

near *Stanhopea*.

Stamens 2, anthers 2, ovary 1, ovule 1, embryo 1.

Stamens small *long* $1\frac{1}{2}$ " *long*, triangular acute.

Leaf submembranous, 5' nerves many distinct, 8' long, broadly ovate, apiculate, $1\frac{1}{2}$ " *long*, $\frac{3}{4}$ " *broad*, base very short, subreticulate, cuneate, aristolobolus.

Pedicels long, peduncles, $4\frac{1}{2}$ " *long*, strongly curved on basal half with half a very ample, imbricate, cordate apiculate, cucullate $\frac{1}{4}$ " *long* sheaths, apical half racemose (spicate) $3\frac{1}{2}$ " *long*. Bractles similar to sheath, somewhat larger. Corolla ovate acute longer than the tube, pale subwhite, furfuraceous gray, and often slightly furfuraceous at base the tube.

Stamens, 2, anthers, fleshy, white, of strong *Stanhopea* scent, when sepals erect, oblong-lanceolate acute, $1\frac{1}{2}$ " *long* $\frac{1}{4}$ " *wide*, very broad, slightly incurved & furfuraceous at base.

Corolla lobes triangular ovate acute, connate at base, and deeply sacculate here, furfuraceous; $3\frac{1}{2}$ " *broad* at base, which are somewhat connate with the back of the lobes slightly shorter than sepals, linear ligulate, very *flat* but thick on their next furfuraceous base, submarginally curved, apical $\frac{1}{2}$ " divergent point triangular sub-acute.

Labellum length of petals, its lobes angularly imbricate with *front* of column, base triangular ovate, vertical, extreme base subcordate prominently prolonged *ant*-corolla furnished with a large antherous triangular tooth, white, perigynous towards mesothel, which is narrowly ligulate, incurved, arising *connately*, towards the epicalcitate sub-rhomboid obtuse spiculate which stands just in front of column and is colour of glabrous, rather dense on the margin, and about $3\frac{1}{2}$ " *broad*, disc prominently ciliate from the *in front* of the fleshy basal tooth to base of mesothel & the ciliate arises into a broad *ligulate* *margin* in a plane of *margin*, *acute* *point* *with* a *thick* *subcordate* *tooth* *in the* *margin*.

Column short, broadly contorted, semitubulate, front margin slightly dilated rounded, acute angle at base, *Simandrium* immarginate; anther fleshy greenish, ovate obtuse, slightly emarginate in front, unilocular.

Pollinia 2, cuneate oblong, scarcely compressed, split behind; anthers linear slender, subapiculate, narrowly oblong ovate at insertion of pollinia; glans large, thin, ovate, apex distinctly acute reflexed, base subligulate at insertion of anthers. Restellum triangular sub-bicentulata with a long *inflexed* *anther* *margin*. Stigma transverse, deeply excavated, nearly closed by the swollen *flange* *column* *which* *stands* *above* *in an* *unequal* *rounded* *corolla* *crossed* *undignate* *with* *margin* *of* *the*.

San Ramon, camino de San Carlos, 'Ligra', Sept.

Endrés the botanist

FRANCO PUPULIN

There is no doubt that Auguste R. Endrés lived, worked, thought of himself – and eventually died – as a botanist. In 1866, when still a young man of 28, he had no hesitation in presenting his credentials as a “botanist” to obtain U.S. citizenship. Whatever we know about his life, through the documents and letters that allow us to draw a picture of him – his work, his relationships, his dreams, achievements and defeats – all is intimately connected with plants. His friends were botanists, collectors, and growers. His meager financial means were invariably destined to buy books on botany or better instruments to understand plant features. He collected plants, took field notes about plant ecology and phenology, dried and prepared plant vouchers, described and illustrated plants, published new plant species, planned (and at least partially carried out) broadly conceived floristic treatments spanning a great diversity of orchid groups: in short, he produced the work of an accomplished botanist.

It is no exaggeration to say that Endrés was the most proficient and dedicated botanist who visited Costa Rica during the nineteenth century. If one looks at the work he carried out in less than seven years of botanical exploration of the country, the results of his contribution are probably unequaled by any other researcher who ever studied the flora of Costa Rica. The fact that the fundamental documents and materials from his studies remained largely inaccessible and unstudied for over half a century, irremediably obscured the reach of his botanical legacy. Tens, if not hundreds, of his floristic discoveries, properly described and illustrated, and mostly accompanied by excellent herbarium specimens, were simply ignored by his contemporary correspondents. Eventually, Endrés’ plants found their way into the realm of science and botany through the work and the names of others, who often were not aware of his extraordinary undertakings.

Costa Rica in the 19th century presented enormous geographical and cultural difficulties to anyone engaged in serious scientific research. New habitats were often all but inaccessible, scientific instruments and literature were scarce. Not only had Endrés to overcome these problems, but his financial situation was always precarious. Taking all this into account, the figures relating to Endrés’ work in Costa Rica are almost unbelievable. Between 1866 and the first months of 1874, with a parenthesis of some months spent in

◆ The manuscript description by Endrés of “N.º 512, near Stanhopea, near Sievekingia”. The genus *Trevoria*, to which this species belongs, was described only 20 years after Endrés’ death, and in 1921 another genus was created to accommodate this species, appropriately named *Endresiella*.

Panama in 1871–1872, Endrés collected over 650 species of orchids in Costa Rica, which is, roughly, a fourth percent of the whole Costa Rican orchid flora. He prepared meticulous descriptions of 613 species of Orchidaceae, and executed 1170 wonderful orchid drawings, illustrating some 500 taxa. In the meantime, he managed to publish 15 species of plants in two families (apart from the orchids, a species of Marattiaceae, *Danaea crispa*), and collected what would become the types of *Guatteria costaricensis* (Annonaceae) *Nephrodium endresii* (Dryopteridaceae), *Cavendishia endresii* (Ericaceae), *Quercus endresii* (Fagaceae), *Ocotea endresiana* (Lauraceae), *Utricularia endresii* (Lentibulariaceae), *Polypodium endresii* (Polypodiaceae), *Cestrum endresii* (Solanaceae), and *Cissus endresii* (Vitaceae). In addition he collected birds for North American scientific institutions, including two new species of hummingbirds – *Eupherusa nigriventris* and *Glaucis aeneus*.

In order to understand the significance of these figures, they have to be compared with the results of other explorers of the rich diversity of the Costa Rican flora before Endrés' time. The Dane Anders Sandoe Oersted (1816–1872) had explored Nicaragua and Costa Rica between 1846 and 1848, forming a collection of more than 900 plants. In Costa Rica, he mostly collected along the high Central Volcanic range, including the volcanoes Barva and Irazú. Reichenbach described his orchid gathering in 1866, in a chapter of his *Beiträge zu einer Orchideenkunde Central-Amerika's*¹, under the title of “Orchideae Oerstedianae”, accounting for 90 species of Orchidaceae, 44 of which had been collected in Costa Rica. In early 1848 the great Lithuanian collector Josef Ritter von Rawicz Warszewicz (1812–1866) came to Costa Rica after visiting Guatemala, El Salvador, and Nicaragua. That same year he moved to Panama and Veraguas, but in 1850 he passed through Costa Rica again before traveling back to Europe, where he worked for some months as an assistant to Prof. Reichenbach. The Central American orchid collections by Warszewicz are often quite imprecise about the original collection site (sometimes simply noted as “Ex America Centrali”). However, it is known that from his gatherings in the central region of the country, Reichenbach published 50 or so orchid findings, several of which were new to the science². The German Hermann Wendland III (1825–1903), a member of a renowned gardening dynasty from Hanover, came to Costa Rica in 1857. This was during a collecting trip to Central America inspired by George U. Skinner, which began in 1856 in Guatemala. In Costa Rica he collected in the mountains around the Central Valley, along the Atlantic plains, in San Ramón and on the road to Sarapiquí³. Upon his return to Herrenhausen, a special greenhouse called “Costa Rica-Haus” was inaugurated to host his orchid collections⁴. Once more, his discoveries were

¹ Reichenbach, H. G. 1866. *Beiträge zu einer Orchideenkunde Central-Amerika's*. Th. G. Meissner, Hamburg. Pp. 45-60.

² *idem*: 4-44.

³ Jenny, R. 1995. History of Pleurothallids XII. The Wendlands. *Pleurothallid News and Views* 7(4): 32-35.

⁴ Pittier, H. & T.A. Durand. 1893. Hermann Wendland en Costa Rica. *Primitiae Florae Costaricensis* 2: 23-27. For a broad survey of the botanical exploration of Costa Rica in the second half of XIX Century, see Ossenbach, C. 2009. Orchids and orchidology in Central America: 500 years of history. *Lankesteriana* 9(1-2), in particular at the pages 54-139.

described by Reichenbach in his “Orchidaceae Wendlandianae”⁵, where he detailed 96 species found by Wendland. When, in 1883, William Botting Hemsley (1843–1924) gathered the available information to publish his final version of the “Orchideae” for the monumental *Biologia Centrali-Americana*, edited by Godman and Salvin⁶, the number of orchid species known for Costa Rica was just 176. This represents a little more than 10 percent of the species presently recorded for the country, and was largely based on the collections by Oersted.

One can only imagine how different the history of Costa Rican and Central American orchidology would have been if Endrés had eventually published his planned work, or if his plants had not been buried, together with Reichenbach’s immense legacy, in the vaults of the Vienna Natural History Museum until 1914.

Endrés’ formation in botany

About Endrés’ early life, we know virtually nothing. It is unfortunate that no substantial document has been found relating to the time before he left Europe in 1855, when he was 17 years old, nor to the eleven years he spent in New York and again in Europe before he sailed for Costa Rica in December 1866. When he first comes to notice through his botanical correspondence, in an annotated drawing of *Dichaea trulla* dated 1866⁷, his botanical jargon is already technically flawless, and his botanical knowledge profound and sophisticated. He not only correctly determined the species, *Dichaea trulla*, but also assigned it to the tribe *Vandaeae*, in accordance with the systematic placement proposed by John Lindley in 1833⁸ and followed, among others, by George Bentham in his celebrated “*Notes on Orchidaceae*”, published in the *Journal of the Linnean Society* for 1881. He correctly described the colour of the “perianth”, not of the “flower”, correctly termed the lip “labellum”, and annotated the ecology of the species: “sporadically everywhere. 0-3000” (which is as true today as at Endrés’ times) (FIG. 74). He made a sketch of three different views of the flower (front, rear, and three-quarters), and precisely illustrated the ventral view of the labellum, slightly flattened to appreciate its outline, and of the small pollinarium (FIG. 75). He obviously knew the morphological characters by which species of the genus *Dichaea* and, more generally, orchids may be distinguished and classified. It is obvious that he did not learn botany in Costa Rica: he practiced it from the day he arrived.

We have no documents to support the level of formal education attained by Auguste R. Endrés. He may have learned the fundamentals of botany through what we have termed the “German hypothesis”, his contacts with Moritz Reichenheim in Germany (where he apparently spent some time and became familiar with the academic circles of Berlin

⁵ Reichenbach, H. G, 1866. *Op. cit.*: 61-102.

⁶ Hemsley, W. B. 1883. *Orchideae*. Pp. 197-308 in: D. Goldman & O. Salvin. *Biologia Centrali-Americana*. Botany, vol. 3. R. H. Porter, London.

⁷ Two pencil drawings with notes. *W-Rchb.Orch.* 0019163, Naturhistorisches Museum, Wien.

⁸ Lindley, J. 1833. *The Genera and Species of Orchidaceous Plants*. Published by Ridgway, London, between 1830 and 1840.

University⁹), or perhaps thanks to his friendship with Isaac Buchanan, while residing in the United States. It was Endrés himself who wrote of being “...deeply obliged to Mr. Buchanan for his readiness to lavish such amounts on the furtherance of my studies”¹⁰. In 1870 Buchanan and Dow jointly gifted to Endrés the sixth volume of Walpers’ *Annals on Systematic Botany*, which included the large section on orchids by H. G. Reichenbach¹¹. The German hypothesis may perhaps explain why his main correspondent was not British or American, but German. However, this does not explain why he wrote mainly in English. The little we know about the formation of Endrés in botany is largely the product of speculation.

Nevertheless, it is almost certain that, even if he had any formal scientific training, he did not hold an academic degree in botany. Through his correspondence, it is evident that he considered it a privilege, not a right, to work and publish as a botanical author. When, in late 1870, he learned that Reichenbach was willing to accept him as the co-author of the plants he discovered in Costa Rica – *My Plants* – he considered this offer an honor, not the acknowledgment due from a colleague for his remarkable work¹². Until his last year, he felt like “...one «of those poor fools condescendingly called ‘collectors’”¹³. But he was secretly nourishing the idea “...of working up the material ... myself and by myself”, and eventually he became frustrated by not having “...enjoyed he public credit ... which is my just due in reward for the sacrifices I have made.”¹⁴

Endrés, whatever his formal education might have been, had a solid and deep classical formation. He was not only fluent in German (his mother language) and English (his father was probably an English teacher when the family still lived in France), but also in Latin. In a letter to Prof. Reichenbach, he referred to the first series of his illustrations of Costa Rican orchids with the term “*icunculae*” (small images), a quite cultured word from classical Latin¹⁵.

