El Real Jardín Botánico de Madrid and the Glorious History of Botany in Spain

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The vicissitudes of Madrid’s recently restored botanical garden reflect the repeated waxing and waning of the plant sciences in Spain over the past two centuries or more

When I was in high school I worked as a volunteer at the Arnold Arboretum, developing there an early interest in arboreta and botanical gardens and in horticultural exotica. Little did I realize then that my interest would lead me as a college graduate into an historical study of Spanish gardens, a study that ultimately would take me to superb historical archives in some of Spain’s most famous castles and palaces.

My historical venture was launched by some inspiring words Eleanor Perenyi wrote about the garden dahlia in her book Green Thoughts. Unfortunately, as anyone who has attempted research knows, getting data or information is seldom as simple as it would seem at the outset of a project. There were times during my research in Spain that I would remember Linnaeus’s words, expressed in Bibliotheca Botanica (1751), about the state of Spanish botany:

[T]he Spanish flora had not revealed any [new] plants, such that in the most fertile regions of Spain there are plants which remain to be discovered. It is cause for grief that in the more cultivated places of Europe, such botanical barbarities exist in our time.

Linnaeus’s acerbic, though at the time apt, observation soon would be out of date, however, because of the zeal with which late-Eighteenth Century Spain took to botany and natural history.

The result of my research, reported here, is the story of Madrid’s Royal Botanic Garden—El Real Jardín Botánico de Madrid—from its humble inception as a Court curiosity tended by an eager coterie of physicians and intellectuals; through its later development into a thriving center of learning, plant exploration, international cooperation, and research; its subsequent decline during the Nineteenth Century and continuing decay during the better part of the Twentieth Century; and its recent restoration and reestablishment as an important Spanish institution of research and learning, a fitting symbol of post-Franco Spain.

I emphasize here the early history of the Garden, a fifty-year period studded with exciting exploration for exotic plants in Spain’s overseas colonies. Aside from the Garden’s recent history, this is perhaps the richest period of Spanish botanical development.

The Historical Context

Christopher Columbus’s discovery of America in 1492 had significant economic and ag-
ricultural consequences for Europe. Aside from its obvious consequences—the introduction and use of the potato, maize, and the tomato for food, for example—it had profound significance for botany and medicine. Its impact was not felt overnight, however: Europeans did not begin to develop the full scientific potential of America until well into the Eighteenth Century—more than two centuries after Columbus made his discovery.

The discovery placed Spain in the vanguard of political and economic activity. It was Spain that bore the initial brunt of the marvels and riches flowing in from the New World. Aside from the economic and political spoils of America—the gold and the silver—Spain encountered unimagined biotic riches. In America, the Spanish encountered two major advanced civilizations, the Inca and the Aztec, that had developed important medicinal and economic uses for the plants and animals of those vast, uncharted lands.

There are two important time periods to consider in Spanish botanical history and its relation to America. The first was the Sixteenth Century, during the reign of Philip II (Felipe II; 1527–1598), one of Europe's most powerful and intellectual monarchs; the second was the Eighteenth Century Enlightenment and the Bourbon Monarchy.

During the Sixteenth Century there were various influential Spanish chroniclers of the Americas, Gonzalo Fernández de Oviedo y Valdés (1478–1557), with his Historia General y Natural de las Indias (Seville, 1535), being perhaps the most important. Another important person was Francisco Hernández (1514–1587), Philip II's medical examiner, or protomédico, who was sent to Nueva España (New Spain—i.e., México and other Spanish possessions in North America) to compile a natural history of the region. Arthur Robert Steele, in his book Flowers for the King, succinctly describes the significance of the Hernández Expedition: "As the first expedition of natural history ever sent out by a government, the Hernández venture is a landmark in the annals of botanical science."

With the death of Philip II in 1598 and the advent of the Seventeenth Century, Spain entered a painfully sterile period for scientific inquiry. The Seventeenth Century was an era of decadance in Spain, during which Court intrigue and a series of ineffectual monarchs undermined Spain's scientific development. Further progress in botany had to await the Eighteenth Century, a new royal dynasty, and the advancement of scientific thought by men such as Tournefort and Linnaeus.

