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JAMES PETIVER'S '*KIND FRIENDS*' AND '*CURIOUS PERSONS*' IN THE ATLANTIC WORLD: COMMERCE, COLONIALISM AND COLLECTING

by

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In 1695, James Petiver concluded the first 'century' of his *Musei Petiveriani* by observing that he had received the specimens described within it from his '*Kind Friends* from divers parts of the World' and '*Curious Persons* … Abroad'. This essay examines Petiver's network of such 'Kind Friends' and 'Curious Persons' in the Atlantic World. The composition of Petiver's network reflected many of the broader patterns of English commerce in the Atlantic at the turn of the eighteenth century. Moreover, England's growing overseas empire and its expanding commercial activity required a parallel expansion in maritime labour. Mariners were correspondingly central to Petiver's work as a naturalist and collector in the region. The importance of slavery and the slave trade to Atlantic economic and social structures meant that the naturalist relied on the institutions, infrastructures and individuals of the slave trade and plantation slavery. A social history of Petiver's Atlantic network reveals how the naturalist utilized the routes of commerce and colonialism to collect specimens, as well as to collect the correspondents who might provide them from West Africa, Spanish America, the Caribbean and mainland North America. It demonstrates the entangled histories of commerce, colonialism, collecting and the production of natural knowledge.

Keywords: James Petiver; Atlantic World; natural history

James Petiver's (*ca* 1663–1718) first natural historical publication, *Musei Petiveriani Centuria Prima* (1695), featured 100 specimens from the naturalist's collection. These objects included a handful from the Atlantic World beyond Europe. Among them was: an African medicament for smallpox sent by an Anglican minister at the Royal African Company's headquarters at Cape Coast Castle; the 'Fair Black Maidenhair' plant gathered by a travelling naturalist in Barbados; and a trio of plants collected along West Africa's Gold Coast by a slaving agent. Petiver explained his acquisition of such specimens by observing that his '*Century*' described 'Animals, Vegetables, Fossils &c' that had 'been either observed by my self, or communicated to me'. The specimens included those that had been gathered by his '*Very Worthy* and *Learned Assistants* at Home', as well as

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others brought by 'my *Kind Friends* from divers parts of the World, or transmitted from such *Curious Persons* as do me the Honour to Correspond with me from several parts Abroad'.[1]

Petiver's '*Kind Friends*' and '*Curious Persons*' were foundational to his work as a naturalist. The London apothecary desired a global collection of natural curiosities, yet only left England once, for a brief trip to Holland. Rather than collect principally during his own travels, Petiver instead recruited others who travelled or lived in 'divers parts of the World' to gather flora and fauna on his behalf. The global network of collectors and correspondents that Petiver oversaw from his apothecary shop at the sign of the White Cross on Aldersgate Street in London enabled him to amass one of the most extensive natural historical collections in early eighteenth-century England. Petiver's network gave him access to specimens previously unknown to European naturalists, such as *aconcroba*, the African medicament for smallpox described in his *Musei Petiveriani Centuria Prima*. The London apothecary's reputation as a naturalist was rooted in the social networks he built and the collections he acquired through them.[2]

Petiver concluded *Centuria Prima* by declaring that he was 'highly obliged' to acknowledge his '*Generous Benefactors*', namely his '*Philosophical Acquaintance* and *Correspondents* Abroad and at Home'.[3] While we know that Petiver's social network was central to his work as a naturalist, we know less about the composition of the network itself and how it fits within the larger history of the Atlantic World. The Atlantic World refers to the regions bordering the Atlantic Ocean, including West Africa, Western Europe, the Caribbean and the Americas. Prevailing wind and current patterns helped to integrate this region in the age of the sail. As an analytical category and field of study, Atlantic history allows us to move beyond modern national boundaries to employ a frame of reference arguably more relevant for the early modern period. Petiver's habit of thanking his '*Philosophical Acquaintance*' in print, combined with his correspondence and other manuscripts, make it possible to largely reconstruct his network of collaborators, correspondents and suppliers in this region.

For the Atlantic World, this work is assisted by Raymond Phineas Stearns' seminal article, 'James Petiver: promoter of natural science', published in 1952. In an appendix to this piece, Stearns identified 80 individuals who participated in Petiver's correspondence network in the Americas.[4] However, Stearns' geographical focus on the New World meant that he did not include Petiver's contacts in West Africa. By expanding the geographical scope to the full Atlantic World beyond Europe and conducting additional research, I have identified 106 individuals in Petiver's Atlantic network. Participation in Petiver's network is defined as sending or receiving correspondence relating to the natural world, contributing natural curiosities to Petiver's collections, or receiving recognition as a collector in Petiver's publications.[5]

In broad strokes, the patterns in Petiver's network that Stearns identified 67 years ago still hold true. Petiver's most active correspondents in the Atlantic World were in the Caribbean,

1 James Petiver, *Musei Petiveriani*, 10 'centuries' (Benjamin Walford, Samuel Smith and Christopher Bateman, London, 1695–1703), century 1 (1695), items 21, 31, 34, 44, 46 (pp. 6–9) and (quote) p. 15.

2 James Delbourgo 'Listing people', *Isis* **103**, 735–742 (2012) at pp. 737, 739; Raymond Phineas Stearns, 'James Petiver: promoter of natural science, *ca* 1663–1718', *Proc. Am. Antiq. Soc.* **62**, 243–358 (1952); Marjorie Swann, *Curiosities and texts: the culture of collecting in early modern England* (University of Pennsylvania Press, Philadelphia, 2001), at pp. 90–96. For *aconcroba* see Petiver, *op. cit.* (note 1), century 1, item 21 (p. 6). The *aconcroba* specimen was one of 40 gathered by Royal African Company minister John Smyth. For more on Smyth's collection and its subsequent uses, see Charlie E. Jarvis (this issue).

