



MAKING KNOWLEDGE
IN EARLY MODERN EUROPE

Practices, Objects, and Texts, 1400–1800

Edited by
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and BENJAMIN SCHMIDT

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CHAPTER TEN

Making Sense of Medical Collections in
Early Modern Holland: The Uses of Wonder

CLAUDIA SWAN

In this essay I respond to the broad question of how knowledge was produced in early modern Europe by offering an analysis of a cluster of natural historical collections amassed around the turn of the seventeenth century in the Netherlands. I aim to tie agents of Dutch medicine and pharmacology to a broader, pan-European history of natural history and medicine circa 1600 while also venturing claims about how the knowledge in which these individuals trafficked—medical knowledge, natural history—was linked to material objects.¹ With one exception, the principal subjects of this account lived and worked within a five-kilometer distance of each other, in the university town of Leiden. As pharmacists, botanists, medical doctors, and professors of medicine, they shared a professional interest in medicine as well. What further links these men is their common interest in collecting; each of them owned or oversaw a sizable collection that encompassed natural items, man-made artifacts, and ethnographic goods. Bernardus Paludanus (Berent ten Broecke, 1550–1633), the town doctor of Enkhuizen and the only nonresident of Leiden, amassed voluminous collections of *naturalia* and ethnographic materials, which lured numerous European visitors to the northern port town where he lived. Christiaan Porret (1554–1627), French-born longtime resident of Leiden and prominent pharmacist, owned a massive collection on a par with a *Kunst- or Wunderkammer* of a princely sort. Dirck Cluyt (1546–98), a pharmacist from Delft who moved to Leiden to manage the university garden in 1592, Carolus Clusius (1526–1609), first director of the Leiden University garden, and his colleague Pieter Pauw (1564–1617), professor of medicine at Leiden, were all professionally associated with the growing collections of natural and man-made goods (from crocodiles, blowfish, and exotic plants to maps, prints, and mummies) housed at the university.



Fig. 10.1. Title page of auction catalog of Christiaan Porret's *Cunstcamer* (Leiden, 1628).

While each of the men listed here plays a role in what follows, Christiaan Porret will assume the lead. His collection is largely unstudied, and what is known about him and the rather spectacular objects he amassed affords a unique view of the practices associated with collecting and with study (knowledge making) in the early seventeenth century. A year after Porret's death in 1627, the contents of his collection were sold by public auction at his home in Leiden (fig. 10.1). The catalog, a printed pamphlet that is our only record of his collection, advertised the goods on offer as "the Exceptional Items or Curiosities and Rare 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 /assembled in his Cabinet [*Cunstcamer*]." Like the contents of the collection, the catalog's title may offer potent evidence useful for reconstructing early modern Dutch epistemology. The objects he owned, many of them foreign and most of them unusual in some regard, are ultimately bound together by the force of ownership: Porret is, literally, the organizing principle of this accumulation of curiosities. The fact that

Porret's collection was assembled in his "cabinet" (*cunstcamer*) is key to the following account of Dutch medical collections and their uses, which aims among other things to assess what items such as those collected by Porret—"exceptional," "curious," "rare," and "sensual" objects—have to do with medical knowledge in early modern Holland.

Knowledge and Its Making in Holland

How did the Dutch know? Various recent scholars have characterized early modern Dutch epistemology as bound up with vision and visual representation. Svetlana Alpers's *The Art of Describing* offered a groundbreaking analysis of the extent to which the primacy of visual experience in scientific inquiry went hand in hand with indigenous artistic practices. The Baconian imperative to observe, describe, and chart the natural world and to do so while and by disassociating oneself from inherited precepts resonates with the dominant mode of representation in the Dutch domain: naturalistic and, according to Alpers, descriptive, rather than narrative, picturing.³ More recently, David Freedberg has called attention in his "Science, Commerce, and Art" to what the subtitle of the essay names "Neglected Topics at the Junction of History and Art History."⁴ According to Freedberg, Dutch culture of the Golden Age featured triangular relations among art, science, and commerce; knowledge production is necessarily associated with global trade of the sort at which the Dutch excelled, and science is inextricably linked to representation on the one hand and the market on the other.

Other studies, less strictly focused on the Netherlands and less art historical in orientation, have compounded this view of early modern knowledge production. Pamela Smith and Paula Findlen have demonstrated how closely interlinked the domains of commerce, science, and the arts were and, in the Dutch case among others, how firmly socially and economically grounded natural inquiry was. They have underscored the bonds between patronage and commerce and the impact of both on cultural production concerned with the investigation of nature. "Individuals who claimed to imitate nature, such as many of the artist-artisans, medical practitioners, and other investigators of nature . . . helped lay the foundations of the new philosophy, which eventually would come to be called 'science.'" This knowledge was derived from hands-on and empirical investigation. "This new natural philosophy, pursued with increasing enthusiasm in the late sixteenth and seventeenth centuries, emphasized practice, the active collection of experience, and observation of nature."⁵ One of the arenas

in which Smith and Findlen locate enthusiasm for this new natural philosophy is medicine. Like Harold Cook, who has asserted that a key role was played by natural historians, individuals interested in natural things (*res naturae*), and, in many instances, medical professionals, Smith and Findlen point out that medical practitioners were prominently involved in “formulating, articulating, and disseminating the new philosophy.”⁶ Cook, whose research focuses on seventeenth-century Dutch practices, suggests that “the most lively work done in the period” of the Scientific Revolution was “related to medicine and natural history.”⁷

Much lively work of precisely this sort took place around the turn of the seventeenth century in Holland. Enkhuizen, a medium-sized port town in which the municipal doctor Bernardus Paludanus lived, worked, and welcomed visitors to his collection, provides a point of entry. Enkhuizen served as the primary Zuider Zee port from the time it distinguished itself as the first Netherlandish city to throw off Spanish rule in the 1570s and would later become one of the six towns in which the Dutch East India Company established headquarters; in the early seventeenth century it harvested the profits of both herring fishing in the North Sea and global trade. Paludanus had traveled extensively before settling in Enkhuizen—in eastern Europe, the Middle East, Egypt, Italy, and the German territories. During these travels, he acquired a medical education (he received his doctorate in philosophy and medicine in Padua), hands-on experience of some of the most celebrated European collections of the time, and collectibles.⁸

Paludanus and his fellow Dutch collectors translated the practice of medical collection to the shores of the Netherlands. We know that Paludanus met such prominent naturalist-collectors as the Neapolitan pharmacist Ferrante Imperato (1550–1631) and, in Bologna, the professor Ulisse Aldrovandi (1522–1605) during his voyages, for example.⁹ Likewise, the foreign *naturalia* Dutch collections contained included Asian, African, and American items, in step with the advances of Dutch trade. The Enkhuizen doctor’s cabinet contained many thousands of objects—dried plants and seeds and resins and, as one German visitor recalled, “all manner of beautiful and remarkable rarities and unusual things from China, India, America, Africa, Asia, Peru, Egypt, Moluccas, Spain, Canary Islands, Turkey, Greece, etc.”¹⁰ Around the turn of the seventeenth century, at a time when he maintained close contact and collaborated with the “Dutch Magellan,” the merchant-voyager and author Jan Huygen van Linschoten (ca. 1562–1611), Paludanus began to collect ethnographic items in large numbers as well. Paludanus’s collection featured natural things and foreign items (*res naturae* and *res exoticae*) commingled in impressive numbers. The 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.”¹¹ A microcosmic assemblage, Paludanus’s collection offered its visitors the experience of the totality of nature. It consisted mostly of *naturalia*, supplemented by ethnographic materials, many of them new to the European markets.¹²

