

Voyaging Out

Saint Domingue produced enough sugar, cotton, indigo, coffee, and cacao to satisfy amply the cupidity for gold and ambition for fortune.

CHARLES ARTHAUD, 1787

Who were the colonial botanists of the eighteenth century? What sort of person risked rough seas, torrid lands, fevers, serpents, and “savages” merely to collect a few plants, even if for king and country? Frans Stafleu has identified a prominent divide among European botanists of the eighteenth century: the *botanistes de cabinet* like Linnaeus, who tended fine gardens and natural history cabinets often at university posts in Europe, and *botanistes voyageurs* like Jean-Baptiste-Christophe Fusée-Aublet, who ventured into tropical rainforests—confronting thorny trees, venomous snakes, drenching rains, ticks, mosquitoes, runaway slaves, and suffocating heat to search for useful and profitable plants. European naturalists were a varied lot: some were men of God, most were physicians; some paid their own passage, most were sent by trading companies, kings, or scientific academies. Some were mature and settled, most were young and unmarried. The vast majority were male. Linnaeus, who ordered many of his students into the field, insisted that they be “penniless bachelors,” young and equally willing to sleep “on the hardest bench as in the softest bed.” Some undertook voyages of a year or two in duration, hoping to amass fame or fortune and return quickly to Europe. Others went to the colonies, settled, and remained for a lifetime.¹

Historians have tended to focus on the heroic figure of the European voyager, and I, too, will be saying a lot about European botanists voyaging as directors of scientific enterprises to far-off and unknown lands in search of nature’s bounty. I will focus here on Sir Hans Sloane, Maria Sibylla Merian, and others who emerge as major protagonists in subsequent chapters of this study. As backdrop for our more focused questions concerning European knowledge and use of abortifacients, it is important to understand who these voyagers were in terms of social and educational background; it is significant, for example, that the majority of botanists in this

period were trained as medical doctors. We also find that differences in how natural history was structured and funded in voyagers' home countries—whether centralized and funded by the government as in France, enabled by trading companies as in Holland, or dependent on private entrepreneurs as in England—often influenced how collecting was done and what sorts of goods were collected. European voyaging naturalists tended to publish novelesque accounts of their observations and adventures, and historians can reconstruct much about their experiences and field practices. To best represent the large number of naturalists involved in colonial botany, I have chosen one as a “type specimen”—a representative individual—for each category of naturalist that I have identified.

Stafleu emphasized a deep divide in perspectives and practices between what I like to call armchair naturalists, who coordinated and synthesized collecting from sinecures in Europe (university posts, heads of gardens, and so on), and voyaging botanists, who visited foreign lands. We find, however, a number of other important divides among European colonial botanists. Place of birth, for instance—whether born and bred in Europe or the Americas—molded naturalists' loyalties to knowledge traditions, peoples, and plants as they botanized in the Caribbean basin. Historians have recently drawn attention to the role of *European creoles*, born and educated in the colonies, who especially in Spanish domains formed self-confident elites and came to challenge Linnaean taxonomies and other botanical practices exported from the metropolis to the Americas.² Creoles of English and French origin elsewhere in the Caribbean were often schooled in Europe and thus tended to share the knowledge and values of their colleagues in the Old World. We also find that many European naturalists who took up *long-term residency* in the colonies developed a deeper knowledge of and affection for places and plants than voyagers who passed through in a matter of weeks or months. A final type of European naturalist highlighted in this chapter is the *voyaging botanical assistant*—the largely unsung illustrators, guides, finders, and support staff of the European naturalist who advanced the massive task of cataloguing nature. Because these assistants rarely published we know less about them. It is possible, though, to piece together aspects of their stories, and I have chosen to recount the adventures of Jeanne Baret, assistant to the French botanist Philibert Commerson.

Focus on these varieties of European naturalists should not obscure other voyagers and their contributions to knowledge of West Indian flora. *African slaves*, forced to abandon their homelands, were often experts in tropical flora and carried with them plants and knowledge of their uses to

the Caribbean. Slaves in the West Indies, “salt water” or creole, also often sought out and experimented with flora indigenous to the area, as did the *Amerindians* who understood well the flora and fauna of their native soils. Amerindians, too, were often voyagers known to have moved plants from place to place in the Caribbean basin for many hundreds of years prior to European contact. They were also experts in the uses of plants as foods, medicines, and construction materials, for example, in hammocks, canoes, baskets, and other goods needed for daily life. These latter two groups—African slaves and Amerindians—we will meet in the next chapter, where I will discuss how Europeans enlisted their expertise in the colonial botanical enterprise.

Botanistes Voyageurs

Stereotypical eighteenth-century “voyagers” were heroic individuals who set off for unknown lands and returned with the fruits of their adventures in relatively short periods of time. As male and female “type specimens” for this category, I have chosen the English physician and future president of the Royal Society of London, Sir Hans Sloane, and the German-born naturalist and celebrated artist, Maria Sibylla Merian. Sloane and Merian were contemporaries, and allow for a nicely matched pair for comparison. Sloane traveled for fifteen months to Jamaica in 1687; Merian voyaged for twenty-one months to Surinam in 1699. Each produced a gloriously illustrated report: Sloane in 1707 and Merian in 1705.

Born in 1660 to a wealthy land-owning Scottish family in the north of Ireland, Sloane, like many youngest sons, found few prospects at home. He made his way to London at the age of nineteen to study medicine, chemistry, and botany and, thanks to his class standing, was introduced to some of the finest naturalists of his day—men such as John Ray and Robert Boyle. Like most botanical voyagers, Sloane was a medical man. The French (but not the Dutch or English) had fielded a large number of naturalist priests in the second half of the seventeenth century (including Jean-Baptiste du Tertre, Charles Plumier, Jean-Baptiste Labat, and Louis Feuillée), but by the eighteenth century this class of naturalists had largely been supplanted by physicians and surgeons.³ Medicine was still strongly allied with botany: Antoine de Jussieu, director of the Royal Garden in Paris was a physician, for example, as were his brothers Bernard, who also worked at the King’s Garden, and Joseph, who collected plants in South America from 1735–1771.

Medicine had been an itinerant profession in the Middle Ages, and

young physicians still in the early modern period considered a grand European tour important to their education. Following this tradition, Sloane set off in 1683 for France and the Jardin du Roi, the great natural historical institution then run by Joseph Pitton de Tournefort. Like many in this period, Sloane picked up a quick degree while abroad, in his case from the University of Orange, one of the few universities in France where Protestants were allowed to study. Linnaeus likewise submitted a thirteen-page doctoral dissertation and received a medical degree during his eight-day residence at the University in Harderwijk in the Netherlands. University positions in this period were often “entailed,” passing from father to son whether or not the latter was qualified.⁴

Sloane returned to London to practice medicine and was elected fellow of the Royal Society in 1685 (at age twenty-five) and shortly thereafter Fellow of the Royal College of Physicians, positions that depended as much on class status as on scientific distinction. Two years later the Duke of Albemarle, newly appointed governor of Jamaica, invited Sloane to serve as his personal physician on the island. Sloane jumped at this chance for a paid voyage to Jamaica. There were many foundational questions concerning nature to be answered. Ray, for instance, wanted to know “whether there be any species of plants common to America and Europe.” Martin Lister, a naturalist, queried “whether there are any naked snails in Jamaica, I meane such as are naturallie without shells at Land as with us.” Sloane himself hoped to find some specific remedies as sensationally useful as Peruvian bark (*Cinchona*), which had been introduced into the London *Pharmacopoeia* only in 1677. Full of youthful enthusiasm, Sloane later wrote, “this voyage seemed likewise to promise to be useful to me, as a physician: many of the Antient and best physicians having travell’d to the places whence their drugs were brought, to inform themselves concerning them.”⁵

An astute businessman, Sloane arranged also to have himself appointed physician to the British West Indian Fleet, in charge of all surgeons, at an annual salary of £600 (a handsome sum; an ordinary seaman might make £1.5 per month in peacetime and £2.25 per month in wartime). An additional £300 was paid Sloane in advance for supplies. This arrangement, whereby a naturalist signed on for nonscientific work in order to travel to exotic flora, was typically how British and Dutch botanists traveled throughout the seventeenth and early eighteenth centuries. For the Dutch especially, science followed trade routes. Most naturalists shipped out as physicians or surgeons on East or West India Company vessels. Jacobus

Bontius traveled to Batavia (now Jakarta) as physician, apothecary, and surgical inspector to the Dutch East India Company territories in 1626; Engelbert Kaempfer, the German-born physician, studied the flora of Japan while in the service of the Dutch company in the 1690s; Paul Hermann, originally from Halle, traveled in 1672 as medical officer for the same company to the Cape of Good Hope and on to Ceylon (Sri Lanka); Carl Thunberg, Linnaeus' student, shipped out as surgeon aboard a Dutch East India ship to the Cape of Good Hope in 1770 and traveled eventually to Japan. Hendrick Adriaan van Reede tot Drakenstein, who produced the magisterial *Hortus Indicus Malabaricus* (1678–1693), was unusual in being a military man, but he worked for the same company. In addition to publishing this twelve-volume work describing 740 plants of Malabar (the region of southwest India where Vasco da Gama landed in 1498), van Reede requested that all governors in Holland's western quarters—Bengal, Surat, Persia, and the Cape of Good Hope—send “annually by the homeward-bound ships from Ceylon to the fatherland all kinds of seeds, bulbs, or roots of the trees, plants, herbs, flowers, etc., which each of you is able to collect in his district for a whole year” for the sake of “curiosity and also medicine.” In addition to working for trading companies, British botanists financed their voyages by various other means: the Reverend Hugh Jones was dispatched to Maryland as both an Anglican minister and botanist for the London Temple Coffee House Botany Club; William Woodville privately financed his botanical research in Jamaica; Benjamin Moseley wrote treatises on the medical use of sugar, coffee, and other plants while surgeon-general of Jamaica. Not until the late eighteenth century did the British government begin financing voyages and supporting botanical research; in this they consciously followed the successful French model (see below).⁶

Sloane sailed from Portsmouth in September 1687 on a forty-four-gun frigate that accompanied two merchant ships and the duke's yacht to the Caribbean. Except for seasickness, his voyage was uneventful, and in December the party landed in Port Royal, Jamaica. Sloane recorded his purposes, field practices, and findings in his large two-volume *Voyage to the Islands of Madera, Barbadoes, Nieves, Saint Christophers, and Jamaica*, published eighteen years after his return to England. After perfunctory remarks concerning his diligent efforts to “advance natural knowledge,” Sloane emphasized that the purpose of his undertaking was to make British colonists self-sufficient by instructing them in the uses of plants “growing sponte or in gardens” for medicines and foods. “It is very hard to carry

thither,” he noted, “such European simples as are proper for the cure of all sorts of diseases,” especially since most drugs lose their virtues in transport. A second and equally important purpose was to enrich English pharmacopoeia back home. Sloane noted that even though useful West Indian herbs did not grow naturally in England, “many of them and their several parts” were brought over and used in medicines every day, and that if people were inquisitive, many more could be brought “to the great advantage of physicians and patients.” He offered that her Grace, the Duchess of Beaufort, in her leisure hours from her more serious affairs of state had successfully raised many tropical plants in her gardens by means of “stoves and infirmaries” (see below).⁷

Above and beyond purposes aimed at promoting public good, Sloane had proposals of his own, namely, prospecting for new drugs that might turn him a profit. Before returning from Jamaica, he invested the greatest part of the fortune he had acquired there in “the bark” (a Jamaican equivalent of the Peruvian bark). Peruvian bark or quinine was a “specific,” a remedy intended to cure a particular ailment, in this case ague and other malignant recurring fevers. Sloane carried a cargo of this remarkably reliable bark back to England and promoted it by prescription in his fashionable London practice. He continued prospecting for new profits from drugs throughout his lifetime. In 1709 he wrote to William Byrd in Virginia asking whether that colony could provide commercial quantities of ipecacuanha (an emetic fetching 30 shillings per pound) so that the two of them in a joint venture might seize the considerable profits to be made from this popular medicine from the Portuguese and Spanish. In 1732 Sloane contributed £20 annually as a subscriber to a project to establish a colony in Georgia; Mr. Millar, a surgeon, was hired by the group to search for new drugs and to coordinate the cultivation of useful plants in the prospective colony. Sloane also had interests in plant-collecting expeditions in Barbados and other Caribbean islands.⁸

During his “leisure-hours” in Jamaica, when not serving the duke or other British planters, Sloane botanized, searching “the several places I could think afforded natural productions.” His first concern was to standardize information in a fashion useful to colleagues around the globe. Sloane noted how he measured plant parts “by my thumb, which, with a little allowance, I reckoned an Inch.” He considered it useless to be more exact, because the leaves of vegetables even of the same sort, the wings of birds, the toes of frogs vary so much from individual to individual. Similarly, he found it difficult to provide exacting descriptions of the glorious

new colors he saw—so wonderful that they required “new names to express them.” He also cautioned that plants tended to blossom in different colors, depending on whether they were grown in Europe or in Jamaica, because of differences in the soils and temperatures of the two environments.⁹

Following common practices, Sloane did not botanize alone; he employed the Reverend Mr. Moore, “one of the best designers I could meet with there,” to prepare illustrations of plants, animals, fish, birds, and insects *in situ*. The two of them eventually made the tedious journey across the central highlands to the north coast of the island on horseback, and like most Englishmen transplanted to the Torrid Zone, complained of the extreme heat, the snakes, the lack of convenient lodging, and the danger of ambush in the bush—all of which compromised accuracy in observations.

