Orchids in Costa Rica

Introduction to a Series in Four Parts

BY CARLOS OSSENBACH

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DISCOVERED BY CHRISTOPHER Columbus during his fourth voyage to America in 1502, Costa Rica, the "Rich Coast," received its name because the remarkable golden ornaments worn by the natives led the Spaniards to believe they had arrived at a land rich in gold and other precious metals. Nothing could be further from the truth. Barren of mineral resources, Costa Rica languished for centuries as the Cinderella of the Spanish American Empire, barely supporting a small population that, by the time of independence in 1821, had not yet reached 75,000 inhabitants. But yesterday's shortcomings became today's blessings. The peaceful colonial agricultural society gave way to a solid democracy, and modern Costa Rica has truly become a Rich Coast, boasting more than 5 percent of the world's total biodiversity in a territory of less than 20,000 square miles. Such richness is also reflected in orchid diversity, with an astonishing 1,400 native orchid species. In a series of four articles, readers will learn how most of this orchid bonanza was revealed during the last century, through the work by Rudolf Schlechter; the Golden Age of those two giants who were Oakes Ames and Charles H. Lankester; the figures of Rafael Lucas Rodríguez, Dora Emilia Mora and Joaquín García; and the magnificent work of the Lankester Botanical Garden of the University of Costa Rica.

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ABOVE LEFT An emblematic name, *Amparoa costaricensis* was collected by Wercklé at La Palma.

ABOVE *Pleurothallis acostaei*, which some authors consider a synonym of *Pleurothallis phyllocardioides*, is a South American species ranging north to Costa Rica.

OPPOSITE A tree with orchids and other epiphytes on Costa Rica's Pacifc Coast.