More often than not, studies of Paludanus’s collection mention his profession only in passing. This is in keeping with a more general trend in the literature on early modern collecting, which construes collecting on the part of pharmacists and doctors as a hobby, while in the case of princes and rulers it is thought to have constituted a potent means for sociopolitical maneuvering and the representation of power.¹³ As Paula Findlen has demonstrated, the study of substances used in the preparation of medicines (*materia medica*) was a critical link between the medical profession and collections. In the context of a widespread curricular reform that took place during the sixteenth century and affected university medical training directly, the study of *materia medica* rose to new prominence, and instruction in simples became de rigueur at universities throughout Europe.¹⁴ The most renowned sixteenth-century teacher of medicinal preparations, Luca Ghini (1490–1556), was hailed in his own time as a “prince of the science of simples.”¹⁵ Simples were taught after midcentury at Montpellier, where free, public lectures were offered to barber-surgeons and apothecaries as well; and, at Leiden, simples were taught to medical students in the university garden as well as in professors’ homes.¹⁶ Whether Paludanus, for example, actually used the specimens gathered in his encyclopedic collection for medical purposes is unknown; the scope of the collection and its renown indicate that it was far from simply a practical resource. Paludanus exemplifies the proximity of early modern medical professionals to the domain of natural goods, procured increasingly via trade channels such as ran through Enkhuizen.

Thousands of foreign travelers visited Paludanus’s collection, and his guestbook provides a wealth of information about the republic of virtuosi who made excursions for the sake of natural knowledge.¹⁷ His collection was also a professional resource in the sense that when, in the early 1590s, the trustees of Leiden University approached Paludanus and offered him the position of director of the university garden, they stipulated that he was to bring with him to Leiden his collection of dried specimens for use in the instruction of medical students.¹⁸ In the event, Paludanus refused the offer and remained in Enkhuizen.¹⁹ The next candidate considered

for the position of director of the garden, the prominent Delft pharmacist Dirck Cluyt, was also renowned for his collections.²⁰ Because he lacked an academic degree, Cluyt was not offered the position of director, but later, in 1594, he moved to Leiden as prefect of the garden. At the time of his death in 1598, he owned roughly four thousand dried specimens and over one thousand watercolors of plants. Cluyt, Paludanus, and the pharmacist Porret represent a systematically underestimated factor in histories of early modern knowledge. Their commitment to amassing sizable collections of *naturalia* and rare or curious objects is doubly difficult to account for because, on the one hand, it is obscured by the emphasis in histories of the period on other forms of scientific pursuit and, on the other hand, their professional status was in flux, if not in question. During the early modern period, the status of pharmacists and doctors within the medical profession shifted; the late sixteenth century in particular witnessed a trend toward professionalization. To some extent, as illustrated in the requirements established by the trustees of Leiden University for the position of director of the university garden, legitimacy was leveraged on the stuffs of nature; Paludanus's and Cluyt's qualifications for the position were quantifiable and transportable in the forms of fossils, minerals, and other specimens to be used in teaching. Paludanus turned down the offer of employment at the university and Cluyt was deemed not hireable because he lacked an academic degree, but in both cases their collections had helped to qualify them for the position and they each subsequently continued to acquire renown for their collections. We will return later to the issue of social legitimation through collecting.

Ivory Towers

On 28 March 1628, within a year of his death, Porret's collection was sold at his home on the Maersmansteeg in Leiden. What became of the amazing range of objects listed under 719 headings in the printed catalog is not known. Like the phrases animating the title page, the entries vacillate between categories in bewildering ways. Porret's collection contained exceptional, curious, rare, and foreign items that ranged from shells and sea creatures to animals and minerals and to works of art as well. The catalog opens with itemized listings of vessels made of semiprecious stone, an ivory lathe-work tower of enclosed spheres, a spiral staircase in ivory, a Persian cloth in the form of a turban, a sketch of Prince Maurits, and an oblong agate; and it closes with a long series of entries describing watercolor renderings of animals, plants, and flowers. While it is remarkable how

many semiprecious stones, natural history watercolors (upward of seven hundred), and exotic items Porret owned, it is even more surprising that his name figures only dimly in histories of collections such as his own.

Within the European context of collections assembled in the sixteenth and seventeenth centuries at courts from Prague and Vienna to Brussels and in ducal residences in between, as 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. Early modern European microcosmic collections consisted of famously heterogeneous compilations of goods. The polymath Francis Bacon recommended, in 1594, that the learned gentleman maintain "a goodly, huge cabinet, wherein whatsoever the hand of man by exquisite art or engine has made rare in stuff, form or motion; whatsoever singularity, chance, and the shuffle of things hath produced . . . shall be sorted and included."²¹ Many a learned gentleman did. Taste ran to instruments, ethnographical items and imports from the New World, and antiquities, as well as to narwhal horns and bezoar stones. Bacon's inclusive prescription helps to explain the coexistence in such collections of dwarfs and hirsutes, for example, with artifacts of nature such as malformed antlers or "painted" stones.

Early modern collecting and collections of the kind that fall under the joint rubric of *Kunst-* and *Wunderkammern* have been studied in recent years by historians of art and science alike. Analyses of European collections of the sixteenth and seventeenth centuries are often driven by polarities. This is particularly true of studies of collecting that consider them emblematic of epistemological and social interests. Erwin Panofsky's 1954 book *Galileo as a Critic of the Arts* treats the relationship between art and science as a matter of taste and does so with direct reference to early modern collecting practices. Panofsky's book is a fascinating study of sensibility—of Galileo's poetic sensibility and the ways in which it informed his scientific disposition. In formulating an opposition between two poetic modes (and in turn two kinds of collections) Galileo lays out his aesthetic proclivities. Panofsky cites an extended comparison Galileo drew between the poetry of Ariosto, whom he preferred, and Tasso; the two modes of writing are compared to two different kinds of collecting. When he read Ariosto, Galileo wrote, he beheld "opening up before [him], a treasure room, a festive hall, a regal gallery adorned with a hundred classical statues by the most renowned masters," whereas Tasso's poetry called to mind "the study of some little man with a taste for curios who has taken delight in fitting it out with things that have something strange

about them . . . but are, as a matter of fact, nothing but bric-a-brac—a petrified crayfish; a dried-up chameleon; a fly and a spider embedded in a piece of amber; some of those little clay figures which are said to be found in the ancient tombs of Egypt."

The terms of Galileo's spatial metaphor make clear that different sorts of collection were associated with different modes of thought and expression. As Panofsky noted, "Galileo portrays to a nicety, and with evident gusto, one of those jumbled *Kunst- und Wunderkammern* so typical of the Mannerist age." Compared to "a formal gallery full of Roman marbles and Raphaels," it comes off as lacking in conceptual order or stability and fails to surpass the quirky pleasures of the little man (*ometto*) at its center.²² Panofsky suggests that this *paragone* serves as a crucial iteration of the astronomer's "aesthetic attitude" and, in turn, attributes Galileo's scientific proclivities and specifically his distaste for Kepler's models of planetary motion to his affinity for coherent patterns of symbolic thought—as reflected in Ariosto's poetry and collecting "high art" on a grand scale. Galileo's evocation of a cabinet of curiosity renders it intellectually flaccid, leaving the *ometto* in the dust, and in this regard it does not reflect the sort of epistemological undergirding characteristic of the Dutch collections under discussion. Nonetheless, the implicit connections Galileo makes between an individual (the *ometto*, for example) and his collection is underlined by Panofsky. On this model, collections are fossils of philosophical or poetic conceptions.