3 Petiver, *op. cit.* (note 1), century 1, p. 15.

4 Stearns, *op. cit.* (note 2), pp. 359–362.

5 It does not include the six ships' surgeons or captains who transported specimens or letters on behalf of Petiver without doing any collecting themselves.

especially in Jamaica. Among the mainland English colonies, South Carolina was home to the largest number of Petiver's collaborators. The study of natural history was in general no more than 'secondary to the private or official business which occasioned' the presence of Petiver's collaborators in the Atlantic World.[6]

While the general patterns identified by Stearns have held up well over time, how we contextualize them within the broader sweep of the histories of science and the Atlantic World has changed in the intervening decades. Stearns argued that Petiver's importance lay in his role as a promoter rather than practitioner of natural science. He declared that without Petiver 'to introduce the study of natural science, to underscore its importance, and to suggest something of its methodology to scores of colonials' the pursuit of natural history beyond Europe would have proceeded more slowly.[7] As Richard Coulton argues in this special issue, scholars today would question this distinction between promoter and practitioner, and therefore the idea that Petiver was not actively engaged in the 'doing' of natural history. Recent work also stresses the collective and polycentric nature of natural historical practice, often refusing to place Europe uniquely at the centre of early modern science. Scholars of Stearns' generation tended to view scientific knowledge as disembodied, stable and universal. Such an understanding allowed for a diffusionist model in which scientific knowledge (and practice) could develop in European centres and spread to colonial peripheries unchanged. With the adoption of the constructivist approach in the late 1980s, sociological and historical studies of science instead stress that science is a human activity like any other and is therefore deeply shaped by the contexts in which it develops.[8]

The contexts that most significantly shaped Petiver's network of correspondents and collaborators in the Atlantic World were those of nascent English colonialism and England's increasing foreign trade. The composition of Petiver's network reflected many of the broader patterns of English commerce in the Atlantic at the turn of the eighteenth century. Moreover, England's growing overseas empire and its expanding commercial activity required a parallel expansion in maritime labour. Mariners were also central to Petiver's work as a naturalist and collector in the region. The importance of slavery and the slave trade to Atlantic economic and social structures meant that the naturalist relied on the institutions, infrastructures and individuals of the slave trade and plantation slavery. He exploited the commercial routes created by the slave trade to build his natural historical collections. A social history of Petiver's Atlantic network reveals how the naturalist utilized the routes of commerce and colonialism to collect specimens as well as to collect the correspondents who might provide them from West Africa, Spanish America, the Caribbean and mainland North America. It demonstrates the entangled histories of commerce, colonialism, collecting and the production of natural knowledge.

A 'Philosophical Acquaintance' in the Atlantic World

Petiver's 'Philosophical Acquaintance' in the Atlantic World reflected the wide-ranging commercial and colonial endeavours in which the English were engaged at the turn of the

6 Stearns, *op. cit.* (note 2), pp. 313, 321, (quote) 310.

7 *Ibid.*, p. 357.

8 Richard Coulton (this issue); Jan Golinski, *Making natural knowledge: constructivism and the history of science,* 2nd edn (University of Chicago Press, 2005), at pp. 5–12.

Table 1. Petiver's Atlantic network by occupation.

Occupation	Individuals	% of Known
Clergy	8	10%
Colonial physician, surgeon or apothecary	16	20%
Colonial official	5	6%
Gardener	2	3%
Merchant	6	8%
Planter or farmer	7	9%
Ship's captain	12	15%
Ship's surgeon	25	31%
Travelling naturalist	5	6%
Unknown	26	
Total (some counted twice)	112	

eighteenth century. The naturalist's network included colonials from English settlements along the eastern North American seaboard and in the English West Indies. It also included individuals engaged in myriad licit and illicit commercial activities throughout the Atlantic World. In some cases, Petiver's own commercial activities as an apothecary enabled his recruitment of these potential collaborators. The dramatic expansion of England's Atlantic trade by the late seventeenth century made possible, and benefitted from, the efforts of naturalists such as Petiver to recruit potential collectors and to acquire specimens.

By 1700, England had 17 colonies in the New World with a total population, including enslaved Africans and indentured servants, of over 400 000.[9] Of Petiver's correspondents in the Atlantic World, 60% resided in one of these English American colonies. The 64 individuals Petiver corresponded with in English America included employees of trading companies, colonial planters and farmers, medical men, ships' captains, colonial officials and merchants. They included a few individuals well known to historians of colonial America, such as the planter William Byrd II of Virginia and the Reverend Cotton Mather of Boston. This group also included Hezekiah Usher, who gathered New England butterflies for Petiver. Usher is more familiar to colonial Americanists as one of the Boston elite accused of witchcraft during the Salem witch trials of 1692.[10]

Petiver's colonial correspondents included a wide spectrum of occupations and social statuses. They ranged from ships' surgeons and professional gardeners to a judge in the vice-admiralty court and a colonial governor (table 1). The largest occupational group among Petiver's terrestrial collaborators in the Atlantic World were colonial medical men, including physicians, surgeons and apothecaries. These accounted for 20% of Petiver's Atlantic collaborators for whom occupational information is available.[11] They would have shared a professional interest in the *res naturae*, especially in minerals, animals and plants with medicinal properties. Most would have received some instruction in natural history, particularly botany, in the course of their medical training. As historians of early modern

9 Nuala Zahedieh, *The capital and the colonies: London and the Atlantic economy, 1660–1700* (Cambridge University Press, 2010), at p. 33. The population of England itself at this time was around five million.

10 For Usher, see Mary Beth Norton, *In the devil's snare: the Salem witchcraft crisis of 1692* (Alfred A. Knopf, New York, 2002), at p. 254; Stearns, *op. cit.* (note 2), pp. 321–325.

11 Sixteen individuals in Petiver's Atlantic network were engaged in the medical field as either a physician, surgeon or apothecary. Occupational information is available for 80 of the 106 individuals in the network.

science have observed, physicians, surgeons and apothecaries played a prominent role within circles of early modern science. Moreover, Petiver's professional network and commercial activities as an apothecary would have put him in contact with medical professionals travelling to distant ports. As Katrina Maydom's work on Petiver's apothecary practice demonstrates, the naturalist's customers sometimes became his collectors.[12]

Petiver's network in colonial America is also noteworthy for the number of women active in it. Five of the 64 individuals who corresponded with Petiver from English America were women, all hailing from either South Carolina or the West Indies. In his numerous publications, Petiver acknowledged the contributions and collecting activities of these women. For instance, in his 'An Account of Animals and Shells sent from Carolina', Petiver credited Hannah Williams of South Carolina, '*a Gentlewoman whom I am also highly obliged to*', for sending him '*most of the following Shells*'. Shells comprised 31 of the 37 specimens described in the article. Among them were the 'red Beam'd Jamaica Muscle' and the 'CAROLINA Egg-Cockle' sent to Petiver by Mrs Rachel Chapman from Antigua. As the literary scholar Susan Scott Parrish has pointed out, most of the women who participated in the networks of Atlantic science initially established their correspondence through the intercession of a male relative. They also tended to have unusually high levels of autonomy, wealth and social standing, more so than most of the men in Petiver's network.[13]

England's burgeoning empire in the Atlantic World provided an important spur to its expanding commercial activities at the turn of the eighteenth century. Previously, English foreign trade was overwhelmingly focused on Europe. England's foreign trade increased in absolute terms during the late seventeenth century, and the segment within it that grew the most rapidly during this period was the transoceanic trade to the East Indies and, especially, English America. Colonial territories provided raw materials, produced land-intensive commodities and served as markets for goods manufactured in the metropole. As one measure of this growth, the value of imports from colonial America doubled over the course of Petiver's lifetime. Correspondingly, the number of ships engaged in the Atlantic trades—and the number of mariners employed upon them—also grew significantly during this period. One estimate suggests that the tonnage engaged in the trade with English America almost doubled in the 25-year period immediately before Petiver began collecting. English commerce at the turn of the eighteenth century was in the midst of significant expansion and change.[14]

