Putting nature in a box: Hans Sloane's 'Vegetable Substances' collection

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Abstract

The ‘Vegetable Substances’ collection was formed by the physician and collector Sir Hans Sloane (1660-1753) between the 1680s and the 1750s. All sorts of people ranging from ship’s captains in the Americas to surgeons in the East Indies sent natural material from around the world to London. Sometimes this involved a variety of means and intermediaries, and in other instances individuals, including aristocratic women in London and Royal Society Fellows across England, gave items directly to Sloane. When Sloane received these samples of botanical items, he had them sealed into small glass and wood boxes. He then numbered these items and described the sample in a three-volume manuscript catalogue. 12,523 items are listed in Sloane’s hand in this catalogue with varying degrees of information relating to their identification, contributor, provenance and use. Today, the Natural History Museum in London holds Sloane’s surviving catalogue and over 8000 of these ‘Vegetable Substances’ objects. Considering the collection as a whole, this thesis explores the role of the ‘Vegetable Substances’ in early eighteenth-century natural knowledge. Using data provided by the catalogue and Sloane’s surviving correspondence at the British Library, this thesis explores what is in the ‘Vegetable Substances’ and identifies how Sloane formed the collection by surveying the connections he developed with people across the world and how he managed these different relationships. Drawing on these exchanges, this thesis also focuses on the uses of the ‘Vegetable Substances’ by examining its contents in particular eighteenth-century contexts including gardening spaces and medicine.

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Abbreviations

BL	British Library, London
BM	British Museum, London
CPG	Chelsea Physic Garden, London
EIC	East India Company
EEIC	English East India Company
FRS	Fellows of the Royal Society
ND	Not dated/undated
NHM	Natural History Museum, London
ODNB	Oxford Dictionary of National Biography
SL MS	Sloane manuscript
VOC	Dutch East India Company
VS	Vegetable Substance(s)

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Chapter One

Hans Sloane and Natural History

Introduction

Standing on the fifth floor of the public gallery of the Darwin Centre in the Natural History Museum, London, peering through a glass pane into the Museum's Historical Collections Room, a wall lined with volumes of dry-pressed plants can be seen, along with a nineteenth-century cabinet. In one of the cabinet's tightly packed drawers is found a small box labelled with the number 856. This item from what is known as the 'Vegetable Substances' collection is listed on page sixty-eight of a three-volume seventeenth- and eighteenth-century manuscript catalogue, and described in the following manner:

'A sort of thea from the same'.

The botanical specimen found inside this small box appears to be a sample of tea that would most likely have been made for sale in China in the late seventeenth century and intended for immediate consumption. The catalogue comment 'from the same' identifies it as part of a set of samples of tea in three seventeenth-century forms: the shrub, the leaf and the commodity, and as coming from 'Mr. Cunningham from China'. This was James Cuninghame (ca.1665-1709), a physician and ship's surgeon who voyaged to Amoy (Xiamen) between 1698 and 1699 and Chusan (Zhoushan) between 1700 and 1703. Cuninghame, an enthusiastic natural historian connected to the English East India Company was one of the first British people to examine Chinese plants in their native habitats. Like others in London, Cuninghame was particularly interested in the characteristics and uses of tea and had keenly collected samples and sent them back to Europe.[1]

[1] C.E. Jarvis and P.H. Oswald, The collecting activities of James Cuninghame FRS on the voyage of *Tuscan* to China (Amoy) between 1697 and 1699, *Notes and records of the Royal Society of London* 69:2 (2015) 135-153.

Historical inquiry into a similar sample of tea in this collection has suggested that an object like this is a 'unique physical remnant of a commerce that has shaped the patterns and practices of global modernity.[2] In London at this time, tea was not only an object of curiosity for those involved with medicine and botany but also of significance to those associated with trade and exotic novelty. This sample of tea, therefore, prompts us to think about Britain's developing relationship with China as both a matter of the commercial transmission of commodities and an intellectual and cultural exchange. This singular 'Vegetable Substance' represents something of Britain's encounter with the rest of the world in the late seventeenth century.

Figure 1: Portrait of Hans Sloane, next to Sloane's Herbarium Collection in the Historical Collections Room, Natural History Museum. © Trustees of the Natural History Museum, London.

This one specimen, however, is part of a much bigger collection named the 'Vegetables and Vegetable Substances' which originally comprised over 12,000 objects but still contains over 8,000 botanical items, all of which were catalogued and described by their owner, and can be found in this cabinet in the Natural History Museum. These items formed part of the botanical collection of Sir Hans Sloane, a collection which also included a herbarium of over three-hundred volumes (figure 1).

