

Chapter 13

Collecting *Naturalia* in the Shadow of Early
Modern Dutch Trade

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As socially and culturally salient entities, objects change in defiance of their material stability. The category to which a thing belongs, the emotion and judgment it prompts, and the narrative it recalls, are all historically refigured.

—Nicholas Thomas, *Entangled Objects*

The famously disproportionate relationship between the tiny geographical area of the northern Netherlands and its vast wealth in the seventeenth century is a function of the Dutch role in global trade, especially of the kind monopolized by the East and West India Companies (founded, respectively, in 1602 and 1621). Among Dutch imports, plants and plant products figured prominently: pepper, cloves, cinnamon, nutmeg and mace, coffee, tea, and sugar were the most lucrative. Many other plants too were absorbed into the Dutch market and assimilated to European natural history in the course of the seventeenth and eighteenth centuries. While some of these exotic varieties were already familiar to Europeans by way of overland spice trade dating to the Middle Ages, others were introduced to western European markets in the early modern period. It was not exoticism, however, that inspired the extraordinary reach of the Dutch overseas, but profit. Pepper (*Piper nigrum*), for example, from Sumatra and Malabar, comprised one-third of the imported goods sold at auction in the Netherlands in the seventeenth century; on average, the Verenigde Oostindische Compagnie (Dutch East India Company, or VOC) shipped six million pounds of pepper to Europe per year. Militarily empowered and driven by economic ambitions as much as, if not more than, by patriotic fervor, the Dutch competed and fought with the English, the Spanish, and the Portuguese frequently, violently, and often at the cost of native lives to se-

cure and maintain control over the spice trade. Local rulers were the occasionally unruly subjects of a multinational global safari, whose primary purpose was to recuperate investment in the outfitting and completion of voyages east and west and to turn a hefty profit in the process.¹

While economic and political gains were the principal motivations for foreign trade, encounters with far-flung regions had a profound effect on Dutch culture and ways of seeing, thinking, and knowing. It would be misleading to state that the arts and sciences played a generative role in Dutch global pursuits, but it is certainly true that they were—differently at different times—affected by the commercial and colonial enterprise overseas. This chapter studies one aspect of early Dutch engagement in the East and West Indies: the assimilation of plants, plant products, and information about them at the turn of the seventeenth century. It asks by what means botanical specimens were acquired and circulated and how they came to be valued. Naturalists and medical professionals play signal roles in this account—their botanical work was often performed in the context of and process of accumulating collections of *naturalia*. How were foreign specimens amassed, organized, described, and represented and how did such processes make sense of the newly imported goods?

This chapter opens with a survey of different kinds of collections assembled in the northern Netherlands in the seventeenth century's first decades: one belonged to the Enkhuizen doctor Bernardus Paludanus (1550–1633); one is the garden of Leiden University; and a third belonged to the pharmacist Christiaan Porret (1554–1627). Later the discussion turns to another, related mode of collecting, exemplified by published accounts of foreign goods. In 1605 Carolus Clusius (1526–1609), director of the Leiden garden, published *Exoticorum libri decem*, the first study issued in the Netherlands of plants (and animals and other items) imported from points east and west. The *Exoticorum*, I will argue, amounts to a natural history collection in print. Producing the *Exoticorum* was a social affair: Clusius depended on a circle of contacts and informants for information and goods. Collecting *naturalia* was a social and epistemological endeavor, especially in the context of (pre-) colonial botany.²

Collecting Nature and the Nature of Collecting

Strictly speaking, the first Dutch account of Asian flora and fauna is a travel narrative by the voyager-merchant known as “the Dutch Magellan,” Jan Huyghen van Linschoten (c. 1562–1611).³ Van Linschoten's *Itinerario* (1596) played a formative role in the rise of the Dutch “sea-borne empire.”⁴ By providing practical information—maps, naviga-

tional and meteorological tips—and general inspiration, it helped spur a burst of trade activity that resulted in the establishment of the VOC and broke the Portuguese monopoly in the east. The appeal of van Linschoten's *Itinerario* lay in the access it provided to the regions described, as much to the armchair traveler as to actual seafarers. The book, based on van Linschoten's experiences in the service of the Portuguese on Goa and in the Azores as “Factor for the King's Pepper,” offers its readers the equivalents of state secrets. While the *Itinerario* contains vital navigational and cartographic information that had been fiercely protected by the Portuguese, it also participated in an established genre of travel writing. The *Itinerario* adheres to the model of European travel narratives, or quasi-anthropological accounts of foreign and unfamiliar locales, people, and customs, that was in wide circulation in the early modern era. Early in the text van Linschoten writes that he was determined to spend time on Goa, on the west coast of India, in order “to investigate the manners, nature, and form of the lands, people, fruits, wares, products, and other things.”⁵