Panofsky claimed that the passage partially cited above is "fully appreciable only by art historians."²³ Recent literature on collecting and specifically on cabinets of curiosity and *Wunderkammern*, however, believes the notion that any single historical discipline has more traction on the subject than any other. Most recent studies of collecting and of the philosophical category of wonder have been written across historical disciplines.²⁴ Distinctions between sort and scope of collections are no longer traced along national or regional lines; instead, differences have come to be charted in social and professional terms. H. D. Schepelern has proposed that collecting principles were by and large uniform throughout Europe but that differences pertain between the aims of natural historians and philosophers, on the one hand, and royal or noble collectors, on the other.²⁵ Giuseppe Olmi, in his studies of early modern Italian collections, has distinguished the private from the princely: "social and economic status of the collectors, and, more importantly, their intellectual and professional interests," are the coordinates according to which the two kinds of collections are organized. Olmi specified that, in his view, the contents and

the arrangement of collections assembled by (medical) professionals were "purely functional rather than symbolic."²⁶ Similarly, in her discussion of "Museums of Medicine," Findlen treats apothecaries' collections as a distinct genre: ownership of such a collection by a pharmacist was unequivocally bound up with the "study of nature as medically necessary knowledge."²⁷ Pharmacists' collections were, according to Findlen, fairly straightforward extensions of their professional, medical interests. Apothecaries "collected specimens as a natural part of their professional activities; they were the ingredients for the medicines sold in pharmacies."²⁸ Possession of a collection was worth something in social currency, but even the cultural or social capital at stake was tied directly to professional practice: "Collecting increased the status of men such as [Francesco] Calzolari and Imperato," Findlen writes, "by publicizing their possession of the most exotic ingredients that nature could supply."²⁹

On this view, natural historians and philosophers enacted in their collections a commitment to obtaining scads of *naturalia* that confirmed their active familiarity with and control over elements of the natural world. The relationship between the medical profession and *Wunder-* or *Kunstkammern* in the early modern period was built of a common interest in the natural world—in natural philosophy and natural history. Lorraine Daston and Katharine Park have 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."³⁰ Princely collections were bound by symbolic order; their spectacle ultimately reflected the power of their owners. Daston and Park also adduced social identity as a primary defining factor where they cited a "spectrum ranging from the princely collection . . . to the professional collection," with scholars, physicians, and lawyers actively collecting under the professional rubric, and medical professionals most assiduously collecting *naturalia*. The spectacle of learning, though, that such collections produced was distinct from the spectacle of power staged in princely collections.³¹

Generally speaking, it might be assumed that a pharmacist's collection assembled around the turn of the seventeenth century would feature items relating to medicinal preparations—plants, spices, resins, and minerals. Porret's collection did, in good number. In addition to *naturalia*, however, it contained numerous man-made or artfully natural items, ethnographic objects, and *scientifica* as well. The initial entries in the catalog for Porret's collection list "two serpentine containers/ that serve as cups or mugs"; "two crystal glasses/ with white stripes"; "a platter of

serpentine stone"; "an ivory sphere or globe/ with various balls/ that turn within each other/ on a pedestal/ or foot of ebony"; and "a spiral staircase made of ivory." Here and throughout the catalog, cast animals painted with lead glaze are cited: "a cast frog, painted with lead," and "a salamander painted in lead" (no. 29) are just two of the artifacts reminiscent of those produced in Paris by the natural historian and ceramicist Bernard Palissy (1509–90).³² The first page of the catalog also cites a round piece of quartz and a shell and "two mother-of-pearl fishing rods from the Straits of Magellan." The variety of objects is remarkable. The catalog also lists, for example, "a sea plant like cauliflower" (presumably a coral) and hundreds of shells in all sizes and shapes and colors, including at least one "mother of pearl shell, carved and painted" (no. 168) (see plate 4). A "covered nut from the Indies" (no. 42) is found in the company of a "covered head, from a fruit from the Indies"; either of these may have been a coconut with elaborate decoration. The list goes on, citing a carved wooden crucifix in an ebony case (no. 61); a blue sapphire in lead (no. 62); a large piece of white coral, painted red and gilded (no. 69); a couple of beaks of birds from the Indies; and a number of rather conventional pictures, among them a pair of painted landscapes in the round and images of contemporary rulers. Porret also owned 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 small box that screws shut, artfully carved, containing wooden toothpicks" (no. 130); numerous groups of "old medals or coins" (no. 99); and a number of foreign pieces of cloth and clothing. Not to mention a peach, a quince, a pear, and a cucumber, each sculpted in wax and containing "two Venetian gloves"; numerous natural stones and painted stones; green eggs of the emu; Indian and Chinese inks; gems and fossils and herbs, both dried and painted; lacquer work; sulfur; a magnifying glass, a kaleidoscope, and other optical devices; Hungarian and Turkish shoes; whistles devised to attract various animals; a blowfish; a large crocodile and a small crocodile; and sheets and sheets of watercolors and drawers and drawers filled with resins, stones, minerals, and fruits.

How unusual was Porret's collection? It is similar to Paludanus's in magnitude, though not entirely in scope: Porret owned works of art (paintings and watercolors and elaborate sculptural items) and Paludanus did not. Porret ventured to collect artful and ingenious items of handicraft; coins and medals; representational works; optical devices. The extent to which his collection comprised a professional resource is not self-evident from the catalog. One measure of its medical or pharmacological role and usefulness may, however, be available through comparison with other lo-

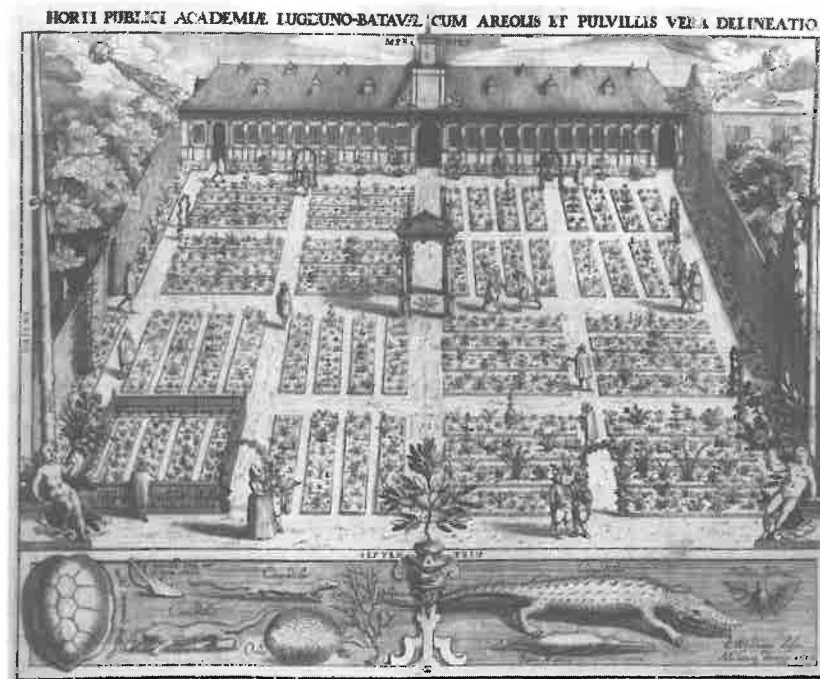


Fig. 10.2. William Swanenburgh after Jan Cornelisz Woudanus, Leiden Garden, engraving, 1610, 33 × 40 cm. Courtesy of the Rijksmuseum, Amsterdam.