Sloane made a point of collecting information about plants previously unknown to him from “the Inhabitants, either Europeans, Indians or Blacks.” In doing so, he was well aware that by 1687 neither the people nor many of the plants found in Jamaica were indigenous to that place. All were voyagers—some willing (such as Sloane himself), some forced (the “Blacks” of whom he spoke), some accidental (opportunistic plants and even rats carried along with cash cargoes). According to Sloane, nature itself—the people, plants, and landscape of the island—had been forged in the crucible of Spanish domination. The natives of the island, he recounted, were “all destroyed by the Spaniards,” either by guns or by smallpox. The Amerindians Sloane knew in Jamaica had been brought there as slaves, taken by the Spanish “by surprize from the Musquitos or Florida.” The Spanish had also transported to the island Africans as slaves “from several places in Guinea” and many fruit trees, useful foods, and medicinal plants from South America. These plants “throve wonderfully, and now grow [in Jamaica] as it were sponte.” When the English conquered Jamaica in 1655, the Spanish were forced to abandon plantations flourishing with exotic and valuable plants. They were also forced to forsake their “Blacks and Indians” who had learned “the skill of using” these plants for foods and medicines.¹⁰

The Dutch and English, too, Sloane noted, had made their contribution to this *mélange* of people, plants, and knowledge, bringing from Surinam to Jamaica their skill in the use of tropical flora. Sloane found in Europeans’ dogged movement of plants and peoples an explanation for the uniformity in nature and its uses across the West Indies: “many of the vir-

tues of plants [he discovered] agree with the observations of authors writing from other parts of the West Indies.”¹¹

Collecting what he could during his fifteen-month stay in the tropics, Sloane prepared live plants and dried specimens for transport back to England. Altogether Sloane managed to amass 800 new plants, among them what became the type specimen for *Theobroma cacao* (Theobroma meaning “food of the gods”). While in Jamaica, Sloane also collected a future wife. Six years after his return to England, he married Elizabeth, daughter of John Langley, an alderman of London, who had inherited her father’s fortune. Elizabeth was, perhaps more attractively, the widow of Fulk Rose, Esq., who had owned thriving sugar plantations in Jamaica (where Sloane and Elizabeth Langley Rose probably first met). Elizabeth inherited the widow’s third of the income of the Rose estates. This massive fortune, combined with his ongoing economic interests, supported Sloane’s science and moved him to the center of London’s scientific establishment, a position he retained for more than fifty years.

Maria Sibylla Merian

Sloane and Merian are both central to the story of abortifacients; each identified the peacock flower, later known as the *Poinciana*, while in the Caribbean. To my knowledge, Merian was the only European woman who voyaged exclusively in pursuit of her science in the seventeenth or eighteenth centuries. Amazingly, it is possible to list other women botanic travelers in a single page. Merian was accompanied by her daughter, Dorothea Maria, who served as her assistant. Merian’s other daughter, Johanna Helena, also collected *naturalia* in Surinam, traveling in 1711 with her husband, who administered an orphanage there. Jeanne Baret sailed with Louis-Antoine de Bougainville (for whom the showy flowering vine was named) as Philibert Commerson’s botanical assistant (see below). In the 1770s Lady Anne Monson (Chapter 5) accompanied her husband, a colonel, from England to the East Indies and there indulged her passion for natural history, but she did not set her own itinerary. And in the 1790s, Maria Riddell, an ardent naturalist, accompanied her father William Woodley, governor of Saint Kitts and the Leeward Islands, to the West Indies. Riddell stole precious minutes to publish her *Voyages to the Madeira, and Leeward Caribbean Isles with Sketches of the Natural History of these Islands*, recording the uses of various plants: a cactus used by “West India ladies” to dye their ribbons, gauzes, and cheeks; a wild licorice whose ber-

ries could be strung like beads for necklaces and bracelets; and an Indian arrowroot that served as a remedy against dysentery and the venom of poisoned arrows. Nonetheless her duties as a wife and daughter took priority and, by her own account, left her little time to botanize.¹²

It became more common for women to travel in the nineteenth century. Sarah Bowdich, for one, accompanied her husband, Edward, to Africa in 1823 as the female collaborator in this “creative couple.” Mrs. Bowdich, as she was called, had intended to serve as illustrator to her scientific husband, but Edward died of malaria in Gambia. With three small children to care for and no money for a speedy return to England, she took up where her husband had left off, collecting plants and arranging his papers for publication. Although Bowdich, like many voyaging naturalists, lost numerous engravings, books, and dried plants to the raging seas on her return passage to Europe, she continued her work, taking her remaining specimens to the Jardin du Roi in Paris for study. She is today hailed as the first woman to collect plants systematically in tropical Africa; she eventually published an account of the flora of the Cape Verde Islands and the area in and around Banjul.¹³

Merian, born in 1647, was indeed bold to travel to Surinam in search of exotic insects, accompanied only by her twenty-one-year-old daughter, whom she had trained from childhood as a painter and assistant. Bodily and moral imperatives kept the vast majority of Europe’s women close to home. Medical men differed in their views about the physical effects of the tropical climate on female physiology. Some, like Thomas Trapham, a Jamaican physician, emphasized that the air in the West Indian islands—made hot by the sun and moist by the moon—was exceedingly agreeable to women, “beneficial to their living, including their conceptions and facilitating their births.” Although as the “moistest sex” women suffered greatly from worms, the “vivifying hot” and “multiplyingly moist” air made women fecund like “all other produces in the Indies.” Writing from Saint Domingue, Nicolas-Louis Bourgeois celebrated the tropics as a paradise for women: the heat of the climate eased childbirth and allowed women to live to an old age. Thunberg, traveling in the tropics of the East Indies, agreed that women held out better than men against the dysenteries and putrid fevers that put Europeans in early graves, but, he added, “those who come from Europe with rosy cheeks lose this species of beauty in a short time, and are afterwards as pale as corpses.”¹⁴

More often, however, physicians emphasized the grave dangers of travel to the Torrid Zone. In the seventeenth century, many taught that crossing

the equator led to infertility. For this reason Dutch women were reluctant to migrate to Brazil. Summing up medical opinion at the end of the eighteenth century, Johann Blumenbach, a German physiologist, emphasized that white women taken to very warm climates succumbed to “copious menstruation, which almost always ended, in a short space of time, in fatal hemorrhages of the uterus.” Many women feared that if they gave birth in the tropics, they would deliver children resembling the native peoples of those areas. The intense African sun, it was thought, produced black babies regardless of the parents’ complexions. The French physician Jean-Baptiste-René Pouppe-Desportes warned that women aged more quickly under the intense tropical sun; their menstrual cycles also ended at an earlier age, leaving them open to a host of dangerous maladies. Even tropical products were sometimes cause for alarm: women in France, for example, feared that if they consumed too much chocolate, they ran the risk of birthing black babies.¹⁵

Apart from the real and imagined dangers involved, one important reason women did not travel is that they were never hired by trading companies, scientific academies, or governments as voyaging naturalists. Like Alexander von Humboldt and a few others, Merian financed her own voyage. Unlike Humboldt, however, Merian had no inheritance to rely upon and instead raised the money for her trip by selling a large collection of her paintings and specimens in addition to subscriptions to her prospective Surinam book. Although Merian did not have official sponsorship, her travels to this strange and sometimes unwelcoming land were facilitated, to some extent, by her long-standing connections with the Labadists, a religious group with whom Merian had close contact and which had members living also in Surinam.¹⁶

Merian sailed from her home in Amsterdam, although she had been born in the free imperial city of Frankfurt am Main. The German princely states and free imperial cities did not hold colonies like many of their European neighbors, despite the strong shipping traditions of Hansa cities such as Lubeck and Hamburg. Nonetheless naturalists from German-speaking areas were well represented among scientific voyagers. Paul Hermann, who finished his life as professor of botany at Leiden, was perhaps the most prominent, but many, like Merian, found their ways to port cities and joined the ecumenical investigation of the world’s flora and fauna. Early on, Spanish monarchs had requested German mathematicians aboard their ships to chart the movement of the stars, the position of the

oceans, and the flow of the tides because of their precision as astronomers and astrologers.¹⁷

Merian did not fit the profile of the usual male naturalist—young and unmarried—in this period. Although unmarried, having divorced her artist husband, Johann Andreas Graff, at a relatively young age in order to follow her own interests, at age 52 when she set sail, Merian was considerably older than most voyagers. She was also not trained in medicine as were many voyaging botanists in this period. Maria Sibylla numbered among the few artists who voyaged with scientific expeditions. These included Aimé Bonpland, who traveled with Humboldt, drying herbarium specimens in small smoky huts closed off against the humidity of the tropics; Pierre Jossigny, who voyaged with Commerson; and Alexander Buchan and Sydney Parkinson, who voyaged with Joseph Banks and died probably of malaria or dysentery on the voyage.

Merian had been born into a prominent family of painters, engravers, and publishers. From an early age she served an informal apprenticeship with her stepfather, guild painter Jacob Marrel, after her own father, the famous Matthäus Merian the Elder, died. A contemporary, Joachim von Sandrart, confirmed that “in her home, Merian received good training in sketching and in painting (both oil and water-color) all manner of flowers, fruit, and birds, and in particular . . . worms, flies, mosquitoes, spiders.” She also learned to engrave copper plates and mix paints. It was not unusual for women to serve as botanical illustrators (despite restrictions such as the Nürnberg Painters’ Code of 1596, which prohibited women from using oils). Barbara Dietzch and Maria Moninckx worked in Merian’s style in Amsterdam. Moninckx painted with her father, Jan, for Agnes Block, who owned extensive private gardens, and for Caspar Commelin, director of the Amsterdam Botanical Garden. In France, Madeleine Basseporte recorded on vellum the rare plants at the Jardin du Roi from 1735 until her death in 1780.¹⁸

Art, not medicine, gave Merian entrée to natural history exploration. She did not travel in the service of a botanist, as did many other artists and illustrators, but instead set her own scientific agenda. Having studied insects since the age of thirteen in Frankfurt and Nürnberg, she moved in 1691 to Amsterdam, the hub of Dutch global commerce, to study the extensive collections of rarities from the East and West Indies, especially the natural history collections of the mayor, also director of the East India Company, and his nephew. Merian was disappointed, however, that these

collections contained only dead specimens; what interested her was the metamorphosis and life cycles of caterpillars. She thus set out to do her own research: “This all resolved me to undertake a great and expensive trip to Surinam (a hot and humid land) where these gentlemen had obtained these insects, so that I could continue my observations.”¹⁹

Although Merian’s scientific biography differs from that of many naturalists, it also resembles theirs in a number of revealing ways. Throughout her life, Merian, like Sloane, combined science and art with commerce. In Nürnberg, Frankfurt, and Amsterdam she established thriving businesses—selling fine silks, satins, and linens painted with flowers of her own design from which she earned a comfortable living. Her colors (for which she had developed new techniques to enhance their durability) became so renowned that she was commissioned by an army general to paint his field tent with all manner of birds and flowers—even on the battlefield, the general wanted to feel that he was enjoying the quiet of a garden house.²⁰

Like many male naturalists, Merian also joined commercial interests to her scientific voyage. In the same way that Sloane sought a substitute for the valuable Peruvian bark in Jamaica, Merian sought other varieties of caterpillars in Surinam that, like silkworms, might produce fine thread. Silk was, in this period, big business. In 1700, the Academy of Sciences in Berlin tried (unsuccessfully) to fund their scientific endeavors through a silk monopoly; Merian’s own stepuncle was in the silk trade in Frankfurt. Silk indeed became important in colonial manufactory: in the late eighteenth century, the “Lady Governess” of the English East India Company in India, for instance, directed a plantation of mulberry trees at the female orphanage in Madras where at least one hundred girls were profitably engaged producing silk.²¹

