the lash." It was this bell that he brought back with him to hang over his house in North Easton, as if it were a symbol for him of the liberation of the slaves of Cuba.

Ames fervently hoped that the garden would be a thing of beauty in addition to its practical and scientific value. He introduced showy palms and other trees for the purpose of enhancing the appearance of the garden for visitors. A letter, dated December 17, 1930, from Modesto Martinez to Thomas Barbour, who succeeded Ames as director of the garden in 1922, demonstrates how ably Ames succeeded:

The Garden is a Garden of Dreams, is a Paradise. Even the oriental trees and palms remind the visitor of the biblical legend; I found, bordering a pond, the bullrushes where Moses was found by the Pharaoh's daughter. One detail will give you an idea of how I felt in that Garden: I was for ten hours there, seeing every tree, every plant, every bush, without any food because I was so happy and I was learning so many things.

today as a tourist attraction. He noted that two tourist events involving the garden had been mentioned in an article in *El Nuevo Herald* (the Spanish language edition of the Miami Herald), excerpted from the Cuban newspaper *Granma*. These were, first, Cuban Aviacion has inaugurated a new weekly route from Toronto, Canada, to Cienfuegos, which the paper called the "third most important tourist destination in Cuba"; and, second, the German cruise ship *Miss Berlin* included Cienfuegos in its itinerary between Key West and Grand Cayman. *Granma* emphasized that tourists could enjoy the three four-star hotels in the city, as well as other attractions, such as the "Jardin Botanico."

The most recent information on the garden comes from Professor Duane Kolterman of the department of botany at the University of Puerto Rico. Writing in *Harvard Magazine* (July-August 1991), he notes that the garden is administered by the Academia de Ciencias de Cuba: "It has a director, a small scientific staff, and maintenance personnel. While the plant collections are in fine shape, the staff expressed considerable interest in exchanging information and library materials with botanists and horticulturists outside of Cuba."

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Primary Sources from the Harvard University Archives:

Records of the Atkins Garden and Research Laboratory, 1898-1946, four containers. Subjects: S1 Ames, Oakes; S2 Barbour, Thomas; S3 Kevorkian, Arthur; S4 Atkins Institution of the Arnold Arboretum; S5 Botany—Cuba. Location: Harvard Archives: UAV231.xxx

Letters and writings of Ames, Oakes (botany); two boxes. Contents: Letters to his family and autobiographical writings (MS), 1902-1949 This collection formed the basis for Pauline Ames Plimpton's book about her father, *Oakes Ames: Jottings of a Harvard Botanist* (1979).

Marion Davis Cahan is a graduate of Radcliffe College, an architect, and presently a volunteer at the Arnold Arboretum. She would be delighted to hear from any readers who have visited the garden since the revolution.

CORRECTION: *Ginkgo biloba*

In the article that appeared in the last issue of *Arnoldia* (vol. 51, no. 2, 1991) entitled "Ginkgos and People: A Thousand Years of Interaction," a sentence on page 10 reads, "The *Ginkgo* tree is apparently mentioned in the oldest Chinese herbal, *Shen Nong Ben Cao Jing*, dating from 2800 B.C. (Michel and Hosford, 1988)." According to Dr. S.-Y. Hu, a former staff member of the Arnold Arboretum, "I have turned the pages of the three volumes of *Shen Nong Ben Cao Jing* (1854 edition) page by page and checked the entries item by item. *Ginkgo* is definitely not in this publication."

Since Michel and Hosford do not cite any sources for their statement that *Ginkgo* is mentioned in *Shen Nong Ben Cao Jing*, their statement must be considered as unfounded, particularly in light of the fact that no Chinese-speaking authors mention this reference.