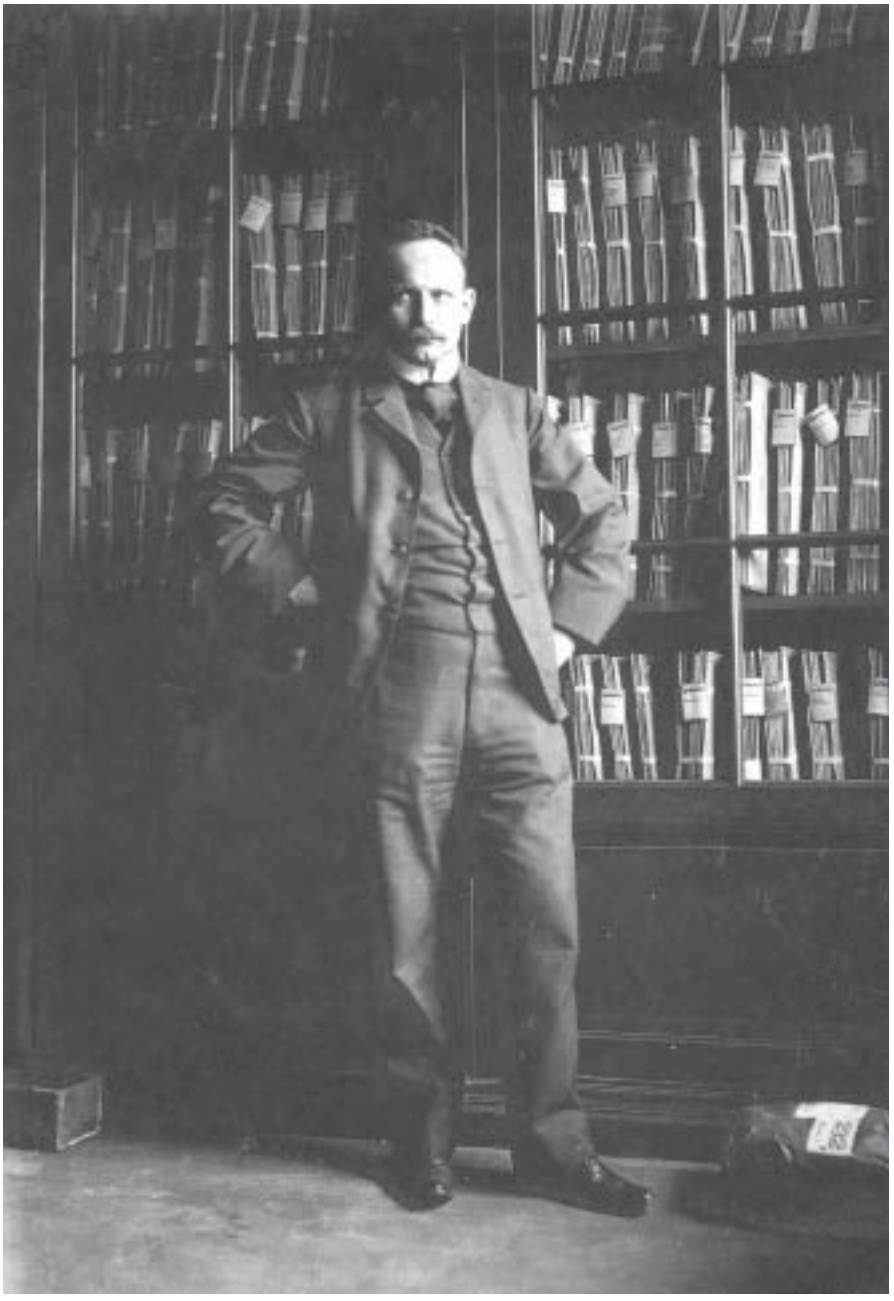
CARLOS OSSENBACH

Orchids in Costa Rica

Part I: The Era of Rudolf Schlechter

BY CARLOS OSSENBACH

"Without a good memory it is of no use trying to be a botanist; one had better give it up and be a merchant." — Rudolf Schlechter



COURTESY OF DR. N. KILIAN, ARCHIVES BGBM BERLIN-DAHLEM

THE ABOVE QUOTE IS CHARacteristic of the egoistic self-confidence of the great German orchidologist Friedrich Richard Rudolf Schlechter (1872–1925), a man of driving ambition, a great capacity for work and a remarkable memory, of whom it is said that at an early age had set for himself the goal of describing at least one new orchid every day [Figure 1].

Schlechter was born in Berlin, where he served an apprenticeship as a horticulturist. At 19 years of age he left Europe for the beginning of botanical explorations that carried him to Africa, Sumatra, Java, Celebes, Borneo, New Guinea, the Bismarck Archipelago and Australia. Of utmost importance were his explorations of New Guinea (1901–1902 and 1906–1909) where he discovered more than 1,100 new species of Orchidaceae, described in his work *Die Orchidaceen von Deutsch-Neu-Guinea*, published in 1914.

After having published in 1914 his studies of the orchids of the Andean countries in South America, in 1918 Schlechter wrote a general recapitulation of the orchids of Central America in his work *Kritische Aufzählung der bisher aus Zentral-Amerika bekanntgewordenen Orchidaceen* (Critical enumeration of the orchids which so far are known from Central America), where he enumerated 132 genera of orchids with 1,325 species for Central America and Mexico.

LEFT Rudolf Schlechter (1872–1925) in the Herbarium of the Botanical Museum in Berlin, 1909.

OPPOSITE A beautiful miniature, the warm-growing *Notylia pittieri* is found near sea level in the southern Osa Peninsula, near the border with Panama.

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From 1921 onward, Schlechter held the position of curator of the herbarium of the Berlin Botanical Garden, amassing an enormous collection of Orchidaceae. Schlechter described, in his *Orchidaceae novae et criticae* (1906–1907) and in the first issues of the famous *Repertorium Specierum Novarum Regni Vegetabilis* (1908–1911), new orchid species from Costa Rica for the first time. He had received these first Costa Rican specimens through the efforts of Henri Francois Pittier (1857–1950), a Swiss teacher who came to the country in 1887 as part of a group of European academics hired by the government of president Bernardo Soto to staff the two new public high schools in the capital, San José. But Pittier did not limit himself to teaching. Soon after his arrival he was among the founders of the National Museum and the Meteorological

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Institute. Pittier lived in Costa Rica until 1905 and during these years conducted a systematic exploration of the Costa Rican flora that had no equal in his time in any country of tropical America. From these efforts resulted the publication of the *Primitiae Florae Costaricensis*, the first flora of Costa Rica, a work that unfortunately was not concluded. While working on his *Primitiae* he sent a great number of orchid specimens (collected by himself, Biolley, Tonduz and Wercklé) to his friend Théophile Durand in Brussels, who passed them on to Schlechter in Berlin for identification. It was therefore Durand who became responsible for Schlechter's lifelong interest in the orchids of Costa Rica. Among Pittier's collections were the types of *Lockhartia pittieri* Schltr., *Notylia pittieri* Schltr. and *Pleurothallis pittieri* Schltr. (= *Pths. floribunda* Poepp. and Endl.). After initial differences (Schlechter for some time refused to return the material sent by Pittier), Pittier worked together with Schlechter until the death of the German scientist in 1925. In 1906, Schlechter dedicated a new genus of Orchidaceae to Pittier: *Pittierella* (today a synonym of *Cryptocentrum*).