A merchant by trade, van Linschoten was not particularly interested in botany. The portions of his *Itinerario* that touch on plants are either entirely market-oriented (where he discusses the trade in pepper), brief (his poetic evocation of trees that blossom in the night, for example), or added to the text by the Dutch doctor Paludanus, his friend. When he returned to the Netherlands from his travels, van Linschoten settled in Enkhuizen, the northern port town, where he cultivated a working friendship with Paludanus that lasted until van Linschoten's death in 1611. It has been suggested that Paludanus “produced” the *Itinerario*; in any case, he provided quantities of botanical information in the form of annotations throughout the text. Even here the account is derivative; the annotations rehash contents of an earlier publication on the plants of Goa, the groundbreaking *Coloquios dos simples e drogas he cousas medicinaes da India* by the Portuguese doctor Garcia da Orta (1500–1569).⁶ Van Linschoten's contribution to botany in the context of early Dutch voyages east is hardly monumental or even original. Nonetheless, several aspects of his endeavor are relevant here.

A few general comments about botany of the Indies in the late sixteenth and early seventeenth centuries are in order, to clarify the nature of van Linschoten's enterprise and its impact. First, the natural history of the Indies was often described in the course of more broadly painted accounts of the new worlds under discovery, and in as many cases the descriptions were derivative.⁷ Second, the dissemination of botanical information depended on the more general market for information and goods from the regions recently encountered. Third, in the Netherlands around the turn of the seventeenth century, medical professionals

played a pivotal role in the production of colonial botany. And fourth, the production of exotic natural history—the study of the flora and fauna of the newly discovered regions of the world—was already linked, within the medical realm as elsewhere, to the practice of collection.⁸

Van Linschoten's legacy survives through his publications, but he is also remembered for the many foreign goods he gave to his friend Paludanus, perhaps the most renowned collector in the Netherlands around the turn of the seventeenth century. Van Linschoten is known to have offered Paludanus two birds of paradise, a male and a female; an armadillo; a tortoise-shell comb; Chinese paper, pens, and ink; and various other exotica. Paludanus's collection, the fame of which was widespread throughout Europe at the time, encompassed many thousands of objects: ethnographic items such as clothing and armor; dried plants and seeds and resins; and, as one German visitor recalled, "all manner of beautiful and remarkable curiosities and foreign things from China, India, America, Africa, Asia, Peru, Egypt, the Mollucas, Spain, the Canary islands, Turkey, Greece, etc."⁹ Before he settled in the northern port town of Enkhuizen as city doctor, Paludanus had traveled widely in eastern Europe, the Middle East, Egypt, Italy, and German territories. During his travels he acquired a medical education (he received his doctorate in philosophy and medicine in Padova), hands-on experience of some of the most celebrated European collections of the time, and collectibles.

Early modern Dutch natural history, medicine, and collecting are deeply intertwined. Lorraine Daston and Katharine Park have recently asserted that "the emergence of collecting as an activity not just of patricians and princes, as in the High and later Middle Ages, but of scholars and medical men as well" was "closely connected with [the] new surge of interest in natural wonders."¹⁰ The relationship between the medical profession and *Wunder-* or *Kunstkammern* (cabinets of curiosity) in the early modern period was built of a common interest in the natural world—in natural philosophy and natural history and in the facts of matter, the particularities of nature. One contemporary, who visited the Enkhuizen collection in 1594, recorded that Paludanus "Showed me his collection, which had such varied and numerous items that I scarcely believed they existed in nature. Nature herself seems to have moved into his house, entire and unmutated, and there is nothing written down in books that he cannot present to your eyes. That is why the great man Joseph Scaliger gave all his rarities (which were both numerous and spectacular) to Paludanus, saying 'Here are your things, which I have possessed unjustly.'"¹¹ The brilliant Dutch jurist Hugo de Groot (Hugo Grotius, 1583–1645) was particularly inspired by Paludanus's extensive possessions, which he described as "the treasury of the globe, collection

