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The Botany of Empire in the Long Eighteenth Century

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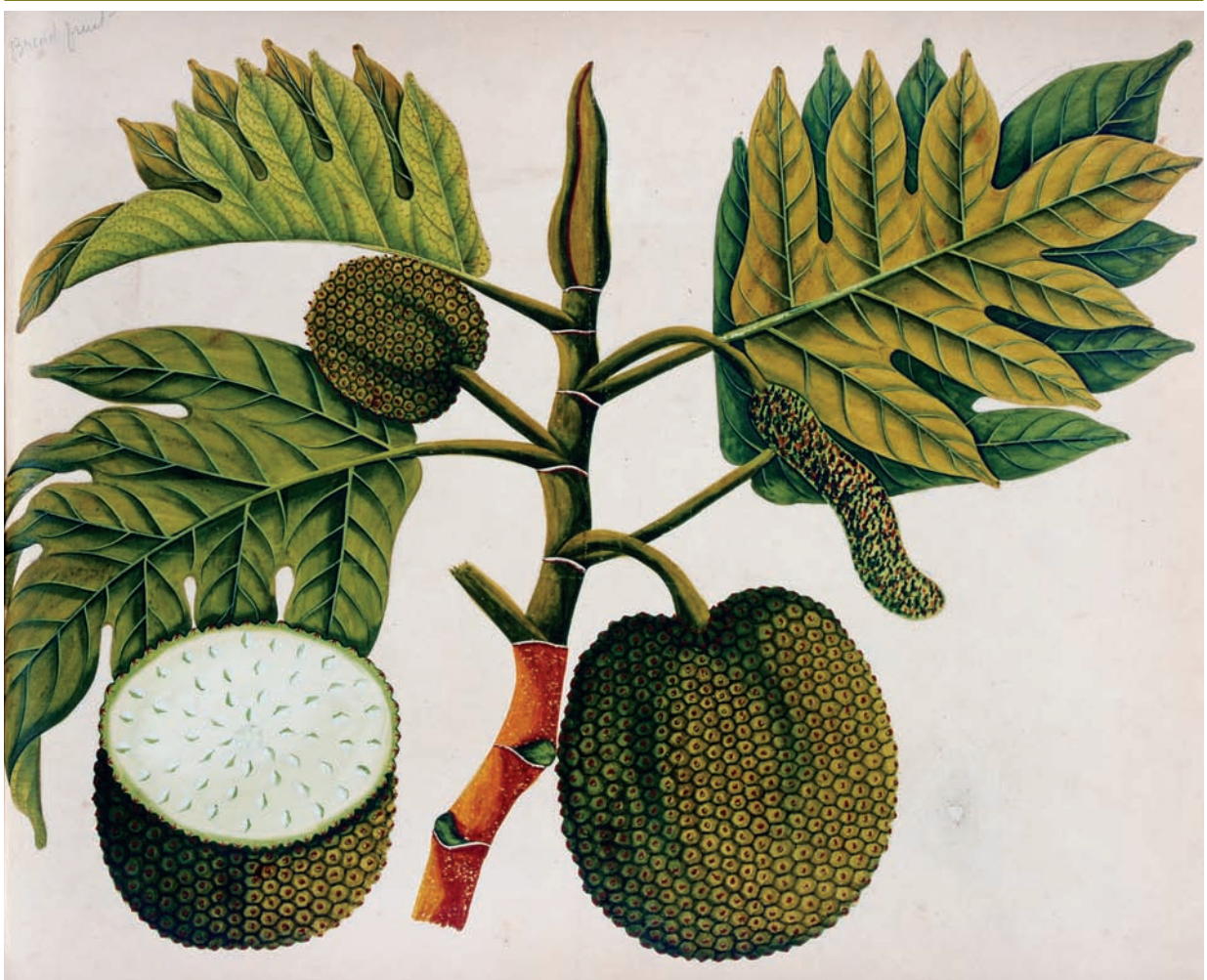
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The Botany of Empire in the Long Eighteenth Century

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1

Introduction

The Botany of Empire in the Long Eighteenth Century

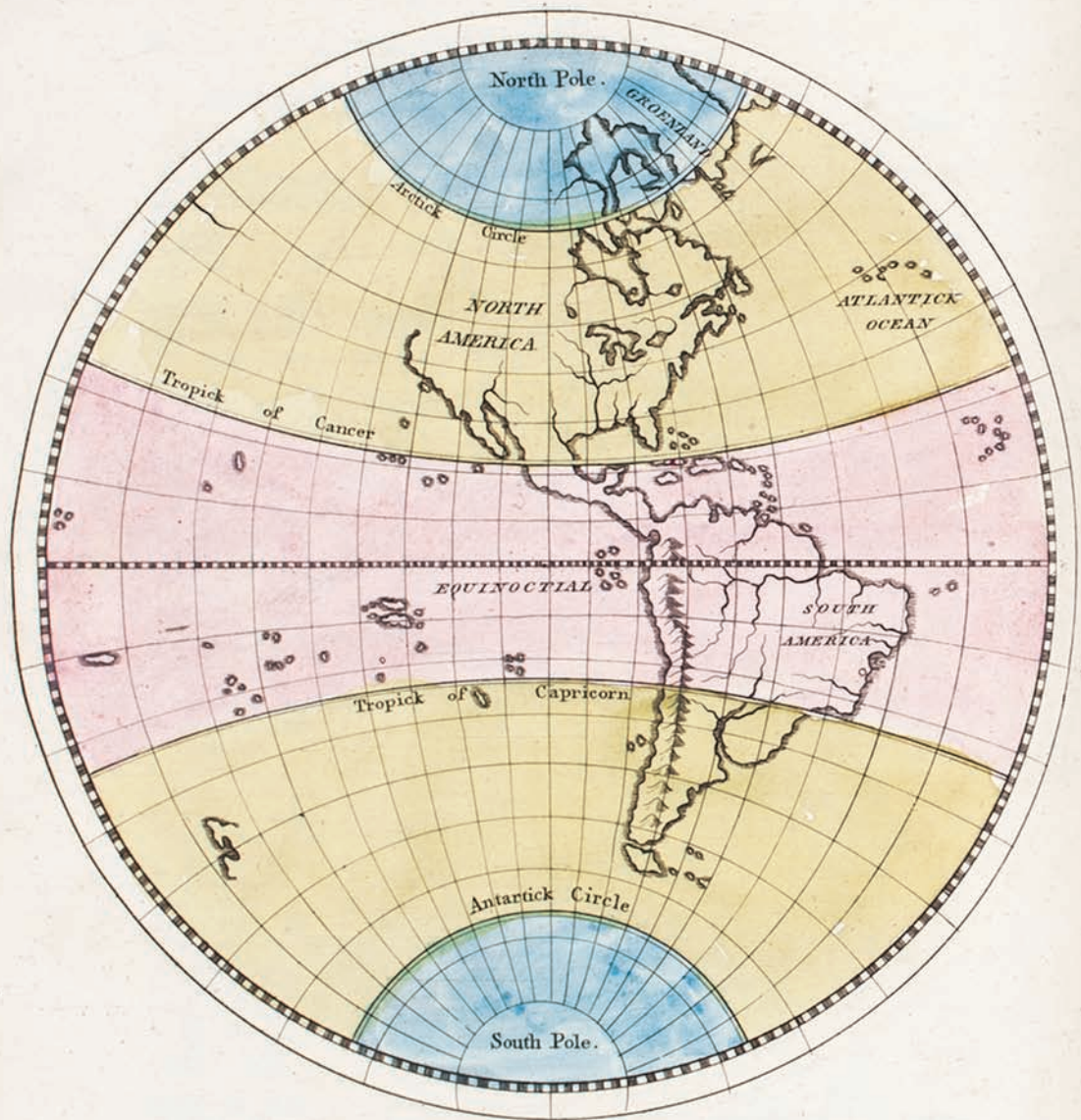
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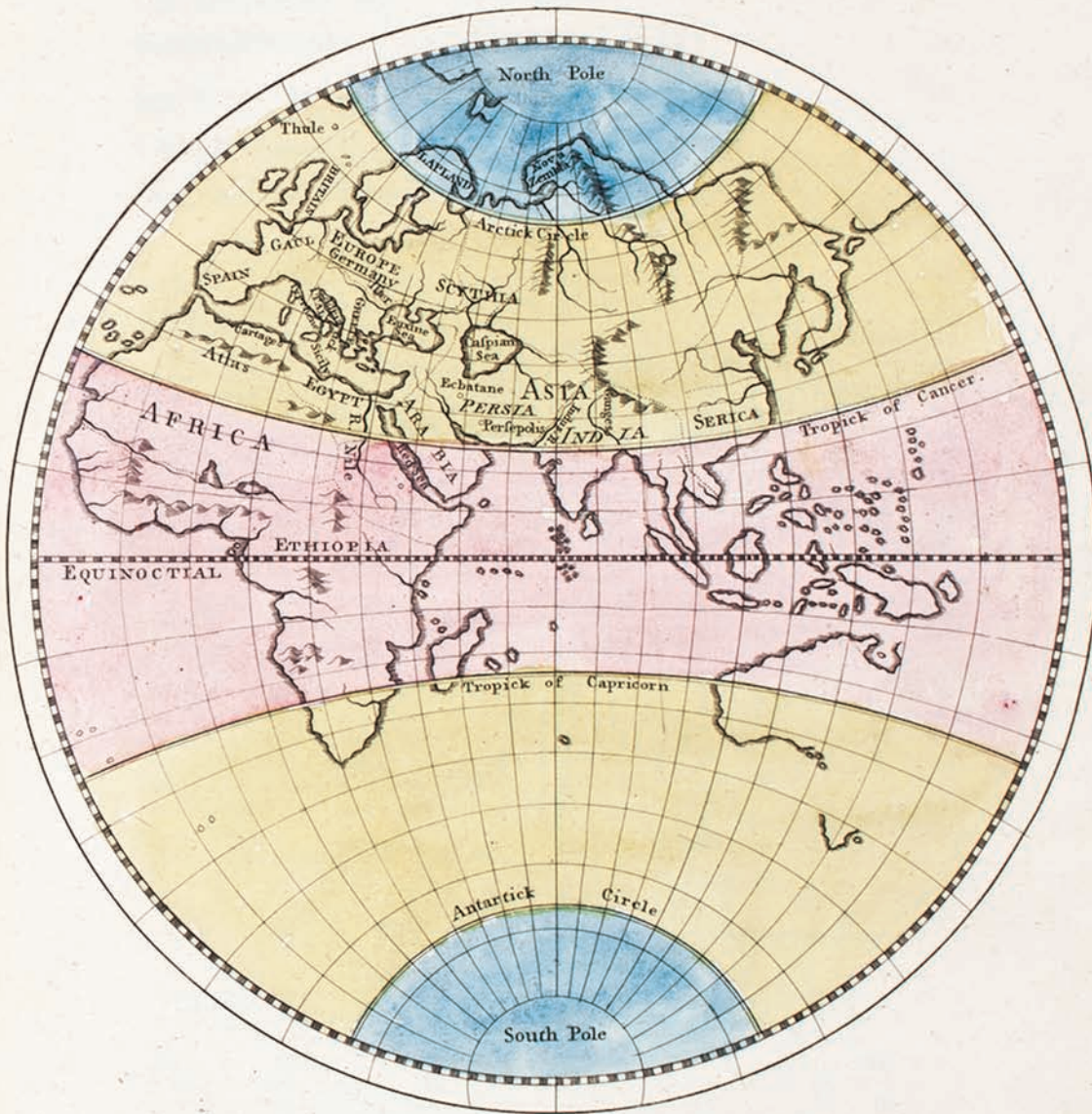
The close relationship between botany and empire in the early modern period has been the focus of scholarly attention for the past two decades. Drawing on Bruno Latour's notion of "centers of calculation," David Miller and Peter Reill, in *Visions of Empire: Voyages, Botany, and Representations of Nature* (1996), demonstrate how a number of eighteenth-century developments intensified the appropriation of natural resources for exploitation: from Joseph Banks's long career at Kew as the dispatcher of far-flung plant hunters to the role of Linnaean taxonomy in standardizing and facilitating global information exchange to new techniques of visualization and transportation that purported to erase the distance between imperial centers and often contested territories and their resources.¹ In *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (2007), Londa Schiebinger and Claudia Swan further emphasize the central role of botany within the political and scientific contexts of natural history, arguing that "the development of botany and Europe's commercial and territorial expansion were closely associated developments."² From the perspective of art history, Therese O'Malley and Amy Meyers's *The Art of Natural History: Illustrated Treatises and Botanical Paintings, 1400–1850* (2008) explores the overlap of aesthetic and scientific values and techniques in the visualization of knowledge.³ Daniela Bleichmar's *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment* (2012) focuses on the role of botanical illustration in validating and disseminating the joined scientific and imperialist agendas of eighteenth-century Spanish expeditions.⁴ In recent scholarship, therefore, botanical science has been cast as complicit with the eighteenth-century colonial enterprise, similar to academic geography and cartography as instruments of imperialist expansion in the nineteenth century.