Petiver's network echoed the diversity of English commercial concerns in the late seventeenth and early eighteenth centuries. American plantation products such as

12 Florike Egmond, 'Apothecaries as experts and brokers in the sixteenth-century network of naturalist Carolus Clusius', *Hist. Universities* **23**, 59–91 (2012); Paula Findlen, *Possessing nature: museums, collecting and scientific culture in early modern Italy* (University of California Press, Berkeley, 1994), at pp. 241–287; Claudia Swan, 'Collecting *Naturalia* in the shadow of early modern Dutch trade', in *Colonial botany: science, commerce and politics in the early modern world* (ed. Londa Schiebinger and Claudia Swan), pp. 226–233 (University of Pennsylvania Press, Philadelphia, 2005); Katrina Maydom (this issue).

13 James Petiver, 'An Account of Animals and Shells Sent from Carolina to Mr James Petiver, F.R.S.', *Phil. Trans. R. Soc. Lond.* **24**, 1952–1960 (1704–1705), at p. 1953(a), 1953(b) (original numbering repeats), 1954; Susan Scott Parrish, 'Women's nature: curiosity, pastoral and the new science in British America', *Early Am. Lit.* **37**, 195–245 (2002), at pp. 206–213.

14 Ralph Davis, *The rise of the English shipping industry in the seventeenth and eighteenth centuries* (Macmillan & Co., London, 1962), at pp. 1–21; Miles Ogborn, *Global lives; Britain and the world, 1550–1800* (Cambridge University Press, 2008), at p. 112–114, 134; Zahedieh, *op. cit.* (note 9), p. 184; Nuala Zahedieh, 'Overseas expansion and trade in the seventeenth century', in *The Oxford History of the British Empire* (ed. Nicholas Canny), pp. 398–422 (Oxford University Press, 1998). Davis estimates that the tonnage of English shipping engaged in trade with English America, including both the mainland and the West Indies, grew from 36 000 tons in 1663 to 70 000 tons in 1686. Davis, *op. cit.* (note 14), p. 17.

Chesapeake tobacco and West Indian sugar brought mariners like captains Patrick Rattray and George Searle to the New World. Rattray and Searle gathered shells, sponges and insects for Petiver's museum when the West Indian trade brought them to Jamaica and Antigua.[15] The growing commerce in plantation-grown commodities also contributed to the expansion of the English slave trade in the late seventeenth century. Petiver's correspondents included employees of two English trading companies engaged in the slave trade: the Royal African Company and the South Sea Company. These individuals collected specimens for Petiver in West Africa, the West Indies and Spanish America. The naturalist's collectors also included two surgeons who survived the disastrous attempt to establish the Scottish settlement of Darien, in modern day Panama. Archibald Stewart and James Wallace presented Petiver with plants 'gathered at the Scots Settlement at Darien'. In Wallace's journal documenting the expedition, he declared that the harbour of Caledonia 'affords legion of monstrous Plants, enough to confound all the Methods of Botany ever hitherto thought upon. However, I found a shift to make some specimens'.[16] Petiver's Atlantic contributors also included a surgeon employed by the Hudson Bay Trading Company, a trading company as long-lasting as the Darien Company was fleeting.

More particularly, Petiver's Atlantic network reflected an often overlooked focus of English commercial activity in the late seventeenth century, the logwood trade. Logwood (*Haematoxylum campechianum*) was an important dyewood that was an essential component in the seventeenth-century English textile industry (figure 1). According to one contemporary, it was 'so essentially necessary in dyeing our manufactures that it would be of the last and worst consequence to be deprived thereof'.[17] It enabled English dyers to produce woollens in shades of black, gray, purple, violet, red, blue and green. It was also thought to have medicinal properties. Logwood is native to the marshy lowlands of the Yucatán Peninsula and the Bay of Honduras, on land claimed but not settled by the Spanish. The English logwood cutters who established a permanent settlement there in the seventeenth century were consequently a source of tension between the English and Spanish Empires. Two ships' surgeons who gathered specimens for Petiver from the Bay of Campeachy were probably employed on vessels trading with English logwood cutters. John Upingham brought Petiver a *Capricornus Americanus* beetle, while Mr Fifield sent the naturalist shells and a collection of plants, including the logwood itself. Petiver declared that he was 'particularly' obliged to Fifield for the 'Sprigs of the *Logwood*, which I never saw in *England* before'.[18]

The illicit nature of the logwood trade serves as a reminder of the prevalence of inter-imperial smuggling and other forms of contraband trade in the Atlantic World. Historian Wim Klooster has argued that 'illicit trade was big business in many parts of the New World, often overshadowing legal trade' in its scope and its value. English ships' surgeons

15 Petiver, *Musei*, century 2 (1698), item 121 (p. 19); James Petiver, 'Letter to George Searle, March 19, 1714', Sloane MS 3340, f. 14, British Library, London.

16 Petiver, *Musei*, century 6 (1699), items 533, 552, 553 (pp. 52–53); James Wallace, 'Nov. 4, 1698, "Journal Kept from Scotland"', in *Papers relating to the ships and voyages of the Company of Scotland trading to Africa and the Indies, 1696–1707* (ed. George Pratt Insh), p. 74 (University Press for the Scottish History Society, Edinburgh, 1924).

17 Quoted in Gilbert M. Joseph, 'British loggers and Spanish governors: the logwood trade and its settlement in the Yucatan Peninsula: part I', *Carib. Stud.* **14**, 7–37 (1974), at p. 8.

18 Petiver, *Musei*, century 10 (1703), p. 94; Petiver, *Musei*, century 8 (1700), item 708 (p. 66). For the British logwood trade, see Joseph, *op. cit.* (note 17), 7–27, and Joseph, 'British loggers and Spanish governors: the logwood trade and its settlement in the Yucatan Peninsula: part II', *Carib. Stud.* **15**, 43–52 (1976); Zahedieh, *op. cit.* (note 9), pp. 228–229.