of the whole, ark of the universe, sacred sanctuary of nature, and temple of the world" (*Thesaurus Orbis, Totius compendium/Arca universi, sacra Naturae penus, Templumque Mundi*).¹² A perfect microcosm, Paludanus's collection offered its visitors the experience of the totality of nature. He was master of the goods he had accumulated, which, as a microcosmic whole, signified a form of knowledge. The literature on early modern collecting tends to deemphasize the professional, medical interests of collectors.¹³ Generally speaking, Paludanus's profession is perfunctorily passed over in studies of his collection. As Harold J. Cook has demonstrated, however, "medicine and natural history constituted . . . the 'big science' of the early modern period, soaking up enormous sums of money and energy contributed by countless people."¹⁴ Medical and natural history collections were among the primary arenas of the "big science" of the day.

Paludanus and the other collectors under discussion here extended the practice of medical collection northward to the shores of the Netherlands; likewise, the range of foreign *naturalia* that their collections contained stretched to accommodate Asian, African, and American items, in step with the advances of Dutch trade. Medical collection was a sort of professional sine qua non and at the same time depended on the vagaries of travel and trade for its supply. It tended, in general, to focus on the natural world. Paludanus's collection, while quasi-encyclopedic in the range of items it contained, stopped short of works of art, for example.

In several instances the production of early modern colonial botany was closely linked with the cultivation of a collection. I say *cultivation* since the gardens in which living specimens were kept also pertain. The microcosmic, encyclopedic, inclusive collections in which exotic plants came to be viewed, studied, named, queried, classified, and propagated range from rooms such as Paludanus must have overseen, filled to capacity with *naturalia* of every conceivable shape and sort; to gardens private and public, such as the Leiden University *hortus*, which opened under the direction of Carolus Clusius in 1593; to books whose structure mimes the order of actual collections of *naturalia*. All of these "collections" were assembled in early modern Holland by doctors and other medical professionals. In many cases, additionally, there is a fluid extension from one form of collection to another. This is, for example, well known of Clusius, who served as imperial gardener to Emperor Maximilian I in Vienna, moved to Leiden to direct the new university garden, and published a collection of specimens, the *Exoticorum* of 1605. It is generally known that Paludanus tended a stupendous collection, and seldom pointed out that his professional identity was medical, and that he also cultivated a garden; but it is even less frequently recalled that the

position Clusius came to occupy at Leiden was actually first offered to Paludanus.¹⁵ Gardens became yet another repository of the objects of medical study and, by slight extension, the *naturalia* fit for *Wunderkammern*.

Universities throughout Europe established gardens during this period to further medical study and the more general study of what was then called “natural philosophy.” The plots of land cultivated in Pisa (est. 1544) by Luca Ghini, in Bologna (est. 1568) by Ulisse Aldrovandi (1522–1605), and in Leiden by Pieter Pauw (1564–1617) and Carolus Clusius, for example, in their early years served a dual function of fostering study of the makings of pharmaceutical remedies and of accommodating rare and exotic specimens recently transmitted to Europe.¹⁶ The late sixteenth-century garden was a space in flux: while it continued to be used for humanist recreation and for the cultivation of known varieties for medicinal (pharmaceutical) purposes, it grew to accommodate the rapidly developing accumulation and study of unknown, foreign, and rare plants. In the larger context of reformed medical study and the development of a market for rare varieties of flowers, the professional or institutional garden (as opposed to the private garden) was no longer simply a repository for time-tested plants that served as the ingredients for medicinal concoctions. Seeds, bulbs, and roots were exchanged avidly, planted and transplanted, and studied fiercely for their potential properties—whether pharmaceutical in the case of foreign specimens or financial in the case of exotic, prized varieties (or both).