In Surinam Merian found one potential silkworm (today identified as the *Rothschildia aurota*) that feeds on what she called a “China tree.” The caterpillar produced an “ochre colored thread” that she believed could “produce good silk and bring a good profit.” She sent samples of the caterpillars—so “fat that they roll”—back to Holland, though to my knowledge she never brought this anticipated moneymaker into production. Her commercial interests in Surinam focused on supplying her specimen trade back in Amsterdam. Before leaving Surinam, she arranged with a local man to continue to supply her with all manner of butterflies, insects, fireflies, iguanas, snakes, and turtles, many preserved in brandy, for sale in Amsterdam, but by 1705 he was dead.²²

Like Sloane and other male naturalists, Merian relied on Amerindians and African slaves—whom she referred to as “my slaves” (*myne Slaven*)—for aid in finding choice specimens and for safety in travel. Her slaves hacked openings for her in the dense rain forest, dug up roots, helped her tend her botanical garden, paddled her and her assistants upriver, and supplied choice maggots, fireflies, and shells. For two years she and her daughter collected, studied, and drew insects and plants of the region, gathering specimens early in the cool of the day and preparing them in the evening. When writing commentaries to her plates featuring her finds, she added—as was common in this period—“information from the Indians.” These included uses of plants in medicine (cotton and senna leaves cool and cure wounds), foods (a recipe for cassava bread), buildings, clothing, and jewelry. According to the historian Natalie Zemon Davis, Merian brought her “Indian woman” with her to Amsterdam. Nothing more is known about this woman.²³

Overcome with malaria, Merian was forced to leave the Torrid Zone in 1701, sooner than she had intended. Upon her return to Amsterdam, she, like other heroic voyagers, began compiling her travel account, in this case her *Metamorphosis insectorum Surinamensium*, portraying the reproduction and development of numerous insects and the many plants they feed upon “never before described or drawn.” Invoking familiar tropes of voyaging literature, she advertised her book as “the first and strangest work painted in America”: “This work is rare and will remain rare . . . since the trip is costly and the heat makes living [in Surinam] extremely difficult.”²⁴

Biopirates

In contrast to English and Dutch voyaging naturalists, who followed trade routes catching rides and taking whatever positions they could to pursue botany, French voyaging botanists were sent out by the government. Jean-Baptiste Colbert, finance minister to Louis XIV, attempted to follow the successful Dutch model by founding the *Compagnie des Indes Occidentales* in 1664 (following upon the failure of the *Compagnie des Isles de l'Amérique* in 1648). Unlike Dutch companies, however, the French company was a commercial enterprise created and supported by the government; as Stewart Mims has shown, 3 of the 5 million livres financing the company were furnished by the king.²⁵

Within a decade this company, too, had failed. Colbert nevertheless remained steadfast in his resolve to advance the French state through

commerce and to harness the expertise of naturalists to this effort. In step with the centralization of French state power in the seventeenth century, Colbert established the Académie Royale des Sciences and expanded the Jardin Royal des Plantes Médicinales in Paris, both of which sent out naturalists. The King's Garden, directed in turn by Tournefort, Antoine de Jussieu, and Georges-Louis Leclerc, comte de Buffon, was the primary training ground for botanists and the headquarters for rationalizing worldwide French botanical and agricultural production. Colbert's goal was a familiar one: to decrease France's reliance on imports and to increase its production of luxury goods for export. James McClellan and François Regourd have labeled this highly bureaucratized system the "scientifico-colonial machine"—a system that worked to centralize the material and intellectual resources of France's colonies by drawing natural resources from the peripheries to the center. Richard Drayton has argued that similar alliances between Crown patronage and natural historical bioprospecting did not form in Britain until late in the eighteenth century.²⁶

The French Royal Garden of Medicinal Plants was founded in 1626 by Guy de La Brosse, physician to Louis XIII. The purpose of the garden was to conserve all types of useful medical herbs for the instruction of medical students as well as to cultivate ornamental exotics for the luxury trade. Taking the simpler name Jardin du Roi in 1718 (and later known as the Jardin Royal des Plantes), this royal establishment hosted courses on botany, chemistry, eventually anatomy, zoology, forestry, agronomy, metallurgy, and all branches of natural history. Almost every French botanical voyager—to the man—passed through the portals of this institution. Some studied also at the rival garden in Montpellier, created in 1593, where one section was reserved for medicinal herbs and the other for acclimatization experiments. The Parisian garden also housed the Cabinet du Roi, an entrepôt for specimen exchange throughout Europe. In France, the king's men collected for the king.²⁷

One early voyager sponsored by the King's Garden was Tournefort, professor of botany there, sent in 1699 by Louis XIV to the Levant to discover plants (France did not have direct commercial access to the medicinal drugs of the Middle East), metals, and new minerals, to verify the coastal maps of the area for the French navy, and to bring back information for French diplomats. The Greek and Arabic drug trade was still important in the seventeenth century, and Tournefort made a pilgrimage to Mount Ararat in eastern Turkey, where Noah's Ark had allegedly come to rest after the Flood and a place widely believed to be the birthplace of ter-

restrial flora and fauna. Deeply disappointed, Tournefort wrote, “everything published by travelers about the mountain is false. There are neither monks nor hermits, neither solitaries nor recluses. It is a horrible mountain . . . half of it is hidden by snow all year round; the rest is bare and sandy.”²⁸ Nonetheless, Tournefort brought back 1,356 plants from the region.

Even the priest voyagers, always in search of useful plants in addition to souls, were sent by the king. Charles Plumier, of the order of Minim, traveled to the Antilles in 1689 with the title *Botaniste du Roi* (the king’s botanist). He died during his fourth voyage to the Americas, searching for *Cinchona* trees in Peru.²⁹

Second to the Jardin du Roi in plant reconnaissance was the Parisian Royal Academy of Sciences, created by Colbert in 1666 to enhance the

[To view this image, refer to
the print version of this title.]

Figure 1.1. The King’s Garden, founded in Paris in 1626. Louis XIII created this garden for the cultivation of medicinal plants at the urging of his apothecary, Guy de La Brosse. It later became known as the Jardin du Roi. Under Louis XIV it blossomed as the leading European center for botanical and natural historical research.

power and privilege of the state. In 1735, this academy commissioned the celebrated expedition led by Pierre Bouguer, Charles-Marie de La Condamine, and Louis Godin to the equatorial regions of South America to measure the length of a degree of the meridian near the equator in order to determine Earth's size and shape (by comparing it to similar measurements taken at the North Pole). The Frenchmen were among the first foreign scientists to penetrate into the interior of Spanish Peru: for centuries Spain had closely guarded the secrets of its American natural resources. Although accompanied by emissaries of the Spanish governor, La Condamine found opportunities to spirit away seedlings of the precious Peruvian *Cinchona* and rubber trees (*caoutchouc*), to test Amazonian curare (on chickens in Cayenne—see Chapter 4), and to settle the question of the real existence of the Amazons (the warlike women said to inhabit the wilds of the river named after them). La Condamine took Joseph de Jussieu to serve as his “botanical eyes.” La Condamine's hope was a familiar one: to procure (legally or not) *Cinchona* and rubber trees for production in some part of the French empire. La Condamine wrote of his prospecting for the valuable Peruvian bark:

On the 3rd June I spent the whole day on one of these mountains [near Loja in present-day Ecuador]. With the aid of two Indians of the region whom I took with me to serve as guides, I was able to collect no more than eight or nine young plants of Quinquina [*Cinchona*] in a proper state for transportation. These I had planted in earth taken from the spot in a case of suitable size and had them carried with care on the shoulders of a man whom I kept constantly in my sight, and then by canoe. I hoped to leave some of the plants at Cayenne for cultivation and to transport the others to the King's Garden in France.³⁰

Despite his care, the plants did not prosper (La Condamine did not know that *Cinchona* grows only at high altitudes). Nonetheless, while gathering geographical information, he also collected seeds of a number of potentially valuable plants at “every step” on his journey—he mentioned ipecacuanha, simaroba, sarsaparilla, guaiacum, cacao, and vanilla—and kept his eyes open for others yet unknown to Europeans.

European powers—the Spanish, Portuguese, Dutch, English, and French—jealously guarded their natural resources, their “green gold.” Such monopolies and secrets bred a counterforce of bioespionage and piracy. Spain's approach was to close the borders of its vast South American

holdings and scrutinize interlopers. If La Condamine had been found carrying *Cinchona* from Spanish dominions into French territories, he would have been imprisoned, mutilated, or executed, even though the French expedition had entered Spanish domains in South America legally (if not honorably) with passports from Philip V, King of Spain.

Others, however, did not. Nicolas-Joseph Thiery de Menonville, a royal French botanist traveling some forty years after La Condamine, entered New Spain (Mexico) to steal the prized cochineal, a small beetle that produces a rich scarlet dye. I call him a biopirate rather than a bioprospector, because Thiery de Menonville—whose clandestine voyage was sponsored by the French ministry of the navy—had no passport or papers for legitimate passage into Mexico and he intended to extract the cochineal by any means necessary. Had he been caught, France would have done nothing to save him. The French government promised him 6,000 livres for his services (an extraordinarily large sum), but could not officially recognize his illegal activities. Thiery's mission was to naturalize the cochineal insect to Saint Domingue, thus breaking for the first time the lucrative 250-year Spanish monopoly on cochineal production. In the eighteenth century, the Spanish produced 1.5 million pounds of the insect per year and by 1784 were receiving £500,000 annually for the dye in Europe. The French, in particular, paid dearly for the cochineal used at their famous Royal Gobelines Tapestry works. Should Thiery have succeeded in naturalizing cochineal to French soil in Saint Domingue, this new colonial crop would have showered France with riches equal to those produced by sugar, coffee, indigo, and cacao.³¹ This colony was, after all, the most prosperous in the New World, providing by 1789 two-thirds of France's foreign revenues. Trade in cochineal would only enhance those revenues.

Cochineal had been cultivated from precolonial times by the Mixtec and Zapotec peoples in Oaxaca, Mexico to provide color for their houses and cottons. The valuable dye continued to be produced throughout the colonial period—albeit now for the Spanish—by Oaxacan Indians working on small peasant plots. The highly prized red and orange dyes were made from the dried, pulverized bodies of a beetle (the females only) with the Latin name *Dactylopius coccus* that is indigenous to Mexico and feeds parasitically on two genera of cacti, the nopal (*Nopalea*) and the prickly pear (*Opuntia*). By the 1870s, cochineal was replaced almost entirely by synthetic dyes, but it again became popular in the twentieth century as a colorant for foods, cosmetics, and beverages after synthetic red dyes (based on petrochemicals) were found to be carcinogenic. Peru now pro-

duces 85 percent of the world's supply of cochineal; it takes 70,000 insects to make one pound of dye.³²

Thiery's travel account, *Voyage à Guaxaca* (Oaxaca), bristles with the high intrigue of a "mission impossible." Engaged in the psychological strategies of advanced war games, Thiery played on what he perceived to be the pride and laziness of the Spanish and, when possible, pitted Spaniard against Spaniard, African against Amerindian, officer against officer. After receiving instructions from the French ministry, the "new Argonaut," as he called himself, embarked on his sixty-six-day journey from France to Saint Domingue in 1776. From there he planned to take passage to Havana (Cuba) on a slaving ship, but found instead a French merchant ship headed to that port. Before leaving he procured a passport from the Intendant of Saint Domingue stating that he was both a botanist

[To view this image, refer to
the print version of this title.]