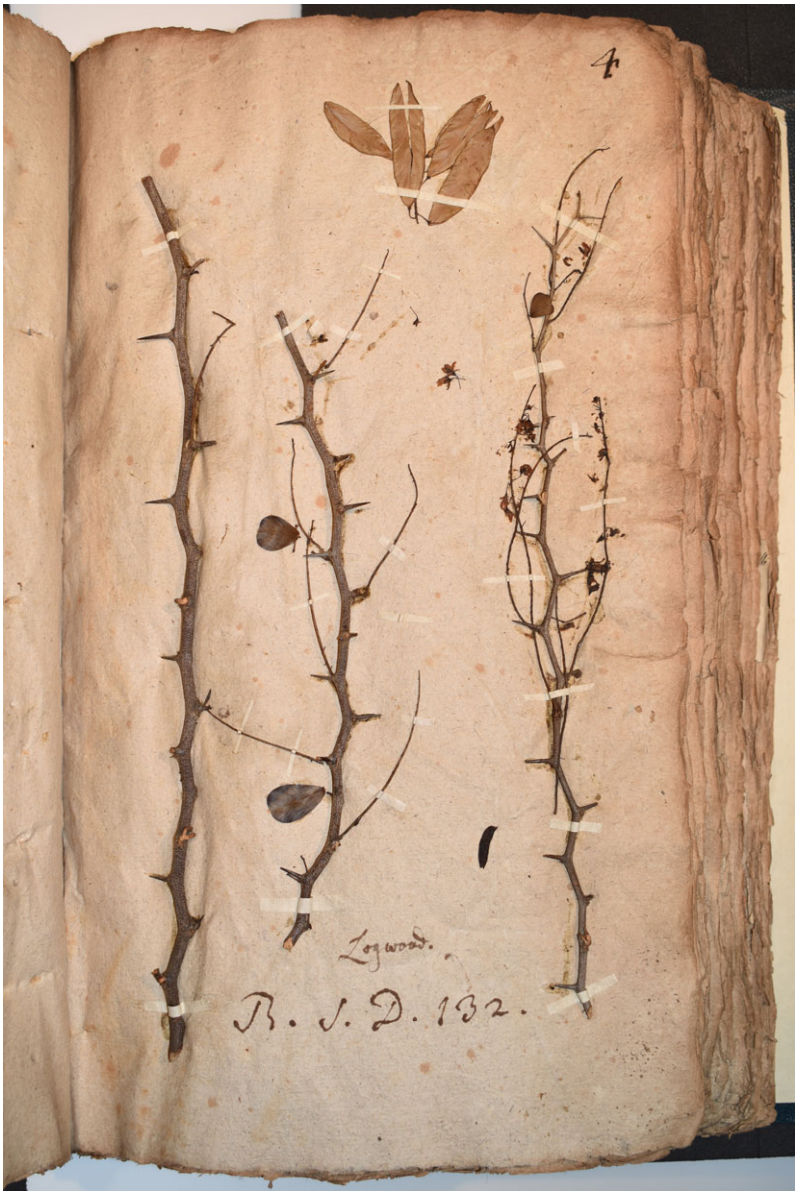

Figure 1. The logwood specimen in the Sloane Herbarium (HS 245, f. 4) was gathered in the Bay of Campeachy by Jamaican surgeon Henry Barham. From the collections of the Natural History Museum, London, here licensed under a Creative Commons Attribution Licence (CC-BY). (Online version in colour.)

who collected on Petiver's behalf in Spanish America before 1713 were necessarily employed in the flourishing illicit English trade to Spanish territories, since during this period there was no sanctioned English trade with Spanish America. Ship's surgeon Richard Planer, for instance, acquired the butterfly labelled 'Figure 7' in the sixth plate of Petiver's

Figure 2. The "Papilio Cartagenius nigrescens, alba linea prope extremitatibus alarum" gathered by slave ship surgeon Richard Planer near Cartagena around 1700 and featured at Figure 7 in Petiver's sixth table of *Gazophylacii Naturae & Artis Decas Prima* (1702). Courtesy of Special Collections, Kenneth Spencer Research Library, University of Kansas Libraries. (Online version in colour.)

Gazophylacii Naturae & Artis Decas Prima from Cartagena in modern Columbia around 1700 (figure 2). The same text also featured a Vera Cruz butterfly gathered by ship's surgeon John Kirckwood around the same time. Collectors such as Planer and Kirckwood

took advantage of the flourishing contraband trade to Spanish America to collect specimens from a region officially off-limits to the English.[19]

When English merchants gained access to legal trade to Spanish America in the second decade of the eighteenth century, Petiver saw an opportunity to acquire new specimens and to use natural history to encourage new foreign trade. As part of the peace treaty ending the War of Spanish Succession, Spain awarded Britain the *asiento de negros*. The *asiento* gave the holder the exclusive right to legally trade in slaves to Spanish America. Even before the peace negotiations were complete, Petiver speculated that the '*South Sea Trade* may easily discover and bring over' rare and valuable Spanish American specimens like the antifebrile *Cinchona*. To facilitate both collecting and commerce, Petiver published a guide to the most desirable Spanish American plants known to have utility as drugs or dyes. Petiver's *Hortus Peruvianus Medicinalis: Or, The South-Sea Herbal* appeared in May 1715, just as the first vessels left England to establish the South Sea Company's trading factories in Spanish America. The text provided brief descriptions and illustrations of 66 Spanish American plants. Petiver explained that these plants were '*much desired and very necessary to be known by all such as now* Traffick *to the* South-Seas'.[20] Petiver's alertness to the possibilities opened by the new trade to Spanish America reflected both his ingenuity as a collector and his savvy as a man of commerce.

Petiver understood that not only could commerce facilitate natural historical collecting but also natural history might encourage new commercial endeavours. As an apothecary who mixed and retailed medicines from his own shop for most of his adult life, Petiver knew well the value of responding to new opportunities. The commercial and colonial endeavours in which the English were engaged in the late seventeenth and early eighteenth centuries created new opportunities for metropolitan naturalists to acquire exotic specimens. Petiver recruited colonials, mariners and other travellers in the Atlantic World to gather flora and fauna on his behalf. The composition of Petiver's collectors and collaborators in the Atlantic World was in many ways a microcosm of the commercial and colonial activities in which the English were engaged during this period.

Maritime collectors

Petiver attempted to recruit as a collector almost anyone he encountered who had reason to travel or live outside England. Within the Atlantic World, mariners proved the most important to the naturalist's network of collaborators. Seafaring men were the largest occupational group who collected on the naturalist's behalf in the Atlantic World. The expansion of English commerce and colonialism in the late seventeenth century meant that there were ever more English mariners to serve as potential collectors and collaborators. These truly transatlantic figures collected flora and fauna in foreign ports, looked after seeds and specimens during their long weeks at sea, transported letters and gifts, and recruited new correspondents to Petiver's network.

19 Wim Klooster, 'Inter-imperial smuggling in the Americas, 1600–1800', in *Soundings in Atlantic history: latent structures and intellectual currents, 1500–1830* (ed. Bernard Bailyn and Patricia L. Denault), 141–180 (Harvard University Press, Cambridge, MA, 2009), at pp. 159–160, (quote) 141; James Petiver, *Gazophylacii Naturae & Artis Decas Prima …* (London, 1702), at table 4, f. 2 and table 6, f. 7.

