

What Those Old Drawings Have To Tell Us

Botanical Illustration and Orchid Taxonomy in the Expedition to Peru by Ruiz and Pavón

BY FRANCO PUPULIN

IF YOU HAVE AN OPPORTUNITY TO visit Madrid, you certainly will not want to miss the famous Plaza Mayor, the central square of the city. It was there, in the old building on the north side of the plaza, the Casa de la Panadería, where a select group of four students, chosen from amongst the more talented pupils of the Royal Academy of Fine Arts, were requested in February 1777 to sketch live some plants, flowers and fruits. Seated in front of them, to judge their work and to choose the two best artists, were some of the more distinguished knights of King Charles III of Bourbon's court, among which were the Director of the Royal Botanic Garden, Casimiro Gómez Ortega (1741–1818), the secretary of the Royal Academy of Arts, Ignacio de Hermosilla Sandoval y Rojas (1711–1780) and the powerful Minister of the Indies, José de Gálvez y Gallardo (1720–1787). The two winning artists, José Casto Brunete Dubua (1742–1794) and Isidro Gálvez Gallo (1764–1829), 30 and 24 years old, respectively, could hardly imagine that the contest would completely change the course of their lives and the history of botany.



Franco Pupulin

THE PAINTERS OF THE EXPEDITION TO PERU Based on the decision of the commission that judged them as the most qualified students, a royal letter dated March 8, 1777 appointed Brunete and Gálvez as the first and second draftsmen of the Botanical Expedition to the Viceroyalty of Peru. The expedition, which would be led by the two young pharmacists Hipólito Ruiz López (1754–1816) and José Antonio Pavón y Jiménez (1754–1840), accompanied by the French botanist Joseph Dombey (1742–1794), was specifically designed for “the methodical examination of the products of nature in my American dominions [...], and to form herbaria and collections of the product of nature, describing and making drawings of the plants found in these, my fertile dominions, in order to enrich my



museum of natural history and the botanical garden of the court,” according to the royal letter of appointment of Ruiz.

Under the reign of Charles III (1716–1788), Spain developed a keen interest in the improvement of “useful knowledge,” which was typical of the enlightened atmosphere of the European courts at that time. Through the impressive series of scientific expeditions sent out by Spain in the

18th century — eight of which were specifically focused on natural history — an impressive corpus of tens of thousands of images was produced. The visible information represented by the pictorial images was central to the remittances of every naturalistic expedition carried out under the reign of the Borbóns, and trained artists were hired to accompany the scientists in all the exploratory travels around the



- [1] The building of the Real Casa de la Panadería, in the central Plaza Mayor in Madrid, was the site of the Royal Academy of Fine Arts of San Fernando until it moved in Calle de Alcalá in 1800. Photo by F. Pupulin.
- [2] José de Gálvez y Gallardo, marquis of Sonora, portrayed ca. 1765. At that time, and before to be appointed Minister of the Indies, he had unlimited authority over the Spanish colonies in the New World as the General Visitor of the Indies.
- [3] The only known portrait of Hipólito Ruiz, at that time 19 years old, as a student at the Faculty of Pharmacy (courtesy of the Real Academia Nacional de Farmacia, Madrid). No portraits of José Pavón, or of any of the artists of the expedition to Peru, are known to exist.
- [4] The Puerta Real (Royal Gate) of the Royal Botanic Garden of Madrid, designed in 1773 by the Italian architect Francesco Sabatini and officially inaugurated in 1781. Photo by F. Pupulin.
- [5] Young Charles III, 11 years old, is studying botany. Painted by Jean Ranc, ca. 1724 (Museo del Prado, Madrid).
- [6] Portrait of Charles III of Spain, by Anton Raphael Mengs, 1761 (Museo del Prado, Madrid).

world organized by the Spanish crown. Their work, aimed to illustrate the new findings of the overseas possessions, was considered an essential task in the expeditions' labors. The salary established for the two draftsmen of the expedition to Peru, Brunete and Gálvez, was exactly the same of that received by the two Spanish botanists, and almost double the salary paid to Dombey by the French crown. Going through the long list of materials bought in Madrid in preparation for the Peruvian expedition (Barreiro, 1931) it is obvious that the officers of the King did not skimp on the expenses necessary to provide the materials required for the work of the painters. The amount spent on "first quality" paper, paints, brushes, magnifiers and other tools needed by the draftsmen far exceeded that paid for the instrumentation intended for the work of the botanists, including their expensive books.

The interest in the "visual results" of the expedition is further demonstrated by the accurate set of rules that the crown provided to the artists as a practical guide for the best performance of their duties. Never before had the illustrators of a scientific expedition received such a detailed guide as that contained in the "Instrucciones to be obeyed by the draughtsmen who will travel to Peru by order of H.M. to serve with the exercise of their profession in the Botanical Expedition," largely written by the First Professor of the Royal Botanic Garden and signed by the King in April of 1777 (Alcalá Archives L.2525, now at the Museum of Natural Sciences of Madrid, reproduced in Barreiro, 1931). Apart from some generic considerations on the cooperative attitude that was supposed to reign among the draftsmen and the botanists (an attitude that was more the exception than the rule during the years spent in Peru), the Instrucciones provide a real manual of style, and suggest the more efficient way to carry out the task of illustrating plants in the field. In general terms, what Brunete and Gálvez were supposed to do in the forests of Peru is not so different from the work required of a modern botanist when collecting, documenting, and preparing specimens during a field trip.

On November 4, 1777, Brunete and Gálvez embarked on the ship *El Peruano* heading to Peru, under the authority of the two leading botanists, Ruiz and Pavón, accompanied by the Frenchman Joseph Dombey. The greatest adventure of their lives had begun. Brunete would die less than 10 years later as a consequence of falling from his mule when crossing the western Cordillera of the Andes in his



[7] Two views of Madrid at the time of the expedition, by painter Antonio Joli. Top, “Calle de Alcalá,” ca. 1750 (private collection). Bottom, “Vista de la calle de Atocha,” ca. 1750 (Fundación Casa de Alba, Madrid).