The Founding of Madrid's Botanic Garden

Spain entered the world of botanic gardens rather late, if we are to judge by the botanic gardens in other countries—the one at Padua, founded in 1545, for example, or the one in Paris, founded in 1635. Nevertheless, the Real Jardín Botánico de Madrid quickly became the symbol of what is called the Spanish Enlightenment. Under the tutelage of Ferdinand VI, a Bourbon and a direct descendant of Louis XIV of France, conditions existed for the establishment of Spain's first true botanic garden.

An important person in the development of this royal institution was a physician by the name of José Quer y Martínez (1695–1764). Don Quer was a medical examiner for His Highness's armed forces, and like any doctor of that era he was keenly interested in the pharmacological applications of plants. Apparently, in addition to owning an extensive library on medicine, materia medica, and botany, he was an avid gardener.

It was not long before the monarch took note of his subject's interest in plants. For, as Quer wrote in Flora Española,
It was most likely in response to Don Quer’s zeal and the very real need of the royal pharmacies that Ferdinand VI ordered the transfer of Quer’s plants to a property, on the outskirts of Madrid near the Manzanares River, known as El Soto de Migas Calientes (literally, The Orchard of Hot Crumbs!). The result was El Jardín Botánico del Soto de Migas Calientes, the first botanic garden in Spain subsidized by the Crown.

In a letter of June 4, 1754, José Ortega, the chief army pharmacist (died 1761), wrote to the Secretary of the Treasury, the Marqués de la Ensenada (1702–1781), about the intense interest in Spanish plants that he had encountered while travelling through the capitals of Europe. Ortega commented on his and Quer’s collection of over three thousand plants brought from the “four corners of the earth,” noting “the necessity to place these plants in the Royal Garden and the need to engage in trade with foreign botanists in order to increase their number by the active exchange of Spanish plants with foreigners. . . .”

Six days later, on June 10, 1754, another letter to the Marqués de la Ensenada, this time from José Suñol, the King’s physician, further emphasized Quer’s efforts at developing a botanic garden, noting that

King’s desires for the advancement of the Arts and Sciences, particularly those whose progress promises great benefits to the health of his subjects, [and it states that] the King permits the use of his orchard of Migas Calientes to the end that a Royal Garden of plants be developed so that in these kingdoms the important field of Botany be developed.  

Wall went on to name the director and assistant director of the Garden, Suñol and Ortega, respectively, and to set its annual

budget. Funding during the Garden’s early period came from the College of King’s Physicians, or Protomedicato. The funding arrangement changed in 1781, during the reign of Charles III, or Carlos III (1759–1788), when the Garden was moved to its present location near the Prado Museum.

These exchanges of letters between ministers and enlightened subjects—mostly physicians and pharmacists—show that by the middle of the Eighteenth Century Spain had developed an active interest in the natural sciences, particularly botany, and was prepared to bear the cost of developing them.

The First Spanish Botanists

Shortly after his acerbic comments about Spanish botany were published, Linnaeus received an invitation from Spain to send a botanical expert to that nation of “botanical barbarities.” Linnaeus chose Pehr Löfling (1729–1756), one of his trusted pupils. In *Flowers for the King*, Arthur Steele writes that when Löfling arrived in Spain in October 1751, “the newcomer was most agreeably surprised—perhaps openly astonished is more apt—to find a small coterie of botanists already at work.” Steele describes five of the botanists Löfling encountered, including José Quer and José Ortega, along with Juan Minuart (1693–1768) and Cristóbal Vélez (died 1753). As we have already seen, Ortega and Quer were instrumental in founding the botanic garden at Migas Calientes four years later.

After the Royal Decree of October 21, 1755, Quer became head professor in the fledgling institution, Minuart assistant professor. Löfling found a decidedly Tournefortian view of botany among his Spanish colleagues. This is understandable because, during the early Eighteenth Century the leading botanical talents in Spain, the Salvador family of Barcelona, had assisted Tournefort in his pursuit of Spanish plants and hence were close adherents of the Frenchman’s classification system.

Quer, as head professor, was writing a *Flora Española*, but it was not completed until after his death. It was his defense of Spanish botany against Linnaeus’s comment on “botanical barbarities.” Therefore, most of the first volume of the *Flora* was given over to a bitter diatribe against Linnaeus’s accusations. The last two volumes of the *Flora*, written in 1784 by José Ortega’s nephew Casimiro Gómez Ortega (1740–1818), acknowledge the major shortcomings of Quer’s work.