cal instances of medical collection. The town of Leiden boasted one of the great public collections of *naturalia* and other curiosities—the university garden—and its extended holdings were, by the first decade of the seventeenth century, popular tourist destinations (fig. 10.2).³³ The anatomical theater too housed a small collection of prints, paintings, and various curiosities; this collection was significantly expanded later in the seventeenth century. In the garden, a long gallery (*ambulacrum*) was built in 1599; it was the brainchild of Pieter Pauw, professor of medicine (the garden opened in 1594). Originally intended to shelter students and visitors 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* housed a sort of mini-*Wunderkammer*, with an emphasis on *naturalia*. In 1614 the city historian Jan Janszn Orlers wrote that it was "decorated and hung with many and various maps and geographical depictions, as with some foreign animals and plants, brought here from both of the Indies and other places."³⁴ The earliest inventory of the

contents of the gallery, which refers to the contents as "curiosities," records a number of "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 bamboo stalks (*Arundo indica*) presented to the garden by the directors of the Dutch East India Company, boxes of resins and extracts, and various fruits or nuts. Animals were more numerous and ranged from crocodiles, penguins, and blowfish to parts of animals: 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, among them Pygmy vestments, two Indian hammocks, an Indian skirt, and an Indian ink pot ("Indian" as in either the West or the East Indies).³⁵

The collection housed in the *ambulacrum* was coextensive with the university garden, which also contained foreign, rare, and valuable specimens. What sorts of connections existed between collections such as Porret's and "living collections," or gardens? Porret too owned at least one garden, as did his fellow collectors Paludanus and Cluyt and others in foreign lands. One of the things for which Porret came to be known during his lifetime was, indeed, his garden—among other things, a more or less requisite resource for the contemporary pharmacist. In a catalog of the Leiden garden published by Pieter Pauw in 1601, a dedicatory poem refers to Porret, who is listed alongside other great "keepers of gardens" such as Aldrovandi, Pietro Bembo (1470–1547), Felix Platter (1536–1614), and Caspar Bauhin (1560–1624).³⁶ In 1621, in an extended paean to his own home and garden in Zeeland, the minister Petrus Hondius (1578–1621) made a rather lengthy digression to praise Porret's talents and garden. Hondius called Porret a "famous pharmacist, simplicist, and herbalist" and spoke of his generosity and diligence, invoking his contemporaries Carolus Clusius and Dirck Cluyt in the process.³⁷ One of the primary links between Porret the pharmacist, Cluyt the pharmacist and university garden prefect, and Clusius the director of the Leiden University garden was their shared interest in horticulture, which is to say in cultivating living collections.

Social Legitimation through Nature

The period during which Porret, Paludanus, Cluyt, and their compatriots amassed their collections was a time of flux in the medical professions. The knowledge of simples among medical professionals was seen, across Europe, to have descended to an all-time low by the early decades of the sixteenth century. In the introduction to his groundbreaking herbal, the *Herbarum Vivae Eicones ad Naturae Imitationem* (Living Images of Plants

in *Imitation of Nature*, 1530–36), Otto Brunfels (1464–1534) told a pointed story about the decline of practical knowledge among medical professionals that was intended to highlight a weakness his publications might ameliorate. Citing Erasmus, Brunfels recounted an instructive prank a certain Basel doctor (Guilielmus Copus, d. 1532?) pulled on the medical faculty at the University of Paris. At a dinner with the Paris professors Copus extracted an herb from the salad and challenged them to name it. Dumbfounded by its appearance, the learned professors concluded that it must be a rare and foreign vegetable. A kitchen maid was called to the table and declared the herb to be common parsley.³⁸ Professors of medicine and professional naturalists levied accusations of ignorance in matters horticultural and pharmaceutical against unlearned doctors, pharmacists, and other practitioners of the healing arts more often than the tale of Copus might suggest.³⁹ Accusations of misreading dispensatory manuals or texts on the *materia medica* were directed at pharmacists with some regularity. Mocked in contemporary texts, pharmacists were also in many cases subjected to increasingly stringent controls, often enforced by faculties of medicine who were authorized to license apothecaries and herbalists.⁴⁰

In the context of these disputes about legitimacy and medical knowledge, class divisions between university-trained medical professionals and "unlearned" apothecaries were stressed to the point of outright ridicule. A text on medicinal simples by Antonius Musa Brasavolus published in 1536 offers a case in point.⁴¹ In the course of the book, the narrator (the author, Brasavolus) encounters the aged pharmacist Senex and his helper Herbarius collecting herbs in the hills outside Ferrara. Brasavolus takes Senex to task for "the surprising listlessness of apothecaries" in general and for stubbornly misidentifying medicinal plants in particular; Senex is ruthlessly characterized by the Ferrarese nobleman-author as coarse, ill-mannered, and, initially at least, chauvinistic in his defense of tradition and acquired knowledge over innovative and open-minded study.⁴² Social or class dominion was at stake in numerous early modern disputes over the legitimacy of remedies and their contents. As late as 1622, Caspar Bauhin, quoting the Parisian physician Jean Fernel (1497–1558), wrote: "The knowledge, collection, choice, culling, preservation, preparation, correction, and task of mixing of simples all pertain to the pharmacists; yet it is especially necessary for the physician to be expert and skilled in these things. If, in fact, he wishes to maintain and safeguard his dignity and authority among the servants of the art, he should teach *them* these things."⁴³ In his Flemish herbal (*Cruijdeboeck*), published in 1554 in Antwerp, Rembert Dodoens (1517–85) explained that he had compiled a catalog of the plant

world in order to rectify widespread ignorance of medicinal plants among practicing doctors. Doctors, he wrote, "believed that such knowledge and familiarity was not worthy of their attention, but was the province of Apothecaries or other unlearned persons. . . . This knowledge of and familiarity with plants is very necessary and fitting to all doctors."⁴⁴ In this context, medical professionals' collections might have offered leverage in a market where academic doctors ruled the institutional roost, and where pharmacy had yet to be cleansed of the taint of "unprofessional" science or medicine.⁴⁵

How might such a chamber of wonders as Porret assembled have served him in pursuit of profit and social rank? Its very existence reflects his relative wealth, and it may during his lifetime have reflected social dominion as well. In an era in which efforts were made to clean up the profession—an era that saw the publication of guidelines in the form of pharmacopeias, for example, and increasingly stringent judicial measures to divide gypsies, quacks, and herbalists from socially and professionally responsible providers—possession of a collection may have served as a mark of distinction. His investment in the goods and in their preservation, in removing valuable items from circulation, may have elevated his status by implication. No records of visits to the collection survive, but judging by the European renown of Paludanus's belongings, Porret's collection is unlikely to have gone unnoticed. When Dirck Cluyt died, the Leiden University medical students attempted to apply the value of his collections to their preservation as a pedagogic resource. Declaring that he had spared no expense or effort in assembling a collection that encompassed four thousand *simplicia* and over one thousand botanical watercolors at the time of his death in 1598, and that these materials—dried goods and pictures alike—were used in the instruction of medicine, the students petitioned the trustees of the university to award Cluyt's position to his son (who was merely twenty-one and had no medical training) on account of the collection bequeathed to him.⁴⁶ Possession of *res naturae* was tantamount, it seems, to knowledge.