[8] The central square of Huánuco, from M. F. Paz Soldán, *Atlas geográfico del Perú* (1865).

[9] The building that hosted the headquarters of the Oficina Botánica, where the treasures of the scientific expeditions to tropical America were kept to prepare their publication. Photo by F. Pupulin.



route from Lima to Pasco. Gálvez would survive fevers, an attack by Tupac Amaru’s insurgents, years in the Peruvian jungles and, according to the words of Ruiz and Pavón (1794), “heat, fatigue, hunger, thirst, nakedness, want, storms, earthquakes, plagues of mosquitoes and other insects, continuous danger of being devoured by jaguars, bears, and other wild beasts, traps of thieves and disloyal Indians, treason of slaves, fall from precipices and the branches of towering trees, fording of rivers and torrents,” and then the end of the Bourbon’s golden era, the French military invasion of Madrid, and the slow decline of the Spanish dream of a great flora of its overseas domin-

ions. When he eventually died in Madrid in 1829, 52 years after leaving the port of Cadiz toward the unknown forests of Peru, Gálvez was still working for the Oficina Botánica, taking care of the vegetable treasures brought back from America. He probably suffered some nostalgia for the luxuriant landscapes of the tropics, as in 1790 — just two years after his return to Madrid — he petitioned for a post to come back to the virgin jungles of the Audiencia of Quito. Shortly before leaving Peru, he had trained another Spanish painter, Francisco Pulgar, hired in Lima to continue the seemingly interminable work of illustrating the flora of the Peruvian Andes and Amazon. Pulgar apparently had worked as

a painter in Toledo before enlisting in the Soria regiment of the Spanish army, sent to Peru to fight the insurgents lead by Tupac Amaru, and he eventually became one of the more prolific and talented artists of the Expedition. He stayed with the Expedition for almost 15 years and relinquished his job in 1798 because of stomach troubles. He eventually married in Huánuco, where he died peacefully. Two years before quitting his position as a botanical illustrator, he began training his successor, José Rivera of Huánuco, the first American artist associated with the Expedition and perhaps the most accurate among the draftsmen who worked for the Spanish crown in South America. Together with the two

“attaché” botanists, Juan José Tafalla Navascués (1755–1811) and Agustín José Manzanilla (?-post 1816), Rivera not only traveled intensively in Peru, but also visited Guayaquil, Quito and Loja (in today’s Ecuador) between 1799 and 1809. When in Guayaquil, in 1800, the group hired another American painter, Francisco Xavier Cortés Alcocer, a native of Quito, who had been previously employed by Celestino Mutis for his project of the flora of New Granada. Cortés was the son of the renowned Quitan painter and botanical illustrator, José Cortés de Alcocer, and brother of two other Mutis’ illustrators, Manuel Antonio and Nicolás.

All together, the five painters of the Expedition to the Viceroyalty of Peru and Chile prepared an impressive corpus of botanical illustrations, which surely exceeded 3,000 colored plates. Of these, 2,230 survived fires, shipwrecks, the assaults of pirates, theft and a long history of oblivion and indifference, and were finally properly catalogued and conserved in the Archives of the Royal Botanic Garden of Madrid.

DRAWINGS FOR SCIENCE

Even though incomplete and largely in need of modern identification by specialists in the diverse groups and families of portrayed plants, the botanical plates of the expedition to Peru, Chile and Ecuador are probably the single most complete, systematically organized and scientifically relevant collection among those realized in the 18th century, under the influence of the Enlightened science. Most of the plates are supported by dried specimens and a large collection of manuscripts, which includes descriptions and notes on species distribution and ecology, and are often enriched by observations about their uses and vernacular names, accurately annotated by Ruiz in his diaries (Barreiro 1931, Jaramillo Arango 1952, Ruiz 2007). The systematic study of these materials as a single unit is a challenge not yet attempted that awaits the efforts of contemporary botanists.

One may be tempted to consider the plates painted during the 38 years spent in South America by the first systematic botanical exploration of the Andes to have merely historical value. However, as I will try to illustrate in the next pages, they represent an invaluable tool to interpret and understand — in some cases for the first time — the meaning of some of the oldest scientific names and concepts of Andean botany, so their significance is therefore central also to biology.

Even though the main scope of the



[10] José Cortés y Alcocer’s colonial art. The visit by the Royal Authority José García de León y Pizarro to the San Juan de Dios Hospital in Quito. Oil on canvas, Hospital Eugenio Espejo, Quito (courtesy of Fundación Museos de la Ciudad).

expedition was to find and describe plants that could be useful as sources of food and medicine — in particular the species of *Chinchona*, known for the content of quinine in their bark — the group of explorers was obviously struck by the exuberance of the epiphytic flora of the Andes. Among the species adapted to survive in the canopy of the tropical forest, orchids are no doubt preminent, and their diversity was so astounding to convince Ruiz, during the first stay of the expedition in the region of Tarma, that this family of plants deserved a monographic study (Ruiz 2007, p. 136). In the second draft of his diary, Ruiz went further, claiming to have written this monograph on orchids, illustrated by more than 500 drawings, which were finally lost in the tragic fire of Macora (Jaramillo Arango 1952). We have no sound reason to think that this monograph was ever produced, but the Archives of the Royal Botanic Garden of Madrid still host a large number of manuscripts by Ruiz, Tafalla, Manzanilla and other unidentified hands, which contain orchid descriptions. They were intended for Volume VII of

the *Flora Peruviana et Chilensis*, a volume that was never published, and were partially used for the accounts on the orchid family published in 1794 and 1798 as “advances” of the *Flora*, where Ruiz and Pavón described several genera and species of orchids new to science.

