Orchids in Costa Rica

Part IV: The Charles H. Lankester Botanical Garden

BY CARLOS OSSENBACH

"The preservation of the Lankester Gardens in Costa Rica is the greatest conservation effort made by those who love orchids ..."

— Rebecca T. Northen, 1972

ABOVE Charles Lankester in 1936 with one of his first cacti.

OPPOSITE TOP LEFT Dorothy Lankester (1912–1992) inherited from her father not only his famous garden but also his passion for orchids. Carlyle Luer, MD, named *Pleurothallis dorotheae* in her honor.

OPPOSITE TOP RIGHT *Kefersteinia retanae*, a native of the southern valley of El General, grew for several years at the Botanical Garden in Munich until it was discovered as a new species.

OPPOSITE *Chondroscaphe yamilethae* honors the president of the University of Costa Rica, Dr. Yamileth González, for her achievements in favor of the garden.

CÓNCAVAS (= CONCAVITIES) IS THE local Spanish name for circular, 3- to 4-feet- (.9- to 1.2-m-) depressions in soils with large contents of clay, several hundred feet in diameter, frequently found to the east of the Costa Rican city of Cartago. These depressions often fill with water and form large lagoons, a paradise for migratory birds that fly to Costa Rica during the last months of the year to escape the harshness of the North American winter. A coffee farm with the name of *Las Cóncavas*, established in the second half of the 19th century by Francisco Quesada, was bought in 1924 by Charles H. Lankester, and featured one of these beautiful lagoons. On a section of this farm, called *El Silvestre* (= the uncultivated), Lankester began his wonderful collections of orchids and plants of other families that formed the base of the Charles H. Lankester Botanical Garden of the University of Costa Rica.

El Silvestre, which Lankester had kept when he sold the rest of his farm in 1955, was inherited by his daugher Dorothy, although economic circumstances made it seem difficult to fulfill Lankester's dream of conserving the place as an "orchid heaven." Dorothy was forced to put the garden up for sale.

However, through the efforts of the Costa Rican Orchid Society and Rafael Lucas Rodríguez, a group of members of the American Orchid Society (led by Rebecca T. Northen), raised half of the purchase price, which was $25,000. The other half was donated by the Stanley Smith Horticultural Trust of Great Britain. An evaluation committee was formed, and thus the garden was

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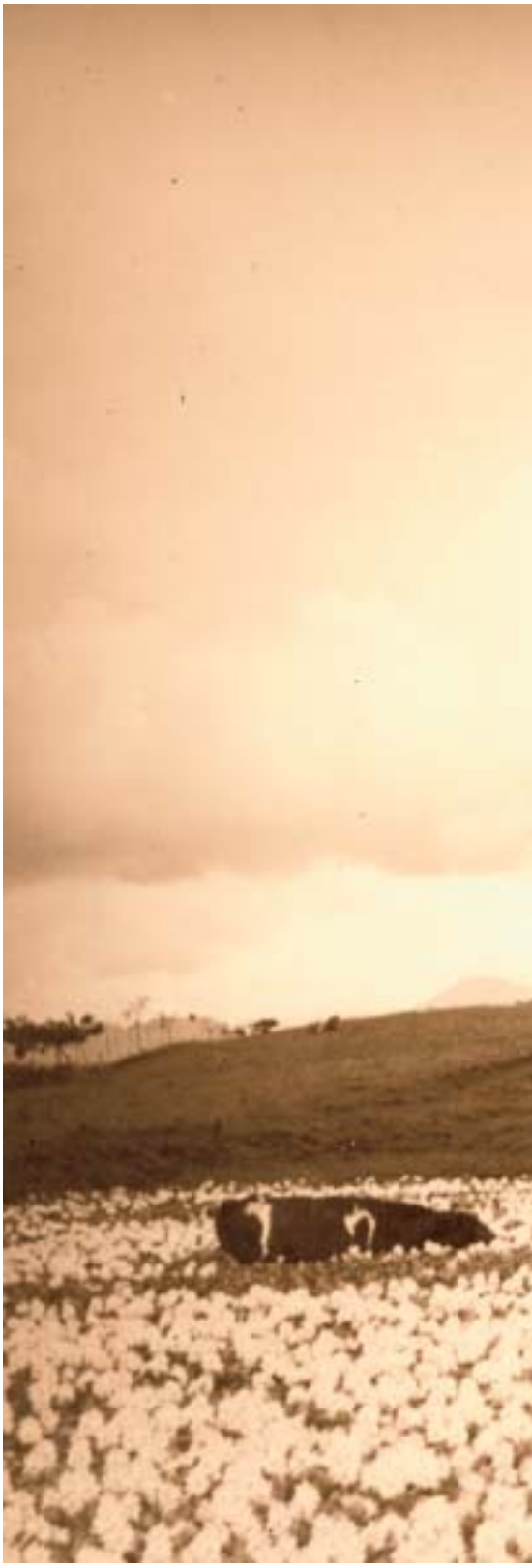