Stuff/Wonder

Porret's collection affords us a remarkable opportunity to explore the nature of professional collecting in early modern Holland. It defies general expectations about the practical nature of pharmaceutical pursuits in its inclusion of so very many exotic, unusual, and exceptional items, and it raises questions about the role of *naturalia* and *sensualia* (*sinnelickheden*)

in the practice of natural history. These expectations and these questions have been taken up by Daston and Park in their *Wonders and the Order of Nature*—in particular where they discuss the terms of "preternatural history" as practiced by medical professionals.⁴⁷ "Preternatural history" is a term they coin to denote a new form of natural philosophy practiced in the early modern era that encompassed the study and indeed the privileging of "marvelous effects of all sorts" and wonders.⁴⁸ Though he could not have written it, the title of the catalog of Porret's collection is as clear a digest of the central terms of emergent "preternatural history" as any other contemporary account. Porret, it seems, participated in the contemporary interest in natural wonders. *Sinnelickheden* are more than the makings of medicine. The emphatic concern with the stuff of nature and sensory engagement with it is crucial to an account of medical collecting. Porret's catalog bristles with natural particulars. We might say that it provides further evidence of Aristotelian investment in accumulating experience dovetailing, in the early modern era, with Baconian refutation of all but the facts of nature to effect a shift in the production of early modern knowledge.

Medical collecting in Holland at the turn of the seventeenth century was more widespread than is generally acknowledged either in accounts of early modern collecting or in histories of science. While some collections were clearly used for pedagogical purposes (the Leiden garden and Cluyt's collection of *simplicia* and watercolors come to mind straightaway), others were less clearly functional in that regard. The category of wonder, as recently explicated by Daston and Park, helps substantially to account for the impact these collections may have had and, indeed, for the ways in which they functioned philosophically. To know was, for these medical professionals, to know nature. And to know was to experience—to engage with the *res naturae* in all their wondrous particularity.

By 1621, Porret, then sixty-seven years old, was unable to visit his garden as frequently as he once had. Petrus Hondius wrote of him, in a dedicatory poem published in 1621: "Your old age prevents you more and more from walking two and three times a day up and back to your garden outside the city."⁴⁹ How important the garden had been to him as a resource is clear. Perhaps by this time Porret's collection served him not merely as a source of wonder and means of access to the natural particulars that were so fundamental to the discipline of natural history but also as a source of consolation. Whether or not this was the case, it offered a range of specimens and objects not unlike those for which gardens were built and in so doing constituted a crucial resource for a medical professional interested equally in use and wonder.

44. *Ibid.*, 306. See Principe on the *Sceptical Chymist*, "vulgar chymists," and systematizers (*Aspiring Adept*, 52, 33, 46-47); and Sargent on Boyle's critique of speculative theorists (*Diffident Naturalist*, 27, 71-75).
45. "[T]he Person I mean here, is such a one, as by attentively looking about him, gathers Experience, not from his own Tryals alone, but from divers other matters of fact, which he heedfully observes, though he had no share in the effecting them; and on which he is dispos'd to make such Reflections, as may (unforcedly) be apply'd to confirm and encrease in him the Sentiments of *Natural Religion*, and facilitate his Submission and Adherence to the *Christian Religion*" (Boyle, *Christian Virtuoso*, 11:306).
46. *Ibid.*, 295; Robert Boyle, *Usefulness of Experimental Natural Philosophy* (1663), in *Works*, 3:222; see also 11:299, 3:200-201, 235.
47. Harwood says that reading is Boyle's most important metaphor and discusses his reading the world in both his moral and his natural philosophy ("Science Writing," 50-51); for a discussion of the "two books" in relation to Boyle, see Sargent, *Diffident Naturalist*, 112-15.
48. Robert Boyle, *Occasional Reflections Upon Several Subjects, Whereto is premis'd A Discourse About such kinds of Thoughts* (1665), in *Works*, 5:16-17, 32.
49. *Ibid.*, 52, 26.
50. Reading books "requires rather that a man be docile than ingenious," whereas collecting "Moral and Spiritual Documents out of a Book of Hieroglyphics, or from a Landscape or a Map, is more than every attentive considerer can do, and is that which argues something of Dexterous and Sagacity that is not very ordinary" (*ibid.*, 27). See also the invocation of the classical figure of the bee, an image of transformative gathering (28, 52).
51. *Ibid.*, 52.
52. *Ibid.*, 30.
53. *Ibid.*; see also 32.
54. See Principe, "Virtuous Romance," 393.
55. Boyle, *Occasional Reflections*, 5:18, 8, 9. Boyle invites his readers "to exercise their Pens in some such way of Writing: Divers of whom will probably be encouraged to venture upon making some such composures, when they find Excuses for divers of those things that are most likely to be thought to Blemish such Essays" (18).
56. *Ibid.*, 5:49-50.
57. *Ibid.*, 10-11. Hunter dates the composition of *Occasional Reflections* to ca. 1647-48 (5:xi) and "Proemial Essay" to 1657 (2:xi).
58. John Uffley, *Wits Fancies: or, Choice Observations and Essayes, Collected out of Divine, Political, Philosophical, Military, and Historical Authors* (London, 1659), A5, A7, A3-A3v.
59. *Discoveries* 731-41, in *The Oxford Authors: Ben Jonson*, ed. Ian Donaldson (New York: Oxford University Press, 1985), 541.

60. [William Master,] *Logoi eukoiroi, Essayes and Observations Theological and Morall* (London, 1653), A4-A5, 9.
61. Lady Chudleigh, *Essays Upon Several Subjects In Prose and Verse* (London, 1710), A3v-A4.
62. *Ibid.*, 12.
63. Robert Boyle, "A Physio-Chymical Essay, Containing An Experiment with some Considerations touching the differing Parts and Redintegration of Salt-Petre" ["Essay on Nitre"], section 39 of *Certain Physiological Essays* (1661), in *Works*, 2:112.
64. For one of Boyle's many accounts of his work being unpolished and unfinished, see *Some Considerations About the Reconcilableness of Reason and Religion* (1675), in *Works*, 8:239-40.
65. Boyle, *Occasional Reflections*, 5:20.
66. Boyle, "Proemial Essay," 2:34.
67. Principe, *Aspiring Adept*, 111, 220.
68. Anthony Grafton, *Defenders of the Text* (Cambridge, MA: Harvard University Press, 1991), 4-5.
69. Anthony Grafton, "The New Science and the Traditions of Humanism," in *The Cambridge Companion to Renaissance Humanism*, ed. Jill Kraye (New York: Cambridge University Press, 1996), 212.
70. Oldenberg, "A Preface to the Third Year of these Tracts," *Philosophical Transactions* 1-2, 410.