Among the more than 2,200 botanical drawings conserved at the Archives, 98 are orchid portraits, illustrating 88 species. At least 14 additional orchid plates are missing from the collection. Hipólito Ruiz meticulously annotated, in the upper right corner of the manuscript descriptions, the number of the corresponding drawing. These numbers were assigned to the drawings in Madrid according to the systematic order of the *Flora Peruviana et Chilensis* and to the new scientific determinations, superseding the original enumeration made by the artists in the field. So, numbers 141 to 149 identify species of *Maxillaria*, 154 to 156 are *Sobralia*, 157 to 165 species of *Humboldtia*, 166 is *Masdevallia*, 168 to 173 are species of *Fernandezia*, etc. When no plate was prepared, Ruiz clearly annotated the manuscripts as

Orchids in the Viceroyalty of Peru

THE ORCHID DRAWINGS PREPARED during the Ruiz and Pavón expedition to Peru and Chile represent a treasure for botany, but for Peru they represent something more, as an expression of the early scientific life of the country. Tafalla and Manzanilla, the attaché botanists who remained in charge of the flora of Perú after Ruiz and Pavón returned to Spain, were the founders of the Chair of Botany and the first two professors of this discipline at the National University of San Marcos in Lima, the oldest University of the Americas.

It was with great enthusiasm, then, that Peru organized a series of lectures and exhibitions devoted to “Orchids in the Viceroyalty of Peru,” which took place October 18–24, 2013 in several of Peru’s most charismatic places. Sponsored by the Foreign Office and the Ministry of Foreign Trade and Tourism of Peru, the Pontifical Catholic University of Peru, the Royal Botanic Garden of Madrid, the University of Costa Rica, ITA Inkaterra Association and the Peruvian Orchid Club, the lectures presented by Esther García Guillén (Deputy Director for the Cultural Heritage of the Botanical Garden of Madrid) and Franco Pupulin (University of Costa Rica, Lankester Botanical Garden) focused on the botanical collections of the Expedition, the search for quinine, the results of Ruiz and Pavón’s botanical activity in South America and, of course, on the lost orchids of Ruiz and Pavón.

With an exhibition in Lima of the orchid drawings of the Expedition (faithfully reproduced to scale thanks to a collaboration between the Royal Botanical Garden of Madrid and Lankester Botanical Garden) and lectures in Lima, Cuzco and Machu Picchu, “Orchids in the Viceroyalty of Peru” was the perfect opportunity to bring back to Peru the orchid paintings made there more than two centuries ago. During a touching ceremony in the Reception Hall of the Municipality of Miraflores in the Peruvian capital, the invited speakers presented the Peruvian government a specially created volume with reproductions of the entire collection of orchid drawings prepared during the Expedition. — *Franco Pupulin*



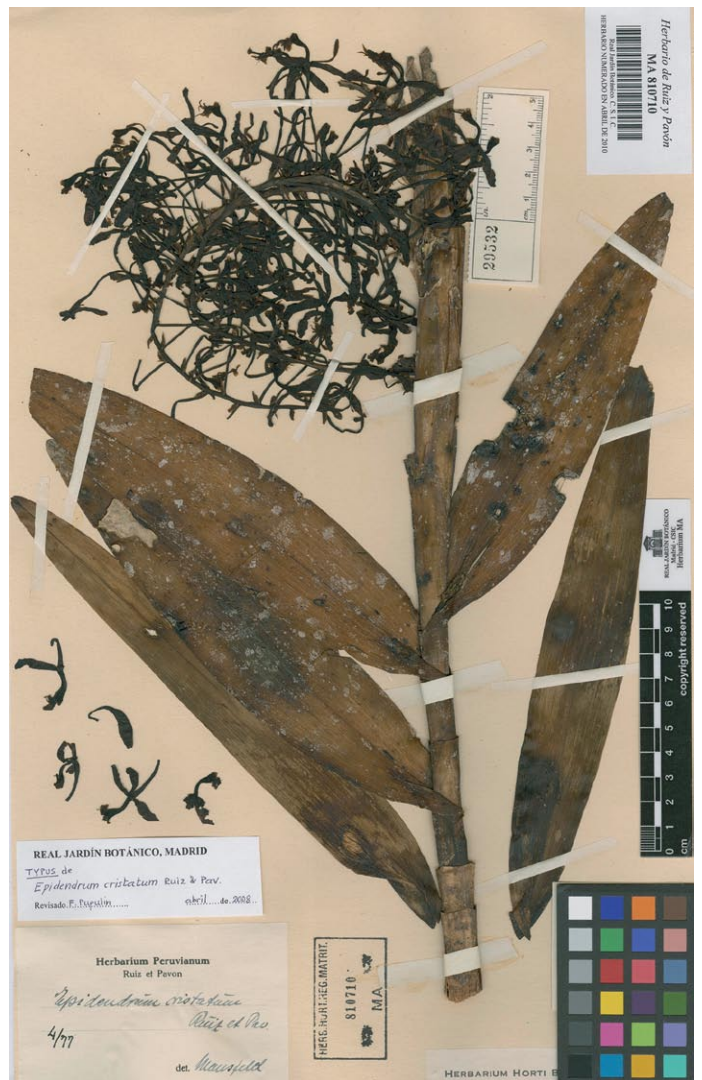
- [1] Esther García Guillén and Franco Pupulin at the exhibition “Orchids in the Viceroyalty of Peru,” held in Lima. Photograph by Elvira Salas-Pupulin.
- [2] The author at Machu Picchu sanctuary, examining a specimen of *Sobralia dichotoma*, one of the orchids described by Ruiz and Pavón. Photograph by Gilmar Pérez. Courtesy of Caretas–Ilustración Peruana.
- [3] Franco Pupulin presents to the representative of the Government of Peru, Ambassador Alberto Carrión, the large volume with the orchid drawings of the Botanical Expedition to Peru. Photograph by Elvira Salas-Pupulin.
- [4] The crafted book with reproductions of the orchid drawings of the Expedition, as presented to the Government of Peru. Another copy of the same book is kept at the Central Library of the University of Costa Rica. Photo by F. Pupulin.