Building on this impressive body of knowledge, *The Botany of Empire in the Long Eighteenth Century* contributes to the ongoing investigation of the intersections between natural history

FIGURE 1.1

A world map colored to show the five zones of the earth in the classical tradition. Europe is graphically decentered: one page shows the American continent, while the other shows the Indian subcontinent in the center, flanked by Africa and Asia/Australia. John Martyn, *The Georgicks of Virgil* (1741). Rare Book Collection, Dumbarton Oaks Research Library and Collection.





and geopolitics in two principal ways. First, it concentrates on the long eighteenth century—a period that saw widespread exploration, an increase in the traffic in botanical specimens, taxonomic breakthroughs, and horticultural experimentation—to compare the impact of new developments and discoveries across several regions. Second, it broadens the geographical scope to encompass powers that did not have overseas colonial possessions—such as the Russian, Ottoman, and Qing empires and the Tokugawa shogunate—as well as politically borderline regions such as South Africa, Yemen, and New Zealand. Our aim is to sketch an inclusive and nuanced picture while avoiding predominantly Eurocentric interpretations of the meanings of botany—and natural history more generally—during the period under consideration.

Although botanical scholarship had global aspirations at least as early as the sixteenth century (when it was still largely contained within the framework of medical theory), it was only in the eighteenth century that it could encompass the inhabitable world, as major colonial powers became the main players in the field of botanical exploration (Figure 1.1). The chronological scope of this volume thus puts botany at center stage at the time when the knowledge and exploitation of plants becomes a fundamental instrument of imperial expansion and government control. But the volume also shows the necessity of expanding beyond the strict confines of the eighteenth century if we are to comprehend the unfolding narratives of empire through, for instance, the radical transformation or demise of significant gardens in Tuscany, Istanbul, or Beijing. Moreover, the long periodization enables us to acknowledge the survival and expansion of traditional practices and institutions, such as the role of learned societies, correspondence networks, botanical gardens, and publications in the circulation of botanical knowledge.

When one seeks to locate botanical practices within their historical contexts, “empire” provides a convenient and seemingly self-evident category of analysis. And yet the meanings and aspirations of empire in the long eighteenth century were multiple and divergent, as were the political tools and human resources at its disposal. Through case studies of botanists who were both

connected to European networks and resistant to their strategies of control (such as visual and taxonomic conventions), *The Botany of Empire in the Long Eighteenth Century* nuances the portrayal of eighteenth-century naturalists as “agents of empire.”⁵ Moreover, the Eastern empires were not merely passive observers of Western colonial ambitions. Expansionist states such as Britain and France did not operate in a world of their own but were obliged to compete or collaborate with regional or local powers. Consequently, this volume also raises the question of the role of botany in constructing social and political identities *within* empire—notably, within the multiethnic and multilingual Ottoman and Qing empires—rather than between competing empires. The notion of empire that emerges from these different geographical and cultural coordinates is, therefore, a provisional and inherently differentiated category rather than a coherent political formation with a uniform scientific or economic agenda.

The roots of a global botany of empire have been traced to the 1670s, with the emergence of sugar plantations run on slave labor in the Caribbean and South America—which, with specific reference to the Dutch colony of Suriname, were reviled for their inhuman labor conditions in Voltaire’s *Candide* (1759). Around the same time, France embarked on a “plan of state-run colonial science” centered on the Académie Royale des Sciences and the Jardin du Roi (Figure 1.2). Not to be left behind, by the period between 1770 and 1820 Britain had 126 official collectors in the field and a network of informal suppliers and transporters.⁶ Throughout the eighteenth century, competition between these two major powers continued to play out in the colonial plantations of the Caribbean and the slave trade that made sugar production possible. Far-flung territories were rendered subservient to the metropolitan economy, either as suppliers of raw materials or as possible locations for the transplantation and cultivation of lucrative crops. The medicinal qualities of coveted plants, such as cinchona, were expected to assist European colonization in tropical regions (Figure 1.3). The consumption of other botanical imports, such as tea or ginseng, was a luxury that drained state coffers, leading to the search for substitutes or plans to



FIGURE 1.2

Sébastien LeClerc's depiction of Louis XIV with members of the Académie des Sciences. This model of the learned academy was the practical and symbolic basis for eighteenth-century state-run science. Nicolas Robert, *Recueil de plantes* (1788, engraving dated 1671–76). Rare Book Collection, Dumbarton Oaks Research Library and Collection.



FIGURE 1.3

Cinchona trees, the source of antimalarial treatments, were an invaluable commodity for empires, such as the British and the Dutch, that held tropical territories. Aylmer Bourke Lambert, *A Description of the Genus Cinchona* (1797). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

grow them more cheaply in colonies. At a distance from the plantation economies, imperial networks of botanical gardens served as laboratories for the acclimation and exchange of economically valuable plants—such as Chinese tea transplanted to India—or temporary storage depots in the long and laborious process of their transportation. Botanical gardens were also occasionally enlisted in attempts to break rival monopolies, as in British and French projects to grow clove outside the Dutch-controlled Moluccas.⁷

Within the framework of imperial competition, scientific, economic, and political ventures were usually intertwined. To a large extent, increasing plant traffic and commercial exploitation were made possible by the expansion of administrative networks and improved technologies of transportation. Publications from that period often addressed such practical matters as shipping—as evidenced, for example, by John Ellis's instructions for how to transport delicate plants on long sea voyages. His instructions for carefully sealing seeds in individual

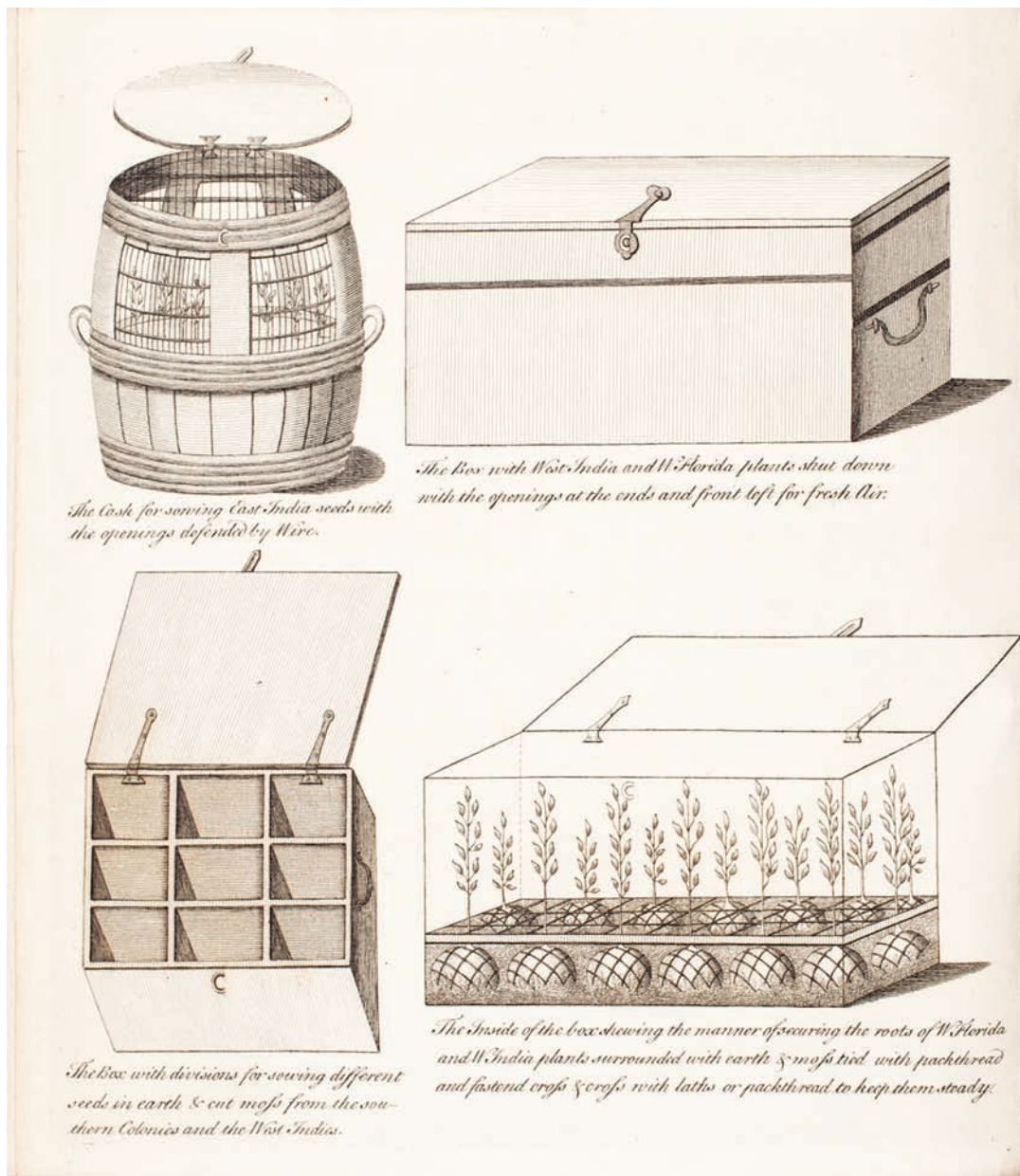


FIGURE 1.4

Methods of plant transportation. Ellis's illustrations demonstrate how to pack plants and seeds securely for long sea voyages. John Ellis, *Directions for Bringing over Seeds and Plants* (1770). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

drops of wax or growing them in state-of-the-art containers were published alongside a scientific paper on the venus flytrap, with an attractive illustration of that plant—a new technology and a novel plant published side by side (Figure 1.4).⁸ Ellis was keenly interested in economic botany; appended to his *Directions for Bringing over Seeds and Plants* was “A Catalogue of Such Foreign Plants as Are Worthy of Being Encouraged in Our American Colonies, for the Purposes of Medicine, Agriculture, and Commerce.”