Pablo Biolley (1861–1908) had arrived in Costa Rica one year before Pittier as part of the same group of Swiss teachers hired by the government. Biolley established himself permanently in Costa Rica, obtaining Costa Rican nationality and marrying a Costa Rican. He died in 1908 at the age of 46. Biolley accompanied Pittier during many of his explorations and made important contributions to the knowledge of Costa Rican flora. To him we owe the discovery of the types of *Masdevallia ecaudata* Schltr. (= *Masd. tubuliflora* Ames), *Maxillaria biolleyi* (Schltr.) L.O. Williams and *Telipogon biolleyi* Schltr.

Shortly after his arrival in Costa Rica in 1887, Pittier had obtained from the government the necessary funding for the assignment of a person in charge of the botanical service of the Museum, for which he chose Adolphe Tonduz (1862–1921), who was assistant at the botanical garden of Lausanne, Switzerland, and arrived in Costa Rica in June of 1889. For the next two decades, botanical exploration of Costa Rica was not only closely related with Tonduz, but depended heavily on him. Costa Rica owes to Tonduz the discovery of many new orchid species, most of them described by Schlechter. Worthy of mention, among others, are *Maxillaria dendrobioides* (Schltr.) L.O. Williams, *Masdevallia tonduzii* Woolward, *Pleurothallis tonduzii* Schltr. and *Oncidium tonduzii* Schltr. (= *Onc. baueri* Lindl.).

Herbaria and Type Specimens

HERBARIA are plant libraries: Facilities serving as repositories designed to ensure long-term preservation of scientific plant samples, generally referred to as specimens. Specimens are pressed and the dried plants are then mounted (glued) on a stiff sheet of paper. A label, which generally includes the Latin name of the plant, the locality and date of collection, name of the collector and information on habitat, is attached in the lower right hand corner of the sheet. Herbarium specimens are useful as references for plant identification and for the determination of plant locations and ranges, abundance, habit, and flowering and fruiting periods. A type specimen (or simply a "type") is the specimen (actually preserved within an herbarium) that served as the base for the description and the designation of the scientific name of a new species.

Herbaria have a history dating back to at least the 16th century. The first herbaria were in book form, pressed and dried plants being glued onto blank pages. The earliest known herbaria of this kind were made at the universities of Bologna, Italy (1570); Basel, Switzerland (1588); and Oxford, England (1621). The largest herbaria in the world are at the Muséum Nationale d'Historie Naturelle in Paris (8.9 million specimens), the Royal Botanical Gardens, Kew (7 million), the New York Botanical Garden (6.5 million), the Missouri Botanical Garden (5.2 million) and the Harvard University Herbaria (5 milllion). The famous Orchid Herbarium of Oakes Ames is today part of the herbaria at Harvard and contains about 131,000 specimens, of which some 10,000 are type specimens. — *Carlos Ossenbach.*

ABOVE The type specimen of *Systeloglossum acuminatum* Ames and C. Schweinf. Multiple labels indicate several taxonomists have examined the specimen.

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OPPOSITE *Telipogon biolleyi*, a common species, is one of the few telipogons that can be cultivated under the normal conditions of a temperate greenhouse.
ABOVE Henri Pittier (1857–1950), the great explorer of the flora of Costa Rica, in a portrait by Sava Botzaris, 1942.
ABOVE RIGHT *Lockhartia pittieri*, from the genus commonly known as braided orchids, is another species named in honor of the great Swiss botanist Henri Pittier. It was originally described from a Panamanian plant, but is known today from most of Central America.
RIGHT *Maxillaria biolleyi* is a common species of the high mountains of Costa Rica. It was originally described by Schlechter as "*Ornithidium biolleyi.*" The genus name was derived from the Greek *ornithos* (= bird), because the red flowers have some similarity with a bird's head.

Karl Wercklé (1860–1924) came to Costa Rica for the first time in 1897, the year in which his first orchid collections are dated. He did not come directly from Europe, but emigrated to the United States, where he worked as a horticulturist in the nurseries of John Lewis Childs in New York. Childs sponsored Wercklé's first journey to Costa Rica in search of plants and seeds of ornamental value for acclimatization in American gardens. As early as 1899, Childs' commercial catalogue described a plant "collected in the mountains of Costa Rica by Mr.