In his defense of Spanish botany, Quer writes that one of the major accomplish-
ments of the Spanish was their acclimatization of countless important New World plants. Yet the Flora reveals that by 1755 the Spanish were actively cultivating only thirty-five species of New World plants.

Because he was a physician, Quer's interest in plants was limited almost exclusively to those that could be used in materia medica. Nevertheless, he does write in his Flora of other plants, such as Tropæolum majus, the garden nasturtium (in defiance of Linneus, Quer calls it Cardamindum ampliori—a Tournefortian determination). “This plant,” he writes,

...is grown in pots and containers in the gardens of Madrid. It came to Spain from Perú by the hands of our discoverers, where it grows in abundance in moist and swampy terrains. ... The plant is used to adorn balconies where, protected from the cold, it flowers all year.8

[Perhaps the most thought-provoking and personally meaningful comment I found in Quer’s Flora was a reference to Robinia pseudoacacia, the black locust, another New World exotic: “[F]rom the wood of this tree, the majority of the buildings in Boston are built,” it informed me.9 Reading this intriguing fact in the very heart of modern Madrid, I could not help but smile and wonder whether it had lain there in waiting for two and a half centuries, to be read with fascination by this young, latter-day Bostonian.]

Meanwhile, José Ortega was busily trying to get the Royal Botanic Garden “off the ground.” On June 20, 1756, José Suñol, the Garden’s acting director, sought funding from the College of King’s Physicians for the expenses Ortega had incurred during the previous year’s operation. One of Ortega’s principal concerns was the faulty pipe supplying water to the Garden, a concern reflecting the Garden’s location in an arid region. Also, Ortega requested funds to construct a green-

house for the conservation of “foreign plants.” In his request, Ortega proposed that the greatest Spanish architect of that era, Ventura Rodríguez Tizón (1717–1785), be commissioned for the task—proof of the Court’s high regard for the Garden.

In Ortega’s letters to his superiors, he expresses many of the concerns about the day-to-day operation of his garden that modern staff members and managers feel for the orderly running of their institutions:—budget constraints, difficulties with contractors, maintenance of grounds, and public relations. In a letter of May 21, 1756, Ortega describes the transformation of El Soto de Migas
Calientes into El Jardín Botánico de Migas Calientes.

He describes the transplanting of the Orchard's fruit trees and vegetable gardens so as to make way for the parterres that would be needed for the formal botanic garden. In terms of overall design, the Garden offered no noteworthy innovations; looking much like a typical Seventeenth or Eighteenth Century non-English, rectangular, parterred botanic garden, it was reminiscent of the earliest botanical garden, that in Padua. Ortega writes that "12 large beds were formed with four parterres. . . ."  

Ortega also comments, in familiar horticultural terms, on the importance of adding manure to the soil, "which was malnourished, and [it] had been many years since this beneficial procedure was performed." He uses similar terms to describe the benefits of loam. As in many Spanish gardens, one of the basic plant materials used was boxwood, in this instance to outline the twelve newly formed beds. The fruit trees were replaced "with species appropriate to a botanic garden, particularly lindens, horsechestnuts, and elms."  

In his closing remarks, Ortega makes a public-relations "pitch" to his Court superiors, writing that "even though the garden is scarcely four months old . . . there are numerous plants, many being the rarest of Europe,
Africa, Asia, and America." In another letter from the same period, Ortega continues in the same public-relations vein when he comments "on the growing beauty of the garden, which is gaining the admiration of the populace, and the visiting foreigners."

Much of the information about the earliest years of the Real Jardín Botánico de Madrid (1755 through 1781) I gleaned from the countless budget statements and other documents housed in an archive called "Simancas." The "Archivo General de Simancas" was established in the early Sixteenth Century by Charles I (Carlos I) of Spain (who was also Charles V, or Karl V, of Germany) in the heart of northern Castile, one hundred sixty kilometers (one hundred miles) north-northwest of Madrid.