The increase in the flow of botanical specimens also led to pressure to capture their variety and incorporate new discoveries into the system of knowledge via precise systems of classification, with Linnaean taxonomy arguably being the most prominent. By the end of the eighteenth century, binomial classification provided a lingua franca to support the appetite for botanical specimens that, by then, spanned almost the entire globe (Figure 1.5). Again, key figures of botanical science, such as Banks and Linnaeus, were also involved



FIGURE 1.5

A Linnaean binomial name added by hand, which extended the value of the printed book at a time when the system of Linnaeus was becoming a lingua franca. Johannes Burman, *Rariorum africanarum plantarum* (1738–39).

Rare Book Collection, Dumbarton Oaks Research Library and Collection.

in commercial ventures. Banks was the president of the Royal Society and a member of the Privy Council of Trade; as the director of the botanical garden at Kew, he acted as a mentor to younger botanists dispatched abroad in search of new plants. Linnaeus—hailed as the “father of modern taxonomy” but also active as a practicing physician—was at the same time a botanical opportunist preoccupied with the possibility of growing tea, as well as mulberry trees for silkworms, in Sweden to avoid the loss of the country’s bullion to luxury imports.

While stressing the importance of economic motives, *The Botany of Empire in the Long Eighteenth Century* also highlights the plurality of philosophical and social agendas invested in the science and practice of botany. New plant discoveries circulated within parallel, often overlapping, systems of value: the profit economy exemplified by the opium or sugar trade; the social economy of gentility represented by Chinese exotics or the elegant tea table; the political economy represented by the ideology of “improvement,” which spurred productivity and competitiveness; and the prestige economy associated with publication in a scientific journal, membership in a learned society, or the ability to cultivate an exotic plant in a new climate. Time and again, however, botanical narratives also convey the lingering romance of discovery, the enduring hold of curiosity and surprise, and the possibility of scientific and aesthetic disinterestedness, even as botany becomes enmeshed with economic profit and imperialist schemes.⁹

Indeed, if we are to believe Jean Baptiste Fusée Aublet, the explorer of French Guiana, the botanist was the only traveler to the colonies who was not entirely moved by self-interest; for who in his right senses, Aublet wondered, would brave the dangers of the jungle—snakes, sinkholes, fugitive slaves, disease, insects, and the insufferable climate—in pursuit of uncertain discovery?¹⁰ Instead, botany drew a very particular kind of person: one in possession of a strong constitution but also firmness, ardor, gaiety, finesse, and exquisite senses attuned to the natural environment (Figure 1.6). Aublet, who left his herbarium to Jean-Jacques Rousseau, paints a Romantic portrait of the botanist in the field that recalls Alexander von Humboldt’s evocations of the sublime in the equinoctial regions of America. For

Humboldt, plants resembled ruins in their capacity to evoke past empires, and he was poignantly aware of the historicity of his encounters with the flora of foreign places. In the gardens of Chapultepec, he saw cypresses whose circumferences suggested they were planted by the Aztec dynasties; and in the midst of the forest, on the banks of the Río Cedeño, he found long-abandoned gardens containing orange trees whose ancestors were brought over by Columbus.¹¹ The responses of Aublet and Humboldt exemplify the many eighteenth-century meanings of “sensibility,” since they not only register the aesthetic effects of landscapes and plants on the enthusiastic naturalist but also refer to the ethical dimensions of botany. Both men, for example, deplored the use of slaves to meet the profit exigencies of colonial plantations.

While providing rich historical background, this volume also engages with influential theoretical constructs that have informed important recent work on eighteenth-century natural history and, more specifically, botany. A recurring theme is the relationship between center and periphery as reinterpreted by Latour through his notion of “acting at a distance.” In practical terms, acting at a distance becomes possible through the formation of networks that collect and transport “inscriptions”—any significant data that can be textual or visual—from the periphery to the center in a growing “cycle of accumulation.” This cycle continues when the inscriptions are successfully appropriated by the center, thus allowing for knowledge as recognition even for the first-time traveler to a peripheral location. The more the cycle of accumulation grows, the greater the size of the networks that can be mobilized to further the center’s imperialist ambitions and the greater the power asymmetry between the periphery and the center.¹²

Latour’s privileged example of acting at a distance is the eighteenth-century cartographic expedition by Jean-François de Galaup, Comte de La Pérouse, that “put” the island of Sakhalin on the world map. His concepts, however, apply equally well to botany. “Expeditions, collections, and inquiries” were among the main strategies that allowed a center to act successfully at a distance.¹³ In the field of botany, the “cycle of accumulation” was exemplified by the botanical garden as a site of

FIGURE 1.6

America depicted as an Amazon, with a portrait of Aublet on the medallion at the lower right. Jean Baptiste Fusée Aublet, *Histoire des plantes de la Guiane Française* (1775), vol. 3, frontispiece. Rare Book Collection, Dumbarton Oaks Research Library and Collection.



- | | | |
|---|---|--|
| 1. <i>Palmier maripa.</i> | 4. <i>Grappe du régime de comon.</i> | 7. <i>Rosine du Palmier zaguenete.</i> |
| 2. <i>Régime de maripa, et Fruit détaché.</i> | 5. <i>Grappe du régime d'avouira.</i> | 8. <i>Cierge triangulaire.</i> |
| 3. <i>Palmier comon.</i> | 6. <i>Fruit du Palmier bache détaché.</i> | 9. <i>Cierge octogone.</i> |

collecting, exchange, communication, and experimentation. Latour's concept of science as the process of bringing inscriptions from the periphery to the center is an apt description of the profusion of eighteenth-century botanical practices that included plant collecting, note taking, and sketching in the colonies and the subsequent engraving and

printing, back in the metropole, of books that could be taken on subsequent expeditions. Improved techniques for preserving and transporting plants, such as the ones described by Ellis, ensured the function of botanical specimens as "immutable and combinable mobiles" that could be archived, analyzed, and rendered useful by the metropole. At the same

time, the spread of Linnaean taxonomy facilitated long-distance comparisons and determinations. Lastly, Latour's model—especially its emphasis on the knowledge/power asymmetry between the center and the periphery—lends itself particularly well to the description of colonial or imperialist enterprises, within which botany was frequently embedded in the long eighteenth century.¹⁴

Nevertheless, the geographical and cultural scope of this volume engenders diverse narratives that do not fit into a single paradigm. Even as he articulates the power of networks, Latour acknowledges their limits and potential fragility. The staggering output of eighteenth-century Spanish botanical expeditions in the New World, for instance, reveals that the mass of inscriptions—botanical illustrations—generated could be beyond the center's actual capacity to process and instrumentalize.¹⁵ Ruptures can occur not simply due to technical problems of transmission but also under the influence of local pressures or power dynamics that fall beyond the reach or awareness of the center.¹⁶ Dissatisfaction with the prevailing technology of inscription—for instance, the two-dimensional nature of botanical illustration—may lead to alternative techniques of representing natural resources in the periphery.¹⁷ If on eighteenth-century American maps cartouches announce the possession of American territories by European powers, on a map of South Africa offered to Louis XVI the cartouches and *papillons* serve instead to place plants and animals in their local ecosystems and to memorialize, as it were, the importance and opacity of local knowledge—while at the same time eschewing Linnaean nomenclature.¹⁸ Above all, the prevailing characterization of the botanical explorer as an “agent of empire” overlooks a wide range of motivations that influenced collecting in the field: personal interests and choices, government or institutional agendas, interactions with local political agents, reliance on local knowledge, and strategies of self-promotion.

Some of the most interesting recent work in the history of science has dealt with strategies of visualization. In its attention to the production, use, and meanings of botanical illustrations, *The Botany of Empire in the Long Eighteenth Century* also enters into dialogue with this body of scholarship. In *Objectivity* (2007), Lorraine Daston and Peter Galison offer a

compelling history of scientific images in almost the same period covered by this volume and describe them as falling into the category of “truth-to-nature.” Drawing on an image from Linnaeus's *Hortus cliffortianus*, Daston and Galison take botany as the paradigmatic eighteenth-century science in which each type represented in a scientific atlas aspired to be “truer to nature—and therefore more real—than any actual specimen.”¹⁹ In the nineteenth century, however, “truth-to-nature” gave way to “scientific objectivity,” the pursuit of “knowledge . . . unmarked by prejudice or skill, fantasy or judgment.”²⁰ Daston and Galison demonstrate a close relationship between epistemology and aesthetics: “truth-to-nature” thus signifies not only a historically specific understanding of how to synthesize knowledge from discrete particulars but also a metaphysical aspiration to “a reality accessible only with difficulty.” The ideal eighteenth-century naturalist, therefore, combined “sharp senses” with a “capacious memory, the ability to analyze and synthesize impressions, as well as the patience and talent to extract the typical from the storehouse of natural particulars.”²¹ This portrait emerges from our case studies and is further supported by many of the images in this volume. It is worth adding, however, that representational conventions were also informed by practical concerns such as the expense and limitations of printing technologies, which are explored in the final section of this introduction. Moreover, they were also embedded in larger philosophical and political ambitions that drove eighteenth-century scholarship.

If botany is exemplary of an eighteenth-century aspiration to “truth-to-nature,” as Daston and Galison argue, its practices nevertheless encompassed a wider range of what we have come to regard as epistemological, ethical, and aesthetic drives of the Enlightenment. A little-known utopian project from the very end of the eighteenth century, which straddles theory and practice, the national and the universal, encapsulates many of the ways in which botany was understood as a fundamental Enlightenment science. While throwing light on the desire for accurate and enduring representations of nature that were clearly recognized at the time—mediated not by an individual artist's skill and imagination but by what was then seen as a cutting-edge technology—this contemporary voice

also succinctly summarizes the central themes and preoccupations of our volume.