While their roots lie in medical study of the plant world, early modern academic gardens bore the marks and accommodated the goods of colonial and trade endeavors. We know, for example, from personal letters, from Clusius’s publications, and from a print of the Leiden garden issued in 1610 that two stalks of bamboo that were donated to the university remained highlights of the garden’s offerings to its public (see figure 13.1). They are featured as framing elements at right and left and are labeled, as are the foreign curiosities delineated in the cartouche below the plan of the garden. These kinds of goods—bamboo, dried blowfish, crocodiles, tortoise shells, coral—had uncertain medical value but were nonetheless fervently assimilated to local collections of *materia medica*. In Leiden they were housed in the long gallery at the southern edge of the garden, the inventory of which is in essence the catalog of a *Wunderkammer*. Originally built to shelter students and visitors to the garden from rain and to provide protection for plants during the winter, by the second decade of the century, by which time its floor had been paved, the Leiden ambulacrum became a destination in and of itself. In 1614 it was described as follows: “This gallery [is] decorated and hung with many and various maps and geographical depictions [*Land-tafelen*], as with some foreign animals and plants, brought here from both of the

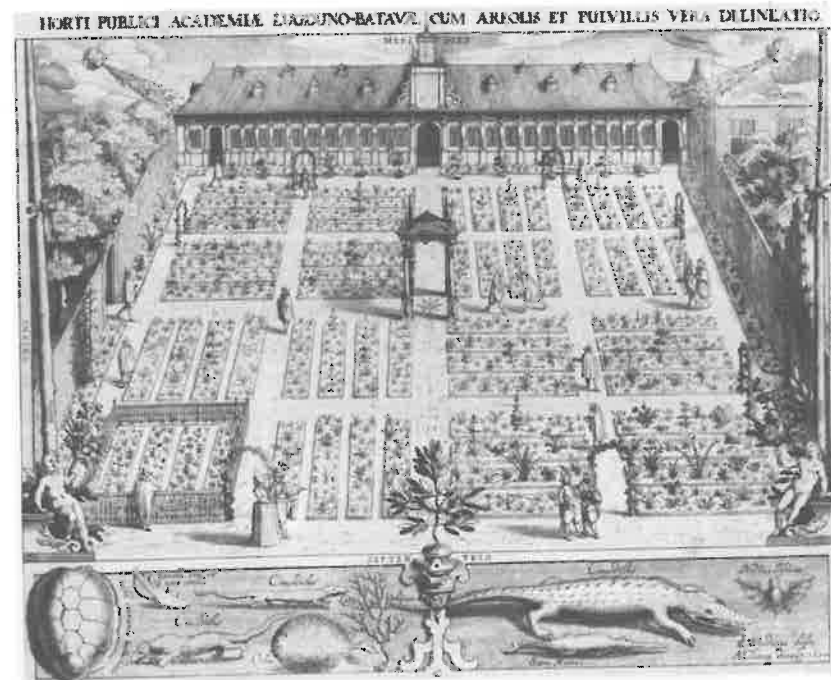


Figure 13.1. One of the earliest prints of the Leiden University garden, in which a variety of exotic specimens are displayed in the lower register. William Swanenburgh after Jan Cornelisz Woudanus, *Leiden Garden*, engraving, 1610, 330 × 400 mm., Holl. 29 Swanenburgh(h), no. 32. Reproduced by kind permission of the National Herbarium of the Netherlands, Leiden.

Indies and other places.” The earliest inventory of the contents of the Leiden gallery, which refers to the contents as curiosities (“*rarityeten*”),¹⁷ records “foreign animals and plants,” some of which may have arrived in the Netherlands on the first Dutch ships to return from the East Indies. They include the bamboo stalks (*Arundo Indica*), a webbed plant (*planta retiformis*), boxes of resins and extracts, and various fruits or nuts; animals are more numerous and range from crocodiles, penguins, and blowfish to parts of animals such as the foot of a cassowary bird, a walrus penis, various parts of a bear, and the “beak of a strange bird.” Ethnographic items are also listed, such as pygmy vestments, two Indian hammocks, an Indian skirt, and an Indian ink pot (as in either the West or the East Indies). Also present were sheets of Chinese paper, some of which bore notations on plants. Among other things, items deemed exotic by contemporary natural history were the foreign, nonnative items no natural historian could procure without engaging market and trade

relations. The precise sources for many of the objects displayed in the Leiden garden and ambulatory c. 1600 and the social aspect of this process of accumulation are touched on later, but it is useful to recall at this point that the renown of gardens such as Leiden's rested in part on the presence of such items as the twin stalks of bamboo, which were donated to the garden by early travelers. Though technically speaking botanical, these goods were clearly appreciated for their exoticism, their foreignness, rather than for their medical applications.