From these documents we can trace the early development of the Garden. For example, the budget statement for 1761 reports that the following items were purchased: glass for the "conservatory of exotic plants," "two large tables and four benches for use in Botany lessons," and various other garden supplies. That same year José Ortega sought funding for plant-collecting trips to various regions of the Iberian Peninsula in order to increase the number of plants growing in the garden. By 1765 budget statements regularly included costs for plant-collecting trips on the Peninsula.

These activities at Migas Calientes show us that it was a working botanic garden in the modern sense of the term. Often, when looking at Spanish garden history, I have encountered reports of Sixteenth Century "botanic gardens" which turned out to have been no more than the gardens of zealous individuals that seldom outlived their founders.

Quer died in 1764, and Miguel Barnades (1708–1771) became the head professor at Migas Calientes. This was an important turn of events because, unfortunately, Quer had never forgiven Linnéus his reference to Spain's "botanical barbarities." Happily for Spanish botany, Barnades overcame Quer's grudge against the Swede. He clearly understood the Linnéan system's advantages and began Spain's adoption of the Systema sexualis.

Charles III (1759–1788) and the Spanish Enlightenment

With Barnades's death in 1771, Arthur Steele tells us, "a new man—a young one—was ready to step into the chair. He was Casimiro Gómez Ortega, and as Joseph Ortega's nephew he had been trained in the ways of botany from the first. . . ." Gómez Ortega would become the consummate administra-
tor of the Real Jardín Botánico de Madrid. Under his stewardship the Garden developed during the late Eighteenth Century into a thriving center of botanical investigation, with far-flung projects of exploration, classification, and cultivation.

Shortly after Gómez Ortega assumed his post at Migas Calientes, the Garden buzzed with activity. Seeds and plants, either purchased or collected in the provinces of Spain, arrived with great frequency. The botany classes continued, with money going to the printing of placards for use in botany lessons. The classes reflected the priority that education held during the Garden's first fifty years. When the Garden was established in 1755, its focus had seemed geared to developing a collection of exotics from all parts of the earth, but by the time Gómez Ortega became head professor the emphasis had changed, and education became a key role of the Garden. Given Spain's need for technically proficient botanists and naturalists able to understand and develop the vast natural resources of the colonies, it was a wise shift in emphasis.

During this early period, in 1773, the Garden began to heat the greenhouse of exotic plants with coal. Thus, as early as 1773 the Spanish were able to raise tropical and subtropical plants in Madrid's temperate climate. Spanish botanists could now study, introduce, and acclimate a wide range of plants available from their vast colonial domains in the New World. They undertook the task with remarkable vigor and determination during the last quarter of the century.

The Garden Moves to the Paseo del Prado (1778–1781)

By 1775, plans were being developed to move the Garden from its remote location in the outskirts of Madrid at Migas Calientes to a more prominent site within the city. This was part of Bourbon King Charles III's urban-renewal scheme for Madrid, whereby the Mediaeval agglomeration of streets was to be superseeded by grand boulevards. The placement of the Garden was an essential element of the plan. A site for the new Garden was selected on the Paseo del Prado (literally, the "Walk by the Meadow," in reference to the numerous meadows and orchards), near the Retiro Royal Park. The Garden was to be placed next to the planned Museum of Natural History, where many objects brought back from the colonies were to be housed. The Natural History Museum would later become the Prado Art Museum. This complex of botanic garden and natural history museum situated along a prominent boulevard was a planning concept, developed by the Court of Charles III for Madrid, that resembles today's "technological highways" and "research parks."

In a revealing exchange of letters between two of the King's ministers, the Duque de Losada (who was Sumiller de Corps, or Lord Chamberlain) and the Marqués de Grimaldi (Secretario de Estado, or Secretary of State), Losada writes, on September 12, 1778, about the plans for the new garden presented by Francisco Sabatini (1721–1797), another well known architect of the period who was responsible for several major projects in Madrid. Losada writes that

in the formation of the Madrid Botanic Garden at the site of the orchards of the old Prado, two concerns were kept in mind, the first being to facilitate the teaching of botany while having close at hand the garden and the school . . . the other being, the beautification of the public "Paseo del Prado de Madrid" with a plan where good taste and regularity [i.e., symmetry] are prevalent.¹²

The Duque de Losada's wish for symmetry and taste was eloquently served by Sabatini's plan. A central axis dividing two symmetrical parterred spaces was proposed; the parterres were divided into three ascending tiers, with the ascending levels highlighting the par-
Plan showing the original layout of the Madrid Botanical Garden. The King’s wish for “regularity” is amply fulfilled. From Anales de la Sociedad Española de Historia Natural (1875).

terres at each preceding level. The central axis terminated on the façade of the long conservatories at the end of the site. Originally, Gómez Ortega had requested iron structures for the conservatories, but the King’s wish for “beauty and regularity” on this prominent site dictated that stone masonry and pillars be used.