Figure 1.2. The manner of gathering and cultivating cochineal in Oaxaca, Mexico. Amerindians—both men and women—gather the cochineal insects from the cacti upon which they breed. Piles of insects are fired just enough to kill them and then laid in the sun to dry.

and physician. Though one of the few botanists in this period not trained as a physician, he envisioned that traveling under this guise would render him “more luxuries” and, more important, “less suspicion.” He set off from Saint Domingue in January 1777 with some food, clothes, and a number of vials, flasks, cases, and boxes of all sizes. Driven by his dream, “all future obstacles vanished from sight, and already I felt it in my power to possess the precious treasure which I sought.”³³

Thiery de Menonville herbalized in Havana while waiting for a vessel to carry him into New Spain. Traveling as an upper-class European (often flashing his gold-capped cane, diamond ring, good manners, and fine connections), he gained entrée to the governor’s home and circle of friends. The bonds of class brought him a passport into Veracruz, his next port of call. The ship’s captain, however, not sharing the confraternity of wellborn men, charged Thiery 100 hard dollars—an exorbitant sum—for passage. Thiery’s first priority upon touching Mexican soil was to win over the people. His Cuban passport, however, was ruled invalid, and Thiery desperately required papers if he was to travel to Oaxaca, where he had learned the finest cochineal was to be had. Botanizing while waiting, the Frenchman identified the “true” jalap of Mexico (a valuable drug), which immediately endeared him to the inhabitants of Veracruz. Thus he honed his core deception: outwardly he played the herbalizing physician in search of drugs, while inwardly he mocked the “idleness and ignorance” of people who paid a high price to import jalap when it grew “under their very noses.”³⁴

Thiery’s herbalizing provided the pretext for his repeated forays into the countryside, attended only by his “Negro,” who carried his portfolio, hatchet, mattock, and breakfast. As time went on, he won the admiration of persons of every rank and became known as the “French doctor.” This charade, he wrote, “allowed me to conceal my ultimate project.”³⁵

Despite his elaborate ruse, the viceroy of New Spain refused his French rival papers and ordered him to leave the country, stating that he did not wish “to open to strangers the secrets of the country” (though Thiery’s exact plans were probably unknown). Undeterred, the French nobleman resolved to travel, despite the possibly fatal consequences, without papers and on foot into the heart of foreign territory. He elaborately planned his journey: he would leave Veracruz in such a way as to appear to be taking a walk rather than a journey, he would travel on back roads, and lodge in the poorest Indian huts along the way. If discovered, he would pretend to have lost his way. Knowing that his French dress, ignorance of the road,

and bad Spanish would arouse suspicion, he decided to declare himself a Catalan from the frontiers of France, which would explain why he spoke French well but Spanish poorly. To further his success, he vowed to go “always neatly dressed, bearing some trinkets and small gifts, affecting good humor, and, importantly, to pay liberally for all I take.” Thus resolved, he left at nine o’clock in the evening, scaled the town ramparts, and bade the city adieu.³⁶

Lodging with Indians, paying grandly for the few eggs and tortillas they could spare, and asking aid of African and Indian guides, Thiery reached his “golden fleece” (*toison d’or*)—the cochineal fields of Oaxaca—with his heart pounding in expectation and fear. Offering that he was a physician in need of the cochineal to make an ointment for the gout, he purchased the live insects and some of the cacti they feed on from various African and Indian proprietors. These he stored in chests of appropriate size with partitions and locks that he had commissioned for the transport of his treasure. He found also ripe pods of the prized vanilla, which he marked and then hid by mixing them and some green shoots from the root into a jumble of ordinary plants in his box. Always ready with a story and a strategy, Thiery returned to Veracruz congratulating himself on having, in the course of his journey, eluded two viceroys, six governors, thirty *alcaldes* (local officials), and 1,200 customs guards. In only twenty days, he had journeyed “240 leagues [720 miles] . . . over roads so bad as often to be almost impassable, under a burning sun, in a wretched country, without resources, and among a people whose language I did not speak; in a country, in short, where I was destitute of a protector or any connections, and where every public officer was a threat to me.”³⁷

At Veracruz, he packed his many treasures for the relatively short sea voyage east across the Gulf of Mexico to Saint Domingue. Despite his precautions, several sailors discovered him tending his cacti and recognized the contraband insects living on them. Thiery again claimed that the cochineal, along with the cacti, vanilla, and jalap, were ingredients for his ointment for the gout. When queried further, he had to admit that these were not the “whole secret” of his potent mixture, but that he compounded them with incense, gold dust, silver leaf, and—he added in a half whisper—“some blessed lint that had touched the relics of Santo Torribio.” To secure the crew’s trust he threw some additional “Latin into the mix.” His deception spared him once again the severe consequences otherwise meted out to smugglers.³⁸

Upon his return to Saint Domingue, Thiery was celebrated for the ser-

vice he had rendered the state and rewarded with the title *Botaniste du Roi* and a permanent pension of 6,000 livres per annum—a sum double that granted members of the Académie Royale des Sciences in Paris. Thiery established a nopal cactus plantation in the botanical garden at Port-au-Prince and also sent cacti and insects to the garden of the Cercle des Philadelphes, the scientific academy located in Cap Français, the “Paris of the Antilles.” Thiery planned to distribute “free, without distinction of rich or poor,” to each inhabitant of the island the treasures of his voyage: the nopal and cochineal, vanilla, jalap, indigo, and cotton. While Indians and former slaves cultivated cochineal in New Spain, Thiery imagined that in the French colonies, this work would best suit a particular class, the *gens de couleur* (people of color), whom Thiery remarked were growing in numbers everyday. The *gens de couleur* were, in Thiery’s view, “almost

[To view this image, refer to
the print version of this title.]

Figure 1.3. Eighteenth-century European boxes fashioned for transporting plants. Nicolas-Joseph Thiery de Menonville’s cases were similar to the one shown in the upper right corner, designed by John Ellis. The box is closed to protect the plants from sea salt and opened at both ends and the front to allow for the circulation of fresh air.

Frenchmen,” meaning that they had the industry and savvy to succeed in producing this potentially rich merchandise on their small holdings that could not support cane, tobacco, indigo, roucou, or other cash crops.³⁹

The dye produced from Thiery’s insects was tested by chemists at the Jardin du Roi in Paris and proved of very high quality. The Frenchman, however, died of “malignant fever” in 1780, just two years after his return to Saint Domingue, at the age of forty-one. His successors at the Port-au-Prince garden, M. Joubert de la Motte, a royal physician from France, and his assistant, the creole M. Chotard, were unable to coax the cochineal into production, bringing Thiery’s plan to naught. The *grana fina* cochineal for which Thiery de Menonville had risked his life died out in Saint Domingue. His work, however, led to the discovery of the *grana silvestre*, a wild variety of the insect native to the French Caribbean island that was soon put into production. By 1787, the Academy of Sciences in Paris had confirmed that the dye produced in their American colony was nearly of the same quality as the Mexican cochineal.

Thiery’s biopiracy opened a new branch of French commerce in Saint Domingue for a few years. He succeeded where Linnaeus in Sweden, the English, and the North Americans had failed. In 1759 the English Society of Arts had offered a prize of £100 to anyone who could produce a quantity of not less than twenty-five pounds of Jamaican-grown cochineal, but no one even came close. The British later attempted to naturalize cochineal in “Hindustan” (India), but again without success. The North Americans also failed in their attempt to produce the insect in South Carolina. The Dutch succeeded in establishing cochineal production in Java, but New Spain (Mexico) long remained the primary producer. Production in Saint Domingue halted with the upheavals and flames of the Haitian revolution.⁴⁰

Who Owns Nature?

In a remarkable passage, Thiery de Menonville discussed his act of piracy, his perilous theft (*un larcin périlleux*), as some called it. “To have stolen the cochineal,” he wrote, “would, in my opinion, have been an act of social injustice, as far as regards the cultivator whose garden I might have spoiled.” This injustice he sought to avoid by purchasing the cacti and insects—at whatever price the owner might ask—thus, in his view, royally compensating the poor Indian or former slave for their goods. His chief concern was not to injure individual cultivators. As for Spain—from whom

he pirated the plants and insects—he felt no obligation whatsoever. He reasoned that he, “as a prototype of a different nation,” shared equal rights with the Spanish to “nature’s favors.” If the Indians had collectively refused his request to purchase the cochineal, “I should then have considered myself, *as in the case of war*, absolved from the restrictions of social laws” and would have carried away by stratagem what was denied by entreaty.⁴¹

Who owned nature in the eighteenth century? This was a question Europeans were concerned with (and in the West Indies we have access only to their point of view). Let’s skip to the present for some comparative temporal insights.

The Rio International Convention on Biological Diversity of 1992 placed biological and genetic resources in the custody of nation-states and subject to their property-right laws (though this sometimes conflicts with community rights of people whose territories span modern national boundaries). John Merson has stated that prior to the 1990s, plants and other biological resources were considered part of the “global commons.”⁴² Nature, in other words, was there for the taking. In the eighteenth century, unspoken notions concerning a global commons applied only to nature and its resources outside Europe: European trading companies and states claimed exclusive rights to the natural resources of the territories they could hold militarily. As we will see, secrecy was often the only weapon Amerindians and Africans in the West Indies had to wield against European bioprospectors (Chapter 2).

Thiery felt a responsibility to individual cultivators—whether Amerindian or African-Mexican—and sought to compensate them for their accumulated knowledge and resources (or so he says), even though his piracy could potentially have undermined their livelihood. With Spain, however, he considered himself in a state of war, and, if he was clever enough to steal the prize, he felt justified in doing so.

Thiery de Menonville was not the first (nor would he be the last) of the French biopirates. The sixteenth-century druggist, Pierre Belon, scoured the Levant for the secrets of Arabic drugs, ointments, and salves. Medical men in Constantinople, whose narrow streets were peopled with spies and counterspies, closely guarded their secrets and often eliminated indiscreet inquirers. Belon eventually managed to “tame” or acclimatize the poppy and other medicinal plants (the cork oak and strawberry tree) to France. But perhaps he knew too much; he was murdered in 1564 in the Bois de Boulogne, where he had been installed by the Valois king, Henri II. His

death was attributed to a passing prowler, but Belon's friends were convinced he was assassinated.⁴³

Thiery may have been more directly inspired by Pierre Poivre, a French botanist who successfully conducted covert raids in the 1750s and again in the 1760s and 1770s into the Dutch East Indies to steal pepper, nutmeg, cinnamon, and cloves for acclimatization and cultivation in his gardens on the Isle de France (the island of Mauritius in the Indian Ocean). Historian Patrice Bret has perceptively remarked that botanists were “foot soldiers” in the “botanical wars” for tropical resources; finding and authenticating valuable plants was naturalists’ work. Following Poivre’s successes acclimatizing Dutch colonial plants in the Indian Ocean, the French government commissioned incursions into the Spanish empire in order to enrich their West Indian holdings in Cayenne and Saint Domingue. Jean-Baptiste Leblond, another royal naturalist, was paid a pension of 6,000 livres per year from 1786–1802 by the general controller of finance to find *Cinchona* in Spanish territories in Guiana and thus break the monopoly on that indispensable anti-malarial. While underway, Leblond also prepared reports on cotton, indigo, pepper, cinnamon, cloves, and breadfruit, and sent many plants and animals to the King’s Garden in Paris.⁴⁴

Voyaging Botanical Assistants

Heroic voyaging botanists, largely upper-class, were supported by numerous lower-class assistants whose work secured their success. John Woodward in his instructions to voyagers specified in detail how to collect, label, and record the uses of plants as described by the people of a particular country. This, he noted, “may be done by the hands of servants; and that too at their spare and leisure times.” Assistants thus carried and fetched; they netted fine specimens, drew, recorded, and generally contributed to the massive task of cataloguing nature’s bounty. Even displaced Africans served Europeans in this capacity: one Thomas Richmond, a field assistant to Joseph Banks on his voyage with James Cook in 1768, was well on his way to becoming the first African to circumnavigate the globe, but he died in the snows of Tierra del Fuego off the southern tip of South America.⁴⁵

I have selected Jeanne Baret as the type specimen for voyaging botanical assistants, even though she was extraordinary in becoming the first woman to circumnavigate the globe. Not the independent researcher Merian was, Baret—or as she signed her name, Barret—traveled in the capacity of a valet (for which purpose she disguised herself as a man) to Philibert Com-

merson, physician and royal naturalist on Bougainville's voyage (1766–1769). According to the account Baret gave after she was discovered, she had “tricked her master [Commerson] by presenting herself dressed as a man . . . at the dock [in Rochefort] at the moment the vessel was being boarded.” Baret's tale, as it is often told, recounts how the 116 young French sailors grew suspicious over the long months of the voyage, remarking that the young “valet” neither grew a beard nor was seen to relieve himself. Despite their suspicions Baret was not found out until the French ships were halfway around the world. It was only when the *Cythériens* (Tahitians) circled her, chanting “*ayenene, ayenene*” (girl, girl), that the Europeans discovered that she was, indeed, a woman.⁴⁶

As fanciful as this story may be, Commerson certainly knew her and knew she was a woman. In 1764, two years before the voyage, he had engaged the then twenty-four-year-old Baret, who according to Bougainville was “neither plain, nor pretty” as his housekeeper (Commerson was thirty-seven years old at the time). As the king's naturalist, Commerson was allotted 2,000 livres to engage a personal servant and an illustrator for the duration of his voyage round the world. It seems unlikely that, as was later claimed, he would have chosen just anyone standing at the pier on the day of departure for this technically demanding and intimate work. He nonetheless proclaimed his innocence, writing sometime later that this “courageous young woman who, taking the clothing and temperament of a man, had the curiosity and audacity to circumnavigate the globe, accompanied us without us knowing it.” He could not have done otherwise; a French royal naval ordinance of 1689, reconfirmed in 1765, forbade officers and sailors to invite women to pass the night on board ship or to come on board for anything more than a short visit. Officers who failed to abide by this order were suspended for a month and sailors were sentenced to fifteen days in chains.⁴⁷

It is difficult to evaluate the relationship between Commerson and Baret. Commerson hired Baret as his housekeeper two years after his wife's death in childbirth. Curiously, he hired her when she was some five months pregnant, just as she was becoming less able to do heavy domestic labor. Baret registered her pregnancy August 22, 1764, in Digoïn outside Lyons, as required by law, but refused to name the father. Shortly thereafter both Commerson and Baret moved to Paris, where she began her work for him on September 6th, for which she was paid 100 livres per year. The child, Jean-Pierre Baret, was born in January of the next year and put out to a wet nurse (a typical form of infanticide in this period). The child died

some months later.⁴⁸ Commerson had left his son from his marriage in the care of his brother-in-law, a priest living in Toulon-sur-Arroux, when he moved to Paris and took up residence with Baret near the Jardin du Roi, where he hoped to advance his career as a naturalist.