⁹ In a letter to Capt. J. M. Dow, dated November 3rd, 1869, Endrés refers to a «don Felipe Valentini», who was visiting Costa Rica, as «the son of the well known professor of the Berlin university» (Cornell University, Ithaca). Born in Berlin from a German mother and an Italian father, Philipp Johann Joseph Valentini (1824-1899) visited Costa Rica the first time in 1854, when he developed an interest in the Spanish colonization of Central America. In 1858 he obtained his Ph.D. from the University of Jena, with a dissertation on the early history of Costa Rica. He was again in Costa Rica from 1861 to 1871, where he established himself as a coffee planter until he left for New York. His contributions on Middle American antiquity encompass writings on Mexican, Maya and Central American topics, mainly concerning Maya epigraphy. Valentini’s father, Dr. Francesco Valentini, was a professor of foreign languages and Italian literature at the University of Berlin, and author of an accurate German-Italian dictionary, published in Leipzig in four volumes between 1831 and 1836. An intimate friend of Alexander von Humboldt, he served as a tutor to the royal court of Prussia.

¹⁰ Letter to Capt. J. M. Dow, dated 4 April 1871. Cornell University, Ithaca.

¹¹ Reichenbach, H. G. 1861. Ordo 28. Orchides. Pp. 167-933 in: C. Müller, *Synopsis plantarum phanerogamicarum novarum omnium. Annales Botanices Systematicae (Walpers)* 6.

¹² Letter to Capt. J. M. Dow, dated December 19, 1870. Cornell University, Ithaca.

¹³ Letter to Capt. J. M. Dow, dated January 12, 1874. Cornell University, Ithaca.

¹⁴ *ibid.*

¹⁵ Letter to H. G. Reichenbach, dated July 8th, 1870. Archives, Natural History Museum, Vienna.

Also from the point of view of his botanical knowledge, it is clear that Endrés was a cultivated man. In a letter to Dow sent from Panama, he shows a deep and critical knowledge of Lindley's classical work on plant structure and classification¹⁶, published in 1846. In it he respectfully criticized the treatment of orchid flower morphology:

It were far from me to touch the works of an authority who [...] dedicated a great part of his valuable time to the especial study of these plants, and whose opinion must therefore a hundredfold outweigh my own, yet facts are stronger than a hypothesis, even if it originates with a Lindley¹⁷.

In describing plants, and from the beginning of his activity in Costa Rica, he followed a specific format, in accordance with the highest botanical standards. His plant descriptions included detailed accounts of the vegetative parts, inflorescences and flowers. Of the latter, he accurately noted the colours. Floral details, including ornaments and *indumenta*, are also described with absolute precision. Particular care is taken in the description of the reproductive organs – column, anther, and pollinarium. The general scheme of the descriptions was so strict that, in many cases, Endrés left a blank space on his manuscripts when a particular organ or particular conditions were missing or too damaged to be properly described. In several cases, the Herbarium and the Archives in Vienna keep different versions of the same description, progressively improved in terms of the completeness and accuracy of the descriptive terminology. Terms like “anthesis”, “bracteolae”, “cuspid”, “carinae”, “clinandrium”, “rostellary membrane”, or adjectives like “fornicate”, “mucronate”, “obsolete”, “triquetrous”, and other highly technical words, commonly used by Endrés in his plant descriptions, were obviously not part of everyday vocabulary.

If one compares the style of the accurate and detailed descriptions produced by the hundreds during his stay in Costa Rica with those of his contemporary botanists, it is legitimate to ask which botanical style and jargon was his “model”.

The cultural influences

Regardless of his mother tongue, Endrés' orchidology was British in structure and references. If it is true that his main botanical mentor was a German professor at the University of Hamburg, it is also certain that all the botanical descriptions prepared by Endrés were, without exception, written in English. English was the language of horticulture; several of the most magnificent books ever published on orchids were written in English, and the first illustrated plant magazines were edited in England. John Lindley, considered the father of modern orchidology and the most eminent orchidologist of his time, was British; his fabulous orchid herbarium was conserved at the Royal Botanic Gardens, Kew, near London. Endrés' first sponsor in orchidology was James Bateman, a British horticulturist and amateur botanist,

¹⁶ Lindley, J. 1846. *The vegetable kingdom: or, the structure, classification, and uses of plants, illustrated upon the natural system*. Bradbury & Evans, London.

¹⁷ Letter to Capt. J.M. Dow, dated 25 November 1870. Cornell University, Ithaca.

the author of the famous *The Orchidaceae of Mexico and Guatemala*¹⁸ and *A Second Century of Orchidaceous Plants*¹⁹, who would later publish a sumptuous monograph on the orchid genus *Odontoglossum*²⁰. He had been recommended to Bateman (who eventually hired him as a collector of orchids in Central America) by another famous British orchidologist, George U. Skinner, who lived for over 30 years in Guatemala. Before his trip to Central America, he was surely in contact with Stuart Henry Low, the proprietor of the Low Nurseries in Clapton, near London. When in Costa Rica, Low was for a short time under contract to the British Veitch Nurseries, of Chelsea and Exeter, probably the largest of the family-run plant nurseries in Europe during the 19th century. Through his friend Isaac Buchanan (an American), Endrés was probably in contact with John Day, a renowned English orchid-grower and collector, who became noted for producing over four thousand watercolour illustrations of orchid species. In sum, and at least until the death of Lindley in 1865, shortly before Auguste R. Endrés traveled to Costa Rica, orchidology was essentially a British business, both in trade and in science.

If we consider the relatively few eponyms among the published and – mostly – unpublished writings by Endrés, apart from those of his acquaintances in Central America (like Alexander Center, Manuel Bedoya, Frederic Cox, Tomás Guardia, Gerhard Jäger, Carl Lammich, Georg Müllner, Wilhelm Nanne, and Francisco Otoya), the names of those honoured are essentially from England. One of the first orchids formally described by Endrés was *Batemannia burtii* (the genus *Batemannia* had been published by J. Lindley as early as 1834) (FIG. 76). According to Reichenbach²¹, “Endres proposed to name it in honor of one of his acquaintances”. Although surely an important person in Endrés’ life, we have been unable to find out who Mr. Burt, was. During the same years spent by Endrés in Costa Rica, a Mr. Burt, gardener to H. B. Mildmay, of Sevenoaks, is recorded by the *Journal of Horticulture and Cottage Gardener* as the exhibitor of a well-grown specimen of *Vanda coerulea*²², but the association is purely speculative. What it is sure is that the unusual name “Burt” (like the variants Birte, Burte, Bearte) is of Anglo-Saxon origin and is still found chiefly in the south-western counties of England. Among the labels and manuscripts that accompany the collections by Endrés, we will find once more the name of his patron, James Bateman, for whom Endrés proposed to name “*Fregea batemanii*” (a species that Reichenbach had already described as *Fregea amabilis*). Then we have the description of a “*Lepanthes hookeri*,” likely dedicated to Sir Joseph Dalton Hooker (1817 – 1911), who, after the death of his father in 1865, had taken up the Directorship of the Royal Botanic Gardens, Kew. The names “*Trichocentrum saundersii*” and “*Trichocentrum saundersianum*” are annotated in Endrés’ handwriting on the drawings of a plant that Reichenbach originally ignored and eventually published only in 1881 as *Trichocentrum*

¹⁸ Bateman, J. 1845. *The Orchidaceae of Mexico and Guatemala*. Physically one of the largest botanical books ever published, it was printed only in 125 copies.

¹⁹ Bateman, J. 1867. *A Second Century of Orchidaceous Plants*. L. Reeve & Co., London.

²⁰ Bateman, J. 1874. *A Monograph of Odontoglossum*. L. Reeve & Co., London.

²¹ Reichenbach, H.G. 1872. New garden plants. *The Gardeners’ Chronicle*, August 1872: 1099.

²² Anonymous. 1867. *Journal of horticulture and cottage gardener*, Nov. 7, 1867, p. 346.

²³ Reichenbach, H.G. 1881. New garden plants. *The Gardeners’ Chronicle*, new series 16, Jul 1881: 70.



Figure 74. The first known illustration by A. R. Endrés, Costa Rica, 1866. *Dichaea trulla* dated 1866 (W0019163, top). Naturhistorisches Museum, Wien.

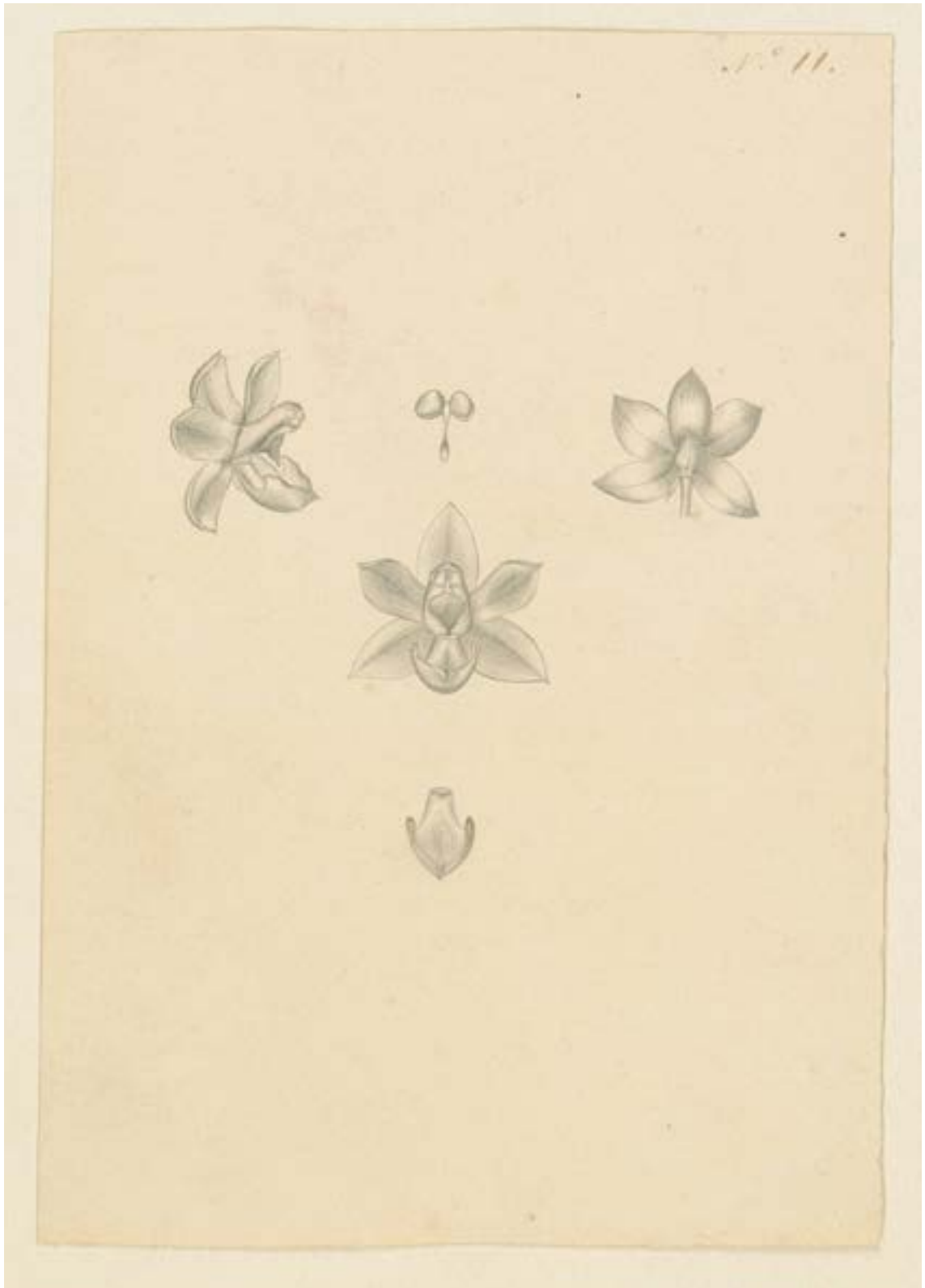


Figure 75. Flowers, lip, and pollinarium of *Dichaea trulla*, from the first known illustration by A. R. Endrés, 1866 (W0019163, bottom). Naturhistorisches Museum, Wien.