That early Dutch collecting of foreign—exotic—plants and other goods was the province of medical professionals is borne out in various hitherto understudied instances. Consider, for example, the collection of the French pharmacist Christiaan Porret, who settled in Leiden as a young professional and remained there until his death in 1627. Little is known of Porret beyond his good connections: he was brought to Leiden by the great Antwerp publisher Christoffel Plantin (1520–89), who opened a branch of his printing empire in the university city in 1582 and in whose Leiden house Porret initially lived.¹⁸ His connections to such prominent figures as Clusius provide insight into Porret's interests and standing. Porret is mentioned regularly in Clusius's publications (both his *Rariorum plantarum historia* of 1601 and his *Exoticorum* of 1605) as a source of goods and information. The goods and information he purveyed—to colleagues such as Clusius and, presumably, to his clients as well—he cultivated and stored in his home, which housed an amazing and little-known collection, and in his garden. In 1621, in an extended paean to his own home and garden in Zeeland, the minister Petrus Hondius (1578–1621) made a lengthy digression to praise Porret's talents and garden. Hondius introduced Porret as "Renowned Pharmacist, Simplicist, and Herbalist" (*Vermaerden Apothecaris, Simplicist ende Herbarist*) and praised his generosity and diligence. Hondius's lengthy dedication was written when Porret was sixty-seven years old. "Your old age," he wrote, "prevents you more and more from walking two and three times a day up and back to your garden outside the city."¹⁹ That Porret's garden was important to him as a resource could hardly be more clearly spelled out.

Housed in his home on the Maersmansteeg in the center of Leiden was Porret's other collection—the other great *Wunderkammer* in the Netherlands after Paludanus's in Enkhuizen. In 1628, within a year of his death, Porret's collection was sold at auction. The small printed catalog is titled "Exceptional Items or Rarities/and/Unusual Sensualities (*Sinnelickheden*)/From Indian and other foreign locales conches/shells/terrestrial and maritime creatures/minerals/and also strange/animals; and some artfully made/handicrafts and paintings/Which Christiaan

Porrett [*sic*], late Pharmacist/collected in his *Cunstkamer*."²⁰ While the fact that this collection was assembled and maintained by a Dutch pharmacist has doubly condemned it to historical oblivion, it is a crucial and fascinating record of how *naturalia* were collected by medical professionals in the early era of Dutch global trade.

The contents of Porret's impressive collection ranged widely in kind and substance. The initial entries in the catalog name, for example, "two serpentine containers, used as cups or mugs" (no. 1); "two crystal glasses with white striping" (no. 2); "a platter of serpentine stone" (no. 3); "an ivory sphere or globe, with various balls that turn inside each other, on a pedestal or foot of ebony" (no. 5); "a spiral staircase made of ivory" (no. 15); Persian cloth in the shape of a turban (no. 16); ink from China (nos. 17, 26); and "two mother-of-pearl fishing rods from the Straits of Magellan" (no. 27). Reading the catalog is a staggering experience. Some of the *naturalia* listed are: "a sea plant like cauliflower" (no. 32)—likely coral; hundreds of shells in all sizes and shapes and colors, including at least one "mother of pearl shell, carved and painted" (no. 168); several nuts—a "covered sectioned nut from the Indies" (no. 42) and a "covered head, from a fruit from the Indies," either of which may have been a coconut; an emu's egg (no. 46); agates, quartz, sapphires, and other stones; ebony and ivory, bones and horns, and at least one fossil; a large piece of white coral, painted red and gilded (no. 69); a couple of beaks of birds from the Indies; a "Bird's nest in a red drawer, with five or six little birds very beautifully constructed of feathers in all colors" (no. 133); a blowfish; a large crocodile; a small crocodile; and drawers and drawers filled with resins, stones, minerals, and fruits. The contents of Porret's collection included not only *naturalia* but also *artificialia*—man-made or artfully natural items—ethnographic objects, and *scientifica*, although this is not the place to itemize more of the extraordinary contents of his collection or to call more than passing attention to the amazing range of crafted articles. In a manner as integral to early modern collections as it is foreign to modern taxonomic logic, the catalog moves from "seven crafted flowers from the Indies in a box" (no. 281) and "a box of various Indian fruits" (no. 282) to "A box with eleven black flutes/small and large/serving to attract different animals/or to imitate their voices" (no. 283).