CHARLES LANKESTER

ABOVE LEFT Formerly a *Chondrorhyncha*, *Stenotyla lankesteriana* was dedicated to the garden's institutional merits.
ABOVE Charles Lankester was an accomplished photographer. Among his portraits was this cow grazing at the lagoon in Las Cóncavas taken in 1937.

inspected by Thomas A. Bartenfeld, president of the Conservation Committee of the AOS; Eric Young, president of the Orchid Society of Great Britain; and Calaway H. Dodson, PhD, whose expertise on Costa Rica was of great value. Their decision was positive and the garden was purchased on condition that the University of Costa Rica would operate it as a botanical garden. And so, on March 2, 1973, the Charles H. Lankester Botanical Garden was formally inaugurated.

The first years were difficult. Without a proper budget, the garden could not be kept open to the public, and could be visited only by special appointment with Rafael L. Rodríguez. It was not until 1979 that the University named Dora Emilia Mora de Retana as the first director of the garden, which, under her direction, slowly tranformed itself from a small farm of 25 acres (10.7 ha) into a world-renowned botanical garden.

Aside from her scientific achievements, Mora de Retana had the merit of converting the garden into a meeting point for the world's most prestigious orchidologists. Calaway H. Dodson, Norris H. Williams, Robert L. Dresser, John T. Atwood, Carlyle A. Luer, Rudolf Jenny, Eric Hágsater, Henry Oakeley, Günter Gerlach, Klaus C. Horich and many others were frequent guests at Charles Lankester's old farm at *Las Cóncavas*. Her interaction with other botanists resulted in 300 Costa Rican orchids illustrated under the series *Icones Plantarum Tropicarum*, mostly based on the living collections kept at the gardens. As Atwood remembers, she kept a vision of Lankester Gardens not only as a tourist garden for generating revenues but as a garden dedicated to Costa Rican orchid research. In 1984, in collaboration with Dressler, who at the time was an invited professor at the University of Costa Rica, she organized the first formal course in orchidology. Her main scientific legacy to the knowledge of Costa Rican orchid taxonomy was the treatment of the subtribes Maxillarinae and Oncidiinae for the *Flora Costaricensis*, prepared in collaboration with Atwood.

Many new orchid species were dedicated to Mora de Retana. Hágsater named in her honor his *Epidendrum mora-retanae*, Gerlach his *Kefersteinia retanae*, Dressler his *Sobralia doremiliae*, Luer his *Stelis morae* and Dodson and Escobar their *Telipogon retanarum*.

We leave Dora Emilia Mora de Retana with Atwoods' final words in his obituary, "… her greatest legacy is to rise above personal ambitions to foster efforts of those around her. Because of her, Lankester Gardens is blessed with a talented, imaginative, and altruistic staff …."

Joaquín B. García Castro (1944–2001), who was called "Quincho" by his friends, was Mora de Retana's friend and main collaborator for more than 25 years. Together, they published the first checklist of Costa Rican orchids after Paul Standley's *Flora of Costa Rica* (1937), where Oakes Ames had contributed the Orchidaceae.