The teaching of botany was ingeniously incorporated in the design by the designation of twenty-four beds in the parterres as “escuelas botánicas” (“schools of botany”), in which each of Linnaeus’s twenty-four classes of plants, based on stamen numbers, could be represented with plant materials from each class. The idea of arranging plants in a botanic garden according to their position in the Plant Kingdom was echoed a century later in Frederick Law Olmsted’s plan for the Arnold Arboretum.

In 1778, the Crown spent one million, two hundred thousand reales on the development of the new botanic garden. This figure illustrates the lengths to which Spain was willing to go in pursuing Charles III’s favorite hobby, botany. In 1781, the Real Jardín Botánico de Madrid was opened with much fanfare and high hopes. Casimiro Gómez Ortega presented His Highness with an herbarium and dedicated the main entrance gate—for use only during Royal occasions—with an inscription in honor of Charles III.

After the Garden moved to its present location in 1781, the number of plants coming in reached dizzying proportions. They came not only from the capitals of Europe but from Royal Expeditions to various parts of Central America and South America. In the Real Jardín Botánico de Madrid there are countless lists of plants arriving from such people as Dr.
La Puerta del Rey—the Main, or Royal, Gate of the Madrid Botanical Garden. It is dedicated to “Carolus III. P. P. Botanices Instaurator Civium Salutis et Oblectamento. Anno MDCLXXXI.” From Anales de la Sociedad Española de Historia Natural (1875).

Fothergill of London, from botanic gardens in France and Italy, and from the colonies of Perú, Cuba, México, and so on.

Particularly noteworthy are requests for seeds from Chile and Perú by L’Hérîtier in Paris in 1782 and by John Gedds (Geddes?) and John Hope (1766–1844) of the Royal Botanic Garden in Edinburgh. Most likely word was circulating through Europe that Spain had sent several botanical expeditions to the New
World, the Ruiz and Pavón Expedition to Perú and Chile in particular. Later, Gómez Ortega expanded the Garden’s acquisition potential by developing a correspondence program whereby learned men would send seeds and plants to Madrid from outposts in the Spanish colonies and from the capitals of Europe.

Under Gómez Ortega’s administration (1771–1801), botanic gardens were established in the Spanish colonies, the most notable being that in México. He oversaw the development in Spain of other botanical gardens, in milder regions better suited for the acclimatization of New World plants (in Valencia, for example), and on Tenerife in the Canary Islands.

An important measure of Spain’s desire to exploit the vast botanical potential of its New World colonies by acquiring, cultivating, and scientifically studying plant materials, and to a great extent the reason for the extensive shipments of plants made during the remaining part of the century, was the publication in 1779 of a treatise by Casimiro Gómez Ortega, *Instrucción sobre el Modo Mas Seguro y Económico de Transportar Plantas Vivas por Mar y por Tierra á los Países Mas Distantes* (Instruction on the Safest and Most Economical Method of Transporting Live Plants by Sea and by Land to the Most Distant Countries). The *Instrucción* was illustrated with figures of the construction of glass-covered wooden boxes for the transport overseas of living plants, and included practical ex-
Diagrams of glass-covered wooden boxes, or cases, used to transport living plants. From Casimiro Gómez Ortega’s *Instrucción* (1779). *Archivos General de las Indias*, Seville.

amples of the acclimatization of foreign plants in Spain. These boxes antedate by more than fifty years the first documented use of Wardian cases by the British. (Gómez Ortega does cite British and French accomplishments in the transport of plants.)