CHAPTER TEN

1. The literature on early modern Dutch collecting is not, as in the case of Italy, yet integrated with the literature on the history of science and medicine. On Dutch collecting in general, see O. Impey and A. MacGregor, eds., *The Origins of Museums: The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe*, 2d ed. (London: House of Stratus, 2001); and Ellinoor Bergvelt and Renée Kistemaker, eds., *De wereld binnen handbereik: Nederlandse kunst- en rariteitenverzamelingen, 1585-1735*, 2 vols., exhibition catalog (Zwolle: Waanders; Amsterdam: Amsterdams Historisch Museum, 1992). On the relationship between collections and scientific practice in early modern Italy, see principally Giuseppe Olmi, *L'inventario del mondo: Catalogazione della natura e luoghi del sapere nella prima età moderna* (Bologna: Il Mulino, 1992); and Paula Findlen, *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy* (Berkeley and Los Angeles: University of California Press, 1994). In general, see Lorraine Daston and Katharine Park, *Wonders and the Order of Nature, 1150-1750* (New York: Zone Books, 1998); and, for a compelling case study of a collection of pictures that belonged to a professor of practical medicine, see Pamela Smith, "Science and Taste: Painting, Passions, and the New Philosophy in Seventeenth-Century Leiden," *Isis* 90 (1999): 421-61.

2. Frits Lugt, *Repertoire des catalogues de ventes publiques intéressant l'art ou la curiosité: Première période vers 1600–1825* (The Hague: M. Nijhoff, 1938), no. 2. E. W. Moes, "De sonderling-heden oft rariteyten ende wtgelesen sinnelickheden van Christiaen Porret," *Leids Jaarboekje* 2 (1905): 93–100, introduces the collection and the collector; other biographical information is found in Henriëtte A. Bosman-Jelgersma, "De lotgevallen van een apothekersleerling in het 17de-eeuwse Leiden," *Leids Jaarboekje* 79 (1987): 62–81. The auction of Porret's collection is mentioned in passing in Bob van den Boogert et al., *Rembrandt's Treasures*, exhibition catalog (Zwolle: Waanders, 1999).
3. Svetlana Alpers, *The Art of Describing: Dutch Art in the Seventeenth Century* (Chicago: University of Chicago Press, 1983).
4. David Freedberg, "Science, Commerce, and Art: Neglected Topics at the Junction of History and Art History," in *Art in History, History in Art: Studies in Seventeenth-Century Dutch Culture*, ed. D. Freedberg and J. de Vries (Santa Monica, CA: Getty Research Institute, 1991), 377–428.
5. Pamela Smith and Paula Findlen, eds., *Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe* (London: Routledge, 2002), 3.
6. *Ibid.*, 17.
7. Harold J. Cook, "The Cutting Edge of a Revolution? Medicine and Natural History near the Shores of the North Sea," in *Renaissance and Revolution: Humanists, Scholars, Craftsmen and Natural Philosophers in Early Modern Europe*, ed. J. V. Field and Frank A. J. L. James (Cambridge: Cambridge University Press, 1993), 47.
8. The classic resource on Paludanus remains F. W. T. Hunger, "Bernardus Paludanus (Berent ten Broecke), 1550–1633: Zijn verzamelingen en zijn werk," in *Itinerario voyage ofte schipvaert van Jan Huygen van Linschoten naer oost ofte Portugaels Indien, 1579–1592*, ed. H. Kern, 8 vols. (The Hague: J. H. van Linschoten Vereniging, 1910–57), vol. 3 (1934), 249–68. See also Bergvelt and Kistemaker, *De wereld binnen handbereik*; Roelof van Gelder, "Paradijsvogels in Enkhuizen: De relatie tussen Van Linschoten en Bernardus Paludanus," and Florike Egmond, "Een mislukte benoeming: Paludanus en de Leidse Universiteit," both in *Souffrir pour parvenir: De wereld van Jan Huygen van Linschoten*, ed. Roelof van Gelder et al. (Haarlem: Uitgeverij Arcadia, 1998), 30–50 and 51–64, respectively.
9. See Findlen, *Possessing Nature*, passim.
10. "Allerhandt schoene und denkwürdige Rariteten und unerhörten Ding auß China, India, America, Africa, Asia, Peru, Aegypten, Malakk, Hispania, Insulis fortunatis [Canary Islands], auß Turkey, Graecia etc." The account was written in November 1593 by Duke Philip Ludwig II of Hanau-Münzenburg and is cited in van Gelder, "Paradijsvogels in Enkhuizen," 36–37.
11. "Thesaurus Orbis, Totius compendium / Arca universi, sacra Naturae penus, Templumque Mundi." Hugo Grotius, *Poemata* (Leiden: Hieronymum de Vogel, 1639), 276.
12. Roelof van Gelder, "Noordnederlandse verzamelingen in de zeventiende

- eeuw," in *Verzamelen: Van rariteitenkabinet tot kunstmuseum*, ed. Ellinoor Bergvelt et al. (Heerlen: Gaade Uitgevers, 1993), 125.
13. See, e.g., Thomas DaCosta Kaufmann, "From Mastery of the World to Mastery of Nature: The *Kunstkamer*, Politics, and Science," in *The Mastery of Nature*, by Thomas DaCosta (Princeton, NJ: Princeton University Press, 1993), 174–94, with an excellent review of the literature. For an important corrective, see Harold J. Cook, "Physicians and Natural History," in *Cultures of Natural History*, ed. N. Jardine, J. A. Secord, and E. C. Spary (Cambridge: Cambridge University Press, 1996), 91–105; and Cook, "The Cutting Edge of a Revolution?"
14. Findlen, *Possessing Nature*, 250 and 252ff., with further bibliography.
15. Tommaso Garzoni, *Piazza universale di tutte le professioni del mondo* (Venice, 1585), 155; as cited in Findlen, *Possessing Nature*, 6. In 1588, Ulisse Aldrovandi, who had been teaching *materia medica* for more than thirty years at Bologna with the help of his vast collection of *naturalia* and, since 1568, of the university botanical garden, wrote to Duke Ferdinando I de' Medici that "I teach what plants one should truly choose for medicinal uses to whomever makes use of medicines." As cited in Findlen, *Possessing Nature*, 254.
16. See, inter alia, Karen Meier Reeds, *Botany in Medieval and Renaissance Universities* (New York and London: Garland, 1991), 58ff.; cf. 72.
17. His *album amicorum* survives in the Koninklijke Bibliotheek, The Hague (MS 133 M63); see K. Thomassen, ed., *Alba amicorum: Vijf eeuwen vriendschap op papier gezet; Het album amicorum en het poëziealbum in de Nederland*, exhibition catalog (Maarsse and The Hague: Museum Meermannno-Westreenianum Museum van het Boek, 1990), cat. no. 12, pp. 55–56.
18. He was asked to join the faculty "met alle zijne 'tsamen vergaerde seltsaemheden, zo van cruyden, vruchten, spruytsels, gedierten, schepselen, mineralen, aerden, veninen, gesteenten, marmieren, coralen etc." (with all his collected rarities, such as plants, fruits, cuttings, animals, shells, minerals, earths, poisons, stones, marbles, corals, etc.). P. C. Molhuysen, *Bronnen tot de geschiedenis der Leidsche Universiteit*, 7 vols. (The Hague: M. Nijhoff, 1913–24), 1:180.
19. See Egmond, "Een mislukte benoeming."
20. On Dirck Cluyt, see Henriëtte A. Bosman-Jelgersma, "Clusius en Clutius," *Farmaceutisch Tijdschrift voor België* 58 (1981): 41–45; Henriëtte A. Bosman-Jelgersma, "Dirck Cluyt: De eerste Leidse hortulanus," *Jaarboekje voor Geschiedenis en Oudheidkunde van Leiden en Omstreken [Leids Jaarboekje]* 83 (1991): 75–88; Henriëtte A. Bosman-Jelgersma, "Dirck Outgaertszn, Cluyt," *Tijdschrift voor België* 53 (1976): 525–48; Claudia Swan, *The Clutius Botanical Watercolors: Plants and Flowers of the Renaissance* (New York: Harry N. Abrams, 1998); and Claudia Swan, "Lectura-Imago-Ostensio: The Role of the *Libri Picturati* A.16–A.30 in Botanical Instruction at the Leiden University," in *Natura-cultura: L'interpretazione del mondo fisico nei testi e nelle immagini*, ed. G. Olmi, L. Tongiorgi-Tomasi, and A. Zanca (Florence: Olschki, 2000), 189–214.