20 Anon., 'An Account of a Book, entituled, *Gazophylacii Naturae & Artis …*', *Phil. Trans. R. Soc. Lond.* **27**, 342–352 (1711), at p. 350; James Petiver, *Hortus Peruvianus Medicinalis: Or, The South-Sea Herbal* (London, 1715), at p. 1.

The appendix to Raymond Phineas Stearns' 1952 article featured a check-list of Petiver's correspondents in the New World. Stearns subdivided the list into sections organized by colony, with one exception. Stearns labelled the first section 'itinerants', which he explained were 'Ship-Masters, Ship-Surgeons, Servants of Trading Companies, and others without a fixed abode'.[21] Some of these individuals, such as Captain William Halsteed and Captain Patrick Rattray, make brief appearances in the article itself. Yet, despite their separate place in Stearns' list, the national—and largely terrestrial—perspective that dominated the fields of history and history of science in the mid twentieth century meant that seafarers were largely incidental or marginal figures within Stearns' work. More than 60 years later, mariners continue to be largely marginal in much scholarship on early modern science and collecting. In particular, the role of mariners in the production of natural knowledge has often gone unnoticed. Where attention has been given to the intellectual or scientific aspects of maritime history, it has tended to focus on the spectacular adventures of captains such as James Cook or William Bligh, rather than the more quotidian efforts of largely unknown mariners.[22] However, seafaring men were a crucial component within early modern networks of natural history, whose contributions have only begun to be explored.

Almost half of the individuals in Petiver's network for whom occupational information is available were either ships' captains or ships' surgeons (see table 1). The 106 individuals in Petiver's Atlantic network included 12 ships' captains and 25 ships' surgeons, together comprising 46% of Petiver's collaborators in the Atlantic World for whom occupational data are available. The mariners who collected for Petiver were all captains or surgeons; there is no evidence that inferior officers or ordinary sailors collected on the naturalist's behalf. Ships' surgeons were more than twice as likely to participate in Petiver's network compared with captains. Similar to the preponderance of medical men among Petiver's terrestrial collaborators, the frequency with which surgeons appear among Petiver's collectors reflects the strength of Petiver's professional network and the professional interest surgeons took in *naturalia*.

Seagoing men were essentially professional itinerants. They could collect plants, animals, shells and other specimens from the various ports where their ships anchored. For instance, Captain John Graves presented Petiver with a 'Radiated Providence muscle' from Providence Island (off the coast of modern day Nicaragua) and a 'Carolina Freckled Crab'. Petiver observed the crab was 'finely netted and speckled with white and red'. The naturalist received the large Barbadian *Trochus* shell from three different ships' captains: Captain Patrick Rattray gathered it in Jamaica; Captain William Bond acquired it 'from the River Messisippi'; and Graves sent it from the Bahamas. The Martiniquian 'Toddy Fly' caught by ship's surgeon William Steward was, according to Petiver, 'So call'd from the Mischief they do to that Tree, 30 or 40 of them together, sawing thro' the *Bark* by the Help of their *Snout-horn*, will make themselves drunk with the Liquors that flows down, and so are taken'.[23] Petiver encouraged ships' captains among his acquaintance to extend their reach as collectors by employing their subordinates in the hunt for curiosities. In 1714, he suggested that Captain George Searle,

21 Stearns, *op. cit.* (note 2), p. 359.

22 Tim Fulford, Debbie Lee and Peter J. Kitson, *Literature, science and exploration in the Romantic era: bodies of knowledge* (Cambridge University Press, 2004); Margarette Lincoln (ed.), *Science and exploration in the Pacific: European voyages to the southern oceans in the eighteenth century* (Boydell Press, Suffolk, 1998); David Mackay, *In the wake of Cook: exploration, science & empire, 1780–1801* (St Martin's Press, New York, 1985).

23 James Petiver, *Gazophylacii Naturae & Artis, Decas Septima & Octava* (London, 1711), table 71 (muscle), table 75 (crab); Petiver, *Musei*, century 9 (1703), item 845 (p. 88) (*Trochus*); Petiver, *op. cit.* (note 23), table 70 (toddy fly).

bound for Antigua, should 'oblige some of your Ships Crew to picke up whatever of these kinds they shall meet with as also such Corals, Spunges or other Sea Weeds those Shoars abound with, all which will be very acceptable'.[24]

English mariners provided some of the few direct, personal links between naturalists separated by an ocean. Captain William Halsteed, who regularly plied the South Carolina trade, reported on the welfare, health and collecting activities of Petiver's correspondents in the colony. In 1700 Halsteed wrote from Charles Town to inform Petiver that 'this morning I dranck with Mr. [Edmund] Bohun and Mr. [Robert] Ellis they tell me they have sent you home a very fine Collection. I am preparing to do the same'. Seagoing men were the eyes and ears of metropolitan naturalists such as Petiver. Only someone on the ground could determine if a colonial naturalist failed to answer a letter because he had lost interest in natural history, was ill or had died.[25] Ships' captains and surgeons also reported on the collecting activities of colonial naturalists, suggesting who had a collection worth soliciting and who had been less than diligent in their collecting endeavours. Captain Patrick Rattray, for example, alerted Petiver that John Fenwick of Jamaica possessed 'an herbal or a collection of Jamaica plants'. Always eager to increase his collections, in 1698 Petiver contacted Fenwick and declared that he 'should be very proud' if Fenwick would agree to loan the apothecary his collection of specimens.[26]

The local contacts of seafaring men also extended the reach of naturalists' networks of correspondents. Petiver benefitted from the recruiting activities of the ships' captains and surgeons in his network. Sometime before 1706, for example, the slave ship surgeon James Fraser put Petiver in contact with Dr David Crawford of Port Royal, Jamaica. Petiver assured Crawford that he 'know[s] nothing can be more acceptable & pleasing to me then a frequent Correspondence with you'. Fraser's introduction developed into a fruitful correspondence over the course of the next six years.[27] Halsteed and Rattray also recruited correspondents for Petiver among the colonists whom they met in the course of their business. Halsteed recruited Hannah Williams and Joseph Lord of South Carolina as correspondents for Petiver. Similarly, the Jamaicans Henry Passmore, Roger and John Fenwick, and Anthony Bigg and his son all became correspondents of Petiver through the good offices of Rattray, who primarily sailed to Jamaica. Ships' captains typically spent weeks in colonial port cities, transacting their business with local merchants and planters. Captains like Halsteed and Rattray therefore had both the time and the contacts necessary to connect Petiver with new colonial correspondents.