Figure 76. *Zygopetalum burtii*, from Frederick Sanders' *Reichenbachia*, vol. I. London, H. Sotheran & Co., 1888.

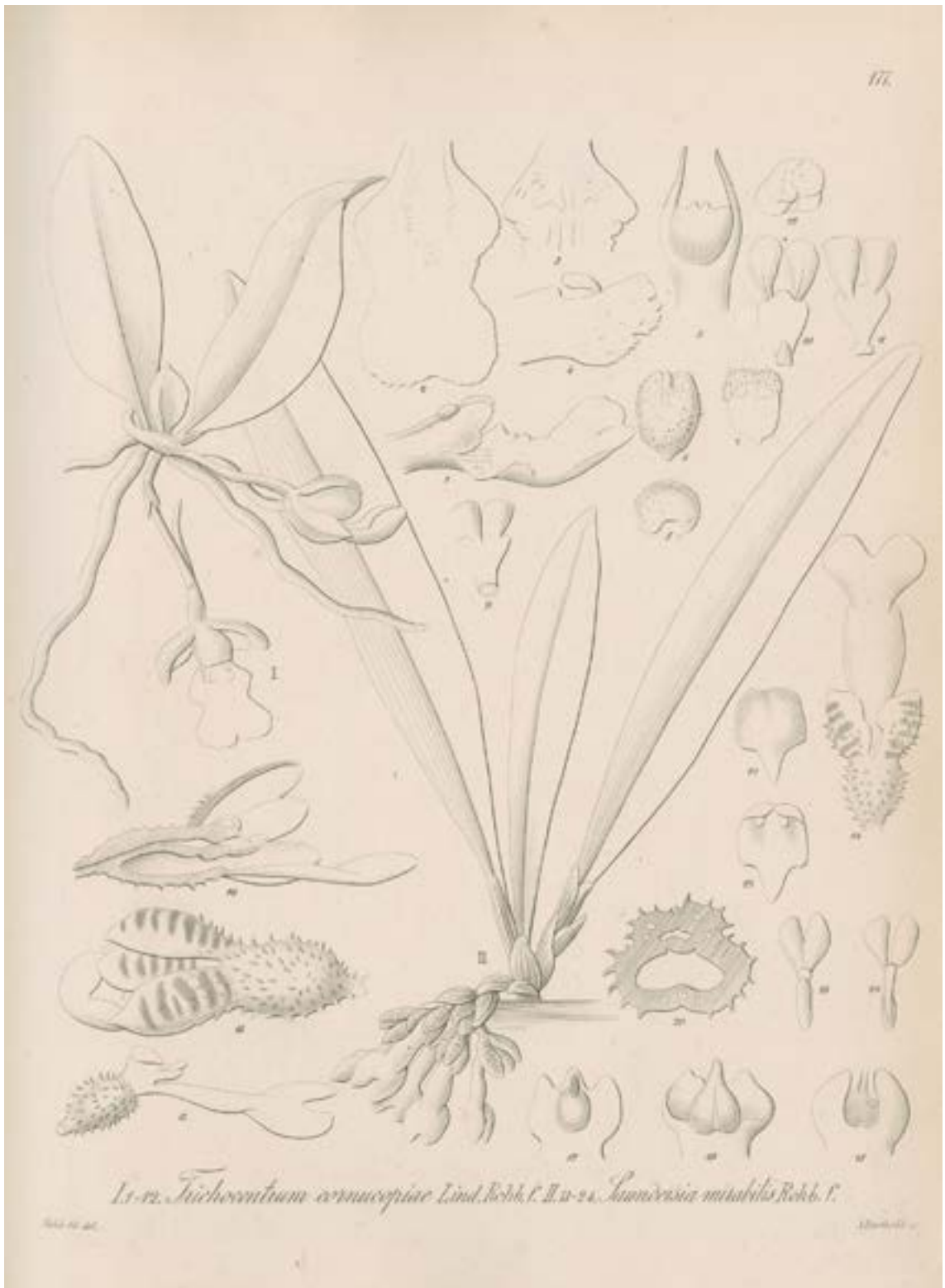


Figure 77. *Saundersia mirabilis* (right), from Reichenbach's *Xenia Orchidacea*, vol 2. Leipzig, F. A. Brockhaus 1873.

*pfavii*²³, but based on a different Costa Rican collection by the Swiss Richard Pfau. William Wilson Saunders (1809 – 1879), another Briton, was a passionate entomologist (he served as President of the Entomological Society from 1841 to 1842 and from 1856 to 1857) and a well known horticulturalist, a Fellow of the Royal Society from 1853 and Treasurer of the Linnean Society of London from 1861 to 1873. He owned a rich orchid collection in Reigate, and he maintained a long and fruitful relationship with H. G. Reichenbach, who in the *Proceedings of the Botanical Congress* of London for 1866 dedicated the genus *Saundersia*²⁴, based on the Brazilian *Saundersia mirabilis* (FIG. 77), to him. Between 1869 and 1872 Saunders edited the *Refugium Botanicum*, which represents a classic example of the fine 19th-century books on plants. It was a literary “botanical refuge”, a kind of romantic repository of species that were seldom, if ever, shown to the public through plant magazines because of their rarity or inconspicuousness in general cultivation²⁵. When, at the beginning of 1870, the first part of volume 2 of *Refugium Botanicum* (a book in three parts, entirely devoted to orchids) appeared, the botanical descriptions were prepared by Reichenbach. The renowned illustrator, Walter Hood Fitch (1817—1892) was in charge of the accurate botanical plates, and Saunders himself added short notes on the requirements for cultivating each of the portrayed species. The lucid and technically impeccable – but not scientifically austere – botanical texts, the exquisite sketches, and the brief suggestions on cultivation distilled from Saunders’ lifetime career as a grower, made *Refugium Botanicum* an extraordinary work which has stood the test of time.

However we look at the “system” of Endrés’ botanical connections and influences, we are invariably referred to a relatively small circle of horticulturists, amateur and professional botanists, illustrators and merchants who knew one another and gravitated around the world’s capital of orchidology and orchidomania: London.

A botanical model

If this was the cultural atmosphere in which Endrés was nurtured, which botanical example had he in mind while preparing the descriptions for his planned monograph on the orchids of Costa Rica?

Botany for botanists was, at the time of Endrés’ formation, quite a dry science. Nineteenth century descriptions of plants were, in most cases, little more than skeletal diagnoses intended to convey the essential characters which differentiate a new species from its relatives. “Scientific” orchidology was not an exception. The published works of John Lindley, like *The Genera and Species of Orchidaceous Plants*²⁶ and *Folia Orchidacea*²⁷,

²⁴ Reichenbach, H.G. 1866. On some points connected with the Orchidaceae. *Proceedings of the International Horticultural Exhibition and Botanical Congress held in London, from May 22nd to May 31st, 1866*. Truscott, Son & Simmons, London.

²⁵ Saunders, W. W. (ed). 1869-1872. *The Refugium Botanicum, or Figures and Descriptions from living Specimens, of little known or new Plants of Botanical Interest*. John van Voorst, London.

²⁶ Lindley, J., *op. cit.* 1830-1840.

²⁷ Lindley, J. 1852-1855. *Folia Orchidacea: an enumeration of the known species of orchids*. Published for the author by J. Matthews, London.

were simply long lists of Latin descriptions, often reduced to just a couple of lines. Also the contributions that Reichenbach – who after Lindley’s death became the undisputed authority on the Orchidaceae – published in scientific journals like *Flora*²⁸, the *Botanische Zeitung*, or the *Annales Botanicæ Systematicæ* – edited by Wilhelm Gerhard Walpers – were nothing more than synthetic descriptions of the new species’ diagnostic features, written in Latin. Reichenbach’s own book, *Beiträge zu einer Orchideenkunde Central-Amerika’s*²⁹ (Contributions to an Orchid Flora of Central America), in which he presented the new discoveries of several renowned orchid explorers of the time, is essentially a catalogue of short descriptions, mostly limited to the essential characters of the flowers. Endrés himself commented on the book: “*On the whole the diagnoses are rather succinct, yet eminently clear.*”³⁰. The renowned and extensive series of botanical illustrations initiated in 1837 by Sir William Jackson Hooker, under the title *Icones Plantarum*³¹, and continued by his son, Sir Joseph Dalton Hooker, had short descriptions, which became progressively more extensive only in later fascicles. The volume on orchids, edited by Daniel Oliver would not, however, be published until 1894³², twenty years after Endrés’ death.

There is no doubting the fact that Endrés knew the great contemporary texts on orchidology. When in Costa Rica, he owned a copy of the *Beiträge* of which he was particularly proud because it was a personal gift from Reichenbach himself. In Costa Rica, through his friendship with John Dow and Isaac Buchanan, he received copies of several fascicles of Lindley’s *Genera and Species* and his treatments of *Stelis*, *Restrepia*, *Brachionidium*, and *Pleurothallis*, published in *Folia Orchidacea*, as well as the work of Reichenbach on orchids that appeared in the sixth volume of Walper’s *Annales*³³. These were not, however, the “models” for his book.

To understand the origin of the crisp, detailed, and informative orchid accounts prepared by Endrés in Costa Rica, we have to avert our eyes from the strict realm of scientific orchidology and look towards a series of journals that took the lead in making orchid science available to a selected public during the end of eighteenth and the first half of nineteenth centuries. In recognition of both the growing interest in horticulture throughout Europe and the grand discoveries of the plant hunters worldwide, a flood of new specialized periodicals was published to document and extol the beauty of the botanical treasures introduced into cultivation from around the globe. Once more, the flowering of these publications was largely a British phenomenon, at least until late nineteenth century, when a growing orchid industry in Belgium and France partially shifted the editorial business toward continental Europe. The passion for exotic plants was a characteristic of European society of the time,

²⁸ *Flora* is the oldest scientific botanical journal, with an uninterrupted publication sequence since 1818.

²⁹ Reichenbach, H. G. 1866. *Op. cit.*

³⁰ Letter by Endrés to Capt. J. M. Dow, dated 8 April 1871. Cornell University, Ithaca.

³¹ Hooker, W.J. 1837. *Icones Plantarum; or Figures, with brief Descriptive Characters and Remarks, of New or rare Plants, selected from the author’s Herbarium*. Vol. 1. Longman & Co., London.

³² Oliver, D. 1894 (ed.). *Hooker’s Icones Plantarum; or, Figures, with Descriptive Characters and Remarks, of New and Rare Plants, selected from the Kew Herbarium*. Vol. 22. Dulau & Co., London.

³³ Letter by Endrés to Capt. J. M. Dow, dated 23 July 1870; letters by J.M. Dow to Endrés, dated 25 November 1870, 12 May 1871, 13 October 1872, and 15 November 1872. All at Cornell University, Ithaca.

and the increasing fascination with orchids during the 19th century reached a state popularly described as an “orchidelirium”. The demand for exotic orchids was so great that wealthy people commissioned professional plant explorers to gather novelties from tropical regions around the world. While horticulturists and orchid traders were deeply interested in having their new and valuable plants named and shown to the public, gardeners and collectors were avid for information about recently introduced novelties and their horticultural requirements.

In 1787 William Curtis³⁴ (FIG. 78A), an apothecary and botanist who held a position at Kew Gardens, began the publication of *The Botanical Magazine; or Flower-Garden Displayed* (widely referred to by its subsequent name, *Curtis’s Botanical Magazine*), as an illustrated journal of both gardening and botany. Many plants received their first publication on its pages, in formal yet accessible language, with the descriptions enhanced by detailed illustrations featuring the work of the best botanical illustrators of the era. The hand-coloured prints, initially taken from copper engravings, complemented the texts, intended for the general reader, and included detailed descriptions and accounts of the plants’ properties, history, and growth characteristics. From the beginning, the *Botanical Magazine* was not exclusively reserved for an affluent audience, but published in a format accessible to a wider readership³⁵. After Curtis’ death in 1799, and the years of the editorship by his friend John Sims, William J. Hooker (FIG. 78B) took over as the editor in 1826, bringing to the *Botanical Magazine* not only his experience as a botanist, but also as contributor to the rival magazine, *Exotic Botany*³⁶, edited by the English botanist and founder of the Linnean Society, James Edward Smith. Hooker brought the artist Walter Hood Fitch to the magazine. He became its principal illustrator for the next forty years (FIG. 79). Joseph Dalton Hooker (FIG. 78C), the Director of Kew Gardens from 1865, followed his father as the editor of *Curtis’ Botanical Magazine*.