In this *Lista actualizada de las orquídeas de Costa Rica*, Dora Emilia and Castro added 46 genera and 467 species to the previous catalog. A medical doctor and university professor, Castro had a privileged mind and was, for long years, the mentor of many Costa Rican orchid enthusiasts. A brilliant scholar, Castro liked to lecture to his friends on complicated themes such as the biochemistry of colors in orchid flowers or fundamentals in orchid hybrid genetics. As Atwood liked to say, "I don't have the brains of Joaquín, therefore I need a well-organized library." Always generous with his knowledge and his time, Castro was for several periods the president of the Costa Rican Orchid Society. With good reason, Franco Pupulin dedicated his *Prosthechea joaquingarciana* to him shortly after his death.

The Lankester Botanical Garden has become the most important center for orchid research in Central America and the Caribbean. Because of this, in 2003 the University of Costa Rica converted the garden to an experimental station. In December 2005, the Ministry for the Environment declared the Lankester Botanical Gardens a "National Center for the Convervation of the Flora and National Epiphyte Sanctuary." For its institutional merits, Pupulin named *Chrondrorhyncha lankesteriana* (today *Stenotyla lankesteriana*) in honor of the gardens.

Jorge Warner, a former assistant to Dora Emilia Mora de Retana, took over the position of director of the Lankester Botanical Garden after she retired in 2000. Assisted by a scientific council, Warner has been able to secure more support from the University authorities, especially from university President Dr. Yamileth González, to whom Pupulin dedicated his *Chondroscaphe yamilethae*. Warner has also been successful in improving the garden's infrastructure and has built up a highly qualified research staff, among which the figures of Dressler and Pupulin stand out. The small team of researchers has produced high-caliber scientific findings and described more than 60 new orchid species in the last five years.

Lankester Gardens is famous for its orchid collections. However, collections of other plant families have become increasingly important over the past years. The section of cacti and other succulents was one of Charles Lankester's favorite spots since the years before World War II, when don Carlos brought the first specimens of cacti into *El Silvestre*.

Herminia López-Calleja, a niece of Amparo Zeledón, Costa Rica's famous orchid grower and collector during the first decades of the 20th century, donated her collection of cacti to the garden in the 1980s. Her daughter, Conchita Guzmán, donated new

Promoting Orchid Conservation in Mesoamerica

MESOAMERICA has one of the world's richest orchid floras with more than 3,000 species and a high level of endemism. In the past 60 years, this area has experienced one of the highest rates of deforestation and habitat fragmentation. Knowledge of Mesoamerican Orchidaceae is still largely incomplete. Many taxa are represented in herbaria worldwide by less than five specimens, and a high number of species are known only from the type specimen. Assessments of orchid diversity are made, not by direct observations, but by analyzing historical data that is usually found in libraries and herbaria in Europe or the United States. In the past, a lack of information resources and documentation about local flora has hindered research and conservation activities in those countries.

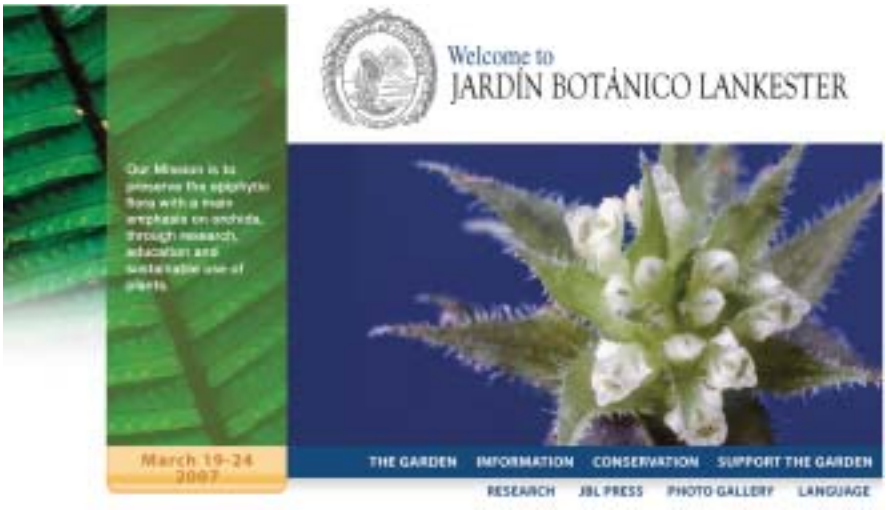
In 2000, Jardín Botánico Lankester launched a conservation strategy for Costa Rican orchids, the core of the cultural and scientific heritage of this botanical institution. This strategy consisted of developing a better understanding of orchid habitat and species diversity, based on efficient retrieval of biological information and improving our current knowledge, as well as disseminating and sharing results with the public and scientific communities.