Petiver provided mariners like Halsteed and Rattray with copies of his publications to give to potential new correspondents. In 1698, Rattray delivered a collection of dried plants and seeds from Fenwick. In his effusive letter of thanks, the apothecary noted that 'Mr Rattray tells me he has given you the Catalogue of Jamaica plants which I sent him, I am very glad to find he has bestowed it upon a Gentleman who soe well deserves it'. Petiver hoped that Fenwick, in turn, would become a recruiter on the apothecary's behalf. He promised to send duplicates of publications to give to anyone travelling from Jamaica to Spanish America.[28]

24 Sloane MS 3340, *op. cit.* (note 15).

25 William Halsteed, 'Letter to James Petiver, May 1, 1700', Sloane MS 4063, f. 18, British Library, London.

26 James Petiver, 'Letter to John Fenwick, May 25, 1698', Sloane MS 3333, ff. 131–133, British Library, London.

27 David Crawford, 'Letter to James Petiver, Sept. 25, 1706', Sloane MS 3321, f. 234, British Library, London; James Petiver, 'Letter to David Crawford, Feb 3, 1707', Sloane MS 3335, f. 49, British Library, London.

28 James Petiver, *op. cit.* (note 26).

Ships' captains and ships' surgeons who spent weeks or even months in colonial ports awaiting their cargo returned to England with detailed, local knowledge of the people and natural productions of the ports they visited. They had the mobility and range of contacts necessary to recruit new collectors and keep existing ones apprised of the latest news. In making such connections, mariners helped to make the Atlantic Ocean a bridge rather than a barrier between colonial naturalists and their metropolitan counterparts.

Slaving collectors

While the commerce in which Petiver's maritime collaborators were engaged reflected the full range of England's foreign trade, the trade where the naturalist's ties appear to have been the strongest in the Atlantic World was the transatlantic slave trade. Almost a quarter of Petiver's suppliers and correspondents in the Atlantic World for whom we have occupational data were engaged in the slave trade.[29] These 25 individuals included people employed in all three stages of the transatlantic slave trade: slaving agents in West Africa, mariners involved in the Middle Passage, and factory surgeons and agents involved in the trans-shipment and sale of enslaved Africans after they arrived in the Americas.

The turn of the eighteenth century was a period of significant change for the English slave trade. In 1690, the Royal African Company held the monopoly on England's legal slave trade. By the time of Petiver's death in 1718, the trade was officially open to all English (or rather by this point, all British) merchants. Perhaps more importantly, the scale of English participation in the slave trade increased dramatically over these decades. Over the course of Petiver's lifetime, the number of captive Africans transported on English vessels more than doubled. Correspondingly, the number of English vessels and the number of English mariners engaged in the trade also increased.[30]

The provenance of West African specimens in Petiver's collection alone suggests a connection to the slave trade. The names of major ports within the English slave trade reoccur throughout Petiver's publications and correspondence. These included West African ports, such as Calabar, Whydah, Angola and Cape Coast. These were the places where English traders purchased captive Africans over the course of months, and then crowded them onto vessels for the infamous Atlantic crossing. Slave ship mariners also gathered specimens for Petiver in English American ports where captive Africans who survived the crossing were disembarked, such as those in the colonies of Jamaica, South Carolina and Barbados. Ship's surgeon Charles Coombs, for example, contributed plants from the slaving port Calabar and butterflies from Maryland to Petiver's museum.[31] Similarly, the ship's surgeon John Kirckwood gathered specimens on both sides of the Middle Passage. In West Africa, he acquired a unicorn beetle from Old Calabar, an 'elegant' Angolan butterfly, plants from Cabenda and a dragonfly

29 Of the 106 individuals in Petiver's Atlantic network, 25 (24%) were engaged in the slave trade. If we exclude those for whom occupational data are not available, the ratio is closer to one-third (25 of 80, or 32%). The proportion of individuals engaged in the slave trade is even higher if we include the six slaving mariners who transported specimens and gifts for Petiver but did not themselves collect.

30 K. G. Davies, *The Royal African Company* (Atheneum, New York, 1970), pp. 44–46, 97–152; Slave voyages database, Trans-Atlantic slave trade: estimates, online http://slavevoyages.org/estimates/RmK9gruS (accessed 27 Sept 2019); David Richardson, 'The British Empire and the Atlantic slave trade,' in *The Oxford history of the British Empire: vol. 2, the eighteenth century* (ed. P. J. Marshall), pp. 440–464 (Oxford University Press, 1998), at pp. 444–446.

31 Petiver, *Musei*, century 4 (1699), item 354 (p. 37), p. 44; Petiver, *op. cit.* (note 16), items 503, 582 (pp. 49, 54).

caught '2 leagues distance from the shoar' off the coast of Angola. In the Americas, he collected a variety of butterflies from Vera Cruz, as well as other insects from Cuba.[32]

Kirckwood was likely involved in the illicit English slave trade to Spanish America, since there was no sanctioned English trade to Spanish territories when he collected in 1699 and 1700. However, other Spanish American specimens in Petiver's collection date to the last few years of the naturalist's life, when Britain held the *asiento*. Petiver's collectors included Britons employed by the South Sea Company at trading factories in Spanish American ports such as Cartagena, Vera Cruz, Portobelo (Panama) and Buenos Aires, as well as the slave ships' captains who delivered enslaved Africans to the company's trading posts in these ports. For example, Captain William Mabbot of the *Indian Queen* departed London in 1716 bound for Whydah on the Bight of Benin, where Mabbot and his crew purchased 360 enslaved Africans. After the Atlantic crossing, the *Indian Queen* anchored in Kingston, Jamaica, where 45 surviving Africans, presumably those considered too ill to be sold in Spanish America, were disembarked. Mabbot's vessel then continued on to Portobelo on the Panamanian isthmus, where the remaining 260 enslaved Africans were disembarked to be sold to Spanish American colonists. Mabbot appears to have collected plants for Petiver during the voyage. Upon the captain's return to London, Petiver learned there was 'a box of herbs' waiting for him onboard Mabbot's vessel. Employees of the South Sea Company such as Mabbot were some of the only Britons allowed in Spanish territories.[33]

Petiver's correspondents among South Sea Company employees also included John Burnet, who worked for the company as a factory surgeon at Portobelo and Cartagena. Before his appointment as a factory surgeon, Burnet sailed as a ship's surgeon on the slave ship *Wiltshire*, which was among the first English vessels to transport captive Africans to the South Sea Company's factory in Buenos Aires. During this voyage, Burnet acquired a collection that included at least 17 objects. They comprised seven different plants, an ostrich egg from Buenos Aires, a shell from the West African island of São Tomé, and five different kinds of fish. This collection also included 'An Abortive Negroe near full grown' and three polyps 'taken out of the hands of two Negroes'. Burnet's position as a slave ship surgeon raises the strong possibility that these anatomical specimens were obtained from captive Africans for whose medical care he was responsible.[34]