FRANCO PUPULIN



[11] One of the plates conserved in Madrid (*Trichoceros antennifer*), as originally scanned by the staff of the Royal Botanic Garden Archives. Courtesy of the Royal Botanic Garden of Madrid.



[12] One of the herbarium specimens sent to Madrid by Ruiz and Pavón. It is one of the four sheets that include type material of *Epidendrum cristatum*. Courtesy of the Royal Botanic Garden of Madrid.

«s. ic.» or «s. icone» (*sine icone*, without figure). In the few cases of those species published by Ruiz and Pavón on the basis of descriptions originally prepared by Tafalla (i.e., *Bletia parviflora*, *Bletia uniflora*, *Bletia repanda*), Ruiz annotated the manuscript and the respective icona with his proposed name, but he did not renumber the plates in accordance with his system. From the analysis of the manuscripts, we know for sure that the drawings 147 (*Maxillaria hastata*), 149 (*Maxillaria paniculata*), 165 (*Humboldtia lanceolata*), 166 (*Masdevallia uniflora*), 167 (*Humboldtia spiralis*), 170 (*Fernandezia denticulata*), 171 (*Fernandezia subbiflora*), 172 (*Fernandezia haematodes*), 173 (*Fernandezia graminifolia*), 174 (*Fernandezia conferta*), 183 (*Epidendrum corymbosum*) and 184 (*Epidendrum acuminatum*), were studied by Ruiz but are not conserved in Madrid. At least two other illustrations, prepared in Ecuador by the expedition led by Tafalla, are also missing from the collections: *Houlletia odoratissima*, referred

to by Tafalla with the number «L. 647» on the sheet of the corresponding dried specimen, and *Epidendrum tridens*, illustrated in the lost lamina 649.

AN INCOMPLETE RESULT
Spanish scientific expeditions were not prolific in terms of publication of their results. The splendid “*Flora of New Granada*,” led by Celestino Mutis, produced thousands of botanical illustrations among the best ever made, but not a single word was ever published about them, and there are reasons to think that Mutis never wrote his promised *Flora*. The Mexican work carried out by Sessé and Mociño for their “*Flora of New Spain*” never saw the light of day, and the extraordinary corpus of botanical illustrations generated during the expedition was lost for almost two centuries before reappearing, only to be sold to a museum in the United States. The same fate befell most of the other expeditions sent out by the Borbóns to investigate the physical and natural properties of the Spanish possessions around the world.

Even though Ruiz and Pavón returned to Spain to find a country made poorer by continued wars and less interested in publishing the results of their South American explorations, nonetheless the three volumes of the *Flora Peruviana et Chilensis*, published between 1798 and 1803 (Ruiz and Pavón 1798b, 1800, 1803), as well as the two “introductions” to the *Flora* of 1794 and 1798, stand out as the more important botanical contributions of the overseas expeditions organized by the Spanish crown.

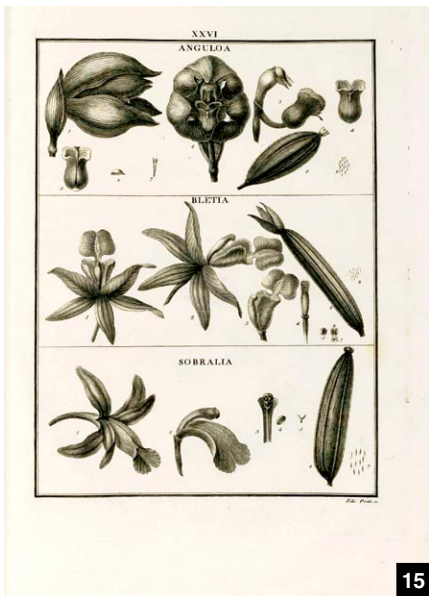
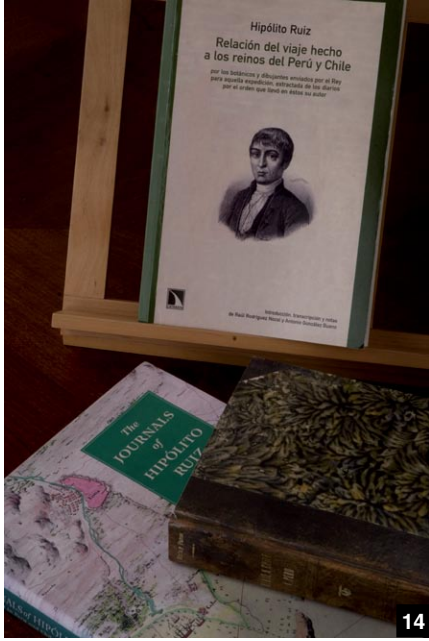
In 1794, in the Prodomus, Ruiz and Pavón described eight new orchid genera (*Anguloa*, *Bletia*, *Fernandezia*, *Gongora*, *Humboldtia*, *Maxillaria*, *Rodriguezia* and *Sobralia*), and four years later they published 66 new orchid species in their *Systema Vegetabilium* (Ruiz and Pavón 1794, 1798a). As the scheduled Volume VII of the *Flora*, dedicated to the plants of Linnaeus’ Class XX, the Gynandria Monandria and Diandra (or the orchids with one and two fertile anthers), was never

Granada Disarium
Orchis *parviflora* Ruiz & Pav.
 Calyx papillo rugo, papillo simplici
 locanthorum nullum.
 Corolla biloba quinque nervis convergentibus quorum latera
 reflexione elongata, duo interiora linearis oblongo-ovata.
 Nectarium tuberculatum petalorum receptaculo adhi-
 sum sulcationem: labio superioris exacte reniformis
 basi reflexae marginis patenti reflexae: lobis interioribus
 duobus emarginatis.
 Stamina filamentis duobus brevissima, papillis indivisibilibus.
 Antherae subsaepe marginis labii superioris reflexae basi
 adhaerentibus.
 Ovarium
 Ovary: bulbis subsaepe compatis, plus linearis
 capsulis, tergitibus apice lineari, bulbis, radicalibus
 uti echinatis, sepius compressis per spatulas articulatam, flo-
 ribus subsaepe seminiferis bilobatis. L. P. C.
 Planta parasitica. Radix caulis. Bulbi subsaepe com-
 patti: bulbis subsaepe albis, semi tibi. Petala
 linearis: ovum, casinatis, tibi, utriusque glabra
 obtusa: radicalibus basi uti echinatis, sive varietatis.
 Scapi compressi per acidos spatulam uti articu-
 latis spatulas amplexantes compressi uti casinatis. Petala
 linearis, sesquialtera.