Before Commerson set sail with Bougainville in 1767, he, like Merian, prepared his will, a document that again suggests an intimate relationship between the botanist and his assistant. Interestingly, in his will, Commerson made provisions for his body to be given to science, taken after his death to the nearest anatomical theater for dissection, a fate usually reserved in Catholic France for executed criminals. His skeleton and body parts were all to be used for study, save for his heart, which was to be placed in a marble sepulcher next to the body of his deceased wife. He bequeathed his manuscripts and property to his young son, and he left his household linens and furnishings along with 600 livres to Jeanne Baret.⁴⁹ He also left instructions that she was to be allowed to remain in his house for a year after his death in order to put his natural history collections in order before sending them to the Cabinet des Estampes du Roi. Despite the differences in their ages and class backgrounds, it is clear that Commerson and Baret knew each other well. On board the *Étoile*, Commerson and his valet both suffered (or feigned to suffer) terribly from seasickness, so that it seemed reasonable for them to lodge together at night in his cabin.

The story of Baret's voyage and discovery was recounted at some length in journals kept by various crew members. Curiously, Commerson's own account in the ship log read only "18 July 1768 the physician M. Commerson's domestic was discovered to be a girl who until now passed as a boy." Bougainville's journal entry was short and matter-of-fact, perhaps because he sailed with the *Boudeuse*, the other vessel in the two-ship caravan. According to the combined accounts, no one suspected a thing until after about a month when the ship company's "gentle repose" was interrupted by murmuring that a girl was on board. The sailors eyed Commerson's valet with suspicion: he had a small and heavy build, large buttocks, elevated chest, small round head, freckled face, tender and clear voice, and a dexterity and delicacy of hand that threw his sex into question. Charles-Félix-Pierre Fesche, a volunteer with Bougainville aboard the *Boudeuse*, noted after this episode that Baret took the precaution of binding her breasts "to hide her sex."⁵⁰

The captains of the two vessels ignored the situation, but day by day the rumors grew louder. Commerson was told that his valet could no longer

pass the night in his cabin but must take an ordinary hammock in the stern with the other five servants on board. There the sailors, “pushed and pulled by curiosity,” pressed themselves on the valet, but he was “cruelly insensible to their offers and entreaties.” At the same time, the “false man” continued to assure the crew that he was not at all of the “feminine sex” but was in fact a eunuch, or, as Baret reportedly put it, “made by accident like those [men] whom the great sultans make the guardians of their seraglios.” She claimed, in other words, that the ambiguities of her sex had resulted from castration.⁵¹

After this incident, “our man,” the reports continued, worked as hard as possible “to appear that which he claimed to be.” He worked “like a Negro.” The voyagers witnessed him [Baret] accompanying his master on all his expeditions amid the snows and icy hills of the Straits of Magellan, carrying provisions, weapons, and portfolios of plants. Baret’s arduous labor had the desired effect, and the crew’s suspicions subsided “due to lack of evidence.” However, when the ships arrived at Nouvelle Cythère, a “savage” named Boutavèry immediately singled out the valet from the crowd of sailors as somehow different. His suspicions were confirmed when she went ashore the next day to herbalize with her master; the “savages” apparently immediately saw what the Europeans could not—that she was clearly female. When the Tahitians began carrying her off to “present to her the honors customary in the island,” Baret had to be rescued by the ship’s officer of the guard.⁵²

Back on board, Bougainville reported that “I was then obliged, according to the ordinances of the king, to assure myself that the suspicions were founded.” After sailing undiscovered for a year and a half, Baret finally confessed that she was a woman; she said that she had deceived her master at Rochefort and that she had also some years earlier served a Genevan gentleman also disguised as a valet. She continued that she was born in Burgundy and soon orphaned. Finding herself in “a distressed situation,” she resolved to disguise her sex. She confessed that she knew when she boarded that the ship was voyaging around the world, and that such a voyage had raised her curiosity. Bougainville judged her to be the first woman to circumnavigate the globe and added, “I must do her justice to affirm that she has always behaved on board with the most scrupulous modesty.”⁵³

After her discovery, Baret abandoned her disguise. Bougainville noted that he “took measures so that nothing disagreeable would happen to her.” It is unclear if he meant during the remainder of the voyage or in

court upon her return to France. She herself left nothing to chance and carried two loaded pistols with her at all times on board ship.⁵⁴

Commerson was not disciplined. One observer of those days wrote that he could have said much about Commerson's "embarrassment," but he did not. Another observer wrote that "because of his [Commerson's] age and knowing of the scandal such an incident would cause on a long voyage and because his actions contravened a royal ordinance," Commerson probably did not know Baret's sex when she boarded the ship. But, this observer continued, Commerson knew of it as early as Montevideo (in present-day Uruguay) because he did not let her mix with the inhabitants there.⁵⁵

Nothing is reported of Commerson and Baret's relationship after her discovery except that she continued to be dedicated to him and accompanied him herbalizing. Commerson died in 1773 on the return voyage on the Isle de France, and in 1774 Baret married Jean Dubernat, a former petty officer of the royal trading post on the island. She later returned to France, where in consequence of Bougainville's intervention, the courts pardoned her. Bougainville judged the case innocuous; "her example," he wrote, "is not likely to be contagious." Rather than disciplining her, the royal navy granted her an annual pension of 200 livres in 1785, referring to her as a "*femme extraordinaire*."⁵⁶

Why the male disguise? Women often donned masculine garb when they entered domains where women dared not tread. Dressed as men, Anne Bonny and Mary Read, for example, lived as pirates in the West Indies in the 1710s. Other women disguised themselves as males in order to join the military, to marry women of their choice, or to enter various areas of science and medicine. At the close of the eighteenth century the future prize-winning mathematician Sophie Germain took courses at the newly opened École Polytechnique in Paris (which, like most European universities, was closed to women at the time) under the pseudonym Antoine-August LeBlanc. At the turn of the nineteenth century, a young woman's guardians sent her to the University of Edinburgh dressed as a boy. After being awarded a medical degree in 1812, "James" Barry joined the British Army, becoming the second-highest ranking medical officer in the colonial military establishment. Her true sex was not discovered until after her death. Similarly, the first woman to attend medical school in the United States in the 1850s, Elizabeth Blackwell, was counseled by a sympathetic professor to attend classes disguised as a man. A second French woman sailed around the world in the early nineteenth century accompanying her

husband, a naval officer. Rose Marie Pinon de Freycinet embarked on this long voyage dressed as a sailor. By the time she was discovered, it was too late for the ship to turn back.⁵⁷

Why did Commerson take Baret around the world? How did she contribute to colonial botanizing? Commerson chose to contravene French law and risked taking her as his valet because she was a useful and faithful servant. Captain Bougainville called her “an expert botanist.” Commerson wrote that she traversed with agility the highest mountains and the deepest forests without complaint. “Armed with a bow like Diana,” he continued, “armed with intelligence and seriousness like Minerva . . . she eluded the snare of animals and men, not without many times risking her life and her honor.” He praised her for the many plants she collected, the herbaria she constructed, the many collections of insects and shells she curated. As a tribute to her, Commerson lent her name to one their finds: the *Baretia bonnafidia*, a plant known for its “doubtful sexual characteristics.” Her name, however, fell into obscurity when botanists renamed this plant the *Turraea* (*Meliaceae*).⁵⁸

Baret’s story shows that in the eighteenth century women could be engaged in science, even in the close quarters of a scientific voyage. Like Edward and Sarah Bowdich, Baret and Commerson might be seen as a creative couple, a legacy of the guild system where husband and wife worked side by side, often over a lifetime, in pursuit of a common goal. She also represents the many invisible assistants serving men who held official posts—either as royal pensioners or professors—in science. Her dedication to Commerson was such that he affectionately called her his “beast of burden.”⁵⁹ Nineteenth-century prudery suppressed the story of Commerson’s *valet fille en homme* and it is just beginning to be retold today.

Baret was not the only woman to serve as a voyaging botanical assistant in this era. Charlotte Dugée, a free “mulatress” and royal illustrator born in Saint Domingue, accompanied Jean-Baptiste Patris, a royal physician in Cayenne, as an artist/illustrator as he explored the source of the Maroni in Guiana in 1766. After months of exploration, she went mad and ventured alone into the forest, where she disappeared without a trace.⁶⁰

Creole Naturalists and Long-Term Residents

The historian of science Antonio Lafuente has discussed the rise of a distinctive “creole science” in the Spanish domains of New Spain (Mexico) and New Granada (Colombia, Ecuador, Panama, and Venezuela) after

1780, by which he means science done by Europeans born and educated in the New World who often fused local American with metropolitan European knowledges. The Spanish, unlike the Dutch, French, or English, conceived of their American holdings not as colonies but as integral parts of an extended monarchy. Accordingly, Spain laid the foundations for self-sufficient Spanish-speaking scientific communities in its American territories; this included founding universities, botanical gardens, printing establishments, and hospitals where the medical effectiveness of certain plants was tested. The first university in the Western hemisphere, today the Autonomous University of Santo Domingo, was founded in 1538, others were founded in New Spain (the Royal Pontifical University, today the Universidad Nacional Autónoma de México) in 1551 and in the Viceroyalty of Peru (the Universidad Nacional Mayor de San Marcos de Lima) also in 1551.⁶¹

One does not find organized “creole science” in the French and British Caribbean islands. The top echelons of the scientific communities in these islands were filled with men born and educated in Europe. Several Caribbean-born naturalists did emerge late in the eighteenth century, but they were educated in Europe (for example, James Thomson, born in Jamaica and educated in Edinburgh, and Jean-Baptiste Mathieu Thibault de Chanvalon, born in Martinique and educated in Paris). In the French holdings Médéric-Louis-Elie Moreau de Saint-Méry, a well-known creole who codified French jurisprudence in the Antilles, was also educated in Europe (in Paris). Some colleges were founded in New England and Virginia (Harvard in 1638, William and Mary in 1693, and Yale in 1701), but not in French, English, or Dutch holdings in the Caribbean, apart from Codrington College in Barbados, established in 1710 by the English to teach “divinity, physick, and chirurgery.”

Although one cannot speak of creole science in the Dutch, English, or French West Indies, the character of botanists traveling to the Caribbean changed in the second half of the eighteenth century as settlements became more secure. In contrast to Sloane, Merian, and even Humboldt, who sojourned in these strange and marvelous lands for a year or two, many naturalists at the end of the century settled into life in the Torrid Zone for ten, twenty, or more years. Though these long-term residents often still married in Europe and returned there to die, many spent the best part of their scientific years in the colonies. Their knowledge of the area was deep; their first allegiances were not always to Paris, London, Amsterdam, or Edinburgh. Some founded local scientific societies, such as the

botanical garden at Saint Vincent in 1765 (that doubled as a scientific society with a sixteen-foot telescope, thermometers, barometers, microscopes, and air pump); the Society for the Encouragement of Natural History and Useful Arts in Barbados in 1784; the *Surinaamse Lettervrienden* in 1786; and the Physico-Medical Society in Grenada in 1791. The Cercle des Philadelphes, founded in Saint Domingue in 1785 (a Masonic body of mostly medical men that enjoyed close ties to learned academies both in France and in Philadelphia) supported all aspects of science and began publishing *Memoires* in 1788, but the Cercle did not survive the Haitian revolution and the death of its founder Charles Arthaud (who was presumably killed in Cap Français in 1791).⁶²

Saint Domingue and Jamaica hosted several established long-term resident naturalists in the eighteenth century—including Bourgeois and Pouppé-Desportes, and Thomson and John Quier, of whom I will say more in the following chapters. In this section I focus on the lesser-known attempts to chart the flora of Guiana and botanists who might be described as “company men.” The French had successfully colonized Martinique, Guadeloupe, and Saint Domingue in the late seventeenth century, but did not establish major settlements in Guiana until after they lost Canada in the Seven Years’ War. Christened “El Dorado” for its reputed riches, Spanish and English explorers sought a mythical cache of gold and precious jewels said to be hidden on an island in Lake Parimá. By the eighteenth century, however, explorers in the region turned their attention to the profits to be made from *Cinchona*, sugar, roucou, indigo, cacao, coffee, and cotton. Between 1764 and 1766, 12,000 colonists (mostly German) were sent to this area, three quarters of whom died soon after arrival.⁶³

Jean-Baptiste-Christophe Fusée-Aublet, a career *botaniste voyageur* (as he called himself), was a company man who worked first for the Compagnie des Indes on the Isle de France and finally for the king in Guiana. His education was typical of eighteenth-century voyaging botanists—fiercely scientific and peripatetic. From his earliest youth he evinced an active interest in natural history, and especially in botany. In order to pursue natural history, he absconded from his Provence home, joined a squadron headed to Spain, and from there traveled to Grenada, Spain, where he studied pharmacy with Don Antonio Sanchez Lopez. Aublet eventually returned to France (Montpellier) to study medical botany and chemistry before moving on to Lyon, where he came to know Christophe de Jussieu, father of Antoine de Jussieu and his naturalist brothers who domi-

[To view this image, refer to the print version of this title.]