21. Francis Bacon, *Gesta Grayorum*, in *The Works of Francis Bacon, Baron of Verulam, Viscount of St. Alban, and Lord Chancellor of England*, ed. James Spedding, R. L. Ellis, and D. D. Heath, 14 vols. (London: Longman, 1858-74; New York: Garrett Press, 1968), 8:334-35.
22. Erwin Panofsky, *Galileo as a Critic of the Arts* (The Hague: M. Nijhoff, 1954), 18-19.
23. *Ibid.*, 18.
24. On wonder, see Daston and Park, *Wonders and the Order of Nature*; Philip Fisher, *Wonder, the Rainbow, and the Aesthetics of Rare Experiences* (Cambridge, MA: Harvard University Press, 1998); Mary Baine Campbell, *Wonder and Science: Imagining Worlds in Early Modern Europe* (Ithaca, NY: Cornell University Press, 1999).
25. H. D. Schepelern, "Natural Philosophers and Princely Collectors: Worm, Paludanus, and the Gottorp and Copenhagen Collections," in *Origins of Museums*, ed. Impey and MacGregor, 175.
26. Giuseppe Olmi, "Science-Honour-Metaphor: Italian Cabinets of the Sixteenth and Seventeenth Centuries," in *Origins of Museums*, ed. Impey and MacGregor, 2-3.
27. Findlen, *Possessing Nature*, 245; cf. 246.
28. *Ibid.*, 245.
29. *Ibid.*, 246.
30. Daston and Park, *Wonders and the Order of Nature*, 149. See also Findlen, *Possessing Nature*.
31. Daston and Park, *Wonders and the Order of Nature*, 266.
32. On Bernard Palissy, see Ernst Kris, "Der Stil 'rustique': Die Verwendung des Naturabgusses bei Wenzel Jamnitzer und Bernard Palissy," *Jahrbuch der Kunsthistorischen Sammlungen in Wien* 1 (1926): 137-208; Leonard Amico, *Bernard Palissy in Search of Earthly Paradise* (New York: Flammarion, 1996); Bernard Palissy, *Recette véritable* (1563), ed. Frank Lestringant (Paris: Macula, 1996).
33. On the garden, which opened in 1593, see H. Veendorp and L. G. M. Baas Becking, *Hortus Academicus Lugduno Batavus: The Development of the Gardens of Leyden University* (Haarlem: Enschedaiana, 1938); A. J. F. Gogelein et al., eds., *Leidse Universiteit 400, Stichting en Eerste Bloei 1575-ca. 1650*, exhibition catalog (Amsterdam: Rijksmuseum, 1975), 166-84; L. Tjon Sie Fat and E. de Jong, eds., *The Authentic Garden: A Symposium on Gardens* (Leiden: Clusius Stichting, 1991), especially E. de Jong, "Nature and Art: The Leiden Hortus as 'Musaeum,'" 37-60. The construction of the anatomical theater was first proposed in 1591; the first public dissections held in it date to November 1593. See Gogelein et al., *Leidse Universiteit 400*, 100ff.; H. J. Witkam, *Iets over Pieter Paaw en zijn theatrum anatomicum en over het bouwen van de anatomieplaats en de bibliotheek* (Leiden: H. J. Witkam, 1967); and T. H. Lunsingh Scheurleer, "Un amphithéâtre d'anatomie moralisée," in *Leiden University in the Seventeenth Century: An Exchange of*

- Learning*, ed. T. H. Lunsingh Scheurleer and G. H. Posthumus Meyes (Leiden: Brill, 1975), 217-77.
34. Jan Janszn Orlers, 1614, pp. 143-44.
35. "Inventaris van de Rariteyten opde Anatomie en inde twee gallerijen van des Universiteyts Kruiythoff" (ca. 1617), in Erik de Jong, *Natuur en kunst: Nederlandse tuin- en landschapsarchitectuur, 1650-1740* (Amsterdam: THOTH, 1993), 232-34.
36. Pieter Pauw, *Hortvs Pvblicvs Academiæ Lvgdvno-Batavæ. Eivs Ich-nographia, Descriptio, Vsus, Addito quas habet stirpium numero, et nominibus* (Leiden, 1601).
37. Hondius must have come to know Porret's collection as a student in Leiden; he enrolled in 1596 and was among the students who benefited from the early years of activity in the Leiden garden and anatomical theater alike. Though he studied botany diligently while at Leiden, he followed in his father's footsteps and entered the ministry. See P. J. Meertens, *Letterkundig leven in Zeeland* (Amsterdam: N. V. Noord-Hollandsche Uitgevers Maatschappij, 1943).
38. Erasmus, preface to *Sancti Hieronymi Opera* (Basel, 1516); *Opus Epistolarum Des. Erasmi Roterodami*, ed. P. Allen (Oxford: Clarendon, 1910), II, 2:56. Otto Brunfels cites the story in *Herbarum Vivae Eicones ad Naturae Imitationem* (Strasbourg, 1530), 1:13.
39. On Calzolari's theriac, see, e.g., Findlen, *Possessing Nature*, 272-77.
40. See Karen Meier Reeds, "Renaissance Humanism and Botany," *Annals of Science* 33 (1976): 519-42; Reeds, *Botany in Medieval and Renaissance Universities*, 24ff. and 74-75 (Montpellier); cf. H. A. Bosman-Jelgersma, "Dodoens en de farmacie," *Handelingen van de Koninklijke Kring van Oudheidkunde Letteren en Kunst van Mechelen* 89 (1986): 137-39; and Vivan Nutton, "Idle Old Trots, Cobblers and Costardmongers: Pieter van Foreest on Quackery," H. A. Bosman-Jelgersma, "Inleiding tot het handschrift tegen kwakzalverij en onbevoegde geneeskunde," and the text of the manuscript against quacks, "Van der Empiriken, lantloepere ende valscher Medicyns bedorch," in *Pieter van Foreest, de Hollandse Hippocrates*, ed. H. A. Bosman-Jelgersma et al. (Knijnenberg: Pieter van Foreest Stichting, 1996), 245-58, 259-64, and 265-92, respectively.
41. Antonius Musa Brasavolus, *Examen Omnium Simplicium Medicamentorum, Quorum in Officinis Usus Est* (Rome, 1536).
42. Edward Lee Greene, *Landmarks of Botanical History* (Stanford, CA: Stanford University Press, 1983), 2:658-701.
43. From Fernel's *Methodo Medendi*; quoted in Caspar Bauhin, *Catalogus Plantarum circa Basileam Sponte Nascentium . . .* (Basel, 1622), preface to medical students. Cited in Reeds, *Botany in Medieval and Renaissance Universities*, 25-26.
44. "sij meynden dat alsulcken scientie oft kennisse haer niet en betaemde, maar alleen toebehoorde den Apothekers of sommighen anderen ongheleerden . . . die scientie ende kennisse van den cruyden alle medciyns seer nootelijck ende betaemelick es." R. Dodonaeus, *Cruijdeboeck* (Antwerp: Jan van der Loe, 1554),