Meanwhile, and after a dispute with the editors, Sydenham Edwards, who had previously illustrated the *Botanical Magazine*, started the publication of *The Botanical Register*, another preeminent illustrated horticultural magazine, which ran from 1815–1847. Before his death in 1819, Edwards edited five volumes of *The Botanical Register*. After him, editorial duties passed to the publisher, James Ridgway, who issued a further nine volumes between 1820 and 1828. In 1829, John Lindley (FIG. 78D) was appointed editor, and he adopted the title *Edwards’s Botanical Register*. Under Lindley’s leadership, the *Botanical Register*, in whose

³⁴ In the garden he had made in “Lambeth Marsh”, Curtis cultivated some six thousand species of plants, with a prime interest in the British flora. With the support of Lord Bute, he produced the *Flora Londinensis* (1777–1787), a series of coloured folio illustrations and descriptions of the plants growing within a radius of ten miles of London. The work was scarcely an economic success, and this perhaps motivated Curtis to inaugurate the *Magazine*, with octavo engravings of the bright exotics which filled the gardens of his clients.

³⁵ The first thirty volumes of the *Botanical Magazine* used copper engraving to provide the plates, which were subsequently hand coloured by up to thirty people. An issue might have a circulation of 3000 copies, with 3 plates in each.

³⁶ Smith, J. E. (ed.) 1804. *Exotic botany, consisting of coloured figures, and scientific descriptions, of such new, beautiful, or rare plants as are worthy of cultivation in the gardens of Britain; with remarks on their qualities, history, and requisite modes of treatment*. The figures by James Sowerby. London.

pages he described hundreds of species new to science, became the first botanical magazine devoted mainly to orchids (FIG. 80).

Other illustrated journals devoted to botany flourished during Endrés' youth. In London, from 1818 to 1833, George Loddiges and George Cooke published *The Botanical Cabinet*, a long running periodical that featured 10 hand-coloured illustrations monthly and eventually presented 2000 charming illustrations of rare plants introduced into the hothouses and gardens of the famous Hackney Botanic Nursery, founded by Joachim Conrad Loddiges in 1770³⁷. Stunning hand-coloured engravings and lithographs of rare plants were featured in Joseph Paxton's *Magazine of Botany and Register of Flowering Plants*, published in London between 1834 and 1849. One of the most highly celebrated botanical series ever produced, *The Magazine of Botany*, had the plates drawn and engraved by F. W. Smith, or drawn and lithographed by S. Holden (FIG. 81). From 1836 to 1842, Benjamin Maund published the celebrated periodical *The Botanist: Containing Accurately Coloured Figures, of Tender and Hardy Ornamental Plants, with Descriptions, Scientific and Popular*, featuring several orchid species masterly illustrated by Miss Taylor, Miss S. Maund, Miss Mintern, Miss Nicholson, J. S. Henslow and others. In 1841, the horticulturalists Joseph Paxton, Charles Wentworth Dilke, John Lindley and William Bradbury founded *The Gardeners' Chronicle*, a journal destined to last for over 150 years, and still extant today as part of the magazine *Horticulture Week*. Under Lindley's editorship, the newspaper-styled periodical published articles on every conceivable aspect of gardening, including both national and foreign news, as well as materials sent in by gardeners and scientists. Among its prominent contributors, *The Gardeners' Chronicle* had scientists and botanists like Charles Darwin and Joseph Hooker. Eventually, this successful journal³⁸ was one of Reichenbach's favorites, and in which he published most of Endrés' species in the section on "New Gardening Plants".

Outside the British Isles, in Ghent in 1845, the German-born botanist and taxonomist Michael Joseph François Scheidweiler (1799–1861) founded *Flore des Serres et des Jardins de L'Europe* with Charles Lemaire (engraver for Redoute's masterful works) and Louis Benoit Van Houtte (1810–1876), proprietor of Establishment Van Houtte. The "Establishment Louis van Houtte" was, at that time, the largest nursery in existence, not only in Belgium but on the whole continent, and was famous for its splendid catalogues, published by its own printing department. *Flore des Serres*, appearing monthly for almost 40 years until 1888, was illustrated with chromolithographs, designed and printed in the large printing office situated in the middle of van Houtte's gardens, and it presented the new exotic plants

³⁷ For a detailed review of the journal's history, see Jenny, R. 2008. *The Botanical Cabinet*. *Lankesteriana* 8(2): 43-52.

³⁸ By 1851, the circulation of *The Gardeners' Chronicle*, with its large international readership, was given as 6500, compared with that of the *Observer* at 6230, and *The Economist* at 3826 copies.

◆ Figure 78. A – William Curtis (1746–1799), the founder and first editor of the *Botanical Magazine; or Flower-Garden Displayed*. B – William Jackson Hooker (1785–1865), the first Director of the Royal Botanic Gardens, Kew, editor of the *Botanical Magazine* from 1827 to 1865. C – Joseph Dalton Hooker (1817–1911), Charles Darwin's closest friend, who edited the *Botanical Magazine* after 1865. D – John Lindley (1799–1865), the editor of *Edward's Botanical Register* from 1829 to 1847.

A



B



C



D





Figure 79. *Maxillaria acicularis*, one of the numerous orchids painted by Walter Hood Fitch for the *Botanical Magazine*.



Figure 80. *Lepanthes tridentata*, plate 1762 from *Edward's Botanical Register*, painted by Mrs. Drake to illustrate a new species described by Lindley.



Figure 81. *Psychopsis papilio*, from Paxton's *Magazine of Botany and Register of Flowering Plants*, volume 4, page 174 (1838).



Figure 82. *Coryanthes albertinae*, from *Flore des Serres et des Jardins de L'Europe*, volume 8, page 744 (1852-1853).



Figure 83. *Caytleya guttata* var. *leopoldii*, from Linden's *Pescatorea: Iconographie des Orvchidés* 1: t. 43 (1860).

◆➔ Figure 84. *Ionopsis utricularioides*, from *Lindenia* 3: 39 (1887).



IONOPSIS PANICULATA LINOL. var. *MAXIMA*

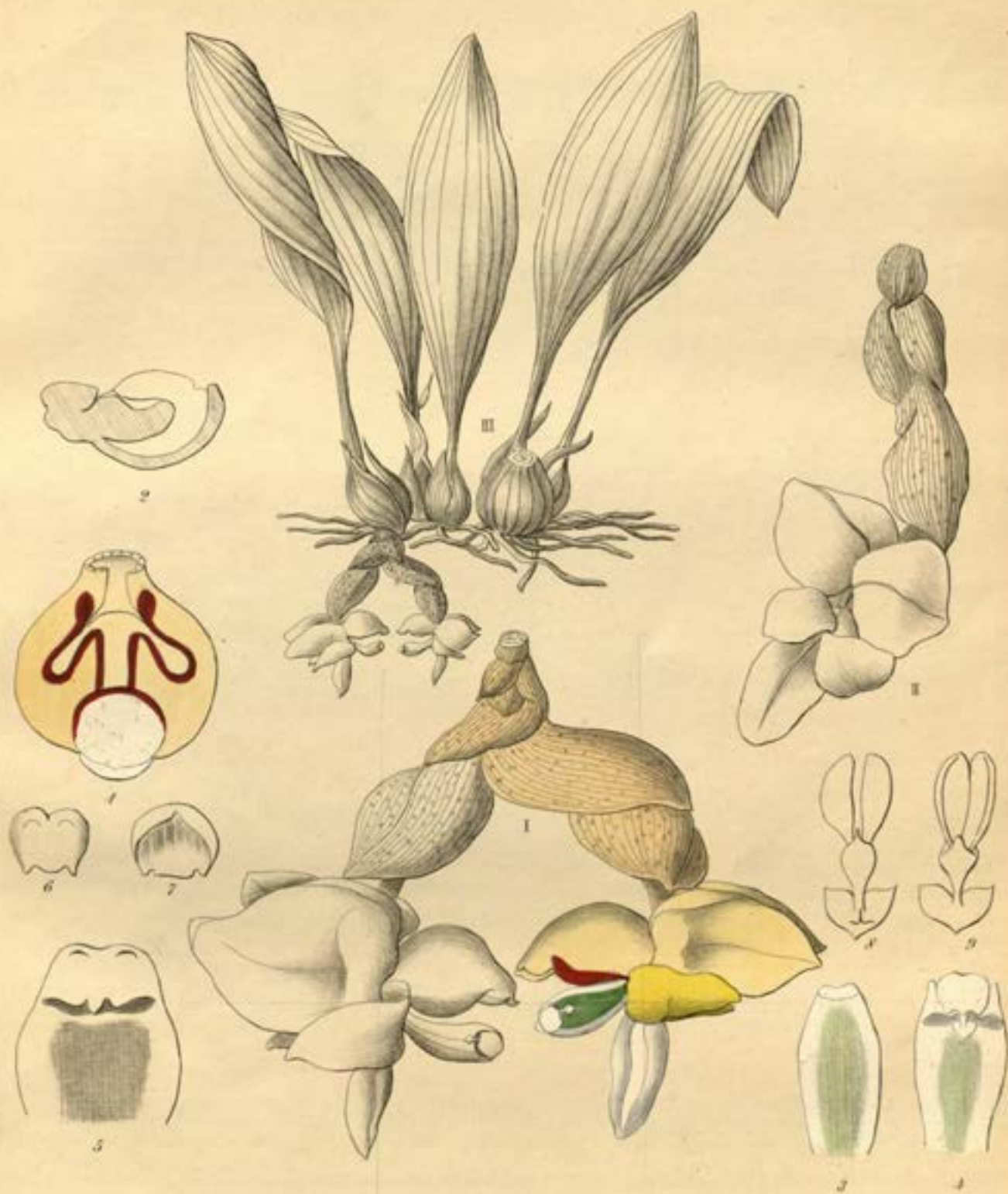


Poneria mesocopia Endl. & Rehb. f.



◆ Figure 85. *Ponera* (= *Scaphyglottis*) *mesocopis*, from *Xenia Orchidacea* 2 (1874).

Figure 86. *Ponera* (= *Scaphyglottis*) *mesocopis*, Endrés drawings of the type plant, used to engrave the plate of *Xenia Orchidacea* (W 20731).



Stanhopea pulchra Rehb. f.



◆ Figure 87. *Stanhopea pulla*, from *Xenia Orchidacea* 3 (1875).

Figure 88. The “mournful Pleurothallis”, *Pleurothallis luctuosa*, from *Xenia Orchidacea* 3 (1878).



Figure 89. *Benzingia reichenbachiana* (as “*Chondrorhyncha lamellata*”), unpublished plate intended for *Xenia Orchidacea*.

◆ Figure 90. *Lockhartia hercodonta*, unpublished plate intended for *Xenia Orchidacea*.



Lycaste Dowiana Endr. Rehb. fil.

? Endro ul ?

(mostly orchids) discovered for van Houtte by his own team of explorers. The talents and skills of the editors, experienced botanists, botanical engravers and nurserymen, gave life to one of the finest horticulture journals produced in Europe at the time. Eventually, this beautiful periodical boasted more than 2000 coloured plates³⁹ in 23 volumes (FIG. 82). From 1848, in Brussels, Scheidweiler also produced the *Journal d'horticulture pratique, ou Guide des amateurs et jardiniers*, which ran until 1861. In 1854, Jean-Jules Linden (1817–1898) began the publication of *Pescatorea: Iconographie des Orchidees*, also in Brussels, eventually issued in 12 monthly fascicles, with Gustave Adolphe Lüddemann as co-editor. This large format work was named in honor of Jean-Pierre Pescatore, one of the earliest orchid amateurs. It was illustrated with beautiful hand-coloured lithographic plates (FIG. 83), and featured texts by the French botanist Jules Émile Planchon (1823–1888) and by H. G. Reichenbach, dealing with a wide-ranging selection of the most beautiful orchids then in cultivation, and which originated from all the tropical regions of the world. This would be followed in 1891 by *Lindenia: Iconographie des Orchidées*, a tribute to J.-J. Linden by his son Lucien, with texts by Émile Rodigas and R. A. Rolfe, printed in Ghent, until 1897, in 13 parts (each containing 24 plates) in seven folio volumes (FIG. 84). But it was too late to be an inspiration to Endrés.

Most of the horticultural journals and magazines of the late nineteenth century were printed in large format, lavishly illustrated by the best botanical artists of the time, and featured the work of recognized botanists. All these publications shared a common goal: to focus on new and interesting plants and give the reader a “view” into science – an educated, comprehensible and tempting science, however. Here, plant descriptions were as elaborate and sumptuous as the splendid coloured lithographs, complemented by detailed notes on the natural habitats of the species and how to cultivate them. All in all, many of the best 19th-century illustrated journals were in fact catalogues, conceived and printed to sell plants.