Figure 1.4. Frontispiece to Jean-Baptiste-Christophe Fusée-Aublet's *Histoire des plantes de la Guiane Française* (1775), vol. 1. The native guide, portrayed as an effeminate male, holds a ceremonial war club in his right hand, signaling his status as a headman. Interestingly, this Carib or Galibi chief holds a pen in his left hand, perhaps indicating the importance of his role in directing Aublet (crowned with laurels in the cameo portrait) to the “different interesting objects in the culture and commerce of French Guiana.” In this image, Aublet highlights America’s wealth of cacti and palms. He foregrounds the fruit of the maripa (commonly known as the American oil palm) and other palms.

nated French natural history for two generations. Seeking employment, he joined the staff of a Spanish army hospital and suffered through two military campaigns. Finding the work “extremely tumultuous and little instructive,” he left for Paris and was soon employed at the Hôpital de la Charité, where Sloane, Pouppe-Desportes, and others had also trained. He eventually made his way to the Jardin du Roi, where for seven years he studied chemistry, pharmacy, mineralogy, botany, and zoology. He planned then to travel to Prussia to study under the celebrated chemist Johann Heinrich Pott (who contributed to the discovery of manganese), but was approached in 1751 at the age of thirty-one by the minister of the French navy to sign on as “botanist and first apothecary-compositor” with the Compagnie des Indes on the Isle de France.⁶⁴

Trading companies had physicians, surgeons, medical botanists, and pharmacists, like Aublet, stationed along their routes. His job was typical: like Bontius in the Dutch East Indies, he was commissioned to set up a laboratory and garden to produce foods and medicines for his employers. Aublet sought, first and foremost, local replacements on the Isle de France for standard drugs that otherwise had to be shipped from Europe to the local hospital. These plants he also sent to his counterparts in the French territories of Bourbon and Pondicherry. Second, he devised a method of monitoring drugs supplied to company ship captains, who were known to resell surplus medicaments for their own profit.⁶⁵ Third, Aublet raised animals (such as cows) and grew plants (watercress, which he pronounced particularly salubrious) for distribution to the inhabitants of the island on condition that they return a part of their yield to the company. The company liked his work and increased his salary; the directors also sent a boatload of onions and seeds of other European staples for Aublet to introduce to the island.

Settling in, Aublet fell in love and had three children with a Sénégalaise slave, Armelle, whose freedom he purchased from the company (Chapter 3). He wrote passionately against slavery and made a point of retaining the indigenous names of new plants that he found in the region (Chapter 5).

But his was not an easy life. Aublet incurred the wrath of Pierre Poivre, the influential administrator of the Isle de France, when he shot off memos to company directors denouncing as bogus the nutmeg Poivre had smuggled out of the Banda Islands (in the Dutch East Indies) for the company. According to Aublet, Poivre’s nutmeg might resemble the “true nutmeg,” but had no commercial value. (Nutmeg was so precious in 1191 that the Romans fumigated the streets with the fragrant spice for the coro-

nation of Emperor Henry VI.) Poivre finally accused Aublet of killing the precious nutmeg seedlings he had hoped to acclimatize to French territories. Aublet also clashed with local apothecaries, who accused him of not supplying them with the medicines they required. He finally left the Isle de France, installing himself and his plants on the neighboring island of Bourbon (today Réunion). Despite the intervention of powerful patrons, Poivre got the upper hand and Aublet returned to France to quiet the controversies surrounding him.⁶⁶

Five months after his return, Aublet was appointed royal apothecary-botanist to prospect for plants in Guiana, on the “wild coast” of South America. His mission was to inventory the plants and animals of the region, looking for anything that could turn a profit for France. He was also to chart rivers and waterways for the military. He sailed aboard the *Patriot* with M. de Behague, who was in charge of a mission to secure cotton for French industry (thus ending imports from India) in addition to cinnamon, nutmeg, and clove. All this was to be kept secret from the Dutch, who still monopolized trade in these spices.⁶⁷

For two years (from 1762 to 1764) Aublet threw himself into his work, criss-crossing every “canton” in Guiana. His superiors praised his initiative and energy but not his character, which they found argumentative and difficult. His first run-in was with the Jesuits, who tried to block his efforts to penetrate to the interior of the country by refusing to supply him with Roucouyenne Indian guides (today known as the Wayana). Aublet, for his part, denounced the Jesuits for enslaving and exploiting the Indians on their missions. Despite these difficulties, within a year Aublet sent off his first scientific cargo to France. His botanical bounty was distributed to the ministers of the navy and finance, and to company officials. A. M. de Bombarde received a handwritten journal along with samples of Guianese flora (probably live specimens); the duc de Choiseul in Versailles and Buffon at the Jardin du Roi in Paris received one case of herbs; boxes of roots, diverse seeds, and fruits; two barrels of plants; and some animals.⁶⁸

Like Merian, Aublet complained that his compatriots in the colonies were in it only for the money. This, he professed, was not what motivated true naturalists. It should be enough for them to have “the satisfaction of being useful, and if successful, a little celebrated.” Like Merian also, Aublet left the Torrid Zone after a short time because of his health and what he perceived to be a total absence of the “conveniences of life.”⁶⁹

Upon returning to France, Aublet established a perfumery in Paris and manufactured an “essence of rose” much admired by Louis XV. He tried

to recoup the specimens he had sent, especially to Bombarde, but was told that after Bombarde's death his extensive natural history cabinet had been dispersed. The historian Jean Chaïa has suggested that Bombarde probably gave Aublet's rich collection to Adanson, Bombarde's protégé. The herbarium that Aublet managed to reassemble by the time of his death was subsequently sold to Joseph Banks.⁷⁰

Armchair Botanists

Many of Europe's leading naturalists—Linnaeus, Antoine and Bernard de Jussieu, and Buffon—never left Europe, but conducted large-scale trade in plants through far-flung colonial networks. Linnaeus, for example, following an extended land-voyage as a young man to Lapland, refused a position as physician to the Dutch East India Company in Surinam in 1737. Nonetheless, his extensive taxonomies depended on the colonial enterprise. By the end of his career, in fact, Linnaeus sat at the center of a vast scientific empire where, in the comfort of his home and gardens in Uppsala, he received specimens and news of new discoveries from some 570 Swedish and foreign correspondents. Jan and Caspar Commelin similarly enjoyed a worldwide network of correspondents through the gardens in Amsterdam, as did Paul Hermann and Herman Boerhaave in Leiden, the Jussieu brothers at the Jardin du Roi in France, Mary Capel Somerset at Beaufort, and Joseph Banks, eventually, at Kew. Bruno Latour has labeled these various European institutions “centres of calculation” where the vast empire of empire bore fruit as science.⁷¹

Both Latour and Marie-Nöelle Bourguet have detailed how European naturalists armed travelers with rules and instructions so that ship captains, missionaries, and other amateurs could collect, record, and preserve specimens in a uniform manner. Linnaeus, for example, prepared a generation of students to travel as botanists aboard the ships sent out by Dutch, English, and Swedish East and West India companies and scientific academies. Fanning out like ambassadors around the globe, these students were often sent with specific instructions to supply particular observations, seeds, or plants. Disciplining and codifying practices in the field allowed the naturalists at home in Europe to “see” at a distance.⁷²

European botanical gardens, home to the *botanistes de cabinet*, were founded in the sixteenth century primarily as “physic” gardens (gardens of medicinal plants) attached to universities and hospitals to cultivate “simples” for medicines and to teach medical botany to physicians and

apothecaries. By the eighteenth century, these gardens were networked with experimental colonial gardens, stretching from Saint Vincent in the West Indies to Malabar, Sri Lanka, the Cape of Good Hope, and on to Java. Plants traveled across these networks in all directions, with many destined for European gardens. Plumier, for example, put into circulation in Europe 900 new species of plants from the West Indies; Joseph de Jussieu collected countless specimens during his thirty-six years in South America; and Humboldt returned from South America with almost 60,000 plants (collected and prepared by Bonpland) belonging to some 6,200 species, thus enriching Europe's botanical treasury by 5 percent.⁷³

Naturalists' specimens not only enriched botanical gardens and European science but also served as a medium of exchange among naturalists. In the words of the historian Sverker Sörlin, they became "hard cash" in a new market, the "stock-exchange" of scientific goods.⁷⁴ Merian sold her specimens to the public, while French collectors, including La Condamine, Thiery de Menonville, and Leblond, exchanged choice specimens for patronage. Terms of employment at the King's Garden required that scientific cargo reach Paris at regular intervals.

Sloane's and Linnaeus' networks demonstrate well how this economy of specimen-exchange worked. Sloane's short foray into the wilds of Jamaica established him as a "broker" of natural historical knowledge. His cache of 800 plants amassed in the field ("most thereof new") served as his biocapital. Upon returning to London, Sloane settled both the plants and information concerning them into extensive European networks of collectors, gardens, and knowledge. He purported to show his treasures "freely" to all lovers of such curiosities, but his primary trading partners were drawn from the landed and scientific elites of Europe. In England, he traded with William Courten (also known as Charlton), with Sir Arthur Rawdon, who conveniently had collectors in Virginia (from where his gardener James Harlow had brought ships laden with cases of trees and herbs), with William Sherard, gardener to the Duchess of Beaufort, and many others. In France, he entered into a lifelong exchange with Tournefort, which opened to him the riches of the French botanical garden. In Danzig, he established connections with Jakob Breyne. For the remainder of his life he sought to expand his initial collection of plants. At Courten's death, Sloane acquired his entire collection (including an extensive herbarium), valued at £50,000. He also bought the 8,000 herbarium specimens of the Queen's botanist Leonard Plukenet, the international collection of the apothecary James Petiver, the collections of Hermann, who had botanized

in Ceylon, James Cunningham's plants from China, and George Joseph Kamel's plants from the Philippines. By his death in 1753, Sloane held the largest collection of dried seeds, roots, wood, resins, fruits, and plant specimens in the pre-Linnaean era—a collection that came to form the nucleus of the British Museum. Sloane's private wealth and massive stockpile of specimens catapulted him into the top echelons of British science.⁷⁵

Linnaeus, without money or noteworthy social standing, flourished in botanical networks, receiving much sought-after botanical specimens from correspondents all over the world in exchange for access to his international contacts. More important, he offered adherents the sense of contributing to a higher cause—his universal system of classification—and, at times, his correspondents garnered the greatest gift of all: immortality by having his or her name ensconced in Linnaeus' system of scientific botanical nomenclature (see Chapter 5).