Burnet was hardly the only slaving mariner to collect for Petiver. Among the specimens listed in the second and third centuries of Petiver's *Musei Petiveriani* are 14 collected in West Africa by individuals employed in the slave trade. A ship's surgeon by the name of Mason collected three plants from Angola, including one that the naturalist described as an Angolan helleborine and another as an Angolan fleabane with serrated leaves. Slave ships' surgeons George Wingfield and Richard Planer collected plants and fungi near Mount Serrado on the Windward Coast. The *Centuria Secunda* also featured the 'Matice-weed' collected at Cape Coast Castle by Edward Bartar.[35]

32 Petiver, *op. cit.* (note 15), items 155, 167 (pp. 21, 22); Petiver, *op. cit.* (note 16), items 515, 530 (pp. 51, 52); Petiver, *op. cit.* (note 19), pp. 7, 9, 11; Hans Sloane, 'Insects catalogue', vol. 1, ff. 65v and 198v, vol. 2, ff. 284r, 287r, 289r, 294r, 298r and 313r, Entomology Library, Natural History Museum, London.

33 John Burnet, 'Letter to James Petiver, n.d.', Sloane MS 4066 f. 294, British Library, London; Slave voyages database, *op. cit.* (note 30), (voyage ID 75656).

34 James Petiver, 'The Following Curiosities were Presented me by my Hearty Friend Mr. John Burnet Surgeon to our English Factory at Porto Bello', Sloane MS 3331 f. 661, British Library, London; John Burnet, 'Letter to unknown addressee, May 14, 1716', Sloane MS 4065, f. 248r, British Library, London; [James Petiver] 'List of plants received from John Burnett', Sloane MS 4072, f. 295r, British Library, London.

35 Petiver, *op. cit.* (note 15), items 141, 155, 167, 169, 175, 176, 185, 189, 215, 217, 220, 236, 241 and 284 (pp. 21–25, 27).

Unlike the other collectors of West African plants featured in Petiver's second and third 'Centuries', Bartar was not a slave ship surgeon. Although Stearns, and other scholars following him, have described Bartar as a surgeon, the Royal African Company's records indicate that he worked as a slaving agent in West Africa.[36] Bartar was of Anglo-African descent, probably born to an English slave-trading father and an African mother. He was educated in England at the company's expense, and probably during this period became acquainted with Petiver and other English naturalists, including apothecary Samuel Doody and professor of botany Leonard Plukenet. Bartar returned to the Gold Coast in 1693 as a slaving agent employed by the Royal African Company. He became one of the most powerful slave traders along the Gold Coast. According to one contemporary, anyone who wished to trade with the English, first had to secure Bartar's favour.[37]

When he was not engaged in slave trading, Bartar collected plants and insects for Petiver along West Africa's Gold Coast. Many of the slaving agent's collections came from the vicinity of Cape Coast Castle, the Royal African Company's headquarters in West Africa where Bartar made his home. For example, Bartar sent Petiver trefoil ground-bean, the scorpion senna and the Malabar bindweed plants from Cape Coast sometime before 1695.[38] The apothecary declared that Bartar's first collection of plants from West Africa included many that were curious and strangers to European botany.[39] Over the next few years, Bartar continued to send Petiver and his other English friends plants, shells, butterflies and other insects. These collections included three or four quires of pressed plants reported to have medicinal virtues, 'an elegant hairy Caterpillar', 'Bartars dark Guinea Butterfly with white spotts', and the 'Pintado Butterfly'.[40] Petiver urged Bartar to extend his reach as a collector of African *naturalia* by recruiting 'such as go up into the Country or to other Parts' of the West African interior 'to make Collections for you'.[41]

Petiver actively sought to benefit from the labour of enslaved collectors. For example, he recognized that Bartar's business as a slaving agent consumed most of his time and therefore suggested that the slaving agent have one of his slaves collect in his stead. When a few years passed with no sign that Bartar had followed his advice, the naturalist grew frustrated. He noted that Bartar had once 'promised to send me a black boy', a failure he could forgive if the slave trader instead employed his enslaved Africans 'now & then [to] go into your woods to fill me a Booke or Two with sprigs of your Trees, shrubs or Plants'.[42] Similarly, Petiver recommended that his other collaborators onboard slave ships or living in plantation societies employ enslaved Africans as collectors. For instance, in 1716 he reminded the slave ship captain George Jesson of his promise to have 'some of your blacks whilst your on the Island … to take & kill whatever butterflies & Moths they meet both great & small'.[43] Similarly, Petiver suggested that colonial

36 Stearns, *op. cit.* (note 2), p. 258; Robin Law (ed.), *The English in West Africa, 1691–1699: the local correspondence of the Royal African Company of England, 1681–1699*, part 3 (Oxford University Press, 2007), at pp. 29–30, 49, 122–124, 413–416, 565–567.

37 Willem Bosman, *A New and Accurate DESCRIPTION of the Coast of Guinea* (London, 1705), at p. 51.

38 Petiver, *op. cit.* (note 1), items 34, 44, 46 (pp. 7, 9).

39 James Petiver, 'Letter to Edward Bartar, Oct. 28, 1694', Sloane MS 3332, f. 84r, British Library, London.

40 *Ibid.*, f. 85r; Petiver, *op. cit.* (note 31), p. 43; Petiver, *op. cit.* (note 16), item 578 (p. 54); Petiver, *Musei*, century 8 (1700), *op. cit.* (note 18), item 727 (p. 68); Petiver, *op. cit.* (note 19), table 3; Petiver, *op. cit.* (note 18), items 836 and 881 (pp. 87, 89); Petiver, *op. cit.* (note 23), table 69; Petiver, 'A Description of divers Animals, Shells, Insects, Plants, &c lately Observed on the Coasts of Guinea with their Figures Communication by J. P. Apoth. F.R.S.', Sloane MS 1968, f. 166r ('Bartars' and 'Pintado' butterflies), British Library, London.

41 Petiver, *op. cit.* (note 39).

42 James Petiver, 'Letter to Edward Bartar, Nov. 18, 1698', Sloane MS 3333, f. 236v, British Library, London.

43 James Petiver, 'Letter to George Jesson, Jul. 20, 1716', Sloane MS 3340, f. 252r, British Library, London.

correspondents such as David Crawford and Madam Carter of Jamaica employ their enslaved Africans in collecting specimens for his collection.[44] He suggested, for example, that Mrs Carter have 'any Servant or Negro on a Sunday or att any time with you can spare him once every week or Fortnight to goe into the neighboring woods for an hour or two & … fill a Book with 2 or 3 Spriggs of a sort of whatever Trees Bushes or Herb he shall see'. Petiver promised to repay 'most faithfully' 'Whatever charge' Mrs Carter incurred by employing her enslaved Africans as collectors.[45] The collecting efforts of both enslaved labourers and individuals engaged in the transatlantic slave trade directly benefitted Petiver and the museum of exotic natural historical specimens upon which his reputation as a naturalist was built.