In October of 1790, on the cusp of political and cultural change in Europe, Louis-François Jauffret (1770–1840)—a writer, pedagogue, and popularizer of science, as well as a contemporary and associate of taxonomists and naturalists Antoine-Laurent de Jussieu and Georges Cuvier—presented to the French National Assembly a project for establishing a national manufacture of artificial plants following the method of Thomas Joseph Wenzel, florist to Queen Marie Antoinette.²² The project, which was also presented to the Academy of Sciences, proposed the establishment of a *cabinet des plantes* that would contain exact replicas—manufactured using Wenzel’s innovative technique—of the twenty-five thousand plant species that were, by Jauffret’s calculation, then known to science. Jauffret envisaged this cabinet as an “immense temple of Nature, wherein the eye could encompass in a single view the entire plant creation.”²³ This encyclopedic view would double as a triumph of scientific representation, for plants would be captured in three dimensions, in all their structural detail and colorful beauty, and preserved for eternity. Science would no longer be hampered by the shortcomings of the colorless, decaying, partial herbarium specimen; the distortions and representational conventions of botanical illustrations; the “arid descriptions”²⁴ or the complexity of multiple nomenclatures and taxonomies in which “chaos march[ed] hard on the heels of all those variations.”²⁵

Jauffret’s proposal conveyed a desire for a global collection of plants, accurately represented and available to scientists and the public alike. Botanical knowledge would no longer be limited by a dependence on the exertions of colonial agents dispatched to collect specimens but often producing disappointing results due to their indolence or incompetence. Observers would be able to make immediate comparisons between different plants and to detect patterns that would yield new information about the effects of climate and region or practical and scientific applications. The utopian vision inspired by Wenzel’s creation was, thus, a critique of existing methods of botanical description and representation and led to Jauffret’s claim that

the proposed cabinet would usher in “a new epoch in the History of human knowledge.”²⁶

Jauffret’s text is also paradigmatic of how eighteenth-century botany was adopted by proponents of national improvement. Without doubt, Jauffret argued, painters and illustrators would benefit from having accurate models at hand, yet the manufacture of artificial plants would not only stimulate the disinterested pursuits of art and science but also facilitate their practical applications. While he gave medicine pride of place, Jauffret was also interested in the applied arts and crafts, anticipating the market prospects for French luxury embroidery or textiles and wallpapers with floral motifs. Equally important, he calculated that the actual manufacture would provide employment for four thousand people at a time of significant disorder and uncertainty in the French capital. And such a cabinet would not fail to attract visitors from abroad, thus contributing to the national prestige. Yet Jauffret’s was more than a national or even imperial vision: it also alluded to the public sphere of knowledge as shared and open to examination. Jauffret saw the cabinet as fulfilling the promise of the eighteenth century, transcending artificial systems and cultural differences to provide direct access to the multiplicity of natural objects “in a public space that would soon become a resplendent sanctuary of knowledge/enlightenment.”²⁷

Chapters

The volume is divided into four parts that highlight different aspects of the relationship between botany and empire across various regions during the long eighteenth century. The first section, “Botanical Ambitions,” introduces the principal themes of the whole volume, setting them within the global mosaic of botanical exploration and exchange.

Botanical Ambitions

Daniela Bleichmar opens the discussion by emphasizing, in “Botanical Conquistadors: The Promises and Challenges of Imperial Botany in the Hispanic Enlightenment,” that botanical exploration was a global enterprise with high economic stakes that relied on institutional networks and received strong state support in the quest for new raw



FIGURE 1.7
 Ginseng, captioned in Latin, German, French, and Russian, from a series of illustrations of medicinal plants dedicated to Emperor Alexander I P. M. Gofman, *Collection de curiosites du royaume des plantes* (1797–1810). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

materials. Concentrating on the Spanish expeditions, Bleichmar stresses the discourse of utility that summed up their aspirations and stoked their interest in the economic value of colonial flora. At the same time, she demonstrates that the Spanish expeditions were attempts to revive an illustrious imperial past: “The role of imperial institutions in supporting scientific investigations and the appeal to colonial administrators for information were not Enlightenment novelties but rather extensions

of longstanding Spanish imperial techniques.” Yet despite these expeditions’ impressive visual output, they were relatively unsuccessful in fulfilling their immediate political and economic motives: Spain, a colonial empire on the wane, offered a foil to the ascendancy of France and England on the world stage.

Shigehisa Kuriyama’s account of the global fortunes of ginseng, “The Geography of Ginseng and the Strange Alchemy of Needs,” raises provocative

FIGURE 1.8

Frontispiece, showing the allegorical uncovering of China to the Macartney mission to China. George Staunton, *An Historical Account of the Embassy to the Emperor of China* (1797). Rare Book Collection, Dumbarton Oaks Research Library and Collection.



questions about historical connection, analogy, and accident. A Jesuit account of Chinese ginseng published in Paris and read by a missionary in Quebec prompted the unlikely discovery of this plant in North America. At around the same time, China's neighbor Japan resorted to "botanical piracy" to manage the cultivation of ginseng at home, thus staunching the flow of bullion to China via Korea. The Japanese solution of growing ginseng at home was a locally feasible alternative to

the British scheme of transplanting Chinese tea to Indian colonial plantations; both, however, served a similar purpose in addressing the balance of trade. Kuriyama's chapter attests to the serendipitous power of printed text and image; it also questions our fixed categories of space and time by tracking their duplication and transposition in ginseng's global fortunes (Figure 1.7).

In "Weeping Willows and Dwarfed Trees: Plants in Chinese Gardens under Western Eyes,"

Bianca Maria Rinaldi tracks how European views of Chinese gardens reflected changing attitudes to the Qing empire. Just as Chinese plants and the distinctively “naturalistic” approach to landscaping were becoming increasingly common in European gardens, Rinaldi argues, early Jesuit accounts cast the Chinese garden as the product of an enlightened empire, worthy of imitation due to its informal aesthetic and low cost (in contrast to the ruinously expensive formal French garden as an expression of absolutism). By the turn of the nineteenth century, however, the same aesthetic (now viewed as the artificial and perhaps even perverse miniaturization and manipulation of nature) was taken as evidence of an enervated and decadent society whose political and moral degeneration implied European superiority and advanced European commercial agendas (Figure 1.8).

Anatole Tchikine’s “Echoes of Empire: Redefining the Botanical Garden in Eighteenth-Century Tuscany” transports us to a small Italian state on the periphery of the Habsburg empire, where the botanical garden was arguably born. This chapter takes a retrospective approach to offer a concise trajectory of the development of the botanical garden as an institution dedicated to preserving and advancing the knowledge of natural history, yet invested with different and sometimes conflicting agendas: medicinal, scholarly, didactic, and, ultimately, economic. By focusing on the Giardino dei Semplici in Florence, Tchikine demonstrates strong continuities from the sixteenth into the eighteenth century in botanizing trips, correspondence networks, and gift exchange, while emphasizing the local effects of the rise of learned societies and the ideology of improvement. The new kind of botany that emerged in the eighteenth century, Tchikine argues, required a new type of botanical garden not only as a repository of knowledge but as a direct response to pressing economic and political needs.

Agents of Empire?

The second section focuses on the complex figure of the botanical explorer. Through a series of individual case studies, often from the margins of empires, this section scrutinizes the notion of the botanist as “agent of empire.” These amateurs and entrepreneurs, scientists, explorers, or simply eccentrics, for

whom work in the field could be a stepping-stone to a secure professional appointment, tried to market their services and skills and embraced personal objectives that often coincided but occasionally conflicted with imperial agendas. Even as the networks of learned societies, government authorities, and botanical gardens in the metropolitan centers sought to order and exploit botanical exploration, conditions on the ground often interfered with or modified the expected outcome. This section, therefore, highlights complex interactions between mainstream and vernacular botany, bringing into prominence the uses and adaptations of local—that is, non-imperial—botanical dialects.

Sahar Bazzaz’s chapter, “The Politics of Secular Pilgrimage: Paul-Émile Botta’s Red Sea Expedition, 1836–39,” takes us to the end of our period. Bazzaz tracks the botanical pilgrimage of an early nineteenth-century explorer who followed in the footsteps of Peter Forskål (1732–63), the Swedish/Finnish naturalist, apostle of Linnaeus, and leader of the famous but unsuccessful mid-eighteenth-century Red Sea expedition. Botta traveled to the Arabian Peninsula with directives from the Muséum National d’Histoire Naturelle (formerly the Jardin du Roi) in Paris to document, describe, and collect samples of flora. Yet Botta’s success was predicated not on the instructions he received, but on his knowledge of area languages and geopolitics and his ability to establish local connections and navigate local conflicts. These qualities later enabled Botta to serve as diplomatic envoy to the Ottomans in Mosul, where he engaged in the archaeological excavations for which he is most famous. This chapter and those that follow highlight the extent to which botanical practices were still enmeshed in other areas of expertise or scholarly investigation—here, archaeology and diplomacy; elsewhere, entomology, ornithology, or medicine—right on the cusp of the professionalization of these disciplines in the nineteenth century.

In “François Le Vaillant: Resistant Botanist?” Ian Glenn addresses an even less mainstream botanical explorer. Born in Surinam, Le Vaillant explored South Africa as an ornithologist and ethnographer first and as a “resistant botanist” second, before striving to make a name for himself as an author and collector of Cape flora in French natural history

circles. A pioneer of naturalistic museum displays, Le Vaillant was critical of botanical illustration for its two-dimensionality; this impoverishment of the spatial dimension signified to Le Vaillant not only the loss of fundamental plant qualities, such as color and scent, but also a deplorable neglect of the local knowledge of indigenous ecosystems. If Linnaean binomial taxonomy served as a common currency that facilitated the decontextualization and objectification of plants for economic or political ends, then Le Vaillant's reluctance to embrace binomial classification was also a form of resistance to imperialist systems of order and control.

Although metropolitan centers have been construed as loci for the ordering of colonial flora, magnets for botanical specimens, and dispatchers of imperial agents, from another point of view they connected—rather than organized—activities that took place largely on the periphery. In “Thomas McDonnell's Opium: Circulating Plants, Patronage, and Power in Britain, China, and New Zealand, 1830s–50s,” James Beattie tracks the career of Thomas McDonnell, whose areas of collecting encompassed India, China, and New Zealand. McDonnell illustrates the ways in which the overlapping economies of eighteenth-century botany continued into the nineteenth century. While making his fortune as an opium trader and honing his local status in New Zealand as a collector of exotic Chinese and Indian flora, he nonetheless sought scientific recognition through his publications, in London, on the unassuming plants that grew outside his garden at Horeke. Beattie concludes by arguing that the cultural practices around “science making” and the associated patronage networks it established conferred differing levels of respectability on McDonnell, dependent on the specific social and political contexts of Britain and Australasia.