Exotic flora could serve as capital for exchange, even at the lower end of the social ladder. In 1719, a French fugitive wrote colonial officials in Guiana from Surinam asking to be pardoned and repatriated in the French colony in exchange for “germinating coffee seeds,” which he proposed to smuggle out of Dutch Surinam. The French had recently identified coffee as a possible colonial cultivar and had seeds sent from the Jardin du Roi to Martinique in 1716, as noted above. Authorities jumped at the chance to win this potentially lucrative crop also for Guiana and approved the man's request. The man was pardoned, and the seeds, received by M. d'Albon, commissioner of the navy, flourished. Plants were distributed to French plantations throughout Guiana, and coffee soon became a valuable export.⁷⁶

Women, too, stockpiled and traded in specimens. Mary Capel Somerset, Duchess of Beaufort, for example, directed vast and costly gardens in the late seventeenth and early eighteenth centuries. Much like other early-modern women scientists who worked in what I have elsewhere called “noble networks,” she gained access to cosmopolitan botanical exchange by virtue of her elevated social status. By the latter part of the eighteenth century, few individuals commanded the resources to compete with state-financed gardens like the Jardin du Roi and Kew. As in many areas of science, when botanical gardens became public, women no longer served as directors.⁷⁷

The Duchess of Beaufort began collecting plants in the 1690s for her gardens at Badminton, Gloucestershire and at Beaufort House in Chelsea (bordering the Chelsea Physic Garden). Her collection included botanical

curiosities from Barbados, Jamaica, Virginia, Guinea, the Canaries, the Cape of Good Hope, Malabar, Sri Lanka, Japan, and China, as well as specimens from continental Europe, England, Scotland, and Wales. The duchess was a hands-on patron; she corresponded and exchanged specimens and seeds of “foreign” plants with the principal botanists of her time, including Sloane, whose renowned herbarium contained twelve volumes of dried exotic plants from her garden. William Sherard, who served as tutor to her son between 1700 and 1702, wrote that these gardens would soon “outdo any in Europe, being furnished with all conveniences imaginable and a good stock of plants to which I added 1,500 and shall daily procure more from my correspondents.”⁷⁸

The duchess was no amateur gardener. Her lists and catalogues of plants cross-referenced her collection with the other leading gardens and major botanical works. Like many botanists of the time, the Duchess of Beaufort was interested in classification only insofar as it was useful for her to organize her gardens and catalogues. Hers was primarily an acclimatization garden, where she coaxed rare exotics, often from seed, into flower in England’s inhospitable climate. Not only were seeds and plants sent to her from around the world, but she also sent out requests listing plants she desired. The first edition of William Aiton’s *Hortus Kewensis* (1789) credited the duchess with the introduction of some sixty-four exotic species into England. As befit a woman of her era, she kept her flowers in “Health, Order and Decency.”⁷⁹

According to the historian Douglas Chambers, the duchess’s head gardener was John Adams. Sloane, however, noted “an old woman” who worked under the duchess’s supervision. Praising her gardens, Sloane wrote in 1703, “Her Grace [has] what she called an Infirmary or small green house, to which she moved sickly or unthriving plants, and with proper culture by the care of an old woman under her Grace’s direction brought them to greater perfection then [sic] at Hampton court or anywhere.”⁸⁰

The duchess’s brothers were also master gardeners. Henry Capel, Lord of Tewkesbury, whose specialty was fruit, had glass houses of oranges and “myrtles” built near Kew House, which he had inherited through marriage. His holdings eventually became Kew Gardens, home of the Royal Botanic Gardens.⁸¹

Similar to Beaufort, Agnes Block, an Amsterdam patrician who owned a country manor in Nieuwersluis on the Vecht some thirty kilometers from Amsterdam, used her exotic flora and seeds to enter into correspondence with botanical gardens throughout Europe. She commissioned many well-

known Dutch painters, including Merian and her daughter, Johanna Helena, to record her impressive inventory.⁸²

Some women, however, declined to enter genteel networks of scientific exchange. In the first decade of the eighteenth century, we encounter an interesting exchange between Merian and James Petiver, a London apothecary and fellow of the Royal Society, whose natural history collection Sloane valued at £4,000. Petiver seems to have initiated the exchange sometime in 1703 by sending Merian “a present of insects.” In a letter written the next spring, Merian solicited Petiver’s aid in procuring an English translation of her *Metamorphosis*. Merian suggested that the work be accompanied by a dedication to the Queen of England, this being “rational, as coming from a woman to a personage of the same sex.” Petiver prepared at least a partial translation in which he chose to order Merian’s entries by types of creature (one chapter devoted to lizards, frogs, and snakes; a second to butterflies; and a third to moths—something that distressed her), but no English translation of Merian’s book appeared in the eighteenth century.⁸³

Merian’s letters to Petiver were businesslike. She arranged to send him the copies of her beautifully illustrated *Metamorphosis* that he ordered. The folio cost eighteen Dutch guilders, she wrote to him, “but because you have ordered some seven of it, you shall have it for fifteen.” She emphasized that she must be paid in guilders in advance, and that the books had to be picked up in Amsterdam. Once he had paid his bill, she continued, “I will deliver . . . the books just as I have done for other people.” In this same letter of 1705, Merian broke off specimen exchanges with Petiver. She thanked him for his most recent gifts of “little animals,” but sent them back, saying that she sought only samples that could reveal “the generation, production, and mutation of animals, how they produce one from another, and the manner of their food.” Nonetheless Merian sent him some earthen jars of Surinam beetles for which she said she had “no use.”⁸⁴

Petiver and Merian’s exchange was anything but direct. Letters took from three weeks to five months to arrive; some did not arrive at all. He wrote in English through his secretary and she answered in Dutch, German, and, through translators, in French and English. The translators did not always serve her well. Christopher Adolph, who rendered Merian’s letter of Friday, October 19, 1705 into English, added: “According to your command, I have put into English the inclosed German letter as well as I could, and if it be not as well as you could wish, I hope you will pardon it

because the original is none of the best stile, nor clearest sense but just as women's epistles generally are."⁸⁵

The Search for the Amazons

Before leaving this chapter, I want to consider a curious example of knowledge transfer—from the European imagination into South America—that fueled European research projects. Anthony Grafton and others have emphasized how New World encounters shook the foundations of ancient texts and contributed to Europeans' new respect for empirical knowledge. We see, however, in the century-long search for the Amazons, those warlike daughters of Ares, the power ancient learning still held over European minds. There are many examples of ancient texts encumbering Europeans' scientific observations: Pliny the Elder's account of *Anthropophagi* ("man-eaters") encouraged many to spot such cannibals in the New World, especially among the Caribs. Similarly Pliny's description of *Homo troglodytes* launched, at Linnaeus' urging, a Swedish expedition to track down a specimen of this purported second species of human wherever it might exist. Even Humboldt, who was well aware that Europeans regularly "adorned" descriptions sent from the New World "with some features drawn from classic antiquity," searched for many years for the mythical Amazons.⁸⁶

European reports concerning the reality of the New World Amazons stretch back nearly to Columbus himself. The river we today call the Amazon was named by the Spanish soldier Francisco de Orellana in 1541 after he witnessed pitched battles between tribes of female warriors along its banks. He took these warrior-women to be the true Amazons, describing them as each fighting with the strength of ten men. Naturalists, in particular La Condamine and Humboldt, were still searching to confirm or forever banish the notion of the existence of these improbable women in the 1730s and 1790s. This foray into the scientific search for the Amazons demonstrates the extent to which Europeans approached New World naturalia through cultural and gendered frameworks that not only set research priorities but often made travelers from Europe unable to absorb radically new information, a topic I look at more closely in Chapter 2.

La Condamine purported to approach the New World critically. He considered "the majority of the natives of South America liars, credulous, and prone to the marvelous" and often described them as intellectually "apathetic" and "stupid." Nonetheless, when investigating the validity of the myth of New World Amazons, which he described as a "republic of fe-

males who lived apart from men,” La Condamine collected evidence from the “peoples of various nations” off and on for the eight years he explored South America. Key for him was that what he took to be independent reports of Amazon sightings all converged “in one common center, that is, the mountains in the heart of Guiana, a realm not yet known to either the Portuguese of Para or the French of Cayenne.”⁸⁷ La Condamine judged these reports consistent and, importantly, unsullied by prior European contact, and hence authentic.

The French mathematician found corroborating evidence for the existence of the Amazons in a green stone called “Amazon stone” (a gemstone variety of microcline or feldspar). Amerindians living along the Topayos river had inherited them from their forefathers who, in turn, had obtained them from the *Cougnantainsecouima*, in their language signifying “women without husbands,” among whom these stones were found in abundance. La Condamine also gave what he called a “moral” argument for the likely existence of these women and their aversion to men. He reasoned that if the Amazons existed anywhere, it was mostly likely in America, where women often accompanied their husbands to war and where the hardships of their domestic life might have provoked them to “shake off the yoke of their tyrants, to form an independent society, and to avoid that vilifying condition of slavery . . . in which they had previously lived.”⁸⁸ He characterized their flight from oppressive husbands as analogous to that of slaves who, disgusted by European ill-treatment, frequently escaped from their masters into the jungle and lived together in bands.

La Condamine energetically sought out an old man whose father had actually seen the Amazons—a potential eyewitness, once removed. Upon arriving among the inhabitants of Coari in the wilds of what is today Amazonas (in central Brazil), he found the old man dead, but his son, himself already seventy years of age, assured La Condamine that “his grandfather had in reality seen them [the warrior women] pass by at the entrance of the Cuchiura river, that they came from the Cayamé which falls into the Amazon on the southern side, between the Tesé and the Coasi, and that the grandfather had spoken with four of them.” This witness, who had passed down to his son the names of the four women, did not mention the supposed Amazon custom of cutting off a breast so that their bows lay flat on their chests, in La Condamine’s opinion “too remarkable an occurrence to have escaped observation.” The Frenchman supposed that the story of these women sacrificing a breast for martial accuracy resulted from European travelers’ “fondness of the wonderful.”

These tales told by Europeans, La Condamine reasoned, may even have found their way into Amerindians' own recounting of "sightings" of the Amazons.⁸⁹

La Condamine finally located a native inhabitant of Mortigura, a missionary settlement in the vicinity of Para, who offered to show him a river, called Irijo, where he claimed, if one traveled upstream for several days, one would find the Amazons. Daunted by the great effort required to travel through dense jungle and high mountains, La Condamine let slip away his chance to become the first European to lay eyes on the true Amazons. He rationalized his decision by saying that because of their migratory habits, the women had most probably already moved on. Even more likely, he mused, this nation of husbandless women may have forsaken their ancient habits because they either had been conquered by another nation or at long last "lost the aversion of their mothers to the company of men."⁹⁰

Traveling some forty years later, Humboldt, while still obsessed with the possible existence of such singular women, did not conclude, as had La Condamine, that these women had once actually roamed the wilds of Guiana. La Condamine, he averred, defended the reality of the *Cougnantainsecouima* merely to sate the lust of Parisians for marvelous tales. Yet Humboldt himself added some intriguing details to the Amazonian myth: they fashioned *sarbacans* (blowpipes through which poison arrows are shot) and gave them as presents to the men who slept with them (in the month of April only); and they discovered and applied with success the medicine hidden in their green stones (said to heal epilepsy, as well as liver and kidney disease).

But Humboldt was more concerned to recount how Europeans had created this myth than with the myth itself. Humboldt delineated several steps in the process by which Europeans "found" in America what pleased them and what existed only in their own imaginations. The myth began, Humboldt argued, in the works of sixteenth-century travelers—Amerigo Vespucci, Christopher Columbus, Gonzalo Fernández de Oviedo y Valdés, among others—who adorned their descriptions of the New World with features drawn from classical antiquity, "merely finding among the newly discovered nations all that the Greeks had earlier taught concerning the first ages of the world." Voyagers, he continued, also sought to flatter their patrons: thus Oviedo sought to compliment Cardinal Bembo's great knowledge of antiquity with his tales of Amazons, and Sir Walter Raleigh aspired to pique the "virgin" Queen Elizabeth's interest by describing a "warlike republic of women without husbands."⁹¹

Humboldt was dismayed that what began as a mere “ornament of style” and a “pleasure of the mind” became in the eighteenth century a “subject of grave discussion” and research. He explained the sightings of probable Amazons by the Amerindians not as purposeful deceptions but as misinterpretations by Europeans. When Europeans asked about the existence of warlike women, Amerindians (attempting to oblige) described “women in different parts of America, [who] wearied of a state of slavery in which they were held by the men, united themselves together, like the fugitive Negroes.” To preserve their independence these maroons became warriors. It was these women—bands of runaway wives—whom Europeans, Humboldt surmised, mistakenly identified as “Amazons.” Humboldt also criticized Europeans who imagined Amerindian women defending their huts and even nuns defending their convents as the much-sought-after Amazons. He ended his discussion: “such was the disposition of men’s minds, that in the long succession of travelers, who crowded on each other in their discoveries, and in narrations of the marvels of the New World, everyone chose to have seen what his predecessors had announced.” Everard Ferdinand Im Thurn, stationed in Guiana in the nineteenth century, suggested that the Amerindians had learned about the Amazons from the Europeans and, after centuries of European enquiry, had integrated this appealing legend into their own stories about the uncharted interior of their country.⁹²

Heroic Narratives

Amazon myths were but one gender dynamic running through voyagers’ travels. Mary Terrall has suggested that eighteenth-century scientific voyagers fashioned their exploits into narratives that served to heighten a new and much-prized variety of heroic masculinity. These travel narratives featured “adventurer-scientists” who encountered life-threatening nature, wild natives, and hostile colonials all in the service of science. Terrall has argued that the figure of the heroic traveler was juxtaposed against the “feminized” domestic spectator, which, in combination with a number of other factors, increased gender bipolarization in eighteenth-century science and functioned, at least on one level, to strengthen the exclusion of women from science. Emma Spary, in her history of the Parisian botanical garden, has also emphasized the “heroic” nature of the romantic voyager: “the hard-working man willing to sacrifice his own safety for science.” In an era when women were defined as too delicate to carry out the rigorous work of science, the celebration of its heroic qualities only strengthened

[To view this image, refer to the print version of this title.]