Conclusion

Petiver's '*Kind Friends*' and '*Curious Persons*' reflected the geographical, social and economic structures of the Atlantic World. Among the most important of these structures were those of the transatlantic slave trade and plantation slavery. Petiver relied upon the routes and personnel of the slave trade to acquire rare specimens from West Africa, Spanish America, the West Indies and English America. More broadly, Petiver recruited colonists, merchants and mariners engaged in myriad commercial and colonial endeavours in the Atlantic World to gather flora and fauna on his behalf. These correspondents and suppliers provided the naturalist with rare and exotic specimens for his collection. As English men and women expanded their commercial and colonial presence in the Atlantic World, so too expanded the opportunities for metropolitan naturalists such as Petiver to obtain specimens that would otherwise have been out of reach.

Through Petiver's remarkable network, an astonishing diversity of flora and fauna reached Europe during the early modern period from the Americas, Asia, India and Africa. The seeds, specimens and other objects gathered through such circuits formed the basis of the gardens, herbariums and museums where European naturalists did their work, and shaped the publications that resulted from their study. The impact of Petiver's Atlantic network of collectors and correspondents can be traced through many of his publications. For instance, one of the naturalist's first contributions to the Royal Society's *Philosophical Transactions* featured specimens gathered near Cape Coast Castle by the Royal African Company minister John Smyth. The 'Catalogue of Some *Guinea-Plants*, with Their *Native Names* and *Virtues*' (1697) identified and described 40 rare African plants, including their vernacular names and medicinal properties. Petiver introduced the catalogue by speculating on 'the many Advantages that would accrue to the Art or Mystery of Physick, if the *Vertues* of all *Simples* were more nicely inquired into, or better known'. The text offered European visitors to the West African coast a guide to local plants that might help them survive a disease environment that had proved so deadly for European bodies. The 'Advantages' promoted by the naturalist's catalogue thus included not only those that would accrue to natural and medical knowledge, but also the promotion of the commercial and colonial circuits that facilitated the collection of the specimens described in the catalogue.[46]

44 James Petiver, 'Letter to David Crawford, Dec. 2, 1711', Sloane MS 3337, f. 158, British Library, London.

45 James Petiver, 'Letter to Madam Carter, Jan. 6, 1696', Sloane MS 3332, f. 173v, British Library, London.

46 James Petiver, 'A Catalogue of some *Guinea-Plants,* with their *Native Names* and *Virtues*; sent to *James Petiver*, Apothecary, and Fellow of the Royal Society; with his *Remarks* on Them. Communicated in a Letter to Dr. *Hans Sloane*. Secret. Reg. Soc.', *Phil. Trans. R. Soc. Lond.* **19**, 677–686 (1697), at p. 677. See also Charlie E. Jarvis (this issue).

In some circles, Petiver's access to exotic specimens such as those described in the 'Catalogue of Some *Guinea-Plants*' signalled the naturalist's expertise, his role as a broker of rare specimens and his membership within the community of naturalists. Yet, other contemporaries reached a very different conclusion about Petiver's collections and the '*Kind Friends*' and '*Curious Persons*' who supplied them. The naturalist's habit of listing the mariners, colonists, surgeons, slaving agents and other individuals who collected on his behalf opened Petiver 'to charges of social illegitimacy and intellectual promiscuity'.[47] For instance, William King's *The Transactioneer* (1700) lampooned Petiver and a handful of other contributors to the *Philosophical Transactions*. King interwove selectively-chosen quotations from the *Philosophical Transactions* into his fictional dialogue. As Richard Coulton observed, these quotations 'when taken out of context sound ephemeral to the concerns of conventional natural philosophy and often inherently ridiculous'.[48] King took note of Petiver's frequent inclusion of a 'Catalogue of his *Kind Friends*' and collectors in his varied publications. 'No body sure will disturb, or Envy them the Honour of being in that Catalogue', snarked King.[49]

The Transactioneer took particular target at Petiver's 'Catalogue of Some *Guinea-Plants*'. 'But hear this *Affrican* Doctor', ridiculed King, 'He has *Aclowa good for Crocoes or Itch. Bumbunny boil'd and drank causeth to Vomit. Assunena boil'd and drank causeth a Stool*'. Although King took such passages verbatim from Petiver's catalogue, he omitted the naturalist's botanical descriptions and references to learned texts, thus reducing the catalogue to a list of unfamiliar African plant names and their medicinal uses. Also absent from King's version of the catalogue were medicaments for diseases like smallpox that represented the greatest epidemiological obstacles to English commercial and colonial expansion. Instead, the seven plants featured in *The Transactioneer* had scatological effects or cured ailments associated with uncleanliness or madness. *The Transactioneer* presented the natural knowledge within the 'Catalogue of Some *Guinea-Plants*' as trivial, impolite and alien. According to King, the '*Affrican* Doctor' who authored it had 'Breeding' no better than 'his Physick'.[50]

Only through the exploitation of England's commercial and colonial networks could a naturalist who rarely left London earn the title—however disparagingly intended—of an '*Affrican* Doctor'. King's insult was the other side of the coin to naturalist John Ray's observation that Petiver was 'the best skilled in oriental & indeed all exotick plants of any man I know … & a man of the greatest correspondence of any in England as to these matters'.[51] Raymond Phineas Stearns concluded his 1952 essay about Petiver by declaring that the naturalist helped to plant 'science … across the seas' and thus contributed to the 'Europeanization of the world'.[52] In their very different ways, both Ray and King suggest that perhaps Stearns had it backwards. Rather than 'Europeanizing' the world, Petiver contributed to the process by which commerce and colonialism transformed Europe and its natural knowledge.

47 Delbourgo, *op. cit.* (note 2), p. 742.

48 Richard Coulton, 'The darling of the *Temple-Coffee-House Club*': science, sociability and satire in early eighteenth-century London', *J. Eighteenth-Cent. Stud.* **35**, 43–64 (2012), at p. 56.

49 William King, *The Transactioneer, With some of his Philosophical Fancies: In Two Dialogues* (London, 1700), p. 38.

50 *Ibid.*, pp. 37–38.

51 John Ray, 'Letter to James Petiver, 1702', Sloane MS 4063, f. 187, British Library, London; quoted in Stearns, *op. cit.* (note 2), p. 356.

52 Stearns, *op. cit.* (note 2), p. 358.