In addition, the *Instrucción* is sprinkled with practical horticultural information on the propagation and viability of seeds, as well as on various methods of vegetative propagation. There is even an excerpt from a royal decree stressing the economic and ornamental importance of this plant material to Spain. The decree also mentions the need to distribute the *Instrucción* not only to Spanish officials in the colonies, but to all interested individuals in the colonies, mentioning in particular the clergy, who were in most instances at the frontline of unexplored territories and who were undoubtedly the better-educated individuals in those regions.

**Spain’s Expeditions to America (1777–1808)**

Perhaps the most significant and most widely studied endeavors undertaken by the Spanish Crown on behalf of New World natural history occurred under Casimiro Gómez Ortega’s stewardship of the Real Jardín Botánico de Madrid from 1771 to 1801. During the last quarter of the Eighteenth Century, Spain sponsored four major scientific expeditions of a decidedly botanical character to the colonies.

The first was the Ruiz and Pavón Expedition to the kingdoms of Perú and Chile (1777–1788). Later (1783–1808), the Botanic Garden assisted the work of a priest and naturalist named José Celestino Bruno Mutis y Bosio (1732–1808) in his long-term study of the flora of New Granada, or Colombia. In addition, there was the Royal Scientific Expedition to New Spain (México) (1787–1803), whose plants had fascinated the Spanish since the time of Francisco Hernández in the 1570s. The last of Spain’s great expeditions was a global voyage of discovery, the Malaspina Expedition (1789–1794).

All of these expeditions yielded large amounts of data on the natural history of Spain’s dominions. Perhaps the richest amassing of data occurred on behalf of botany, for the Spanish discovered many new species. Their observations and painstaking examinations of the diverse flora of these regions yielded vast quantities of descriptions, drawings, sketches, watercolors, and herbarium specimens, as well as numerous trial cultivations in Madrid and other, more climatically appropriate botanic gardens in Spain.
Sadly, however, the full potential of Spanish botany during the Eighteenth Century remained largely unfulfilled. The Nineteenth Century had some cruel hardships in store for Spain that would lead this scientific windfall to remain dormant and forgotten for nearly a century and a half after these exciting voyages of discovery took place. Not until relatively recently has the scientific potential of the Spanish Enlightenment come again to the attention of scholars.

The Ruiz and Pavón Expedition (1777–1788). Perhaps the best documented and most carefully studied Spanish expedition to the New World was the Ruiz and Pavón Expedition to the kingdoms of Chile and Perú of 1777–1778. The landmark study of this important expedition is Arthur Steele's Flowers for the King. A remarkable book, it was one of the first and best attempts at careful, scholarly analysis of the Expedition, its participants, goals, and accomplishments.

This arduous, eleven-year expedition to Chile and Perú was a cooperative effort between the governments of Spain and France. The French, who had pressured the Spanish for an expedition to these kingdoms in order to recover the long-lost manuscripts of Joseph de Jussieu (1704–1779), appointed Joseph Dombey (1742–1794), a well established botanist, to the Expedition. The Spanish provided most of the manpower that made the exploration possible. In addition to appointing draftsmen and painters to the Expedition, Gómez Ortega selected two bright, young botany graduate students from Madrid, Hipólito Ruiz López (1754–1816) and José Antonio Pavón y Jiménez (1754–1840). Both were twenty-three at the time of their departure in 1777 and both—Ruiz in particular—were to make the most significant contributions of the Expedition.

Through the ceaseless efforts of Hipólito Ruiz, the Expedition contributed more to the early understanding of New World plants than any other Spanish expedition. In addition to publishing Flora Peruviana, et Chilen-sis (1798–1802), a project that was never completed because of the disastrous turn of events in Spain at the beginning of Nineteenth Century, the Ruiz and Pavón Expedition also probably yielded most in terms of the cultivation and acclimatization of New World plants in Spain—Alstrœmeria hæm-antha Ruiz & Pavón, Brugmansia sanguinea [Ruiz & Pavón] D. Don (Datura sanguinea Ruiz & Pavón), Fuchsia corymbiflora Ruiz & Pavón, Fuchsia magellanica var. macro-stema Ruiz & Pavón, etc.