Botanical Itineraries

The impulse to survey, map, and collect was closely linked to imperial ambition. The disciplines of natural history and cartography had much in common in the eighteenth and nineteenth centuries: both were fueled by the desire to explore and master “new” territories, both benefitted from technological and administrative developments, and both exemplified what historians of empire and science

alike have identified as the deployment of knowledge as an instrument of power. Botanical itineraries grew more numerous and productive due to government-sponsored voyages of exploration, ongoing exchanges within state-administrated networks of botanical gardens, the rapidly growing volume of cartographic information, and evolving ways of overcoming distance through print and communication technologies. This section outlines some of the challenges confronted by botanists in the course of their travels and shows how they drew on metropolitan, personal, and local resources to achieve their aims (Figure 1.9).

Sarah Easterby-Smith's chapter, “On Diplomacy and Botanical Gifts: France, Mysore, and Mauritius in 1788,” explores the mobility of people and plants requested by Tipu Sultan of Seringapatam, India, via a diplomatic mission to France. Tipu Sultan's deputies came with a catalog of gifts requested of Louis XVI; among the desired offerings of Sèvres porcelain and French armaments were native plants and, in addition, three spices not native to France: nutmeg, cloves, and cinnamon. Easterby-Smith traces the complicated trajectory of the French botanical gifts and the contradictory administrative exchanges between the metropolitan authorities in Paris and the local director of the botanical garden in the Île-de-France. Eventually, the plants were released to Tipu's emissaries and the French gardeners accompanying them, who continued their sea voyage plagued by cramped quarters, a scarcity of water, and ravenous vermin. While exploring the on-the-ground difficulties of plant travel, this chapter taps into broader practices of botanical reciprocity in the period, such as diplomatic gift exchange and the actual operation of networks of colonial botanical gardens.

In “From Local to Global: Balsa Rafts and a Bountiful Harvest from Ecuador,” Colin McEwan takes us to the banks of the river Guayaquil in South America. McEwan draws our attention to local transport solutions as witnessed and recorded by Alexander von Humboldt. In his *Personal Narrative of Travels to the Equinoctial Regions of America, During the Years 1799–1804*, Humboldt notes the paucity and difficulty of roads in South America and goes so far as to suggest the importation of camels to aid with transportation of goods and

improve transcontinental trade. Yet camels proved harder to transport than plants, and Humboldt's maps pay attention instead to river networks. His travels through the Andes must have sharpened his appreciation of the role of rivers in enabling local communications and trade, as well as access to the coast. McEwan's close reading of an image of a balsa raft, loaded with fruit, on the river Guayaquil sketches for us the contemporary conditions of riverine and oceanic trade, while also demonstrating Humboldt's reliance on the accounts of earlier travelers. Firmly rooted in local traditions and itineraries, the image also suggests incipient connections to the global trade of mass commodities (such as cotton), which were of interest to the European empires.

Rachel Koroloff, in her chapter "In Imperio Rutheno': Johann Amman's *Stirpium Rariorum* (1739) and the Foundation of Russia's Botanical Empire," analyzes how Russian imperial strategies and aspirations were embodied in the first comprehensive flora of the Russian empire. Such cartographic and botanical contributions, she argues, primarily reflected the empire's preoccupation with its southern and eastern borders. Russia's tenuous hold on the Caucasus and the Caspian Sea was mediated by the collection and description of their natural resources and their carefully curated presentation in European diplomatic and scientific contexts. The legacy of seventeenth-century Russian expansion—characterized by special attention to the southern Caspian regions, the need to control the steppes populated by nomadic peoples, and the concern over the Ottoman and Safavid empires—continued to exert a direct effect on the botanical expeditions undertaken in the 1720s and 1730s, which relied heavily on local resources and government infrastructure: roads and postal stations as well as administrative networks. Indeed, one's ability to obtain passage into these regions signified a modicum of imperial control. Koroloff's analysis contributes to the reassessment of the traditional narrative of Russian science in the eighteenth century, away from a narrow focus on Siberia and Western Europe and toward a broader assessment of Russia's imperialist aspirations, especially where they came into conflict with its Ottoman and Safavid neighbors.

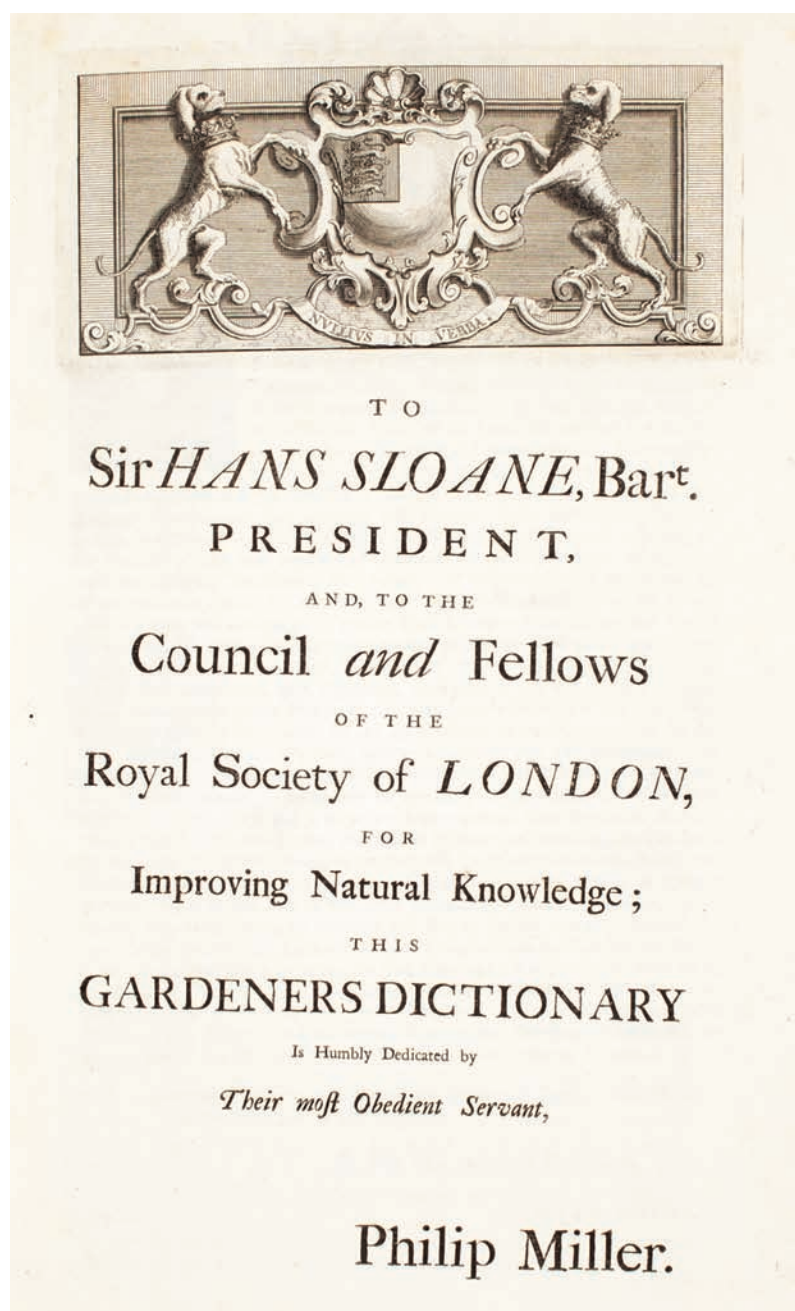


FIGURE 1.9

Dedicatory page expressing the author's gratitude to Hans Sloane. Philip Miller, *Gardeners Dictionary* (1733). Rare Book Collection, Dumbarton Oaks Research Library and Collection.



FIGURE 1.10

The ability to cultivate a pineapple was a sign of one's botanical credentials. Johannes Commelin, *Horti medici amstelodamensis* (1697–1701). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

Cultivating Identities

This section explores the relationship between botanical knowledge, self-representation, and material culture, highlighting the important ways in which eighteenth-century botany served as a vehicle for the creation of social, political, or local identities through art, garden design, manufacture, publishing culture, and social ritual. The chapters that follow locate plants as commodities within their cultures of luxury and mass consumption; they also explore the ways in which aesthetic conventions and traditions inform the representations of plants and make them stand in, metonymically, for the territories and cultures from which they derive. Lastly, they show how botanical texts and illustrations become vehicles for the construction of individual as well as social—imperial or post-imperial—identities (Figure 1.10).

The impact of botany on eighteenth-century material culture and social customs is one of the central themes in this volume. Romita Ray's chapter, "Ornamental Exotica: Transplanting the Aesthetics of Tea Consumption and the Birth of a British Exotic," explores the cultural effects of plants as commodities by focusing on tea consumption in England. Alongside the economics and aesthetics of tea, Ray also considers its central role in the construction and performance of sociability. Tea's ambiguous effects on the body—as a luxury commodity that promoted polite sociability but also corrupt sensibility—were matched by ambivalence about its effect on the national economy and the balance of trade. Ray explores the ways in which "the cultures of natural history, ushered through the channels of commerce, generated fresh sensory experiences and, by extension, unique ornamental objects and ornamental bodies." At the same time, she maps an interesting triangulating effect of empire: the transplantation of the tea plant from China to India to satisfy the economic needs of Britain.

In "Allegories of Alterity: Flora's Children as the Four Continents," Miranda Mollendorf examines British botanist Robert John Thornton's *Temple of Flora* (1797–1812), a lavish publication described by its author as "a Universal Empire of Love" that contained the "choicest flowers of Europe, Asia, Africa, and America." The book, whose expense ruined

Thornton, presents plates of the flowers inscribed within a landscape and accompanied by poetry. The effect of both setting and accompanying text is to “humanize” the flowers, in Mollendorf’s argument. Yet she also shows that Thornton’s personifications draw on the traditional iconography of the “Four Continents” to assign to each flower racial and cultural characteristics associated with its territory in a hierarchical scheme that privileges Europe as the locus of culture and power. These ideological overtones are perhaps most striking in the sexual and racial characteristics associated with flowers from Africa, Asia, and America. Ultimately, Mollendorf argues, Thornton’s *Temple of Flora* inscribes flowers with colonial desire as commodities that can be bought, collected, and exchanged within the covers of a book (Figure 1.11).

The following chapter, “Ottoman Horticulture after the Tulip Era: Botanizing Consuls, Garden Diplomacy, and the First Foreign Head Gardener,” takes issue with traditional accounts of Ottoman imperial gardens in the eighteenth century as simply representative of the desire to emulate European models. Deniz Türker shows instead that Ottoman taste for different gardening practices continued to be marked by sophisticated discernment and was attuned to local customs and needs, as well as to broader cultural and political concerns. By focusing on the court’s reception of European diplomats’ gardens in the Ottoman capital and the figure of Jacob Ensle, the first European head gardener of Topkapi, Türker demonstrates that Ottoman attitudes toward French and Dutch versus English landscape aesthetics were intertwined with contemporary geopolitics (not least a resistance to the English picturesque so eagerly embraced by Catherine the Great of Russia). Türker also highlights Ensle’s role in building networks of plant exchange, showing how his popular and exclusive garden tours became a conduit that brought global plants and trends into the palace—and, inversely, brought to learned European audiences a more sophisticated picture of Ottoman culture than the one to be found in conventionally “Orientalist” accounts.