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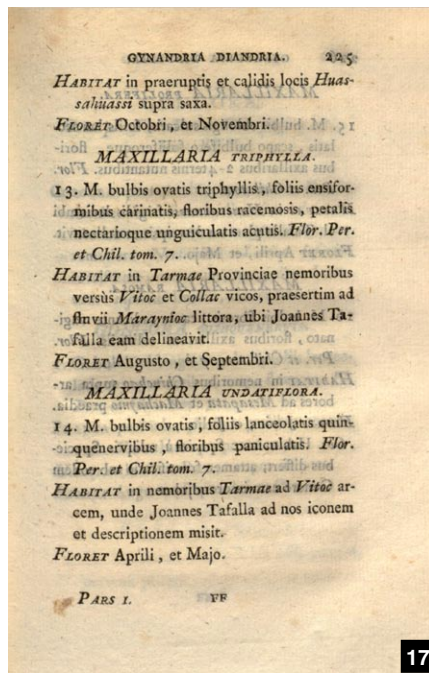
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completed for the press, the understanding of Ruiz and Pavón's orchid concepts had to rely entirely on the very synthetic descriptions published in the "advances," the schematic engravings appeared in the *Systema* to complement the generic descriptions and the dried specimens they sent from South America to the Royal Botanic Garden in Madrid, often incomplete and sometimes without any flowers. Under these circumstances, it was inevitable that some of the species described during Ruiz and Pavón's journey to South America would remain cryptic to modern students of the Andean flora. When Charles Schweinfurth, an assistant to Professor Ames at the orchid herbarium of the Harvard University, put hand to the monumental work of an orchid flora of Peru — a project to which he dedicated

more than 15 years and that saw the light of day in parts between 1958 and 1970 — he inevitably ran into some of the "ghost" names of Ruiz and Pavón's orchids (Schweinfurth 1958, 1959, 1960, 1961, 1970). The following are some examples of what Schweinfurth's comments about them (Schweinfurth 1960):
 "Bletia repanda Ruiz & Pav. [...] The terminal inflorescence indicates that the concept is not a Bletia."
 "Bletia parviflora Ruiz & Pav. [...] = obscure species."
 "Bletia uniflora Ruiz & Pav. [...] = obscure species."
 "Maxillaria longipetala Ruiz & Pav. [...] = obscure species, probably Lycaste."
 "Maxillaria triphylla Ruiz & Pav. [...] = obscure species, probably Xylobium."

"Maxillaria undatiflora Ruiz & Pav. [...] = obscure species, surely not Maxillaria."
 In the herbarium of Ruiz and Pavón conserved in Madrid there are several sheets of *Bletia catenulata* (another of the species described by the two Spanish botanists), but not a single specimen is annotated as *Bletia repanda*. Sheet number 810787 of the Ruiz and Pavón herbarium has a single leaf and flowers of *Bletia parviflora*, but it is annotated by Tafalla only as "Orchys?". There is another sheet that perhaps corresponds to *Maxillaria longipetala*, but it only has a pseudobulb with a leaf, and neither flowers nor a label written by Ruiz or any other botanist of the expedition. Sheet 810778 is a *Maxillaria* of the group *Sauvetea* (now considered a separate genus), but modern authors had



[13] Manuscripts with orchid descriptions at the Archives of the Royal Botanic Garden, Madrid. From top left, clockwise: description of *Gongora quinquenervis* and *Maxillaria ramosa* by Hipólito Ruiz; “Orchis No 437” (*Cattleya maxima*) by Agustín Manzanilla; “Ophrys L. 169” by José Tafalla (with Ruiz’ annotation: *Bletia uniflora*). Courtesy of the Royal Botanic Garden of Madrid.



no cues to associate it with *Bletia uniflora*: Tafalla’s original label just read “*Ophrys*”. No sheets at all correspond to the species that Ruiz and Pavón described as *Maxillaria triphylla* and *Max. undatiflora*.

Apart from these scanty and nomenclaturally mute materials, Schweinfurth could only rely on the original descriptions to try understanding the obscure concepts he was dealing with. Were these descriptions useful? Once more, let us have a look at them with the original words by Ruiz and Pavón (1798).

“*Bletia repanda*. *B. bulbis subrotun-*

dis, foliis lanceolatis nervosis plicatis, scapo ex apice bulb racemoso (A *Bletia* with almost rounded bulbs, leaves lance-shaped, with nerves and plicate, the inflorescence a raceme born from the apex of the bulb.)”

“*Bletia parviflora*. A *Bletia* with bulbs egg-shaped, the leaves sword-shaped with a keel, the inflorescence with lateral branches.”

“*Bletia uniflora*. A *Bletia* with bulbs almost rounded, slightly compressed, the leaves straight with a keel, the inflorescence born from the roots, single-flow-

[14] Modern editions of the diaries that Ruiz wrote about the Peruvian and Chilean botanical expedition (library of the author). Photo by F. Pupulin.