Figure 1.5. A European gentleman carried “by man’s back” over the Andes. He reads to overcome the boredom of the many hours required to sit motionless lest his slightest movement send the porter, chair, and himself plummeting down the mountainside. Alexander von Humboldt complained that “human carriers” were too confident in their abilities and chose imprudently steep and narrow paths over raging rivers and cavernous valleys. Humboldt, who sketched this scene, rarely rode by man’s back, preferring to walk the distance barefoot after thorns and stones had destroyed his shoes.

the notion that it suited men best. The figure of the heroic traveler did, in fact, loom large in eighteenth-century travel literature. Linnaeus in his *Critica botanica* emphasized that genera of plants should be named after botanists to commemorate their heroism in pursuit of science: Tournefort “traversed the heights of the Alps, the ravines of the Pyrenees” in search of plants; Clutius wandered “through the desert of Barbary”; Micheli botanized in stormy weather and died of pleurisy and pneumonia; Sherard spent “days and nights” completing his *Phytopinax*, “whence he contracted a wasting sickness and died”; and so on. Even modern-day travelers to the tropics can sympathize to a certain extent with the hardships encountered while traversing those areas. Travel was, and can still be, difficult for the unprepared or unfortunate.⁹³

But other gender dynamics become apparent in this literature as well. In many instances, eighteenth-century travelogues placed European male travelers in what Europeans might interpret as traditionally feminine roles that also became closely associated with the French upper classes in the years immediately preceding the French revolution. In these cases, it was “native guides” in the countries they visited who took on masculine roles (at least as so interpreted in European society), while Europeans were afforded numerous and often exorbitant courtesies. Images of naturalists being carried on chairs over the Andes are well known. In October of 1801, for example, as winter approached, Humboldt, Bonpland, and their troupe of assistants and carriers crossed the Quindiu, considered the most difficult mountain to traverse in the Andes. Humboldt dramatized the difficulty of the passage: “the weather was severe, the rain continual, the mud thick and stagnant. Food was scarce along the long road and places to lodge nonexistent.” The abundant thorns quickly shredded boots so that, unless naturalists were carried by “men’s backs,” they had to walk the great distance barefoot. “Few people of means go by foot in these conditions,” Humboldt concluded, “they arrange instead to be carried in a chair tied to a man’s back.” The German naturalist-explorer instructed his readers that the locals in this part of the world spoke of going “by man’s back” in the same way that others speak of going by horseback.

These carriers or *cargueros*, according to Humboldt, took voyagers across terrain not accessible even by mule. These men—both “mestizo” and white—were said to carry six to seven *arrobas* (seventy-five to eighty kilos) up steep mountain paths; the most robust of them carried nine *arrobas*. Humboldt reported that the Spanish government had once offered to build a better road into the region, but that the *cargueros*, for whom carry-

ing had become a livelihood, protested, preferring wild and free lives in the forest to sedentary and monotonous existences in a village.⁹⁴

La Condamine also painted a pretty picture of “helpless” European explorers in his description of the high rope bridges used by the Incas, which he hesitated to cross. “The natives,” he wrote, “who are far from being naturally intrepid, pass such bridges on the trot, with their loads on their shoulders . . . and laugh at the timidity of the traveler who hesitates to venture.”⁹⁵

True, European gentlemen were refined and not accustomed to dirtying their hands in manual labor. Yet the developing conventions of colonial master/servant relationships rendered Europeans unduly dependent on their guides in the tropics. Michel Adanson, traveling in Senegal in the 1750s, was carried across a river on his man’s shoulders. Coming to the Niger, Adanson hesitated to cross by foot because he feared falling into a hole. While his “Negro” sounded the bottom, he rested in a tree, being “tired of snakes and the water.” Finally Adanson was coaxed to cross: “I mounted upon his shoulders,” Adanson wrote, “with my gun in my hand, a few birds, and a bundle of plants. With his guide soon up to his neck in water, Adanson wrote, “I resigned myself to his skilful guidance, or rather to my own good fortune, and I let him do as he pleased. He waded through . . . with amazing resolution, without being in the least daunted, though he was obliged to swallow three large gulps of water [by then well above his mouth and nose] which for some time took away his breath.”⁹⁶

Female travelers also penned narratives of hardship. Merian described suffocating heat, thorny and impassible forests, and life-threatening illness. Overcome with fever, she wrote that for her insects, “I nearly paid with my life.” The Scottish woman Janet Schaw, too, dramatized the hardships of her passage to the West Indies. Rolling seas and constant rains capsized their overlaid boat which, when righted, oozed with sodden beds and water-logged trunks. All her provisions washed overboard, save for one trusty tea kettle and a large ham.⁹⁷

If, as historians have suggested, academy scientists composed heroic narratives for themselves, they also styled them for traveling ladies. Jean Godin des Odonais, the official measurer for the 1735 Parisian academy’s South American expedition, recounted the story of his wife’s journey down the Amazon from her native Peru to his home in France. This tale shared all the elements of eighteenth-century heroic narratives: Madame Isabelle de Grandmaison Godin des Odonais, a Spanish noblewoman born in Peru, had the unhappy fate of watching her seven immediate traveling

companions succumb to ferocious beasts, venomous snakes, thirst, hunger, and fatigue while she alone survived.

When the French equatorial commission left Quito, Jean Godin des Odonais stayed on, taking up a post as professor of astronomy and natural science at the College of Quito in 1739. Here he met and married the fifteen-year-old Isabelle. Godin left for Cayenne in 1749 to prepare passage for his family to France. The Portuguese refused him a passport to return to Quito to fetch his wife and extended household for the arduous journey to the Atlantic port city. Finally granted the required papers in 1758, Godin fell ill and sent word that his wife should meet him in Cayenne. She sold their household furniture and left Quito in 1769 accompanied by her two brothers, a physician, her “Negro,” three female “mulatto or American” servants, and thirty-one American natives to carry her and her baggage. Slowly, the difficulties began. The village where the travelers were to pick up a boat was caught in the grip of a smallpox epidemic and the carriers, who had been paid in advance, all ran away. The party found two Indians in the village free from the contagion and waited while they constructed a boat. They piloted her downstream for two days before abandoning her. With no one to steer the craft, Madame Godin and her party went ashore and built themselves a hut, waiting some twenty days for a canoe that never arrived. They eventually fashioned a raft, but it immediately capsized and they lost all their supplies. Tired of the river, the party entered the forest. Wearied from walking, their feet torn by thorns, their provisions exhausted, they fell to the ground and awaited death. After three or four days, Isabelle, stretched on the ground alongside the corpses of her brothers and other companions, resolved to go on. Delirious, she at last found some water, wild fruit, and fresh partridge eggs. She was finally discovered by some Indians who gave her passage in their canoes to his in Cayenne. Godin and his wife later sailed for France, reaching his estate in 1773. As a female, Madame Godin des Odonais was a privileged and rare traveler. She was motivated, however, by the love for her husband, not for science.⁹⁸

Travel in the Torrid Zone was, indeed, perilous. Nature was remarkably sex-neutral in dealing with Europeans who ventured into the tropics; men were no more spared than the “fair sex.” Africa was known as the “white man’s grave”; India, as the “the European graveyard.” Thunberg, traveling in the East Indies in the 1770s, discussed the frailty of the European body in unfamiliar environs (“our Houses of Clay”) while recording that 158 men out of a crew of 400 perished before his ship rounded the Cape

of Good Hope (many from scurvy). According to Philip Curtin's estimate, European merchants and troops in West Africa died at a rate of 483 per thousand per year throughout the eighteenth century. Conditions in the West Indies, Guiana, and Surinam were not as severe, but bad enough. In Jamaica, death rates among Europeans ranged between forty to ninety per thousand per year, spiking to 200 per thousand in Kingston in the early part of the eighteenth century. Disease, especially yellow fever, was so endemic that European populations failed to increase in Jamaica. Humboldt, traveling in the Caribbean a century after Sloane and Merian, still bemoaned his being "condemned" to mosquitoes, the want of food, the impossibility of drying botanical specimens in a moist and humid rain forest, but most of all to the notorious "ploughman insect" that burrowed into his fingers and toes. After two days of agony, Humboldt found a "mulatto woman" who removed the insects and their egg sacks one by one by digging into his skin with a sharpened stick. Finding this cure more painful than the insects themselves, Humboldt located a "Javita Indian" who made an infusion of the bark of the *uzao* (a shrub with small leaves like those of the cassia) that promptly killed the pests. Humboldt was so fearful of this particular pestilence that he and his men never traveled without *uzao* bark in their boats.⁹⁹

Travel books from this time are filled with stories of troops in the New World suffering from unknown diseases. Even in the temperate climate of northern New France (Canada), unidentified diseases decimated newcomers. One captain in the area tried to hide the number of his men who were sick. "We did greatly fear that the people of the country would perceive our weakness" and take advantage of it. His men were afflicted with "swollen knees, sinuses shrunk together, teeth spoiled, gums rotten and stinking." The captain consulted his guide, who recommended the juice and sap of the leaves of a certain tree, in his language called *amedá* (sassafras?). Two women were sent to fetch some of it and the guide showed the captain how to boil the bark and leaves of the tree together, drinking some of the decoction every other day, and applying the dregs of it to the afflicted legs. The captain's men refused to drink the unknown medicine until two hardy souls took it and were quickly delivered from their sickness. They marveled that the drink cured in five or six days what "all the physicians of Montpellier and Lovaine [Louvain] . . . with all the drugs of Alexandria" could not have done in a year.¹⁰⁰ This story had a happy ending, but many did not.

Even elite scientists—who had every possible physical advantage—faced

hardships. La Condamine recounted the “martyrs” to science: of the five from the Académie Royale des Sciences expedition to the Arctic sent out in the mid eighteenth century, only one survived; Nicolas-Louis de La Caille died during his travels to the Cape of Good Hope, a “martyr to astronomy”; Abbé Chappe d’Auteroche, an academician, died in California in 1769. La Condamine registered the deaths of his own companions during the 1735 expedition to the equator: Couplet, the most robust and one of the youngest, was carried off three days after his arrival at Quito by a putrid fever; Seniergues, the surgeon, was killed in a scuffle at Cuenca; Pierre Bouguer died of an abscess of the liver; Louis Godin, younger than Bouguer, survived the latter but two years; de Morainville, who remained in Quito, died when he fell from the scaffolding of a church he had designed; Hugo married at Quito and was never heard from again. Joseph de Jussieu, like Mabillion, went insane. La Condamine himself suffered from deafness and paralysis in his lower limbs, and a number of the expedition’s servants, “white as well as of colour,” perished—two of them violently.¹⁰¹

In addition to the rigors of the climate and dangers of the road, human-made obstacles also impeded travel. Travelers waited months for passage on ships and for passports through the territory of unfriendly countries. La Condamine waited at Cayenne six months for passage back to Europe, and an additional two months at the Hague for the passports required to cross the Low Countries into France. Thierry de Menonville similarly waited six months in Havana for a ship to take him to Veracruz, Mexico.

Natural and human-made hardships also prevented many of these naturalists’ treasures from arriving in Europe. In 1753, Adanson in Africa lost his plants, which he plaintively reminded the reader “had occasioned the voyage” in the first place. His precious cuttings and seeds were all destroyed by severe cold on their way from Brest (in Bretagne) to Paris. In 1777, the beleaguered Thierry de Menonville lost a cargo of precious plants he had dispatched to the King’s Garden in Paris when the ship sank. The most devastating experience was that of Joseph de Jussieu, who botanized for the French King’s Garden for three decades in and around Quito and Lima. He returned to France a broken man, sick and having lost his memory at the end of his life. His many crates of specimens that he had collected, dried, and packed for shipping were all left in foreign ports. Nothing but a few memoirs remained of his work.¹⁰²

Then, too, samples that naturalists managed to get back to Europe were not always in the best of shape. Collected at great distances from ports, of-

ten during the wrong season, and insufficiently preserved to withstand a prolonged sea voyage or adulterated for greater commercial gain, many of the specimens were useless when they arrived in Europe.¹⁰³ John Ray complained, for example, that the 800 new species Sloane proudly carried to England had no roots—a plant part Ray considered vital for classification.

European governments, trading companies, and scientific establishments fielded a number of naturalists with diverse goals and outlooks in the Caribbean. Surveying colonial resources, they sought to discover and domesticate plants that might add to the nation's (or their own) wealth and power either on European soil itself or, when the rigors of that climate spoke against it, in the rich and fecund soils of one of Europe's tropical colonies. In so doing Europeans, who had little experience with flora in the Torrid Zone, often relied on the expertise of peoples indigenous to those areas. How did Europeans cull secrets of nature from tropical lands? How did they wrest secrets from local informants? What sorts of knowledge did Europeans choose to collect, and what did they leave behind?