In “Making ‘Mongolian’ Nature: Medicinal Plants and Qing Empire in the Long Eighteenth Century,” Carla Nappi introduces us to ‘Jam dpal

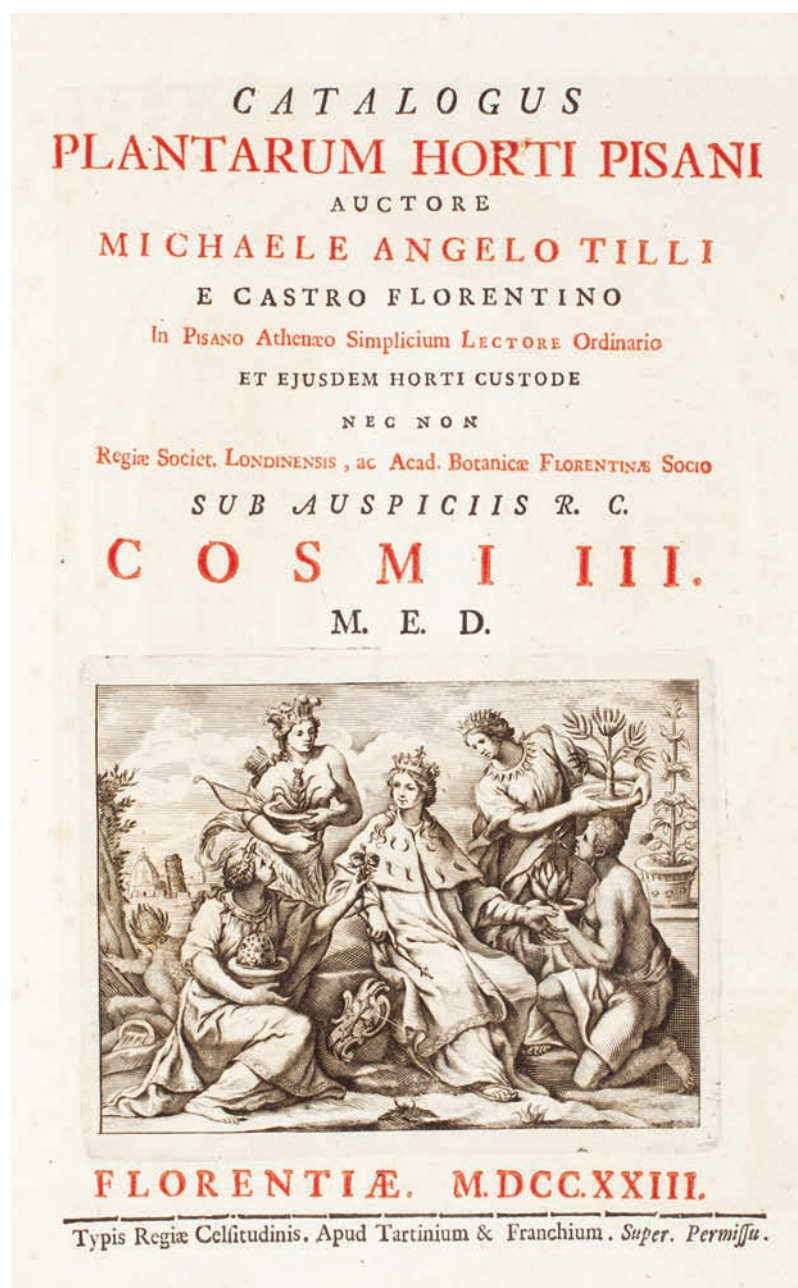


FIGURE 1.11

Title page showing the four continents. Michelangelo Tilli, *Catalogus plantarum horti pisani* (1723). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

rdo rje, a Buddhist monk born in Inner Mongolia in 1792. His manuscript presents plant materials alongside animals, metals, stones, and medical instruments in a compilation that will remind many readers of the European tradition of *materia medica*. Nappi focuses on a single botanical image annotated in Manchu, Mongolian, Tibetan, and Chinese scripts. In contrast to the rise of Linnaean taxonomy and its uses in Europe to promote scientific monolingualism at the service of scientific empiricism, Nappi argues that the coexistence of alternate names within a single frame is a visual performance of the multiplicity of Qing identities. Ultimately, in transposing the long eighteenth century onto the Qing empire, Nappi demonstrates that Qing botany was both visually and epistemically multiethnic and multilingual, even as later partial translations ascribe to the text specific ethnic identities (e.g., “Mongolian” or “Tibeto-Mongolian”).

In the final chapter of the volume, “William Bartram’s Drawing of a New Species of *Arethusa* (1796): Portrait of a Life,” Amy Meyers examines a botanical image through the lenses of autobiographical definition and communal affiliation. William Bartram’s drawing has often been read as an affirmation of republican exceptionalism, cast in the form of an explicitly American garden filled with rare New World species and located next to the nation’s capital. For Bartram, however, the robust and varied community of plants contained in the garden had historical associations that reached back to the colonial period and long predated the establishment of the nation. Meyers interprets Bartram’s drawing as “a historical reflection reminding those who might choose to interpret the young nation—or the course of their own lives—as the product of a revolutionary break with the past that the present and the future are, in fact, embedded in historical relationships that are continuous and ever-binding.” Botany is, thus, caught anew in the web of eighteenth-century history.

Material Cultures of Botany and the Dumbarton Oaks Rare Book Collection

The Botany of Empire in the Long Eighteenth Century began as a symposium that coincided with the fiftieth anniversary of the Dumbarton Oaks Rare Book

Library, and was designed to highlight the importance of material culture to eighteenth-century botanical practices. In order to be properly contextualized and understood, many of the stories told in this volume call for an awareness of print and publication technologies, as well as conventions and innovations in botanical illustration. The collection at Dumbarton Oaks has furnished examples that have informed our discussions.

The very nature of international expeditions entailed coordination across different professions: a voyage over the Atlantic or through the Middle East might include experts in astronomy, cartography, and natural history. A well-known representation of such an expedition is the *Description de l’Égypte* (1809–28), which was an attempt at comprehensive documentation of the geography, natural history, and archaeology of Egypt produced by Napoleon’s savants as a complement to his 1798–1801 expedition. A lesser-known undertaking is the earlier expedition by Guillaume-Antoine Olivier and Jean Guillaume Bruguière that was published between 1801 and 1807 as *Voyage dans l’empire ottoman, l’Égypte et la Perse* (Figure 1.12). Such projects were not always as explicitly imperial or encyclopedic in their intent as the *Description de l’Égypte*, but they often drew together specialists of different national or professional backgrounds due to the practicalities of international travel and scholarship. Olivier and Bruguière were physicians who documented the insects, plants, and mollusks of the region in addition to mapping its coastline. Another example, Thomas Shaw’s *Travels* (1738), acquired by Dumbarton Oaks for its documentation of the archaeology and antiquities of North Africa and the Levant, includes illustrations and lists of local plants (Figure 1.13). Shaw also shared his botanical specimens with the botanist Johann Jakob Dillenius, who identified hundreds of specimens, many of which were new to Europe.²⁸ In Engelbert Kaempfer’s *Amoenitatum exoticarum* (1712), we find detailed engravings of the cities of Safavid Iran followed by extensive descriptions of the flora of Japan; a conventional botanical image of the tea plant is accompanied by an engraving of the instruments used for making and consuming the drink itself. Like many authors of this period, Kaempfer, who worked as a surgeon for the Dutch East India Company, could



FIGURE 1.12

Oak specimen, published alongside mollusks, insects, and detailed coastline maps. Guillaume-Antoine Olivier, *Voyage dans l'empire othoman, l'Égypte et la Perse* (1801–7). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

be seen as a deliberate agent of empire—but, like Shaw, he might be better understood as a self-fashioned collector, curating his discoveries in the context of a published volume (Figure 1.14).

Kaempfer did not, of course, produce his volume's celebrated engravings; with some notable exceptions, authors seldom did, which brings us to the complicated interplay of letterpress (i.e., the printed word) and illustration. When we consider the production of such books, we should keep in mind the number of professionals involved, a number that could easily double if the printed product was enhanced with illustrations. The title and dedicatory pages of any given volume tell part of the complicated story of the many parties involved,

while the plates themselves, as with Shaw's *Travels*, could each be dedicated to a specific subscriber. In addition to the author and publisher, we must also take into account printer, bookseller, patron, censor, subscribers, and illustrator. Even to say "illustrator" is to oversimplify the case: a botanical book typically involved a painter who composed an image from a specimen, sometimes working under the watchful eye of the book's naturalist-author. Another artist would design the intaglio plates—although the engraving and etching of the same plate might be the job of two different professionals—while the engraver's workshop, which was typically a different operation from the letterpress workshop where the text was printed, would print them. In some cases



a



b

FIGURE 1.13
Egyptian antiquities (a),
and Egyptian plants (b).

Thomas Shaw, *Travels, or Observations Relating to Several Parts of Barbary and the Levant* (1738). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

a colorist, working with variably accurate instructions, might add color by hand.²⁹

Philip Gaskell observes of letterpress printing: "From 1500 to 1800 printers everywhere handled closely similar tools and materials in closely similar ways [and] all made the same sort of arrangements for fitting the individual processes together into complete patterns of work." These tools and materials were, of course, manipulated by hand; paper was made from rags and printed on handpresses until the early nineteenth century.³⁰ This conservative process defined the printing of words on blank pages; the production of illustrations, however, changed significantly over the long eighteenth century.