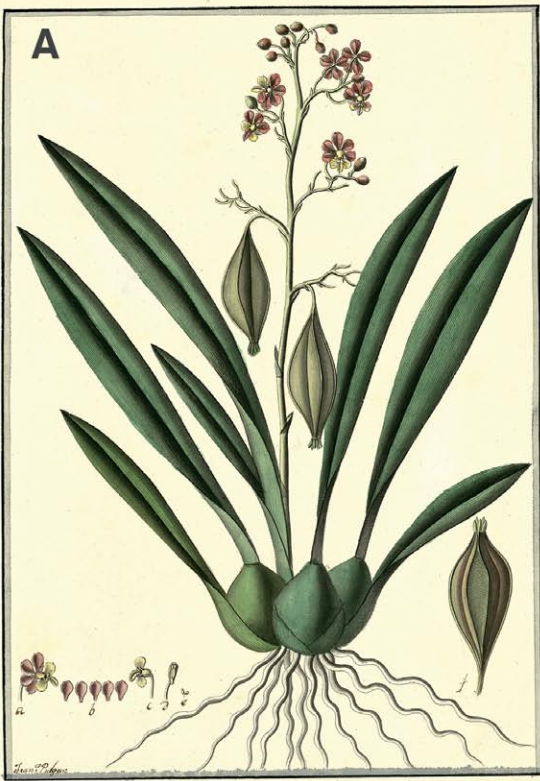
[15] Engravings from the Ruiz and Pavón *Florae Peruviana, et Chilensis* (1794), with flowers of *Anguloa*, *Bletia*, and *Sobralia*. Courtesy of the Library, Royal Botanic Garden, Madrid.

[16] Type specimen of *Gongora quinquenervis*, from the herbarium of Ruiz and Pavón. Note that the specimen has no flowers. Courtesy of the Royal Botanic Garden of Madrid.

[17] A page from the *Systema Vegetabilium* of Ruiz and Pavón, with the original description of *Maxillaria triphylla* and *Max. undatiflora*. Courtesy of the Library, Royal Botanic Garden, Madrid.

[18] Engravings from *Flora Peruviana et Chilensis*, vol. 2. Plate 304, *Heliconia lingulata*. On the left, illustration from the regular edition; on the right, the same engraving painted by hand, from the deluxe edition. Courtesy of the Library, Royal Botanic Garden, Madrid.

[19] The slides taken at the Royal Botanic Garden of Madrid as the first documentation draft of the orchid drawings made during the Botanical Expedition to Peru and Chile. Courtesy of the Royal Botanic Garden of Madrid.



A

135

Bletia parviflora



B

195

Maxillaria triflylla



C

69

Maxillaria untabiflora



D

169

Bletia uniflora

ered" (Ruiz and Pavón 1798).

"*Maxillaria longipetala*. A *Maxillaria* with bulbs egg-shaped, leaves oblong without nerves, 3-toothed at apex, inflorescence single-flowered."

"*Maxillaria triphylla*. A *Maxillaria* with egg-shaped bulbs with three leaves, the leaves sword-shaped, keeled, the flowers produced in racemes, the petals and the lip narrow at the base, pointed."

"*Maxillaria undatiflora*. A *Maxillaria* with egg-shaped bulbs, the leaves lance-shaped with five nerves, the flowers produced in a raceme with lateral branches." There's nothing else and what's there certainly isn't much to go on.

A PICTURE IS WORTH MORE THAN A THOUSAND WORDS

In 2008, when I first visited the herbarium of the Royal Botanic Garden of Madrid to study the dried plants from Ruiz and Pavón's travel to South America, I discovered that the Archives of the botanical garden hosted a quantity of other materials from the Peruvian expedition, including samples of woods and barks, a collection of fruits (among them *Vanilla* "beans"), a large set of manuscripts with the characteristic handwritings of Ruiz, José Tafalla and Agustín Manzanilla, and literally thousands of colored drawings of plants prepared by the artists of the expedition. These drawings, made in the field in the forests of the Andes highlands and their Amazonian slopes, were intended to serve as models for the engravings that would eventually illustrate the volumes of the *Flora Peruviana et Chilensis*. The staff at the Royal Botanic Garden had arranged the drawings by families, and they kindly provided me with a copy of the orchid illustrations, which had been roughly documented in film slides. Though of quite low technical quality, the slides soon proved the importance of the drawings to the study of the orchid legacy of Ruiz and Pavón.

For the first time, they revealed that the orchids of Peru, Chile and Ecuador that the Spanish botanists sent back from South America were not simply described in the synthetic texts they published on their return to Madrid, but were finely illustrated in most of their critical details. The names treated by successive authors as "obscure" – and for this reason sentenced to be forgotten in a botanical limbo – could not be clearer, in the extraordinary drawings prepared by the artists during the South American journey.

The interested reader can find a complete and detailed description of all the orchid paintings in a two-part paper I recent-



ly published in the *Anales del Jardín Botánico de Madrid* (Pupulin 2012a, 2012b, and see in Literature the references to the free downloadable articles), but I would like to show here just a few, but very interesting, cases in which the portraits prepared by the painters of the Expedition allowed us to finally give a face to Ruiz and Pavón species.

Cyrtochilum parviflorum (Ruiz & Pav.) Pupulin *Bletia parviflora* is, in fact, not a *Bletia* at all. The name created by Ruiz and Pavón in their *Systema Vegetabilium* refers to a small-sized species of the genus *Cyrtochilum*. The ovoid, closely spaced pseudobulbs, the branched inflorescence and the small, purple flowers with a white, trilobed lip, are indistinguishable from those of *Odontoglossum fractum*, described by Reichenbach 80

[20] Orchid drawings made during the botanical expedition to Peru and Chile. A, *Bletia parviflora* = *Cyrtochilum parviflorum*. B, *Maxillaria triphylla* = *Cyrtochilum triphyllum*. C, *Maxillaria undatiflora* = *Oncidium undatiflorum*. D, *Maxillaria uniflora* = *Sauvetea uniflora*. Courtesy of the Royal Botanic Garden of Madrid.