José Celestino Mutis in New Granada (1760–1808). The work of José Celestino Mutis in the Kingdom of New Granada, or Colombia, amounted to a one-man expedition. Mutis was aided by a team of local draftsmen and painters, whom he had assembled for the arduous task of collecting, dissecting, and drawing more than five thousand black-and-white and color illustrations of that region's flora.

The Mutis venture was testimony to a single-minded enthusiasm for botany. Mutis had set off for America in 1760, independent of government initiation, to study firsthand the natural history of the colonies while working as a physician to the Virey (Viceroy, or "Governor") of New Granada. He died in 1808, in New Granada.

During his early years, Mutis had made various requests to the Court of Charles III for permission to devote his time fully to the study of the flora of New Granada, but his requests went unheeded; nevertheless, he entered into correspondence with Linnaeus, sending him various samples of plants, including quinine, or Cinchona sp. Not until 1782 did Mutis finally receive approval for his study, which was known as the Real Expedición al Nuevo Reino de Granada (1783–1808).

Mutis's dedication and fervor were boundless; he compiled immense amounts of material, both herbarium specimens and illustra-
tions. Yet the results of his work had little impact on what was taking place in Madrid for, unlike Ruiz and Pavón, he had not been selected by Gómez Ortega, and thus his “Expedition” had no administrative support back in Madrid. This may explain why Mutis’s results remained unpublished during his lifetime and why, after the many herbarium specimens and exquisite illustrations were deposited in Madrid in the 1830s, they remained largely unexamined for nearly a century. This may also explain why his study had little to offer in terms of the cultivation of New World plants in Spain.

Perhaps the only real recognition Mutis received during his life was that offered in 1803 by Alexander von Humboldt (1769–1859) during a visit to Mutis in Colombia. Apparently, Mutis, nearing the end of his life, gave von Humboldt many duplicates of his own specimens and illustrations. Von Humboldt freely accepted these valuable offerings and used much of the material in Plantae Aëquinoctiales (Paris, 1808), his flora of Central and South America. Von Humboldt (and his coauthor, Aimé Bonpland) dedicated the flora to Mutis.15

**Martin Sessé’s Expedition to New Spain** (1787–1803). One of the last major Spanish botanical expeditions was the Royal Scientific Expedition to New Spain, as México and the other Spanish territories in North America were called. This endeavor (called the “Sessé and Mocío Expedition” or, officially, La Expedición Botánica al Reino de Nueva España) began in 1787 and ended in 1803. It bore some resemblance to the Mutis venture in having been initiated by a naturalist and physician who was already living in the New World—Martín de Sessé y Lacasta (1751–1809). It differed from Mutis’s in that Sessé developed direct ties with Casimiro Gómez Ortega, who got for Sessé both financial support and the necessary Royal Decree. Martín Sessé’s objective was not only the botanical exploration of México but the establishment there of a botanical garden. Also appointed as botanists on the Expedition were Vicente Cervantes (1755–1829) and José Mariano Mocino (1757–1820). Gómez Ortega’s main objective in supporting Sessé was to acquire new plants and seeds for the Real Jardín Botánico de Madrid.

This, perhaps, is where the Expedition was

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*Mexico City in 1823. At middle left is the hill of Chapultepec, crowned by the unfinished Royal Palace, whose gardens were the site of the Real Jardín Botánico de México from 1791 until the Garden ceased to exist some time after 1824. The Potrero de Atlampa, at the far edge of the wet, marshy area between Chapultepec and the city itself (foreground), was the site of the Garden from its founding by Martín Sessé in 1787 until the move to the Palace grounds. Its wetness made it unsuitable. From Chronica Botanica (1947), after W. Bullock, Six Month Residence and Travels in Mexico (1824).*
Portrait of José Celestino Bruno Mutis y Bosio (1732–1808) in Alexander von Humboldt and Aimé Bonpland's flora of Central and South America, Plantæ Æquinoctiales (1808), which was dedicated to Mutis for his single-minded devotion to botany. For twenty-two years (1760–1782) Mutis independently pursued his botanical studies in New Granada (Colombia), finally receiving approval from the King in 1782.
most successful. Its success is evident in the large number of seeds and plants that were recorded as having entered the Botanic Garden while it was under way (1787–1804). Thanks to the Sessé Expedition, plants such as *Cosmos* spp. and *Dahlia* spp. arrived in Madrid, whence they were disseminated to the rest of Europe.