Carlos Wercklé" (*Childsia wercklei*). In 1902, Wercklé returned to Costa Rica, where he stayed until his death. In an article published in 1909, Wercklé described Costa Rica as "the privileged region of Tropical America," adding that, "in truth, it is unlikely that any other country presents a flora containing the same number of species in a territory of the same size." Among the new species discovered by Wercklé and dedicated to him by Schlechter are *Elleanthus wercklei* Schltr., *Epidendrum wercklei* Schltr. (= *Neowilliamsia wercklei* [Schltr.] Dressler), *Kefersteinia wercklei* Schltr., *Pleurothallis wercklei* Schltr. (= *Pths. segoviensis* Rchb.f.) and *Maxillaria wercklei* (Schltr.) L.O. Williams.

Tonduz was the great intermediary between Schlechter and those who collected in Costa Rica during the first years of the last century. This seems to have been the case of the relationship between Schlechter and the exceptional orchid collections made between the years of 1908 and 1910 by the brothers Alexander C. and Alfred Brade, German nationals who had established themselves in Costa Rica. Alexander Curt Brade (1881–1971), by profession an architect, was the driving force behind those collections. Alexander Curt came to Costa Rica in 1908 but stayed for only a short time, returning to Germany for reasons of health in 1910 and emigrating later to Brazil (ca. 1918), where he reached glory as one of South America's greatest orchidologists. Rudolf Schlechter, in his *Additamenta ad Orchideologiam Costaricensem* (1923) dedicated an entire chapter to the collections he had received from the Brade brothers: *Orchidaceae Bradeanae Costaricenses*. Among the many new species discovered by the Brades are *Osmoglossum convallarioides* Schltr., *Elleanthus bradeorum* Schltr. (= *Elleanthus glaucophyllus* Schltr.) and *Lycaste bradeorum* Schltr. *"Bradei", "Bradeorum" and "Bradeanum"* are all normal epithets that remember and honor the Brade brothers. But only a few know that *Liparis fratrum* Schltr. (now *Crossoglossa fratrum* [Schltr.] Dressler) was also dedicated to them (from the Latin *fratrum* = "belonging to the brothers").

After Pittier left Costa Rica in 1905 and Brade did the same in 1910, Schlechter had to find new contacts in the country. In 1919 he wrote to Amparo de Zeledón and Alberto M. Brenes, asking them to prepare new collections of orchids. Doña Amparo de Zeledón (1863–1957), as she was respectfully called, daughter of a wealthy landowner of Cuban-Spanish origin, supported the scientific activities of her husband, José C. Zeledón, then Costa Rica's leading ornithologist, and became herself involved in collecting native plants, especially orchids, which she grew in her large garden in San José. Doña Amparo reacted with enthusiasm to Schlechter's letters, arranging for Tonduz to press plants from her orchid garden and sending Wercklé out on new collecting excursions. The results were three shipments of herbarium specimens that were received by Schlechter

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ABOVE A beautiful representative of this genus, *Epidendrum wercklei*, which is synonymous with *Neowilliamsia wercklei*, usually flowers in October and can be found at elevations between 3,600 and 7,545 feet (1,100 and 2,300 m).
OPPOSITE ABOVE *Pleurothallis tonduzii* is one of the many species originally collected near San Ramón. It belongs to the group of the so-called frog orchids, because the flowers sit on top of the leaf.
OPPOSITE LEFT *Kefersteinia wercklei* is a rarely seen species from a delightful genus, originally recorded from the heights of La Palma.
OPPOSITE RIGHT *Masdevallia tonduzii* inhabits the warm, moist tropical forests of the eastern lowland regions of Costa Rica and adjacent Panama.