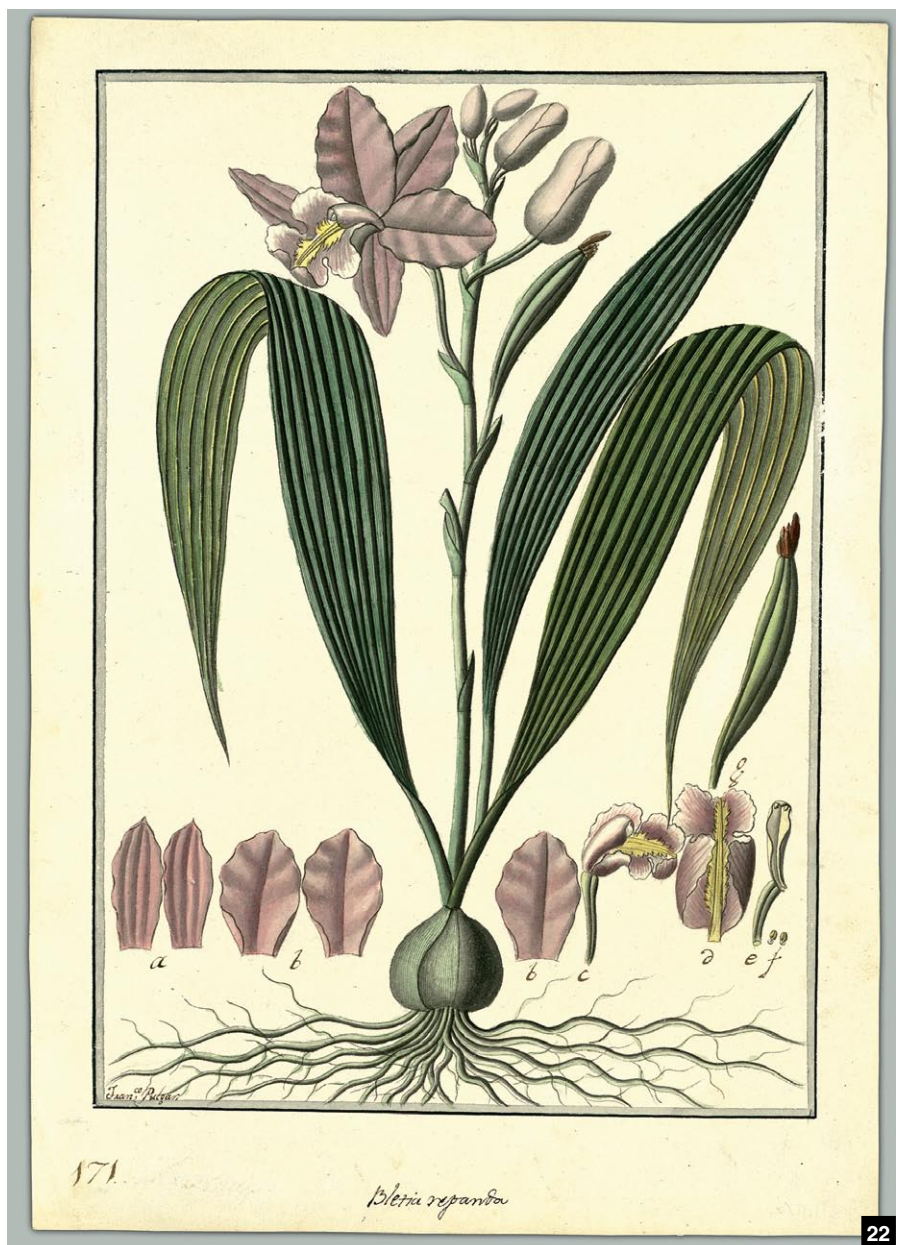
[21] Isidro Gálvez's illustration of *Maxillaria longipetala*, a species belonging to the core group of *Maxillaria*. Courtesy of the Royal Botanic Garden of Madrid.

years later from a Colombian collection by Roezl. Fritz Kränzlin described it again in 1906 with the name *Odontoglossum microthyrsus*, based on a plant that Weberbauer collected in the same locality where Tafalla had found it more than a century before.

Cyrtochilum triphyllum (Ruiz & Pav.) Pupulin As the beautiful painting by Pulgar well illustrates, *Maxillaria triphylla* is not a *Maxillaria* after all. Schweinfurth (1960) had suspected it, but there wasn't a specimen in Madrid or elsewhere to corroborate his idea. The plant used by Pulgar to prepare the drawing, collected by Tafalla in the region of Tarma, has ovate, grooved pseudobulbs and golden yellow flowers marked with brownish red in the proximal half. Sepals and petals are distinctly clawed. In my large paper (Pupulin 2012a), I suggest that *Cyr. triphyllum* could be conspecific with *Cyrtochilum auropurpureum*, also recorded from Peru, but it is probably better to wait for other students, more knowledgeable than me in this difficult Andean group, to decide eventually whether *Cyr. triphyllum* is a totally new taxon or if the name used by Ruiz and Pavón is the oldest available for another known species.

Oncidium undatiflorum (Ruiz & Pav.) Pupulin I am pretty sure that Stig Dalström, who kindly helped me with the identification of the species portrayed by Francisco Pulgar, would be much happier considering this a true *Odontoglossum*. For my part, I was mostly interested in rescuing the old name that Ruiz and Pavón assigned to their new species of "*Maxillaria*," and it is quite possible that it represents the first (and valid) name for the species that Dalström described as *Odontoglossum ariasii* (also from Peru), and Mark Chase and Norris Williams transferred to *Oncidium* with the new name *Oncidium manuelariasii* (to avoid duplicating *Oncidium ariasii*, which already existed).

Sauvetea uniflora (Ruiz & Pav.) Pupulin The *Bletia uniflora* of Ruiz and Pavón is another species that does not belong to *Bletia*. The plant collected by Tafalla and Manzanilla in Peru and illustrated by Francisco Pulgar, on which Ruiz and Pavón (1798a) prepared their description, not only belongs to the genus *Sauvetea* (recently segregated from the mammoth *Maxillaria*) but, judging from the detailed drawing of the flower and the dissected perianth, is the first name ever assigned to the species known as *Maxillaria laevilabris* (aka *Sauvetea laevilabris*). For sure, John Lindley described



[22] The illustration of the type specimen of *Bletia repanda*, with its terminal inflorescence as erroneously painted by Francisco Pulgar. The name is a synonym of *B. catenulata*, another species described by Ruiz and Pavón. Courtesy of the Royal Botanic Garden of Madrid.