Exceptional, curious, foreign, plants, animals, minerals, and art as well, all collected by a pharmacist and not in his shop but in his *Cunstkamer*: however amazing this seems, within the European context of the early modern collections assembled at courts from Prague to Vienna to Brussels, in ducal residences in between, and on a smaller scale privately, the combination in Porret's collection of natural items, works of art and

handicraft, ethnographic specimens, and even optical devices is entirely congruent with more general developments. From a strictly functional point of view, however, Porret's collection makes little sense: it is not possible to explain how a pharmacist could have used its contents. While we know, for example, that pharmacists continued to supply such relative delicacies as sugar and hard-to-come-by supplies such as ink and distilled liquors and wine until well into the seventeenth century, and while it is true that unicorn horn (Porret owned one) and bezoar stone were still considered efficacious remedies, the uses of Turkish and Hungarian shoes, for example, or ivory lathe work or carvings of Chinese deities, such as he owned, are elusive.

That the history of collection and the birth of museums are linked closely with medical practice and, in particular, with pharmacists' interest in *naturalia* is clear. As Paula Findlen has shown, the continuities between pharmacists' collections and other early modern collections are manifold. They all equally pertain to the new model of the museum, which Findlen has described as "a site of encyclopedic dreams and human sociability . . . [and] a setting in which to examine nature."²¹ Collections of *naturalia* pose interesting challenges, and a collection that pertains substantively to the model of a princely *Wunderkammer* but was assembled by a pharmacist doubly so.²² Consider, for example, that the title page of a contemporary Italian pharmacist's collection tells us that it contains: "many natural and moral things worthy of philosophical consideration, and no less pertinent for setting out and explaining Medical things; [the collection] is not without great exotic things, as well as artificial things."²³ Looking back to Porret's collection and bearing Paludanus's and the Leiden gardens in mind, we observe the same relationship among philosophical consideration, medical explication, an interest in the exotic, and appreciation for what is artful. This is especially striking in the case of the goods explicitly identified as foreign.

Paludanus's collection contains numerous items identified as from the Indies—ranging from the items mentioned above to Indian cloths; "a tin spoon from the Indies" (no. 716); a "box with Indian beans" (no. 713); two Indian pikes (no. 679); Indian arrows, bows, and a shield (nos. 672–74); Moluccan chests (nos. 668, 669); an Indian melon (no. 655); and an ax, feathers, hats, baskets, swords, and such clearly botanical items as "a garland of Indian fruits" (no. 606). What is striking is how integrated these items are in the overall system of the collection. Their wonder is of course amplified by their foreignness, which translates into exoticism for all intents and purposes. One item, "A herbarium or plant book/printed in China" (no. 493), stands out as an example of foreign botany. But this is an exception to the rule of such collections, in which

what was accumulated was not foreign knowledge or patterns of thought or practice, but objects—stubborn material objects that did, in Nicholas Thomas's²⁴ terms, change, that were historically refigured, but only by virtue of being categorized according to that European system of objects and of attention to the natural world also known as collecting. By encompassing such exotic goods, Porret's and Paludanus's collections evinced wonder, much as princely collections did, by virtue of the range and scope of textures of particulars.

Social Exchanges

Generally speaking, foreign goods were assimilated to European natural history wholesale in the early modern era; they came to occupy ingrained paradigms of study and of use. Botanical goods were imported; knowledge, by and large, was not. Existing regimes of classification offered templates for the absorption of new material and physical information in the later sixteenth and much of the seventeenth centuries. In many cases plants and plant goods were introduced as commodities rather than as medicinal remedies; and even when doctors introduced them, by way of publication or exchange, the terms in which they presented these foreign goods were saturated with social and commercial concerns.

The combination of travel and botanical study was not new to the seventeenth century, the heyday of global trade. In the course of the previous century, for example, naturalists returned to western Europe from foreign locales with specimens in hand. In the 1570s the Augsburg physician Leonhart Rauwolf (1535–96) made a three-year journey through the Levant (stopping in Tripoli, Damascus, Aleppo, Baghdad, Jerusalem, and elsewhere); on his return to Germany he published an account of his journey, a partial, botanical record of which also survives in the herbarium of dried specimens he assembled.²⁵ Rauwolf's brother-in-law, the Augsburg merchant Melchior Manlich, who conducted trade in the Near East, subsidized the trip, in the hopes of discovering new, salable goods and medicaments.²⁶ The case of Leonhart Fuchs (1501–66) is an inverse example of the motivating effect of mercantile interest on the production of natural history in the context of global trade. Fuchs set out to locate in Germany all of the plants cited by Dioscorides and Galen, and to describe them in his *De historia stirpium* (1542), partially in order to circumvent dependence on costly foreign imports from the East. While da Orta's efforts were more emphatically medical—his *Coloquios* is recognized as the first account of tropical medicine published for a European audience—it is nonetheless evident that early