The Sessé Expedition never published the results of its labors in a “Flora Mexicana,” again because of the disastrous disruption Spain experienced in the next century. *Flora Mexicana* and *Plantas de Nueva España* were not published until 1893 and 1894, respectively, by the Sociedad de Historia Natural de México.

The Malaspina Expedition (1789–1794). The last major expedition undertaken by the Spanish Crown was the globe-girdling Malaspina Expedition of 1789–1794. Iris H. W. Engstrand’s study, *Spanish Scientists in the New World*, skillfully chronicles the scope and breadth of the Expedition. Its namesake, Alejandro Malaspina (1754–1809), a renowned navigator, was commissioned by Charles IV to conduct a natural history expedition to most of the Spanish territories around the globe, from the Atlantic to Perú and the Pacific, up to the Pacific Northwest, to Nootka Sound and across the Pacific to the Philippines. The botanists on this expedition were the France-born Luis Née (fl. 1791), the
Spaniard Antonio Pineda y Ramírez (1753–1792), and the Bohemian naturalist Thaddäus (or Tadeo) Hänke (1761–1817), who discovered the redwood (*Sequoia sempervirens*) near Monterey, California, in 1791, during the Expedition.¹⁶

This expedition, like the others, ended in desperation when the time came to publish the copious data it had gathered in its long, arduous travels. When it returned to Madrid in 1794, the Malaspina Expedition momentarily basked in praise, but Alejandro Malaspina then became involved in Court intrigue engineered by Charles IV’s wife, Queen María Luisa of Parma, against the King’s most influential advisor (and the Queen’s lover), the reactionary Manuel Godoy Alvarez de Faria (1767–1851), the so-called “Prince of Peace.” Malaspina was convicted of treason and banished.¹⁷

The Expedition was moderately successfully, however, with respect to botany and the cultivation of New World plants, thanks primarily to the efforts of Luis Née and the up and coming Spanish botanist, Antonio José Cavanilles (1745–1804), back in Madrid.

The Old Guard Steps Down

By the beginning of the Nineteenth Century there were clear indications that Casimiro Gómez Ortega was in his waning days of power and influence at the Royal Botanic Garden. He was about to be superseded by someone of remarkable botanical ability and productivity. The understanding of these events lies in the description and publication of two common garden plants, the dahlia and the cosmos.

*Dahlia* and *Cosmos* have already been mentioned as genera that were introduced to Europe as the direct result of the Sessé and Mocíño expedition to New Spain, which had been fostered by Gómez Ortega himself. Interestingly, however, the plants were described by Antonio José Cavanilles, perhaps the most prolific and first truly world-class botanist of Spanish origin.

Antonio José Cavanilles was born in Valencia in 1745, where he studied at the University of Valencia, obtaining a degree in philosophy and theology. During a trip to Paris in 1770, he became interested in natural history. In 1781, at the age of thirty-six, he dedicated himself fully to botany. His rapid progress made many take note of the Spaniard, including Antoine de Jussieu (1748–1836). While in Paris, he began work on botanical monographs, the first being one on the Linnaean Class Monadelphia.¹⁸

When he returned to Spain in 1790, he had become one of the most celebrated botanists of the age. The renown he had gained while in Paris was not easily overlooked by Gómez Ortega and his fellow botanists, and soon professional jealousies erupted. A full-blown battle was to engulf all the Spanish botanists of the time. When the smoke finally cleared, Gómez Ortega and Ruiz and Pavón were the losers.

Cavanilles was appointed director of the Garden in 1801 and quickly upgraded all aspects of the institution, from its herbarium to its conservatories. Cavanilles and his assistants produced an important body of technically superior literature that was full of accurate descriptions and determinations of many New World plants.

A publication that sheds much light on the significant botanical descriptions brought to bear by the industrious Cavanilles was *Descripciones de las Plantas Demonstradas en las Lecciones Publicas* ([Descriptions of the Plants Demonstrated in the Public Lessons [of Botany]]). It reveals that over one hundred fifty plants of the New World were being cultivated in the Garden in Madrid, many of them described by Cavanilles in 1803. Sadly, this remarkable productivity and genius did not last long.