The target of these beautiful catalogues was the wealthy amateur who could afford expensive publications and the novelties presented in each new release as well. Illustrated books and journals on orchids were in the libraries of the aristocracy and the well-off bourgeoisie, who owned the best collections in Europe. As Carlos Ossenbach shows in another chapter of this book, Endrés maintained a close friendship with Moritz Reichenheim in Berlin, possessor at that time of one of the best orchid collections in Germany, and he surely had access to his rich library. These sophisticated publications were, probably, the models Endrés had in mind while preparing his meticulous descriptions and botanical drawings.

We do not know if Endrés knew or had the chance to see the first issues of his friend and mentor’s masterpiece, *Xenia Orchidacea* – the three volumes of which Reichenbach began

³⁹ The plates of *Flore des Serres* are distinguished by the circular signature running up the lower side (“Off. lith. et pict. in Horto van Houtteano”).

⁴⁰ Jenny, R. 2011. The Black Orchid and the *Xenia Orchidacea*. *Orchid Digest* 75(1): 18–22. Three volumes were published, each in 10 deliveries with text and 10 plates. Volume one was published from April 1854 to October 1858, Volume two from April 1862 to December 1874 and Volume three from May 1878 to February 1900.

◆ Figure 91. Captain Dow’s *Lycaste*, *Lycaste dowiana*, unpublished plate intended for *Xenia Orchidacea*.

publishing in April 1854 – as no mention to this work appears in his correspondence⁴⁰. However, he surely would have liked it. A number of Costa Rican orchids, based on the collections by the Dane Anders Sandøe Oersted and the Pole Joseph Ritter von Rawicz Warszewicz, were featured in the first volume, bound in late 1858: *Warscewiczella discolor*, *Lepanthes erinacea*, *L. lindleyana*, *L. turialvae*, *Mesospinidium warscewiczii*, *Miltoniopsis warscewiczii*, *Odontoglossum oerstedii*, and *Oerstedella centradenia*. In the last issue in volume 2, December 1874, a plant from Endrés is described and illustrated for the first time in *Xenia Orchidacea*⁴¹: *Ponera mesocopis* (FIG. 85), based on his specimens and, at least in part, on the descriptions and drawings he had sent to Reichenbach with the proposed name of “*Ponera cirrhata* Endr. Rchb.f.” (FIG. 86)⁴². Maybe Endrés saw the printer’s proofs before sailing to the United States. Surely, he would have been proud to see his work featured in the third volume of *Xenia*, where his *Epidendrum phyllocharis*, *Ornithidium strumatum*, *Pleurothallis luctuosa*, *Pleurothallis moschata*, *Pleurothallis polylyria*, *Restrepia reichenbachiana*, *Restrepia prorepens*, *Stanhopea pulla* (FIG. 87) and *Trichopilia dasyandra* were illustrated with his own drawings⁴³. But, as the name of the “mournful *Pleurothallis*” (FIG. 88) would remind us⁴⁴, Endrés died before the first issue of *Xenia* 3 was printed in May 1878. His drawings, however, were obviously perfectly suited for *Xenia*. Several others were ready for the printer but remained unpublished in Reichenbach’s legacy in Vienna⁴⁵ (FIG. 89–91).

The almost obsessive detail with which Endrés illustrated and described the gynostemium, pollinaria and anthers of the flowers is particularly worth of a note. It is unlikely that he knew of Charles Darwin’s, “*On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects, and on the Good Effects of Intercrossing*”. This seminal contribution, which laid the foundation for any further study on the complex biology of orchid pollination, was published in London only in May of 1862, and probably less than 2,000 copies were printed (FIG. 92). The second edition of Darwin’s book, with a shortened title, is dated 1877, but by that time Endrés was already dead. It could be that, through his friendship with Reichenbach, Endrés had access to a copy of his doctoral dissertation, “*De polliniis Orchidearum genesi ac structura et de orchideis in arte ac systema ridigendis*”, which the German taxonomist defended and published in Leipzig in 1852 (FIG. 93). By the mid-nineteenth century, the structure and shape of the reproductive organs of orchidaceous plants had been only summarily investigated by Robert Brown (1773–1858), who in 1810 established five sections within the Orchidaceae, based on

⁴¹ Reichenbach, H. G. 1874. *Xenia Orchidacea - Beiträge zur Kenntniss der Orchideen*, vol. 2: 22, t. 200. Leipzig, F.A. Brockhaus.

⁴² In Reichenbach’s herbarium, at the Naturhistorisches Museum of Vienna, an original drawing by Endrés of the plant habit of *Ponera* (= *Scaphyglottis*) *mesocopis* is conserved, which was used to prepare the lithographic plate for *Xenia Orchidacea* (W-0020731), and detailed floral sketches of “*Ponera cirrhata*” (W-0020736).

⁴³ Reichenbach, H.G. & W. L. Kränzlin. 1900. *Xenia Orchidacea - Beiträge zur Kenntniss der Orchideen*, vol. 3. Leipzig, F.A. Brockhaus.

⁴⁴ Pupulin, F., D. Bogarin & M. Fernández. 2011. Illustrations and Studies in Neotropical Orchidaceae. 2. A note on *Pleurothallis luctuosa* (Pleurothallidinae), with a new species. *Annalen des Naturhistorischen Museums in Wien* B, 112: 239-252.

⁴⁵ Pupulin, F. 2009. *Benzingia reichenbachiana*. *Curtis’s Botanical Magazine* 26: 237–244.

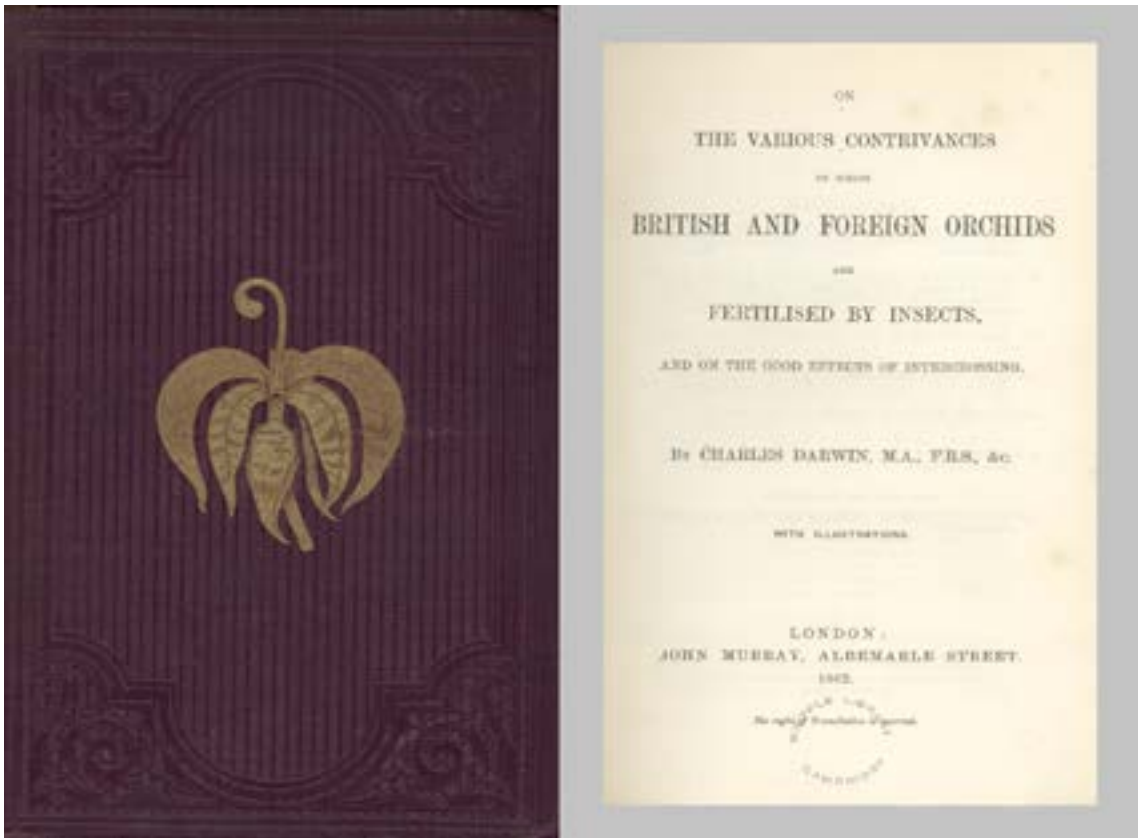


Figure 92. Darwin's classical work on orchid pollination. London, 1862.

characteristics of the anther and the pollinia, and by Louis Claude Marie Richard (1754–1821), who, in his *De Orchideis Europaeis Annotationes* for 1817, first accurately described the structure of the gynostemium and illustrated sectile, granular, and hard pollinia. Eventually John Lindley (1799–1865), rightly considered the father of orchidology, utilized the features of the anther and the pollinarium to circumscribe major orchid groups in his *The Genera and Species of Orchidaceous Plants*, published between 1830 and 1840.

The microscopic organs of the orchid flowers, however, were far from fully understood or even properly illustrated. The characteristics of the pollinia and the associated structures were usually overlooked by botanical artists and rarely taken into account in plant descriptions. An exception was the magisterial work by Franz (Francis) Andreas Bauer (1758–1840), who illustrated in detail the structure of the pollinia of *Orchis mascula*, *Cephalanthera grandiflora* (= *C. damasonium*), *Brassia maculata* and *Satyrium pustulatum*. Occasional illustrations of pollinaria can be seen, such as those of *Cephalanthera* by Curt Polycarp Joachim Sprengel (1766–1833), or those of *Epidendrum elongatum*, *Calanthe veratrifolia* and *Neottia ovata* (= *Listera*), presented by C. Julius Fritsche in his dissertation on pollen, and published in 1837 in the *Mémoire de l'Académie Impériale des Sciences de St. Pétersbourg*. Reichenbach himself was often quite unhappy with the illustrations of pollinaria prepared by botanical artists. Even when he was working with some of the most talented illustrators of the Victorian era (as is

DE POLLINIS ORCHIDEARUM GENESI AC
STRUCTURA ET DE ORCHIDEIS IN ARTEM AC
SYSTEMA REDIGENDIS.

COMMENTATIO

QUAM

EX AUCTORITATE

AMPLISSIMI PHILOSOPHORUM ORDINIS

DIE MENSIS JULII DECIMO HORA DECIMA MDCCCLII

ILLUSTRIS ICTORUM ORDINIS CONCESSU

IN AUDITORIO JURIDICO

PBO VENIA DOCENDI IMPETRANDA

PUBLICE DEFENDET

H. G. REICHENBACH.

bet 1852

LIPSIAE

SUMPTIBUS F. HOFMEISTER

MDCCCLII.

Figure 93. Front cover of Reichenbach's dissertation on the structure of pollinaria. Leipzig, 1852.