modern (sixteenth- and seventeenth-century) interest in exotic botany was already shot through with economic and social motivations. In a letter he wrote to Carolus Clusius—translator of da Orta's *Coloquios* into Latin and author of several key books on the plant world—ten years after returning from the Levant, Rauwolf asks Clusius to keep his eyes peeled for a patron or benefactor interested in purchasing his herbarium. He possesses, Rauwolf writes:

A number of other plants as well, which I brought from the east; some are very rare. They have been carefully pasted on to paper, so they maintain their colors, and are gathered in a volume such that they can be readily studied by whomever. These plants, which I obtained at the cost of great efforts, much hardship, and danger, I would willingly offer to a liberal and generous prince who would take pleasure in knowing them. Should you encounter such a person and should you have the occasion to discuss this in my name, I would be particularly obliged.²⁷

This passage, the core of Rauwolf's letter to Clusius, is a representative instance of how early modern botany—and in particular, botanical study in foreign parts—garnered economic and social sponsorship. Rauwolf asks the well-positioned Clusius to find a backer for his efforts. As his herbarium is already ten years old at this point, he requests patronage *ex post facto*. The herbarium of oriental plants was as much a repository of botanical information—he says that it can be “readily studied by whomever”—as a commodity in advance of a marketplace.

During his tenure at Leiden University, Clusius was deeply involved in the exchange of such goods and of information about them. His *Exoticorum* is his most significant publication on foreign natural history, preceded by his translated editions of da Orta's colloquies in 1567, Nicolas Monardes's (c. 1512–88) three volumes on plants of the West Indies in the 1570s and 1580s, and Cristóbal Acosta's (d. 1592) follow-up to da Orta's description of East Indian botany in 1582.²⁸ All three of these treatises were translated by Clusius into Latin and revised, in order to make them more broadly accessible; they are also included in the *Exoticorum*. Clusius had long been interested in local or regional botany; he wrote volumes on Austrian and Spanish flora, for example. Aside from publishing catalogs of plants local and foreign, Clusius ran the Leiden garden; and he maintained a wide circle of correspondents all the while, many of whom supplied goods for either or both endeavors.²⁹ What is fascinating about Clusius's botanical work is its evident dedication to hunting and gathering, as it were. He is eager to acquire individual specimens, grateful to friends and acquaintances for providing actual plants and plant goods and descriptions of them, and quick to credit them and their collections. All of this is clear from the text of his *Exoticorum*, as well as from his other publications and his correspondence. The division

of his volume on exotic or foreign and unknown items into brief chapters is typical of early modern natural history. Clusius seems to engage the same form of attention, encapsulated in the brief, descriptive entry, in his discussion of specimens in letters: for example, in a letter dated April 1598 to Paludanus, Clusius remarks on a box of dried fruits from the Indies that Paludanus had sent to him to inspect and describe. As in the *Exoticorum*—these fruits are the subjects of book I, chapter 20—Clusius is interested in the provenance, the morphology, and previous publication history. He tells Paludanus in the 1598 letter that he, Clusius, had never before seen three or four of the items sent to him, and he asks for further information about where one of them (“the large, black fruit that is also filled with seeds, as becomes evident when you shake it”) came from and what it is called.³⁰ He seems doggedly committed to descriptive—rather than prescriptive—values of plants. Original or adapted uses are of no interest to him.