In the last five years, Jardín Botánico Lankester has been working in partnership with other botanical institutions, to establish an information center for Mesoamerican orchid research and conservation. Specific goals are to gather and update historical and current biological information about orchids. This includes clarification of species, variation, distribution, ecology, natural history, population dynamics and endangerment, and to establish conservation priorities both in terms of genetic rarity and habitat sensitivity.

As a direct result of this project, we now have:

- a documentation center with actual-size reproductions of 1,600 types of orchid taxa (± 30 percent of the published orchid names in the region), together with thousands of relevant historical documents
- collections of living plants, flowers preserved in spirit, pollinaria, dried tissue samples and digital images (see separate note by Diego Bogarín) that allow local and visiting botanists quicker and easier access to critical research resources.
- a digital database of the field books of scientific staff and associate researchers, including more than 10,000 documented records on orchid distribution and habitats
- published orchid inventories of several Costa Rican national parks
- predictive distribution maps for about 70 selected orchid species
- a collection of 7,000 medium-format color slides (+80 percent) of all Costa Rican taxa.

With this instrument, we have arrived at a functional understanding of the causes of rarity and decline of some orchid populations and have been able to give recommendations to the government of Costa Rica for legislation to protect orchid habitats. We have organized two international conferences on orchid biology and conservation in Costa Rica and have been selected to host the Third International Orchid Conservation Congress in San José in March 2007. — *Jorge Warner, Director, Lankester Botanical Garden (e-mail jwarner@cariari.ucr.ac.cr).*



LEFT Homepage of the new Web site of Lankester Botanical Gardens (www.jardinbotanicolankester.org) where visitors can learn about LBG projects, new publications from the orchid world, organization of the 3rd IOCC Conference in Costa Rica (March 2007) or enjoy the magnificent gallery of photographs. The homepage is conveniently presented in two languages: English and Spanish. The photograph on the homepage is of a rare Costa Rican terrestrial orchid, *Eurystyles standleyi*.

BELOW *Sobralia doremiliae* is found in Tapantí National Park, only a few miles away from Lankester Gardens.

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installations for the cacti collection that were inaugurated in 2005. Other collections are those of bromeliads, palms, heliconias (35 species) and bamboo (40 species).

One third of the garden, used as pastures during Lankester's time, has been left to regenerate without human influence and is today an extremely interesting secondary forest. Under the trees we find a great variety of plants, among them the beautiful aroid, *Monstera deliciosa*.

A last word must be said about the garden's publications. *Lankesteriana* has become a scientific journal that enjoys worldwide recognition. Many new species of orchids have been described there since it first appeared in 2001. *Epidendrum* is the increasingly popular bulletin of Lankester Botanical Garden, with news and articles on popular orchid-related topics.

Acknowledgments

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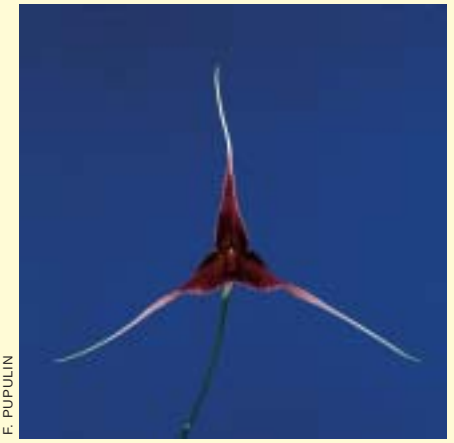
Orchid Collections at Lankester Botanical Garden

THE collections in a botanical garden play a major role in the development of scientific research. The reference collections system is in charge of the Orchid Identification Center, in the Research Department of Lankester Botanical Garden (LBG). The collections provide the staff and visiting researchers with critical information essential to botanical work, and also function as sources for public display in educational exhibits.