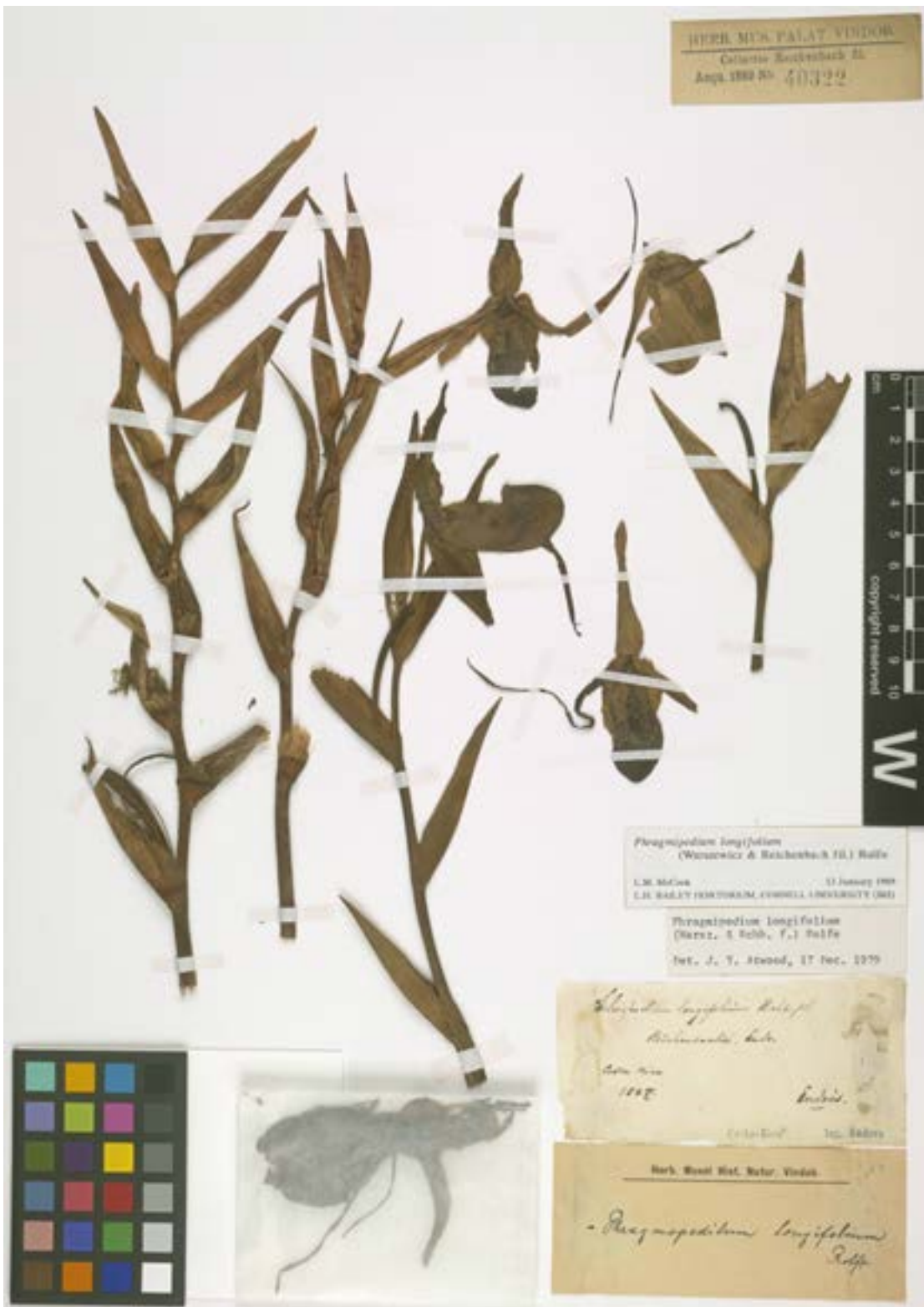


Figure 94. Inflorescences of *Phragmipedium longifolium*, annotated by Endrés with the name «*Selenipedium longifolium* Rchb.fil. / *Reichenbachii* Endr. / Costa Rica / 1867». It probably corresponds to one of the plants upon which Endrés wanted to describe his “*Selenipedium reichenbachii*”.



Figure 95. The holotype of *Sievekingia suavis*, with Endrés sketches and Reichenbach manuscript description. W0020709.

the case of Walter Hood Fitch, 1817–1892), he sometimes required his own sketches of the pollinaria – which he considered the closest to reality⁴⁶ – to be included in the final lithographs. The work carried out in Costa Rica by Endrés is, in this perspective, extraordinarily modern, and the level of detail he attained in illustrating pollinaria from orchid flowers has seldom been equaled even in contemporary botanical illustrations. Often illustrated in two or more views, the pollinaria by Endrés are so precise that they are diagnostic of their species, and are comparable to modern illustrations obtained with the aid of a stereoscopic microscope fitted with a drawing tube (*camera lucida*) or with a photographic camera.

Endrés at work

How did Endrés work? From his conserved writings and drawings, it is quite evident that, from the beginning of his work in Costa Rica, he was following a systematic plan. Most of Endrés' specimens in the Reichenbach's herbarium have no indication of the collecting year, but they often refer to the month (or months) in which the plants flowered, probably to maintain records on species phenology. It is quite probable, however, that Endrés made one or more shipments of his more recent gatherings to Reichenbach each year, so that the botanist in Hamburg obviously knew when they were collected. "June 5", annotated by Endrés on a specimen of *Lepanthes fascinata*⁴⁷, means nothing to us, but Reichenbach received this specimen in that specific year. If he maintained no records of Endrés' consignments (as apparently he did not), this information was lost at that time, or maybe it was lost subsequently when the specimens were eventually mounted in Vienna 25 years after his death. Nevertheless, from about one hundred properly dated specimens, we have an idea of Endrés' planned work. In 1867–1868 he collected most of the species of *Dichaea*: his *Dichaeas* Nos. 1, 4, 8, 32, and 38, in 1867, and again 1, 8, and 3, 5, 6, 9, 11, 12, 13, 14, 15, 23, 26, 29 in "1867–1868". The Zygopetalinae orchids of the group *Huntleya* were mainly prepared in 1869–1870, when he collected his "Zygopetalums" Nos. 2, 4, 5, 6, 8, 9, 10, 12. In those same years he made the only dated collections of *Epidendrum*; Nos. 37, 39, 42 being collected between December 1869 and August 1870. The first dated specimen of *Lepanthes* (No. 33, *L. candida*), was collected in 1867, and the greatest part of the other specimens bear dates between May 1867 and July 1870. No dated specimens are known after "June–July–August" 1872, when Endrés collected "*Fregea batemanni*" (= *Sobralia amabilis*), according to his mention in a letter to Capt. Dow⁴⁸.

Endrés apparently used two different numerical systems to identify his specimens, neither of the two strictly corresponding to collecting numbers in a modern way. On one hand, the field numbers he assigned to the specimens are apparently not consecutive, so we have, for example, No. 195, assigned to "Zygopetalum 1" (= *Warczewiczella discolor*) in

⁴⁶ See, for example, the notes by Reichenbach under the plates 77 and 84, in W. W. Saunder (ed.), *Refugium Botanicum, or Figures and Descriptions from Living Specimens of Little Known or New Plants of Botanical Interest*, Vol. 2. Published in 3 parts by J. van Voorst, London, in 1869, 1872, and 1882.

⁴⁷ *Lepanthes fascinata*, W-Rehb Orch 24844. Naturhistorisches Museum, Wien.

⁴⁸ Letter to Capt. J. M. Dow, dated September 9, 1872. Cornell University, Ithaca.

⁴⁹ According to Reichenbach, however, the plant "was discovered so early as June, 1867, in Costa Rica, by M. Endrés". *The Gardeners' Chronicle* 1872, p. 1099.

March 1867, but No. 100, “*Batemannia burtii*” (= *Huntleya*), was collected in 1869–1870⁴⁹. *Lepanthes ciliisepala* (“*Lepanthes* 34”), of June–September 1867–1868, is numbered 504, but *Lepanthes excedens*, with a lower number (No. 342), was gathered in April–December 1869–1870. As early as 1868, he began assigning the same “collecting number” to what he considered to be the same species. *Dichaea fragrantissima* subsp. *eburnea* from “San Ramón, road to San Carlos”, collected in October–November 1868, has the same number, 161, as two specimens of the same species collected at Quebrada Verde in 1867⁵⁰. According to this system, and irrespective of the collecting dates, number 9 (field number) is always assigned to *Dresslerella pilosissima*, 23 to *Acostaea costaricensis*, 33 to *Lepanthes candida*, 35 to *Homalopetalum pumilio*, 504 to *Lepanthes ciliisepala*, 557 to *Benzingia reichenbachiana*, 606 to *Lepanthes bradei*, and so on.

On the other hand, these repeated numbers are not to be confused with “classification numbers”, which Endrés used effectively, but which followed a different numeration. As he was interested in producing a systematic treatment of Costa Rican orchids, he created a system of consecutive numbers assigned to the different species of each group. These numbers are different from the field numbers, even though in some cases they almost have the same function. Let us see a couple of examples. According to the classification proposed by Reichenbach, most of the species of *Zygopetalinae* with conduplicate leaves (in Costa Rica essentially without pseudobulbs) were assigned to a broadly conceived genus *Zygopetalum*. Endrés classified, described, and illustrated 12 species of “*Zygopetalum*” from Costa Rica⁵¹, only one of which was eventually described as new in the genus *Batemannia*⁵². He apparently classified 70 species of his beloved genus *Lepanthes* with this system (plus one with the anomalous number 299), for 47 of which we have numbered materials, both

⁵⁰ “*Dichaea* 1, No. 161” (W-Rchb Orch 38612), and “*Dichaea*, No. 161” (W-Rchb Orch 23565; W-Rchb Orch 36706) respectively. Naturhistorisches Museum, Wien.

⁵¹ “*Zygopetalum* 1” = *Warczewiczella discolor*; “*Zygopetalum* 2” = *Huntleya burtii*; “*Zygopetalum* 3” = *Pescatorea cerina*; “*Zygopetalum* 4” = *Cochleanthes aromatica*; “*Zygopetalum* 5” = *Stenotyla picta*; “*Zygopetalum* 6” = *Chondroscaphe bicolor*; “*Zygopetalum* 7” = missing; “*Zygopetalum* 8” = *Kefersteinia lactea* (and *K. parvilabris*); “*Zygopetalum* 9” = *Kefersteinia wercklei*; “*Zygopetalum* 10” = *Benzingia reichenbachiana*; “*Zygopetalum* 11” = *Chaubardiella pacuarensis*; “*Zygopetalum* 12” = *Kefersteinia costaricensis*.

⁵² In the series “New Garden Plants” of *The Gardeners’ Chronicle* for 1872, H. G. Reichenbach published *Batemanian burtii* Endrés & Rchb.f. According to the author, the plant “was discovered so early as June, 1867, in Costa Rica, by M. Endres, who proposed to name it in honor of one of his acquaintances” (p. 1099).

⁵³ “*Lepanthes* 3, *Lepanthes umbonifera*” = *Lepanthes umbonifera*; “*Lepanthes* 4” = *Lepanthes elata*; “*Lepanthes* 6” = *Lepanthes horichii*; “*Lepanthes* 7” = *Lepanthes jimenezii*; “*Lepanthes* 8” = *Lepanthes confusa*; “*Lepanthes* 9, *Lepanthes pulcherrima*” = *Lepanthes pulcherrima*; “*Lepanthes* 10, *Lepanthes minutissima*” = *Lepanthes minutissima*; “*Lepanthes* 11” = *Lepanthes poasensis*; “*Lepanthes* 13” = *Lepanthes blephariglossa*; “*Lepanthes* 14” = *Lepanthes fimbriata*; “*Lepanthes* 16, *Lepanthes inversifolia*” = *Lepanthes comet-halleyi*; “*Lepanthes* 21” = *Lepanthes eximia*; “*Lepanthes* 24, *Lepanthes gracillima*” = *Lepanthes gracillima*; “*Lepanthes* 25” = *Lepanthes decipiens*; “*Lepanthes* 28” = *Lepanthes erinacea*; “*Lepanthes* 30” = *Lepanthes sannio*; “*Lepanthes* 31, *Lepanthes mirabilis*” = *Lepanthes posthon*; “*Lepanthes* 33” = *Lepanthes tipulifera*; “*Lepanthes* 34” = *Lepanthes ciliisepala*; “*Lepanthes* 36” = *Lepanthes horrida*; “*Lepanthes* 37, *Lepanthes nanneana*” = *Lepanthes bradei*; “*Lepanthes* 38” = *Lepanthes turrialvae*; “*Lepanthes* 39” = *Lepanthes costaricensis*; “*Lepanthes* 40” = *Lepanthes estrellensis*; “*Lepanthes* 41” = *Lepanthes blepharistes*; “*Lepanthes* 42” = *Lepanthes elegans*; “*Lepanthes* 43” = *Lepanthes coeloglossa*; “*Lepanthes* 44” = *Lepanthes disticha*; “*Lepanthes* 45, *Lepanthes tabarcae*” = *Lepanthes inescata*; “*Lepanthes* 46” = *Lepanthes*

as drawings and/or *exsiccata*⁵³.

To a number of species that he collected, Endrés apparently assigned no “classification numbers”, i.e. *L. chiriquensis*, *L. circularis*, *L. coeloglossa*, *L. dichroma*, *L. fascinata*, *L. grandiflora*, *L. guanacastensis*, *L. hamulifera*, *L. inornata*, *L. myiophora*, *L. parvilabia*, *L. purpurea*, *L. pygmaea*, *L. similis*, and *L. stenorrhyncha*. When these are included, we have a total of 62 species of *Lepanthes* collected by Endrés, which astonishingly correspond to over two thirds of all the taxa known for Costa Rica.

We do not know if he personally sent live specimens to Reichenbach before being hired by Veitch to collect orchids for the family’s nurseries. Reichenbach received Central American plants via Veitch from at least 1871, when he had to hand both dried and living specimens, collected in Chiriquí by Gottlieb Zahn (at the time employed by Veitch) along his route from Panama to Costa Rica⁵⁴. What is sure is that in the *Gardeners’ Chronicle* and in his *Xenia Orchidacea*, Reichenbach described several species on the basis of plants grown at the Hamburg Botanical Gardens, originally collected by Endrés in Costa Rica, which he had probably obtained through the living collections of Messrs. Veitch in Chelsea.

Considering the high number of orchids that Endrés was able to illustrate in detail, there is no doubt that he had to cultivate the plants until flowering. As Ossenbach pointed out in another chapter, the small plot of land he bought in San Ramón was probably used for this purpose. Judging by his remaining drawings, Endrés illustrated the same specimen, and sometimes different plants of the same species, many times, and he gave the same number in his “General Collection of Orchids” to all of them⁵⁵.