ccclxxxvii. As cited in Bosman-Jelgersma, "Dodoens en de farmacie," 132. On the production of *dispensatoria* in Antwerp in the sixteenth century, see F. de Nave et al., eds., *Botany in the Low Countries (End of the 15th Century—ca. 1650)*, exhibition catalog (Antwerp: Museum Plantin-Moretus, 1993). Dodoens's sentiments echo those of Gaspare Gabrieli, the first professor of simples at the University of Ferrara. In a lecture given in 1543, Gabrieli wrote: "In my opinion [the lack of interest among physicians in *materia medica*] derives solely from the belief that the part of medicine dealing with knowledge of plants does not concern them. They leave the entire study of this branch [of medicine] to chemists, apothecaries, and wise-women. Thus at present the entire medicine of herbs is in the hands of the unlearned, the foolish, and superstitious wise-women. Not surprisingly, infinite errors occur from this incompetence." Cited in Findlen, *Possessing Nature*, 251.

45. Egmond, "Een mislukte benoeming"; Swan, *Clutius Botanical Watercolors*; and Swan, "Lectura-Imago-Ostensio."

46. See above, n. 10.

47. Daston and Park, *Wonders and the Order of Nature*, especially 146-72.

48. *Ibid.*, 137.

49. Petrus Hondius, *Mouffe-schans* (Leyden, 1621), prefatory material.

CHAPTER ELEVEN

1. Recent studies, such as Margaret J. Osler, ed., *Rethinking the Scientific Revolution* (Cambridge: Cambridge University Press, 2000); and Stephen Pumfrey, "The Scientific Revolution," in *Companion to Historiography*, ed. Michael Bentley (New York: Routledge, 1997), 293-306, offer new approaches and bibliography.

2. Worm's notes on two theological lectures in Giessen in 1606 are preserved at the Cathedral School in Aarhus, Denmark.

3. H. D. Schepelern, ed., *Breve fra of til Ole Worm*, 3 vols. (Copenhagen: Munksgaard, 1965), 1: no. 3.

4. See Worm's autobiography cited in E. Hovesen, *Lægen Ole Worm* (Aarhus: Aarhus Universitetsforlag, 1987), 45-47, especially 46.

5. Schepelern, *Breve*, 1: no. 8.

6. Worm's autobiography cited in Hovesen, *Worm*, 46.

7. H. D. Schepelern, *Museum Wormianum* (Odense: Wormianum, 1971), 72.

8. Schepelern, *Breve*, 1: no. 16.

9. O. P. Grell, "Caspar Bartholin and the Education of the Pious Physician," in *Medicine and the Reformation*, ed. O. P. Grell and A. Cunningham (London: Routledge, 1993), 78-100, especially 84-85.

10. See Hovesen, *Worm*, 47, 63.

11. For Worm's friendship with de Mayerne, see Schepelern, *Breve*, 1: no. 13 and 2: no. 1040.

12. For Worm's early interest in Rosicrucianism, see the introduction to his *Oratio Inauguratis de Fratrum R. C. Philosophiam Reformandi Conatu*, 10 May

1619 (Copenhagen, 1619), cited in Schepelern, *Museum Wormianum*, 115-16. For the identification of Johannes Hartmann as Worm's source, see H. Hotson, *Johann Heinrich Alsted, 1588-1638: Between Renaissance, Reformation, and Universal Reform* (Oxford: Oxford University Press, 2000), 99.

13. This is especially interesting in light of recent work arguing that Moritz himself was the author of the pamphlets: Heiner Borggreffe, Thomas Fusenig, and Anne Schunicht-Rawe, eds., *Moritz der Gelehrte: Ein Renaissancefürst in Europa* (Eurasburg: Edition Minerva, 1997).

14. Schepelern, *Breve*, 1: no. 20.

15. *Ibid.*, no. 25.

16. *Ibid.*, no. 38.

17. *Ibid.*, no. 41. Oedipus, king of Thebes, was of course famous for having solved the riddle of the Sphinx.

18. *Ibid.*, no. 48. See also J. Shackelford, "Rosicrucianism, Lutheran Orthodoxy, and the Rejection of Paracelsianism in Early Seventeenth-Century Denmark," *Bulletin of the History of Medicine* 70 (1996): 181-204, especially 194. As will appear from what follows, my conclusion is at odds with Shackelford's. Paracelsianism, in its Severinian form, continued to appeal to leading Danish scholars such as Ole Worm, even after the Rosicrucian debacle.

19. Schepelern, *Breve*, 1: no. 78; see also my "The Acceptable Face of Paracelsianism," in *Paracelsus: The Man and His Reputation, His Ideas, and Their Transformation*, ed. O. P. Grell (Leiden: Brill, 1998), 245-67, especially 264.

20. Schepelern, *Breve*, 1: no. 142.

21. *Ibid.*, no. 43. For Jean Beguin and Etienne de Clave, see A. Debus, *The French Paracelsians: The Chemical Challenge to Medical and Scientific Tradition in Early Modern France* (Cambridge: Cambridge University Press, 1991), 80-82, 70-71.

22. Schepelern, *Breve*, 1: nos. 131 and 133.

23. For Davidson, see Debus, *French Paracelsians*, 124-25.

24. Schepelern, *Breve*, 2: nos. 729 and 747.

25. For Guy de la Brosse, see Debus, *French Paracelsians*, 82-84.

26. Schepelern, *Breve*, 2: nos. 845 and 862.

27. *Ibid.*, nos. 1378, 1536, and 1694.

28. *Ibid.*, 3: no. 1734.

29. For palingenesis, see Debus, *French Paracelsians*, 161-62. For its links to apocalypticism and the search for the Philosophers' Stone, see F. Secret, "Palingenesis, Alchemy, and Metempsychosis in Renaissance Medicine," *Ambix* 26, pt. 2 (July 1979): 81-92.

30. Schepelern, *Breve*, 3: no. 1572.

31. *Ibid.*, no. 1575. For Estienne de Clave, see Debus, *French Paracelsians*, 71, 80.

32. Schepelern, *Breve*, 3: no. 1578.

33. *Ibid.*, no. 1738.

34. *Ibid.*, no. 1747.