The extensive botanical exploration throughout the country, donations and interchange of plants with other botanical institutions, have built up the living collection of LBG. This living collection includes no less than 10,000 orchid plants, each identified with a label showing the scientific name, the number and name of the collector and a reference number. Plants native to Costa Rica make up 80 percent of the total. The other 20 percent is composed of orchids mainly from South and Central America, with some from Africa and Asia. The number of species is around 1,100, representing about seven of every 10 species native to Costa Rica. There are unique specimens growing in this collection like *Dracula inexperata*, one of the beauties of Costa Rican pleurothallids; the enigmatic *Warmingia margaritacea*, a rare oncidioid orchid only known from Costa Rica; and *Brachionidium haberi*, one of the biggest species of the genus with purple flowers, which is difficult to find and cultivate. The species described as new to science by the taxonomists at LBG are represented in cultivation as clonotypes.



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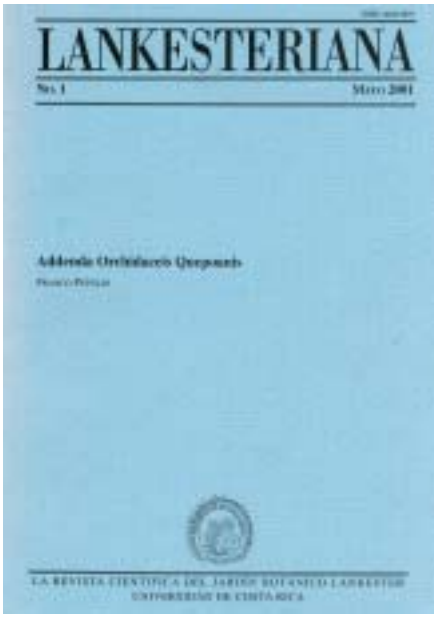
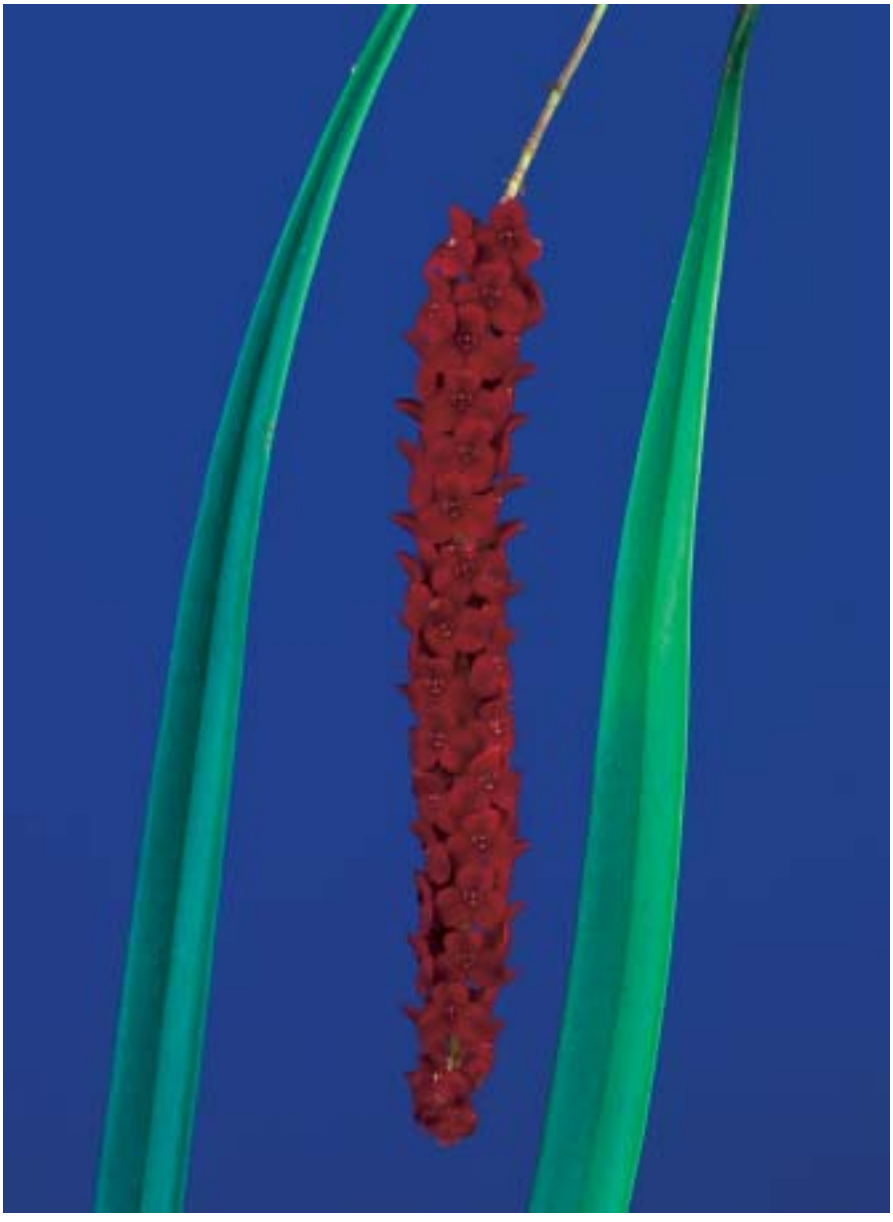
ABOVE A beautiful *Dracula* discovered by Franco Pupulin on his birthday. He aptly named it *inexperata*, the "unexpected."