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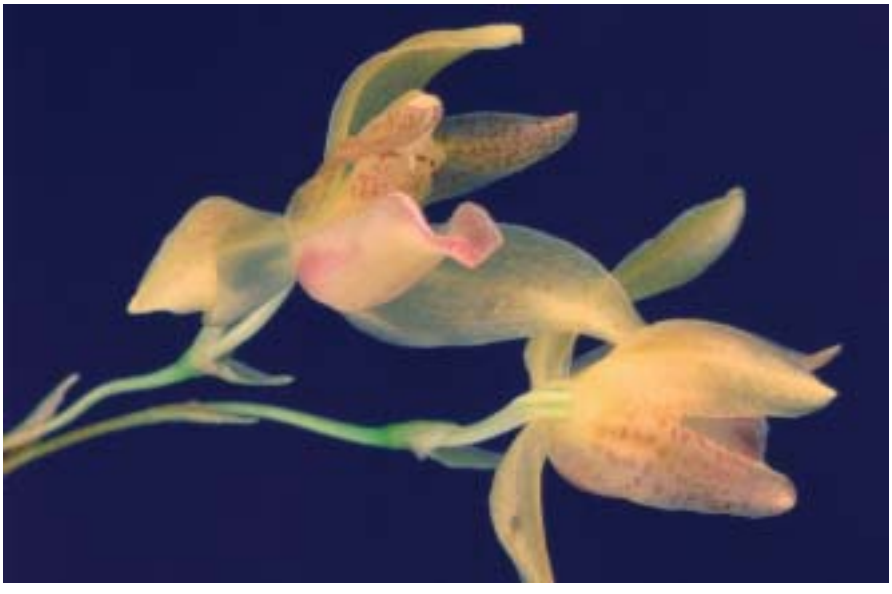

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between 1921 and 1923, and that were described as *Orchidaceae Amparoanae* in his *Additamenta* (1923). Among the specimens received from Amparo de Zeledón, Schlechter found three new genera and 62 new species. Schlechter wrote, in the introduction to his work: "It was under these circumstances a distinct pleasure for me to dedicate to the high-hearted sponsor of science, doña Amparo de Zeledón, a new genus, *Amparoa*, and a series of beautiful and especially interesting species." Under these new species we find, besides *Amparoa costaricensis* (= *A. beloglossa* [Rchb.f.] Schltr.), *Cycnoches ampa-roanum* Schltr., *Dichaea amparoana* Schltr. (= *D. lankesteri* Ames), *Epidendrum amparoanum* Schltr., *Gongora amparoana* Schltr., *Pleurothallis amparoana* Schltr. and *Scaphyglottis amparoana* (Schltr.) Dressler (= *Hexisea amparoana* [Schltr.] Ames, F.T. Hubb and C. Schweinf.).

Alberto Manuel Brenes (1870–1948) was born in the small town of San Ramón, and studied in Costa Rica until 1890, when he left Central America for Europe. He spent a short time in Paris and from there went on to Lausanne, Switzerland, where he studied for one year at the university followed by a time in Geneva, where he stayed until 1898, taking courses in botany and natural history. Botanist of the National Museum for many years, he continued botanical explorations after Pittier left the country in 1905. In 1920 Brenes became the head of the botany section at the Museo Nacional, a position he held until 1935. At that time, Brenes had accumulated an herbarium of over 20,000 specimens which, for the quantity and quality of its materials, had no equal in Central America. His collections came primarily from the region of San Ramón de Alajuela. From there he sent Schlechter a large collection of orchids in 1922. Schlechter described this collection in his work about Costa Rica under the title of *Orchidaceae Brenesianae* and highlighted the good quality of the included specimens. Only the collections organized by doña Amparo de Zeledón could stand up to those of Brenes, among which Schlechter identified some 90 new species. Schlechter named a new genus after him (*Brenesia*, now a synonym of *Pleurothallis*) and a great number of species, such as *Elleanthus albertii* Schltr. (= *Elleanthus hymenophorus* [Rchb.f.] Rchb.f.), *Ponthieva brenesii* Schltr. and *Trichocentrum brenesii* Schltr. (= *Trichocentrum capistratum* Linden and Rchb.f.).

OPPOSITE TOP LEFT The beautiful terrestrial orchid *Crossoglossa fratrum* is named in honor of the two Brade brothers. It can be found from Nicaragua to Panama.

OPPOSITE TOP RIGHT Amparo de Zeledón (1863–1957), the orchid lady from Costa Rica.

OPPOSITE BELOW LEFT *Pleurothallis wercklei* is considered synonymous with *Pleurothallis segoviensis*.

OPPOSITE BELOW RIGHT *Pleurothallis amparoana* is also known under the names *Specklinia amparoana* and *Stelis pilosa*. It is commonly called the pelican, because the united lateral sepals resemble the beak of this bird.

How to Grow Alberto Brenes' Ponthieva

THE small town of San Ramón, about 30 miles (48 km) to the northeast of San José, was called by Schlechter the "El Dorado for the orchid collector." At an altitude of 3,280 feet (1,000 m), with high humidity and under the influence of both the Pacific and the Atlantic winds, the climate of San Ramón has produced a diversity of orchids equaled only by another famous orchid region of Costa Rica: the heights of San Jerónimo and La Palma, to the northeast of the capital, with similar climatic conditions. An orchid specimen collected by Guillermo Acosta in San Ramón was described by Schlechter as a new genus and species, and dedicated to the town. It was *Ramonia pulchella* (= "Ramonia, the beautiful" — now a synonym of *Scaphyglottis*). All the botanists named in this feature story collected in San Ramón, although the most important collections Schlechter received from that region were those of Brenes and Acosta.