The process of engraving a metal plate with a burin and then printing the image created by the ink that filled the carved lines dates back to the

fifteenth century. In the eighteenth century, however, printmakers developed a number of hybrid strategies. Combining engraving with etching to produce so-called line engravings, for example, saved work and, therefore, money. For similar reasons, a switch was made from copper plates to steel plates in the early nineteenth century. Copper was easier to work, but steel could last longer and make for a more lucrative run of prints.³¹ Other innovations in image production included mezzotint and aquatint in the late seventeenth century and lithography introduced at the very end of the eighteenth century, followed by chromolithography in the early nineteenth century. Methods to create color prints prior to the development of chromolithography included hand-coloring black-and-white images, as seen in Mark Catesby's *Natural History*

FIGURE 1.15
 Elisha Kirkall, *Cassia bahamensis*, color
 mezzotint. John Martyn,
*Historia plantarum
 rariorum* (1728–37).
 Rare Book Collection,
 Dumbarton Oaks
 Research Library
 and Collection.



specimen to serve as an illustration for many, rather than distilling the observation of many specimens into one generalized image. Kniphof coated plants with printing ink and printed directly from the plant onto paper by means of a press. This process made for a very limited print run due to wear and tear on the specimens (a drawback that Benjamin Franklin turned into an advantage by using nature prints on currency to stymie counterfeiters). The real strength of nature printing, however, is in how the technique captures detail, such as the venation

of leaves and the texture of roots and tendrils. This method of producing a two-dimensional image from a three-dimensional object does not always do justice to plant parts such as flowers and fruits, which may be one reason it has often been used with non-flowering plants such as ferns. Nature printing can draw attention to details that are not otherwise visible, such as sporangia on ferns and mosses. More importantly, nature printing as an attempt to portray the particularity of an individual plant runs against the notion of the type as the ideal of botanical



FIGURE 1.16

Nature printing from the early eighteenth century, complicating the timeline of objectivity in scientific illustration. Johann Hieronymus Kniphof, *Botanica in originali pharmaceutica* (1733). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

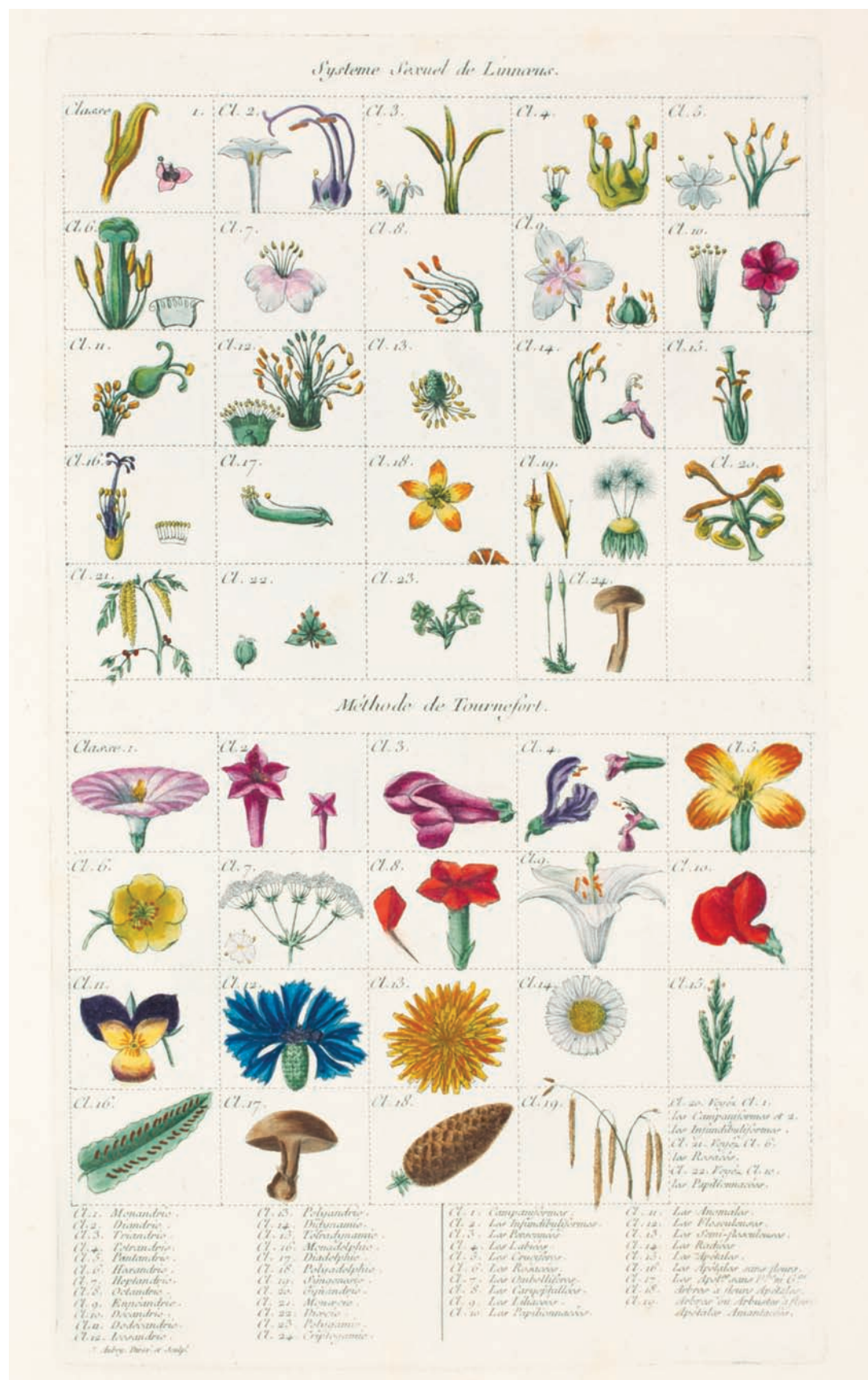
representation. The work of Kniphof hints at the wide variety of illustration techniques used in the eighteenth century and extends our understanding of the ways in which fidelity to nature was conceived in that period (Figure 1.16).³³

Since the early days of printing, adding images to a book had entailed additional expense often borne by the author or shared by the subscribers. This pattern held in the eighteenth century, but, as we have seen, illustrations became less expensive due to changing technologies. Although to us,

botanical illustrations seem essential in publications on natural history, Linnaeus famously pronounced them unnecessary to the specialist: “I do not recommend drawings to determine genera, in fact I absolutely reject them, although I confess that they are of great importance to boys and those who have more brainpan than brain; I confess that they convey something to the unlearned.”³⁴ Perhaps Linnaeus’s aim was not so much to disparage images as to distinguish his *Genera plantarum* (1737) from the sort of books designed for “boys”—or, for that matter,

FIGURE 1.17

The systems of Linnaeus and Tournefort illustrated side by side, ostensibly for the education of children. Pierre Philippe Alyon, *Cours de botanique* (1787–88). Rare Book Collection, Dumbarton Oaks Research Library and Collection.





a



b

nonexperts in general. Such decisions about illustrations usually depended on the book's intended audience. Pierre Alyon's *Cours de botanique* of 1787, a volume in the Rare Book Collection at Dumbarton Oaks that includes extensive illustrations of the classification systems of both Linnaeus and Tournefort, was purportedly written for the children of the Duc d'Orléans (Figure 1.17). Or, as Isabelle Charmantier argues, Linnaeus may not have meant his opinion on illustrations to extend to anything other than the specific topic of *Genera plantarum*, that is, designating differences in plant genus.³⁵ Regardless, Linnaeus himself did not always abide by this controversial recommendation—which he made early in his career, when money for images was not so readily forthcoming—and his books make frequent use of images and diagrams.

The distinction between different audiences raises the issue of genre: what was being written and for whom? The holdings of the Dumbarton Oaks Rare Book Collection demonstrate the variety of books produced in this period. In addition to the expedition volumes discussed previously there were, for example, luxurious works by authors such as Pierre Joseph Redouté, Étienne Pierre Ventenat, and Balthasar Cattrani, which continued the old tradition of recording prestigious collections of plants cultivated in particular gardens that were as important for the decorative arts as they were for the study of natural history (Figure 1.18).

Some books were small and designed for use in the field; for example, the well-annotated copy of Charles Plumier's *Nova plantarum americanarum genera* (1703) at Dumbarton Oaks is small enough

FIGURE 1.18

a) Balthasar Cattrani, *Collection de botanique* (ca. 1780); and b) Pierre Joseph Redouté, *Les roses* (1817–24). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

FIGURE 1.19

An annotated book,
perhaps for use in the
field. Charles Plumier,
*Nova plantarum
americanarum genera*
(1703). Rare Book
Collection, Dumbarton
Oaks Research Library
and Collection.



to bring on ship with ease and was one of the books frequently consulted and cited by subsequent travelers to the Americas (Figure 1.19). Other books told official versions of important diplomatic missions, such as George Staunton's account of the British embassy to China, or presented highly individualistic attempts at biogeography, such as the works of Alexander von Humboldt.

One fascinating example among many is a late eighteenth-century manuscript by Aloysio Cabrini in which he copied the images from Paolo Boccone's *Museo di piante rare* (1697). Cabrini's manuscript has added binomial names and, in some cases, morphological details such as the flower or the calyx of a plant, demonstrating his adherence to Linnaeus's system of classifying plants based

FIGURE 1.20

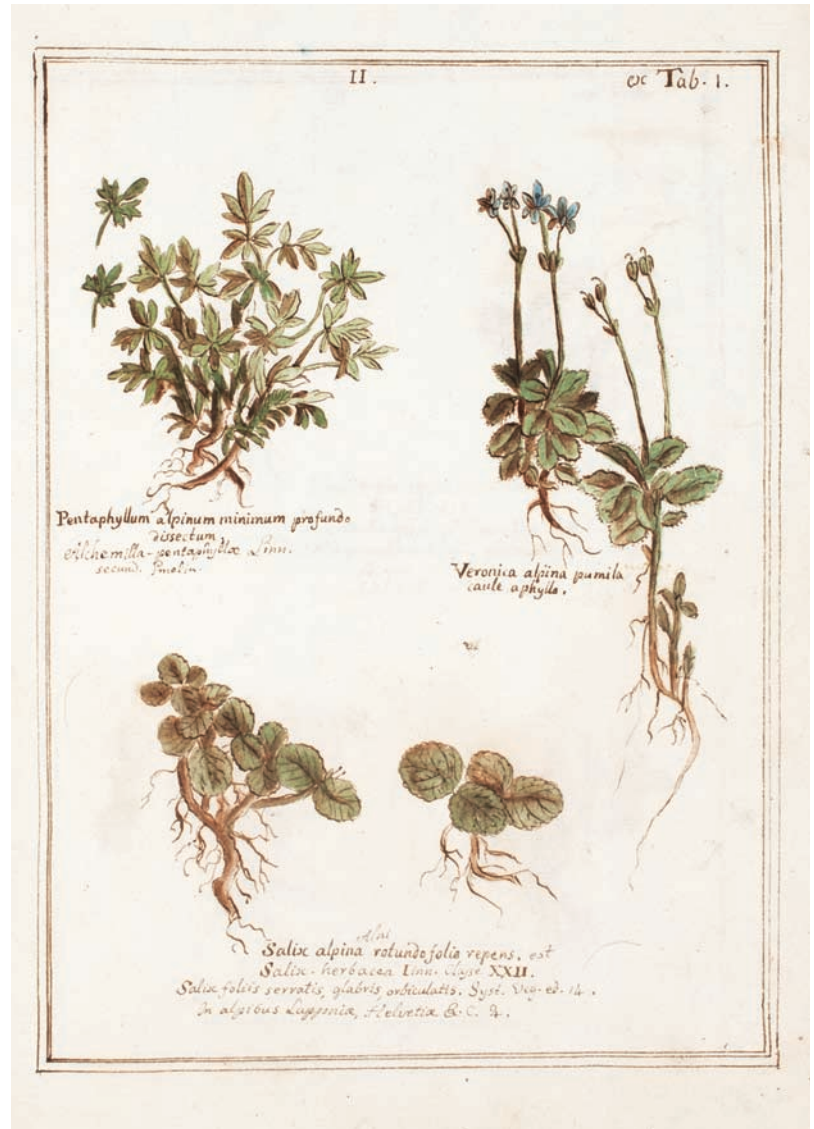
a) Manuscript copy of Boccone's illustrations: Aloysio Cabrini, *Boccone Museum rariorum plantarum* (1791); and b) Paolo Boccone, *Museo di piante rare* (1697). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

on their floral parts. On the one hand, Cabrini's reliance on a century-old text indicates the tenacity of a long tradition, glossed over as it may have been with new vocabulary. On the other, these additions demonstrate the author's receptiveness to the changes in plant identification and description that took place over the century between the two books—and probably indicate Cabrini's hope to publish this book, as expressed in his introduction, despite his lack of a patron. The work, thus, illustrates the interplay of continuity and change in botanical practices of the period (Figure 1.20).