From whatever point of view you want to approach the figure of Endrés, there is no doubt that he had exceptional talents and exceptional willpower. Based on my own experience, even working with a modern stereomicroscope fitted with a *camera lucida*, you will not spend less than two to three hours making a complete preliminary sketch of a miniature orchid. Endrés had only a simple microscope at his disposal (more on this point in the chapter on Endrés the illustrator), and he had to draw freehand. This means that he probably had to spend more than three hours on each subject. He probably was not able to

orbella; “Lepanthes 47, Lepanthes elegans” = *Lepanthes edwardsii*; “Lepanthes 50, Lepanthes muellneriana” = *Lepanthes candida*; “Lepanthes 51” = *Lepanthes acoridilabia*; “Lepanthes 52” = *Lepanthes mystax*; “Lepanthes 53” = *Lepanthes falcifera*; “Lepanthes 54” = *Lepanthes wendlandii*; “Lepanthes 55” = *Lepanthes tridens*; “Lepanthes 56” = *Lepanthes dotae*; “Lepanthes 59” = *Lepanthes lindleyana*; “Lepanthes 63” = *Lepanthes inescata*; “Lepanthes 64, Lepanthes limbellata” = *Lepanthes limbellata*; “Lepanthes 65” = *Lepanthes deformis*; “Lepanthes 70” = *Lepanthes atrata*; “Lepanthes 299, Lepanthes guardiana” = *Lepanthes guardiana*.

⁵⁴ Reichenbach, H. G. 1871. New garden plants. *Gardeners’ Chronicle* 1871: 834. 1871. It is not clear if the type specimen of *Masdevallia attenuata* collected by Zahn was found in Costa Rica (as stated by Reichenbach) or in Panama. According to the *Hortus Veitchii*, Zahn drown attempting to cross a river while traveling to Costa Rica; see also Smith, C. & F. Pupulin 2011. Contributions to a taxonomic revision of *Masdevallia* (Orchidaceae: Pleurothallidinae) in Costa Rica. A note on *Masdevallia attenuata*. *Harvard Papers in Botany* 17: 25–38.

⁵⁵ Because of this double system of numeration, and the frequent duplication of “field numbers”, Endrés collections should be always cited in association with the collecting year and, preferably, with the sheet number of Reichenbach herbarium or the recently assigned number of the general collection at the Naturhistorisches Museum Herbarium.

work after five o'clock in the afternoon, when in Costa Rica there is not enough daylight to see through the lenses of a microscope, and there was no electricity in San Ramón. You will need at least another three to four hours to make a fair copy from your rough sketches; two hours more to prepare the first draft of a botanical description, and another hour to have it cleaned for sending. Consider the time needed to prepare your dried specimens, to label and pack them, and you will have, at a very conservative estimate, ten to eleven working hours – roughly a day – per plant. Before that, you have to find and collect your plants. In the case of Endrés in the Costa Rica of the nineteenth century, this was done by means of long and difficult journeys on foot or on horseback. Once you find them, you still have to carefully grow your orchids for months, waiting for a flower...

If you have ever had a chance to see the delicate plants of the species *Telipogon* in their natural habitat, or those small Pleurothallids which grow in the cool and windy highlands of the Costa Rican mountains, you must know that they are unable to survive long trips, and many are definitively not suitable for cultivation. In many cases, Endrés had to draw his collections and prepare their descriptions *in situ*, working in the worst conditions imaginable for this purpose.

But then, if you just work, with no other interests beside orchids, if you have no family, no holidays, and almost no social life, if you just organize your entire life around the study of orchids, and you need no rest, you may perhaps work on five hundreds plants in five years. Endrés did double that.

Costa Rican orchidology

In 1869 the name of Endrés (erroneously spelled “Enderes”) appeared for the first time associated with a note prepared for *The Gardeners' Chronicle & Agricultural Gazette* by his revered professor in Hamburg. Here, in discussing the taxonomy of his *Selenipedium longifolium*⁵⁶, Reichenbach stated: “...Much later, in 1867, we obtained an accurate sketch, and a very faithful description of *Selenipedium Reichenbachii*, from M. Enderes [sic], who rediscovered the plant in a very inaccessible place. [...] It rather appears (as M. Enderes [sic] kindly informed us), that but one flower opens at once”⁵⁷. According to the same Reichenbach, the name suggested by Endrés in his honor was apparently quite familiar in horticultural circles. In his retail list of new and rare plants for 1869, William Bull (1818 – ca. 1902) offered plants of *Phragmipedium longifolium* under the name of *Cypripedium reichenbachii*⁵⁸.

Both the sketches and the “faithful” description by Endrés were apparently lost, as in Reichenbach's herbarium in Vienna only two specimens of *Phragmipedium longifolium* are conserved today. One of them, without Endrés' original label, bears only the date of 1867. The other, which includes several inflorescences (FIG. 94), has a manuscript note by

⁵⁶ Reichenbach originally described the species, together with J. Warszewicz, in the *Botanical Zeitung* for 1852 (Vol.10: 690) with the name *Cypripedium longifolium*. In 1854 he transferred it to *Selenipedium* in the first release of 1852 *Xenia Orchidacea* (1: 3). The species is currently assigned to the genus *Phragmipedium*.

⁵⁷ Reichenbach, H. G. 1869. New plants. *Gardener's Chronicle* 1869: 1205-1206.

⁵⁸ *ibid.*

Endrés: "Selenipedium longifolium Rchb.fil. / Reichenbachii Endr. / Costa Rica / 1867", and probably corresponds to one of the specimens on which Endrés based his proposed description of "Selenipedium reichenbachii". As no diagnosis or description was ever published of this name, which is only cited in Reichenbach's treatment of *Selenipedium longifolium* (where it is considered a synonym), the name *S. reichenbachii* should be technically considered a *nomen nudum*.

The year after, it would be his German mentor, H. G. Reichenbach, who described the first new orchid based on a plant collected by Endrés, giving him back the honor of a dedication: on October 15, 1870, *Stelis endresii* was published in the *Gardeners' Chronicle*. According to Reichenbach, "it was discovered in Costa Rica by M. Endres, and flowered in the Hamburg Botanic Garden in December 1869 and July 1870." In 1871, Reichenbach described another species based on a Costa Rican discovery by Endrés, *Sievekingia suavis*, for which he had to create a totally new orchid genus (FIG. 95).

That same year, in the edition of the *Gardeners' Chronicle* for September 11, 1871, Endrés published his first new plant with Reichenbach: *Polycycnis gratiosa*, one of the most beautiful species of the Costa Rican flora. By the end of the year, three additional new orchid species co-authored by Endrés and Reichenbach would see the light of day: *Trichocentrum caloceras* (30 September), *Pleurothallis polylyria* (18 November, probably a synonym of *P. gelida* Lindl.), and *Maxillaria reichenheimiana* (30 December). The cooperation between the field botanist working in Costa Rica and the professor of botany and director of a botanical garden in Germany continued over the following years. In 1872 they described *Lockhartia amoena*, *Pleurothallis lateritia* ("Sent to the Hamburg Botanic Garden") and *Batemannia burtii* (= *Huntleya*). In 1873 they jointly published *Brassia chlorops* (= *Ada*), based on collections by Endrés himself and J. Carmiol and on living material cultivated by Messrs. Veitch. *Ponera mesocopis* (= *Scaphyglottis*) was described in 1874 in the second volume of Reichenbach's *Xenia Orchidacea*. In August of that same year, the *Gardeners' Chronicle* published the description of *Lycaste dowiana*, dedicated to Endrés' revered friend, Capt. John Dow. *Ornithidium strumatum* was published in late December, three weeks after Endrés' death from pleurisy in Colombia. *Masdevallia reichenbachiana* (FIG. 96) and *Restrepia reichenbachiana* (= *Restrepiopsis*), the last two species which bear the common authorship of Endrés and Reichenbach, were published posthumously by the *Gardeners' Chronicle* in 1875. That same year, on May 8th, the journal published a short obituary of Endrés, promising a future account on his career by Prof. Reichenbach. This was never published.

Reichenbach, however, continued publishing the discoveries by Endrés until 1886, when he described *Sievekingia fimbriata*, the last tribute to the Costa Rican orchidology of his late friend. Other species described by him from Endrés' collections are *Maxillaria nasalis* (= *M. nasuta*) and *Zygopetalum lacteum* (= *Kefersteinia*) in 1872, *Pleurothallis fulgens* and *Restrepia dayana* (= *R. muscifera*) (FIG. 97) in 1875, *Pleurothallis endotrachys* and *Masdevallia triaristella* (= *Trisetella*) in 1876, *Dichaea diandra*, *Maxillaria caespitifica*, *Pleurothallis luctuosa*, *Restrepia prorepens* (= *Barbosella*) and *Stanhopea pulla* in 1877, *Epidendrum phyllocharis* in 1878, *Pleurothallis moschata* (= *Trichosalpinx arbuscula*) in 1881, *Epidendrum ionocentrum* (= *Prosthechea*), *Trichopilia dasyandra* (= *Cischweinfia*),

Trichocentrum pfavii var. *zonale* and *Warczewiczella picta* (= *Stenotyla*) (FIG. 98) in 1883. In the last six years of his life, Reichenbach did not publish any other new species from the hundreds Endrés had sent to him during his years in Costa Rica.

In 1886, George Nicholson (1847–1908) described the beautiful *Miltonia endresii* (= *Miltoniopsis*) in his *Illustrated Dictionary of Gardening*, noting that “Señor A. R. Endrés was the first to introduce the species in a living state to this country.” Sir Harry James Veitch (1840–1924) used another living plant originally introduced by Endrés from Costa Rica in 1783 to name *Epidendrum lindleyanum* var. *centerae* (= *Barkeria*). This was in the sixth issue of his *Manual of Orchidaceous Plants Cultivated Under Glass in Great Britain*, published in 1890. After this date, all the new orchids from material collected by Endrés were described on the basis of dried specimens or drawings conserved in the herbarium of H. G. Reichenbach, which, according to the will of its owner, remained closed to any inspection for 25 years after his death in 1889.

The first orchid botanist to have access to the orchid herbarium of Reichenbach, preserved at the Natural History Museum, Vienna, was Friedrich (Fritz) Wilhelm Ludwig Kränzlin (1847–1934), who studied part of the newly available material in 1919. The following year, he published *Telipogon buenavistae*, *T. christobalensis*, *T. endresianus* and *T. minutiflorus* in the *Annalen des Naturhistorischen Museums in Wien*⁵⁹. In 1921, in his “*Masdevalliae novae*”⁶⁰, he described ten new species of Pleurothallidinae from Endresian collections: *Cryptophoranthus endresianus*, seven species of *Masdevallia* (*M. anaristella*, *M. anura*, *M. aperta*, *M. funebris*, *M. molossoides*, *M. superflua*, *M. zahlbruckneri*), now mostly synonyms or assigned to other genera, and two species of *Scaphosepalum* (*S. endresianum* and *S. naviculare*, both synonyms of *S. anchoriferum*).

That same year, the greatest German orchidologist of his time, Rudolf Schlechter, after studying the collections of Endrés kept in Reichenbach’s herbarium, described *Chondrorhyncha endresii* (= *Chondroscaphe bicolor*), *Chondrorhyncha reichenbachiana* (= *Benzingia*), *Habenaria endresiana*, and created a new genus to honor Endrés, *Endresiella*, typified by *E. zahlbruckneriana*. “It gives me great satisfaction at this point to be able to dedicate a quite exceptional new orchid genus to the well-known researcher of the orchid flora of Costa Rica, Endres, with his wonderfully executed drawings which occur in his collections, and which to a large extent remained un-worked, in their determinations in the Reichenbach herbarium”, wrote Schlechter in his sincere admiration for Endrés’ work⁶¹. Unfortunately, the genus had been already described by Friedrich K. Lehmann in 1897 under the name of *Trevoria*⁶².

⁵⁹ Kränzlin, F. W. L. 1920. Beiträge zur Kenntnis der Gattung *Telipogon* H.B.K. *Annalen des Naturhistorischen Museums in Wien* 33: 9-38.

⁶⁰ Kränzlin, F. W. L. 1920. *Masdevalliae novae*. *Repertorium Specierum Novarum Regni Vegetabilis* 17: 411-438.

⁶¹ Schlechter, F. R. R. 1921. *Orchidaceae novae et criticae*, Decas LXVIII. *Repertorium Specierum Novarum Regni Vegetabilis* 17: 12 - 18.

⁶² Lehmann, F. K.. 1897. New or noteworthy plants: *Trevoria chloris* n.gen.et spec. *The Gardeners’ Chronicle*, Third Series, 21: 345-346 and fig.128 (supplement).