From more than 400 species in excess of 80 genera that can be found in the immediate vicinity of San Ramón, one of Schlechter's favorites was the genus *Ponthieva*. Terrestrial or epiphytic, the bizarre and beautiful flowers of *Ponthieva* have a complicated floral structure, with the lip uppermost, united with the column. More than 25 species of *Ponthieva* are known from the southern United States to central Chile, of which six have been found in Costa Rica. Schlechter described two new species of *Ponthieva* from Costa Rica: *Ponthieva brenesii*, dedicated to Alberto M. Brenes, who had collected it for the first time (San Ramón, 1921) and *Ponthieva formosa*, from a collection by Wercklé at La Palma. Today, the two names are synonymous.

As Reynaldo Gómez, greenhouse coordinator and chief gardener at Lankester Botanical Gardens, University of Costa Rica, relates, *Ponthieva* species should be cultivated in medium to light shade (about 40 to 50 percent indirect light). They should be potted in 4- to 6-inch (10- to 12-cm) pots and set on benches keeping a minimum distance of 5 feet (1.5 m) from the roof of the greenhouse. Gómez uses a potting mixture of 50 percent coconut fiber, 30 percent small pebbles or crushed stones (no larger than 3/8 inch [8 mm] diameter) and 20 percent of a mixture of peat moss, clay and sand. Greenhouse temperatures should be kept as close as possible to the natural conditions (75 F [23 C] daytime and 60 F [15 C] nighttime). Water freely and allow a resting period before flowering (between March and June for most species, except *Ponthieva racemosa*, which flowers between October and January). — *Carlos Ossenbach.*

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ABOVE *Ponthieva brenesii*, a rare species named in honor of Alberto M. Brenes.

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COURTESY FAMILY OF AMPARO DE ZELEDÓN

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We come finally to Guillermo Acosta (1878–1955). He had been sent by his family to London, where he studied business administration, returning to Costa Rica to manage the family's considerable fortune. Acosta sporadically collected orchids and sent a small collection to Schlechter, who described it in his *Additamenta* (1923) under the title of *Orchidaceae novae et rariores collectorum variorum in Costa Rica collectae*. In this collection, Schlechter found a new genus, which he dedicated to don Guillermo, *Acostaea*, and several new species, such as *Lepanthes acostaei* Schltr. (= *L. blepharistes* Rchb.f.), *Maxillaria acostae* Schltr., *Pleurothallis acostaei* Schltr. (= *Pths. phyllocardioides* Schltr.) and *Scaphyglottis acostae* (Schltr.) C. Schweinf.

Rudolf Schlechter died on November 15, 1925, from a tropical disease that had troubled him since the travels of his youth. His large herbarium, into which the collections of Kraenzlin and Mansfeld (who took his position after his death) were later incorporated, was completely destroyed during an Allied bombardment in March, 1943. Only those specimens that were on loan to other institutions escaped the fire, plus a series of copies that Schlechter had prepared on behalf of Oakes Ames, at that time director of the Botanical Institute of the University of Harvard, in Massachusetts. After Schlechter's death, his wife Alexandra continued with this work.

Acknowledgments

I would like to thank Franco Pupulin for his great photographs, the Archives of the Botanical Museum in Berlin and Reynaldo Gómez for his introduction to the cultivation of *Ponthieva*.

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OPPOSITE LEFT *Dichaea amparoana,* often considered a synonym of *Dichaea lankesteri*, was recently rediscovered in Costa Rica. As with all species of *Dichaea*, grow it in intermediate temperatures and humid conditions. Never expose the plants to full sunlight.

OPPOSITE TOP RIGHT *Scaphyglottis acostae* was first described by Schlechter as *Hexadesmia* because of the six pollinia.

OPPOSITE RIGHT *Maxillaria acostae* is one of the six new species, all collected in the vicinity of San Ramón, named by Schlechter in honor of G. Acosta.

ABOVE The Herbarium in Berlin after its destruction in March 1943.

LEFT Widespread from Mexico through Panama, *Isochilus amparoanus* (= *I. chiriquensis*) should be grown in cool to intermediate temperatures.