The living collection is a constant source of material needed for taxonomic work. Taxonomy is a comparative activity, and requires the study of a lot of material to assess variability and select critical characters to differentiate the species. To support this, the LBG has established several parallel collections in addition to the collections of living plants. One important reference is the collection of flowers preserved in spirit, where important vouchers are kept of orchid photographies, anatomical studies, floristic projects and plants described as new species. This collection complements the herbarium material and is useful in maintaining the three-dimensional character of an orchid flower. The collection was begun in 2002 and has now more than 2,000 samples, 90 percent of which are Costa Rican specimens, representing about 65 percent of the native Costa Rican orchids. In addition, there is an orchid pollinaria collection, a novel idea because it involves both physical specimens of pollinaria with their respective digital images.

The collection has 200 samples of species both native and exotic. The dried tissue collection has 400 samples of orchids. The tissues, preserved in silica gel, are used to make phylogenetic analysis or DNA studies. Finally, the digital images collection is composed of photographs, scanned plates, ink drawings, sketches and historic documents such as types at the Harvard, Kew and Vienna Herbaria, protologs and bibliographic documents.

All collections have an electronic inventory searchable by a computer, making it easy to access the information. In the future, LBG plans to put all of this information on the Internet by a mechanism that involves a list of names in a taxonomic sense. Linked to the orchid collection system of LBG, each name will refer to the information existing at the moment for each taxon. — *Diego Bogarín, Research Associate, Lankester Botanical Garden (e-mail dbogarin@cariari.ucr.ac.cr).*





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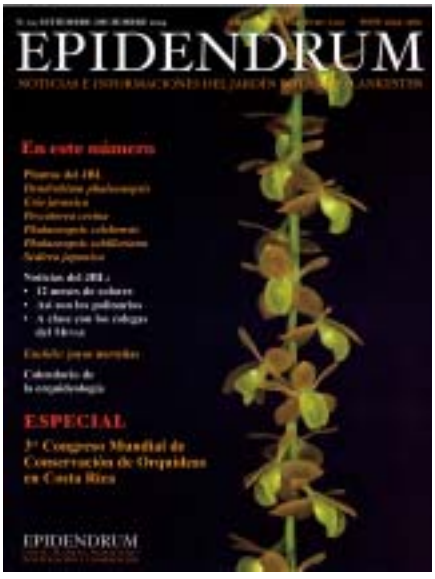

TOP LEFT Rafael Lucas Rodríguez (standing) during the opening address at the inauguration of the Lankester Botanical Garden. Next to him Gordon Dillon, Secretary of the American Orchid Society and to the far right Rebecca Northen, who led the fundraising efforts in the United States to buy the garden.
ABOVE Front covers of *Lankesteriana* (top) and *Epidendrum,* the publications of Lankester Botanical Garden.
LEFT *Stelis morae*, a representative of this genus known for its confusing taxonomy.