◆ Figure 96. *Masdevallia reichenbachiana*, from *Lindenia* 6: pl. 250 (1893).



MASDEVALLIA REICHENBACHIANA ROXBURGH



Figure 97. *Restrepia muscifera*, from Curtis' Botanical Magazine, pl. 5257 (1861).

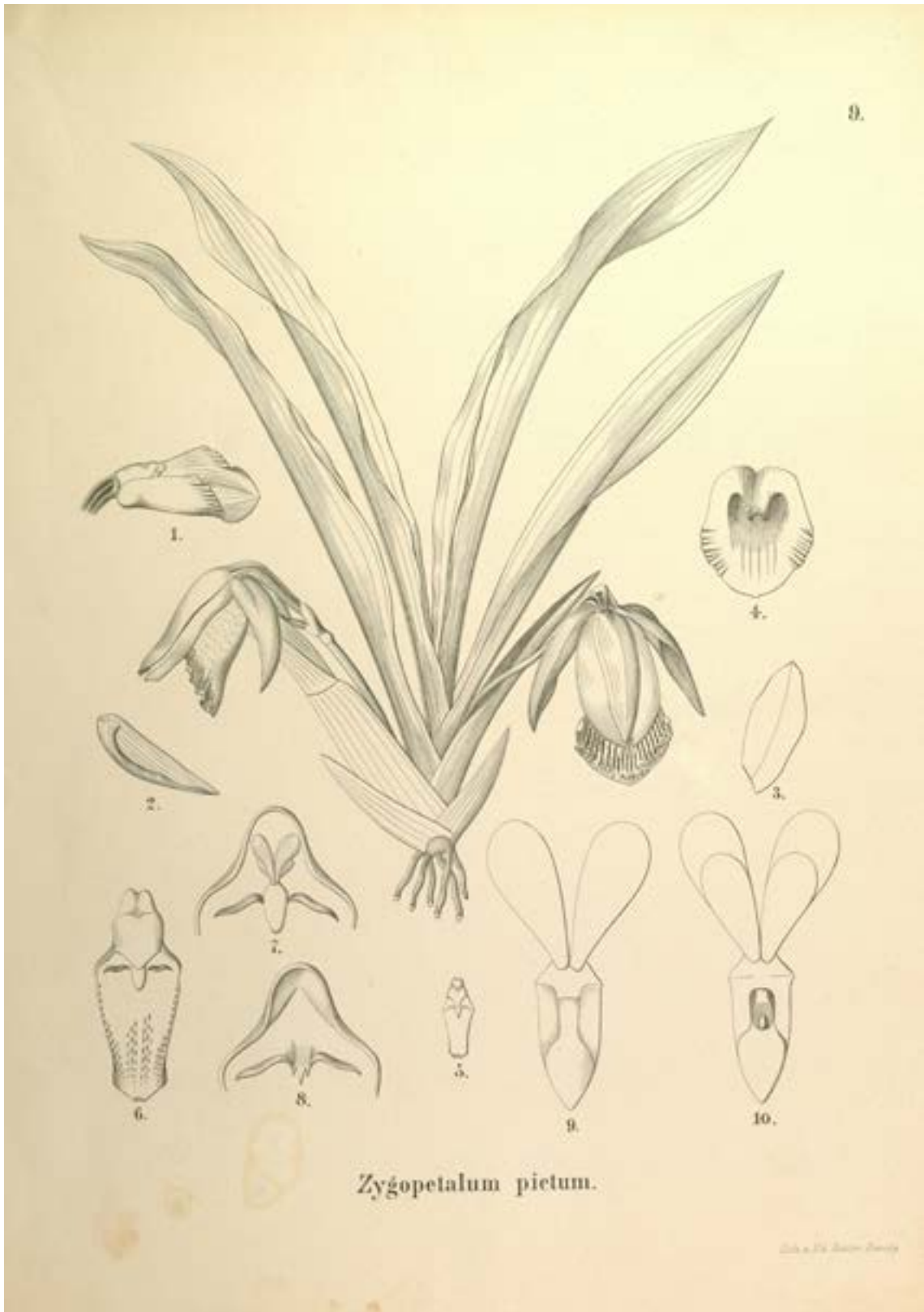


Figure 98. *Stenotyla picta*. Unpublished plate, intended for *Xenia Orchidacea*, based on a sketch by Endrés.

It was Kränzlin, however, who took the greatest advantage of the scrutiny of the materials sent by Endrés to Reichenbach, whose remains were buried among a mass of herbarium materials. In 1922, in his treatment of the oncioid orchids for Adolf Engler's *Pflanzenreich*⁶³, Kränzlin described *Cryptarrhena quadricornu* (= *guatemalensis*), fourteen species of the genus *Oncidium* (*O. asparagoides*, *O. calyptostalix*, *O. castaneum*, *O. cheirophoroides*, *O. chelidonizon*, *O. dielsianum*, *O. henrici-gustavi*, *O. macrorhynchum*, *O. microphyton*, *O. obryzatoides*, *O. rechingerianum*, *O. sclerophyllum*, *O. stenobulbon* and *O. tetraskelidion*) – today mostly synonyms of previous described species – *Sigmatostalix macrobulbon* and *S. poikilostalix* Kraenzl., and *Solenidium endresii* (= *Mesospinidium warscewiczii*). The following year, in his monograph on the pseuromonopodial orchids, written for the same work⁶⁴, he added three species of *Dichaea* (*D. cryptarrhena*, *D. dammeriana* and *D. glabrescens*) and *Lockhartia grandibractea*, until recently erroneously considered a later name for the species Endrés and Reichenbach had described 50 years before as *Lockhartia amoena*.

The name of Endrés as a botanical author is also associated with the North American orchidologist, Carlyle August Luer (1922–). Between 1992 and 1999, Luer published twenty new species of Pleurothallidinae from Costa Rica, based on the detailed descriptions and illustrations prepared by Endrés 120 years before and kept in Reichenbach's herbarium⁶⁵. In the case of seven species of *Lepanthes*, the specific epithets are those originally proposed by Endrés (*L. atrata*, *L. dotae*, *L. gracillima*, *L. guardianiana*, *L. limbellata*, *L. minutissima*, *L. selliana*, *L. umbonifera*), and the taxonomic authorship includes his name. This gives a total of 22 orchid species described by Endrés alone, in cooperation with other botanists, or by other authors in acknowledgment of his original classification proposal.

Endrés' book

As we were unable to find the essential correspondence between Endrés and Reichenbach, apart from a few letters dealing strictly with their botanical interchange, we can only deduce, from several of Endrés' illustrations and botanical descriptions, that such a work was really intended, although it is not clear if a co-authorship was ever envisioned. This may perhaps explain why Reichenbach published so little of the unbelievable goldmine of orchid novelties discovered by Endrés in Costa Rican forests; he was perhaps planning to name them in their forthcoming book. Endrés, for his part, surely worked on the book. His notes

⁶³ Kränzlin, F. W. L. 1922. Orchidaceae-Monandreae, Tribus Oncidiinae - Odontoglosseae Pars II. *Das Pflanzenreich* IV. 50 (Heft 80).

⁶⁴ Kränzlin, F. W. L. 1923. Orchidaceae-Monandreae-Pseudomonopodiales. *Das Pflanzenreich* IV. 50 (Heft 83).

⁶⁵ Luer, C. A. 1992. New species in *Lepanthes* Sw. *Lindleyana* 7: 100-118. Luer, C. A. 1995. New species of *Lepanthes* from Costa Rica. *Lindleyana* 10: 133-173. Luer, C. A. 1996. New species in the Pleurothallidinae from Costa Rica. *Lindleyana* 11: 54-113. Luer, C.A. 1999. Miscellaneous new species of *Dryadella*, *Lepanthes* and *Pleurothallis*. *Icones Pleurothallidarum*, Vol.18. *Monographs in Systematic Botany from the Missouri Botanical Garden* 76: 159-181.

on the drawings and botanical descriptions make constant reference to “Volumes”, and only the project of a book explains why he was progressively refining both his descriptions and sketches in new and more accurate versions: he was preparing the final drafts for the press. To have an idea of what the book might have looked like, we may refer to the plates, based on Endrés’ drawings, published by Reichenbach in *Xenia Orchidacea* or prepared for this series (see figg. 59–61). But then, where is the book?

For a while we hoped that the final manuscript descriptions and the illustrations for the book were conserved, as a unit, in Reichenbach’s herbarium. When, in 2007, we began preparing all of Endrés’ materials for scanning – filing them separately in dedicated boxes – our hope slowly vanished. Endrés’ legacy in Vienna is made up of hundreds of apparently unrelated notes and scraps, more detailed drawings and various stages of botanical descriptions, plus almost a thousand specimens. There is, however, nothing like the manuscript of a book – not a single chapter, no introduction, no index, no plan. Nothing. Dates for the collections and collecting locations (rarely present) are without any apparent order, and the many references to his dated “volumes” do not present a coherent scheme. Where was the book?

Then, at the beginning of 2009, Prof. Christa Riedl-Dorn kindly confirmed the existence of Endrés’ manuscripts in the Archives of the Natural History Museum in Vienna. Our hope of finally seeing the long-awaited “volumes” of Endrés’ books was rekindled. Rudolf Jenny rushed to Vienna to have a first *in vivo* scrutiny of the manuscripts. What he found, however, were another three hundred loose pages, most including plant descriptions, with ten more illustrations of *Lepanthes* and *Pleurothallis* (but also including a fungus which appeared on a post in Endrés’ “orchid house”⁶⁶). The descriptions are numbered, as usual, in Endrés’ handwriting, and often make reference to the relevant sketches, which, however, are not kept in the Archives. The texts mostly deal with *Lepanthes*, of which the Archives have 120 descriptions corresponding to 56 species (46 numbered non-consecutively from 01 to 53, and others named to species, i.e., *L. acuminata*, *L. antennifera*, *L. aristata*, *L. dextrosa*, *L. hispida*, *L. integrilabia*, *L. rotundifolia*), and with *Pleurothallis*, with 82 descriptions corresponding to 70 species. Additionally, there are descriptions of some 20 species of Laeliinae (mostly *Epidendrum* and *Prosthechea*), and a few others.

We have no doubt that these pages were intended for Endrés’ book, and perhaps they represent the first part, or just a part, of a complete set of final manuscripts. The fact that they include the generic descriptions of *Brachionidium*, *Pleurothallis*, and *Stelis*, obviously points in this direction and reinforces our opinion that the final work envisioned by Endrés was very similar to a modern orchid flora, in which the species accounts are preceded by the description of the genus to which they belong. Once more, however, this was not the book that we were looking for. What emerged in the Archives, almost a century after Reichenbach’s legacy was made newly available to orchid researchers, was perhaps just a portion of the book, nothing more than idea, a hint of how it should have been if it ever existed. And, if the book had ever existed, where was it?

In early 2005, we began working on the material scanned in Vienna, and a flood of new

⁶⁶ Archives of the Natural History Museum of Vienna: Pleurothallis txtn°9seite2.

illustrations, notes, and specimens continued to arrive in Costa Rica for several months. When some order began to emerge from the hundreds of sketches and illustrations, it was clear that we were in front of several different groups of drawings. Most of them were preparatory sketches, usually drawn in pencil, rarely inked, on quite cheap paper. These pages bear references to the “species number”, and/or to Endrés’ species sequence within genera, and/or to a consecutive series of sketches, but they are rarely marked with page numbers. There was, however, another group of illustrations, far less numerous, consisting of rendered pencil drawings on much heavier paper, where enlargements and reductions of the different parts from the original sketches were made to fit standard formats. One of the formats, likely intended for full-page publication, was made on larger sheets, while other sketches are made on smaller pages, maybe meant to be grouped for printing. All these accurate pencil plates are individually numbered on the upper right, and these numbers are noted by Endrés in his fair copies of species descriptions. So, the final drawings were cross-referenced by a special number with the final descriptions. As far as their author was concerned, they were ready for the press.

So, perhaps we had had Endrés’ book under our noses all the time, and we just had not seen it! Eventually, we were able to match more than 400 “final” illustrations, with their respective “final” descriptions. The book is still incomplete, but it would amount now to almost 1000 printed pages. Considering that the work for the book was concluded in 1874, it is probably the most important, complete and consistent floristic treatment of the orchid flora of a rich tropical country ever written in the nineteenth century.

Next, we will try to give life to some pages from Endrés book. Besides the title and the frontispiece, which are a product of our fantasy, these pages are a faithful tribute to the work of Auguste R. Endrés, based strictly on his drawings, botanical descriptions, and notes. They are just a sample of the book that he dreamed about, and of the botanical work to which he devoted his life. They are a just and due homage to the botanist who, more than any other before him or after him, revealed the intricate diversity of Costa Rican orchid flora.