By such eager accumulation of specimens Clusius worked to fill the Leiden garden with rare and interesting plants and even drafted instructions for sailors and ships' surgeons and apothecaries traveling to the East. This means of acquiring exotic goods had already been exploited by Pauw, a year earlier, in a set of instructions that are now lost. From the internal VOC correspondence, however, it is clear that Pauw's principal aim in encouraging botanizing overseas was to acquire more simples for the collection at Leiden.³¹ The VOC documents mention the necessity of furnishing the garden with native and foreign simples and, therefore, with “various Indian herbs, seeds, flowers, resins, roots, and other such things,” and furnishing the mineral collection with “spices, medicaments, and mineral things that come from the Indies.”³² It is clear from letters and other sources that items brought back on the earliest expeditions to the Indies (even prior to the foundation of the VOC in 1602) were quickly and avidly consumed by local audiences. It is interesting that while Pauw's requisition must have stressed the academic uses of the exotic goods he hoped to obtain, a document of the same kind that Clusius submitted in 1601, two years later, is more materialistic. Clusius's instructions to the traveling surgeons and pharmacists are exacting. Branches bearing leaves, fruits, and flowers are all to be brought back pressed between paper; and Clusius does not hesitate to specify precisely which plants he wants: nutmeg, both male and female; black pepper; white pepper; betel; cubebs (tailpepper); and cotton such as grows in the vicinity of Bantam. He goes on to request branches of all other sorts of trees that are foreign and asks that sketches be made of how the trees grow, whether they are large or small, deciduous or not, the names of the trees, and how they are used. Clusius explains, in a succinct statement of his scientific motivation: “One must know all of

these things, in order to describe well"; and he concludes, "In sum, he who is attentive will find enough to bring back."³³ Interestingly, the plants that Clusius itemizes were among the most marketable items returned from the East Indies by the merchant ventures. These exotic specimens were eagerly subjected, once secured, to strategies of description and market pressures alike. Where the line between trade value and scientific value lay is unclear. The gifts made to the Leiden University collections c. 1600—bamboo, several fruits, and plants were given to Professor Pauw, rector of the university in 1601–2, by VOC merchants—emblemize the close partnership between mercantile and scientific interests. And in this form of social exchange, status accrued in both directions: to the giver of exotic goods and to the recipient/owner.

In the era under discussion the medicinal use of exotic goods does not yet seem to be their primary quality, in the eyes of natural historians. This is an era of description rather than prescription. Tropical medicine per se would not become an issue for the Dutch until later in the century, when the numbers of travelers to the East increased dramatically and, along with them, the need for remedies (see Harold J. Cook's chapter in this volume). The goods imported c. 1600 were quickly assimilated to collections—and thereby subjected to specific forms of attention.³⁴ In the gardens and in private collections, as in Clusius's publications, botanical specimens were acquired and accounted for as wonders. Their acquisition expanded the field of natural knowledge and experience, and in several cases they worked to individuals' social benefit. The objects changed, but the system of thought and the practices of medicine to which they came to belong did not. "The category to which [the bamboo given by the VOC to Pauw in 1602] belongs, the emotion and judgment it prompts, and the narrative it recalls," in Thomas's terms, were not—yet—the stories of colonial botany per se and tropical medicine. They still belonged to the arena of natural particulars, and of wonder.

Chapter 14 Accounting for the Natural World

Double-Entry Bookkeeping in the Field

Anke te Heesen

When Robinson Crusoe—seaman, merchant, and sole survivor of a shipwreck—washed ashore on a desert island, he had with him little more than the wet clothes on his back. A pious and pragmatic Englishman and tradesman, Crusoe quickly took heart and sought to master his situation. In *The Life and Strange Surprising Adventures of Robinson Crusoe* (1719) Daniel Defoe (1660–1731) tells the story of man's installation in the world as the inverse of the creation story: the fact that Crusoe had already tasted of the tree of knowledge allowed him to rebuild the civilization he had left behind, in nature. After a year on the island, during which the Englishman procured essentials and settled down, Crusoe began to keep a diary. "I now began," he writes,

to consider seriously my condition, and the circumstance I was reduced to; and I drew up the state of my affairs in writing . . . and as my reason began now to master my despondency, I began to comfort myself as well as I could, and to set the good against the evil, that I might have something to distinguish my case from worse; and I stated it very impartially, like debtor and creditor, the comforts I enjoyed, against the miseries I suffered, thus. . . .¹

Here the text contains a table with two columns, one labeled "Evil" and the other "Good." He closes his tabulations with the words "and let this stand as a direction from the experience of the most miserable of all conditions in this world, that we may always find in it something to comfort ourselves from, and to set in the description of good and evil, on the credit side of the account."² To order his thoughts and to clarify his situation before God as a believer, Crusoe engaged in a form of spiritual bookkeeping. In a sense, Crusoe's account enacts a secularized Last Judgment, in which he gives account to God but above all to himself and his reason. Only this weighing of debit and credit restores in him some measure of equilibrium, Defoe writes.³

One year after the publication of Daniel Defoe's account, the German