Maxillaria laevilabris from a tracing that Andrew Mathews made in Lima in 1834 over a preliminary sketch (or a copy) of the very same drawing prepared by Pulgar and shown here.

Maxillaria longipetala is not a *Lycaste*, as Schweinfurth (1960), and many authors after him (Garay 1962, Dodson and Dodson 1980, Brako and Zarucchi 1993, Jørgensen & León-Yáñez 1999, Archila Morales 2002a, 2002b) have treated it, but is a real *Maxillaria* instead, as Ruiz and Pavón aptly baptized it. The beautiful drawing by Isidro Gálvez, one of my favorite paintings, shows that it pertains

to the core group of the genus *Maxillaria* (see McIlmurray and Oakeley 2004), and it is perhaps the first name for the species better known as *Maxillaria triloris*. The confusion probably stemmed from a herbarium sheet in Madrid (no. 810776), with a manuscript label by Ruiz: «*Serapias?* an *Arethusa?* / *Maxillaria longipetala*». The mounted specimen undoubtedly corresponds to a species of the genus *Sudamerlycaste*, and the label by Ruiz was evidently misplaced when the specimen was mounted.

What about *Bletia repanda*? Contrary to the ideas of Schweinfurth, it really was

a species of *Bletia*. Schweinfurth was right, pointing out that the inflorescence of real bletias is produced from the base of the corm and not from its apex, as erroneously stated by Ruiz and Pavón (1798). Curiously enough, the drawing by Francisco Pulgar also shows an apical inflorescence, but leaves no doubt about the identity of the genus. Ruiz and Pavón probably described *Bti. repanda* on the basis of the illustration (no herbarium specimens have ever been found) prepared by Pulgar, who illustrated a plant collected by Tafalla on the shores of the Marañon river several years after Ruiz and Pavón had returned to Spain and, according to the drawing, they characterized the inflorescence as terminal. Following the written “Instrucciones” given to the artists, the illustrators would have drawn the delicate flowers first, and the harder vegetative parts of the plant at another time. It is very probable that they even sketched the inflorescence and the detail of the flowers, and the habit, from different growths. If they did not prepare a specimen at that time (as it seems probable, as no specimens have so far been found), it is entirely possible that when Pulgar drew the final copy of *Bletia repanda*, he simply forgot from where the inflorescence was borne in the living plant. Once you recognize it as a *Bletia*, the species illustrated by Pulgar is indistinguishable, in my opinion, from *Bletia catenulata*, that Ruiz and Pavón also described from a plant that they collected during their stay in Pozuzo in 1784 (Ruiz and Pavón 1798; Ruiz 2007).

The old taxonomic literature, as these few cases of Ruiz and Pavón’s orchid names treated here demonstrate, is often supported by other kinds of data that deserve examination and study, in the form of associated texts, herbarium specimens, correspondence, and illustrations. As a whole, these data represent the legacy of botanists and naturalists who have preceded us, and are a testament to the scientific effort they made to transmit to future generations their knowledge and discoveries. It is up to us not to frustrate this effort, turning each time to the origins of our science, reading and interpreting the documents that give foundation to the knowledge of natural diversity. The task of evaluating and clarifying the oldest names in the scientific history of orchids cannot be evaded if we aspire to a stable and correct nomenclature. Completing this work is one of the duties of modern botany, and our way of making a proper tribute to the extraordinary naturalists of the past.

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Ruiz and Pavón were responsible for giving names to 66 orchid species in, at the time, 11 genera. Thirty-five of those names have stood the test of time, having remained unchanged. The other 31 taxa are: *Bletia ensiformis* = *Encyclia cyperifolia*, *Bletia parviflora* = *Cyrtochilum parviflorum*, *Bletia repanda* = *Bletia catenulata*, *Bletia uniflora* = *Sauvetrea laevilabris*, *Epidendrum biflorum* = *Epidendrum peruvianum*, *Epidendrum equitans* = *Epidendrum woytkowskianum*, *Epidendrum lineare* = *Oestlundia luteorosa*, *Epidendrum maculatum* = *Epidendrum teuscherianum*, *Epidendrum nutans* = *Epidendrum ruizianum*, *Fernandezia conferta* = *Scaphyglottis conferta*, *Fernandezia graminifolia* = *Scaphyglottis graminifolia*, *Fernandezia haemathodes* = *Ornithidium haemathodes*, *Fernandezia laxa* = *Dichaea laxa*, *Fernandezia punctata* = *Maxillariella punctata*, *Humboltia acutiflora* = *Specklinia acutiflora*, *Humboltia contorta* = *Restrepia contorta*, *Humboltia cordata* = *Pleurothallis cordata*, *Humboltia polystachya* = *Acianthera polystachya*, *Humboltia revoluta* = *Pleurothallis revoluta*, *Humboltia spiralis* = *Stelis purpurea*, *Maxillaria alata* = *unplaced name*, *Maxillaria ciliata* = *Sudamerlycaste ciliata*, *Maxillaria hastata* = *Cyrtochilum hastatum*, *Maxillaria ligulata* = *Cyrtochilum ligulatum*, *Maxillaria paniculata* = *Cyrtochilum paniculatum*, *Maxillaria ramosa* = *Maxillariella cassapensis*, *Maxillaria triphylla* = *Cyrtochilum triphyllum*, *Maxillaria undatiflora* = *Oncidium undatiflorum*, *Maxillaria undulata* = *Xylobium undulatum*, *Maxillaria variegata* = *Xylobium variegatum*, *Sobralia amplexicaulis* = *Epistephium sp.*