Dumbarton Oaks has several hand-painted albums from the late eighteenth and early nineteenth centuries produced in Asia as souvenirs for employees of the British East India Company. Similar items that are now in Kew, Edinburgh, and other important collections suggest the value of a comparative study of the artists and workshops that produced these books, not to mention the individuals who carried these images home with them (Figure 1.21).

Other materials—for example, a small book of illustrations evidently copied in part from William Curtis's *Botanical Magazine* and a number of items with interesting additions including marginalia and hand-drawn illustrations—likewise draw attention to the growing audience for botanical data. The small collection of hand-painted Curtis copies was made by a clergyman (Reverend Robert Bransby Francis) in Norfolk for a female relative ("Mrs. Whyte") who had expressed an interest in botany. Such copied images and well-annotated books are evidence of the widespread nature of botanical knowledge that by the late eighteenth century had penetrated different areas of cultural life and was no longer limited to a small group of professionals and their patrons.

The expanding audience for botanical images was contemporaneous with the increasing



a



b



FIGURE 1.21

Watermelon. Similar albums, made by hand but in a workshop for streamlined production, can be found in libraries at Kew and the Royal Botanic Garden Edinburgh. *Album of Watercolors of Asian Fruits and Flowers* (1800–50). Rare Book Collection, Dumbarton Oaks Research Library and Collection.

availability of the plants themselves. Improved methods of plant transportation and cultivation, such as the storage cases we have mentioned or the introduction of bark stoves to greenhouses, meant that plants could be moved over great distances and grown in previously inhospitable climates. English and French nursery trade catalogs demonstrate this changing demand for plants. While late seventeenth-century catalogs by Pierre Morin or John Rose supplied the lavish gardens of royalty, with seed lists often printed as broadsides (few of

which survive due to the ephemeral nature of these materials), by the late eighteenth century, nursery catalogs were increasingly aimed at the amateur enthusiast gardeners of the growing middle class as opposed to the nobility and prominent botanists.³⁶ In the early nineteenth century, nurseries such as the one run by Conrad Loddiges continued to stoke the enthusiasm for ornamental and exotic plants. Loddiges also published the colorfully illustrated *Botanical Cabinet*, the title pages of which directed readers to the nursery's location in Hackney.

Objects that had been exotic in the late seventeenth century, such as hothouse plants or illustrated books, became increasingly familiar in the course of the eighteenth century. Illustrated garden catalogs and publications, such as Curtis's *Botanical Magazine* or the *Herbier général de l'amateur*, accustomed readers to the material culture of plants and brought the work of prestigious artists—who had previously illustrated luxurious volumes for a small audience—into the homes of a broader public. The

proliferation of these publications attests to the intertwined passions for plants and botanical books among the eighteenth-century reading public.

Acknowledgments

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Notes

1 Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, Mass.: Harvard University Press, 1987); and David Philip Miller and Peter Hanns Reill, eds., *Visions of Empire: Voyages, Botany, and Representations of Nature* (Cambridge: Cambridge University Press, 1996).

2 Londa Schiebinger and Claudia Swan, *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press, 2007), 3. The literature on early modern science and empire is vast; see, for instance, John Gascoigne, *Science in the Service of Empire: Joseph Banks, the British State, and the Uses of Science in the Age of Revolution* (Cambridge: Cambridge University Press, 1998); Richard Drayton, *Nature's Government: Science, Imperial Britain, and the "Improvement" of the World* (New Haven: Yale University Press, 2000); and Roy McLeod, ed., *Nature and Empire: Science and the Colonial Enterprise* (Chicago: University of Chicago Press, 2000).

3 Therese O'Malley and Amy R. W. Meyers, eds., *The Art of Natural History: Illustrated Treatises and Botanical Paintings, 1400–1850* (Washington, D.C.: National Gallery of Art, distributed by Yale University Press, 2008).

4 Daniela Bleichmar, *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment* (Chicago: University of Chicago Press, 2012).

5 David Mackay, "Agents of Empire: The Banksian Collectors and Evaluation of New Lands," in Miller and Reill, *Visions of Empire*, 38. Neil Safier has used the case of Joseph de Jussieu to show how local contingencies can result in "thwarted" botanical knowledge that escapes the "imperial frame." Neil Safier, "Fruitless Botany: Joseph de Jussieu's South American Odyssey," in *Science and Empire in the Atlantic World*, ed. James Delbourgo and Nicholas Dew (New York: Routledge, 2008), 219.

6 Londa Schiebinger, *Plants and Empire: Colonial Bio-prospecting in the Atlantic World* (Cambridge, Mass.: Harvard University Press, 2004), 10.

7 Jill H. Casid, *Sowing Empire: Landscape and Colonization* (Minneapolis: University of Minnesota Press, 2005).

8 John Ellis, *Instructions for Bringing over Seeds and Plants, from the East Indies and Other Distant Countries, in a State of Vegetation* (London: Printed and sold by L. Davis, 1770).

9 For a revisionist account of the role of the individual cartographer within broader systems of knowledge and control, see D. Graham Burnett, *Masters of All They Surveyed: Exploration, Geography, and a British El Dorado* (Chicago: University of Chicago Press, 2000), 11, where the explorer's "active engagement with the land" and personal experience in the field "promise . . . to unsettle the imperial territorial inscriptions" he is tasked to collect (12).

10 Jean Baptiste Fusée Aublet, *Histoire des plantes de la Guiane Française* (London and Paris: P. F. Didot jeune, 1775).

11 Alexander von Humboldt and Aimé Bonpland, *Personal Narrative of Travels to the Equinoctial Regions of the New Continent, during the Years 1799–1804*, trans. Helen Maria Williams (London: Longman, Hurst, Rees, Orme, and Brown, 1814–29).

12 Emma Spary combines Latour's notion of the inscription with Simon Schaffer's description of the disciplining of scientific vision, as well as attention to the lingering practice of patronage, to analyze eighteenth-century botanical networks around the Jardin des Plantes. Emma C. Spary, *Utopia's Garden: French Natural History from Old Regime to Revolution* (Chicago: University of Chicago Press, 2000), 51. David Philip Miller adopts the notion of "centers of calculation and accumulation" in "Joseph Banks, Empire, and 'Centers of Calculation' in Hanoverian London," in Miller and Reill, *Visions of Empire*, 21–37. See Latour, *Science in Action*, 215–57. Daniel Baugh describes Banks as a "natural resource imperialist" in "Seapower and Science: The Motives for Pacific Exploration," in *Background to Discovery: Pacific Exploration from Dampier to Cook*, ed. Derek Howse (Berkeley: University of California Press, 1990), 40.

13 Latour, *Science in Action*, 232.

- 14 On the imperialist connotations of Latour's model, see David Kaiser, *Drawing Theories Apart: The Dispersion of Feynman Diagrams in Postwar Physics* (Chicago: University of Chicago Press, 2005), 111.
- 15 See Bleichmar, chapter 2, this volume.
- 16 See Easterby-Smith, chapter 9, this volume.
- 17 See Glenn, chapter 7, this volume.
- 18 C. N. G. Clarke, "Taking Possession: The Cartouche as Cultural Text in Eighteenth-Century American Maps," *Word and Image* 4, no. 2 (1988): 455–74; and J. B. Harley, "Maps, Knowledge, and Power," in *The Iconography of Landscape*, ed. Denis Cosgrove and Stephen Daniels (Cambridge: Cambridge University Press, 1988), 277–312. On the map of South Africa and its implications, see Glenn, chapter 7, this volume.
- 19 Lorraine Daston and Peter Galison, *Objectivity* (Brooklyn, N.J.: Zone Books, 2007), 60.
- 20 *Ibid.*, 17.
- 21 *Ibid.*, 58.
- 22 Louis-François Jauffret, *Projet d'établir en France une manufacture de végétaux artificiels... d'après les nouveaux procédés de T.-J. Wenzel* (Paris, 1790). We are grateful to Ian Glenn for bringing this work to our attention; see chapter 7, this volume.
- 23 *Ibid.*, 8 ("un temple immense, élevé à la Nature, dans lequel l'oeil embrasseroit d'un seul regard toute la création végétale rassemblée").
- 24 *Ibid.*, 30.
- 25 *Ibid.*, 32 ("le désordre marche à la suite de ses variations").
- 26 *Ibid.*, 8 ("qui peut faire époque dans l'Histoire des connoissances humaines").
- 27 *Ibid.*, 48 ("dans un foyer commun, qui deviendrait bientôt un foyer éclatant des lumières").
- 28 George Claridge Druce, *The Dillenian Herbaria: An Account of the Dillenian Collections in the Herbarium of the University of Oxford, Together with a Biographical Sketch of Dillenius, Selections from His Correspondence* (Oxford: Clarendon Press, 1907).
- 29 Roger Gaskell, "Printing House and Engraving Shop: A Mysterious Collaboration," *Book Collector* 53 (2004): 229–32.
- 30 Philip Gaskell, *A New Introduction to Bibliography* (1972; repr., New Castle, Del.: Oak Knoll Press, 1995), 160, 214, 253.
- 31 Bamber Gascoigne, *How to Identify Prints: A Complete Guide to Manual and Mechanical Processes from Woodcut to Inkjet*, 2nd ed. (New York: Thames and Hudson, 2004), sections 9b and 12.
- 32 For examples of the techniques employed by Catesby and Rafinesque, respectively, see Meyers, chapter 16, and Kuriyama, chapter 3, this volume.
- 33 It is interesting to note, however, that according to Jauffret's text, cited earlier, not even Kniphof's nature printing is deemed to do justice to the original: by pressing actual inked leaves against the paper, he gave all plants the same spinach-green hue. Tournefort's work is the only one that Jauffret singled out for praise, but it had cost enormous sums and was unique in Europe.
- 34 Quoted in Staffan Müller-Wille and Karen Reeds, "A Translation of Carl Linnaeus' Introduction to *Genera Plantarum* (1737)," *Studies in History and Philosophy of the Biological and Biomedical Sciences* 38, no. 3 (2007): 568.
- 35 Isabelle Charmantier, "Carl Linnaeus and the Visual Representation of Nature," *Historical Studies in the Natural Sciences* 41, no. 4 (2011): 367.
- 36 John Harvey, "Introduction and Commentary," in *The Georgian Garden: An Eighteenth-Century Nurseryman's Catalogue* (Stanbridge: Dovecote Press, 1983).