This thesis is a study of the 'Vegetable Substances': a collection containing a vast number of chiefly botanical things, the majority of which are sealed into boxes,

[2] M. Ellis, R. Coulton and M. Mauger, *Empire of tea: the Asian leaf that conquered the world*, London, 2015, 1.

or have been placed into apothecary trays, and are listed in a manuscript catalogue. These items came into Sloane's procession from all sorts of places and from all sorts of different people.[3]

Born in April 1660 in Northern Ireland of a Scots family, Sloane moved to London at the age of 19 to train as an apothecary and physician. He met notable natural philosophers of the day. He travelled to France to learn more of medicine and botany and, after returning to London in 1684, worked with the physician Dr Thomas Sydenham (1624-1689) and was elected Fellow of the Royal Society, and of the Royal College of Physicians (of both of which he would later become President). He also travelled to Jamaica in 1687 as physician to the Duke of Albemarle, returning in 1689 after the duke died. Sloane would spend the rest of his life in London, working as a physician, and collecting.

Sloane did not just collect 'Vegetable Substances', or other natural objects for that matter. During his long life he amassed an immense and diverse collection that would go on to facilitate the establishment of the British Museum in 1753. It ranged from over fifty thousand books and manuscripts and thirty-two thousand coins and medals, to scientific instruments, antiquities and ethnographic artefacts, as well as fossils, shells, corals and animal parts.

The central question for this thesis is what role Sloane's 'Vegetable Substances' collection played in the production of knowledge about the natural world between the late seventeenth century and the mid eighteenth century. In order to answer it, this thesis looks to ascertain the contents of this collection, how it was formed and, where possible, how it was used. It will attempt to do this through assessing what is in the 'Vegetable Substances', whence all of these objects came and how they entered Sloane's collection, and how that collection was organised and understood.

In turn, this requires a broader consideration of how natural history collections were involved in the production of knowledge. To this end, this chapter will discuss three broad themes. The first will contemplate the different and changing forms and purposes of natural history collections. The second will focus on the global context of

[3] See J.F.M. Cannon, Botanical collections, in: A. MacGregor (Ed.), *Sir Hans Sloane: collector, scientist, antiquary*, London, 1994, 136-149; C.E. Jarvis, M. Spencer and R. Huxley, Sloane's plant specimens at the Natural History Museum (with a supplementary account of Sloane's fossils by Cyrille Delmer), in: A. Walker, A. MacGregor and M. Hunter (Eds), *From books to bezaors: Sir Hans Sloane and his collections*, London, 2012, 137-157.

these collections, and how connections and relationships – or 'networks' – effected the movement and collection of natural knowledge. The third and final theme of this chapter surrounds the uses and aims of natural history collecting, particularly in relation to medicine and botanical collections.

Natural History, Collections and Collectors

Scholars have sought to show the constantly changing meaning of the term 'Natural History', and that collecting natural history therefore took different forms in different periods and places. In their introduction to *Cultures of Natural History*, Nicholas Jardine and Emma Spary interrogated the changes in natural history between the seventeenth century and the present day and argued that it involved 'conglomerates of people, natural objects, institutions, collections, finances, all linked by a range of practices of different kinds'.[4] For example, during the seventeenth century new social circumstances of the naturalist, a reverence for ancient learning and voyages of exploration to the New World created a resurgence in European studies of the natural world.[5] This resurgence meant that studies of natural history were not confined to particular places or people, and professions such as physicians soon accepted it as a legitimate part of the medical curriculum.[6]

As a result, early modern natural history collections took many different forms. For natural philosophers they were a way to observe nature more closely in order to explore the ancient works of science more carefully. At court, princes and rulers saw natural history as a noble and pleasurable pursuit, often competing to create the most extensive collections. By producing 'cabinets of curiosity' – or *Kunstkammer* and *Wunderkammer* – natural philosophers and their patrons were able to create microcosms of the world.[7] Within this the objects themselves were important. Sir Francis Bacon (1561-1626), Lord Chancellor of England, claimed that real knowledge arose from directly observing and engaging with the natural world and the Royal

[4] N. Jardine and E.C. Spary, Introduction, in: N. Jardine, J.A. Secord and E.C. Spary (Eds), *Cultures of natural history*, Cambridge, 1996, 6.
[5] P. Findlen, Natural history, in: K. Park and L. Daston (Eds), *The Cambridge history of science, volume 3, early modern science*, Cambridge, 2006, 438; P. Findlen, Courting nature, in: N. Jardine et al, *Cultures of natural history*, 57-58.
[6] Findlen, Courting nature, 58.
[7] For discussion about cabinets of curiosities, or wonder-rooms see for example O. Impey and A. MacGregor (Eds), *The origins of museums: the cabinet of curiosities in sixteenth and seventeenth century Europe*, Oxford, 2001, 1-4.

Society of London used various methods to accumulate specimens. Following this Baconian view of science, in the late seventeenth century the Royal Society believed that holding the material upon which published accounts were based allowed for the authentication of the observations of the author.[8] Therefore, collections of natural objects represented the 'ultimate expression of the approach to natural history that had its roots in the first generation of the fellowship of the Royal Society'.[9]

The late seventeenth century is particularly significant because it is a period of transition between distinctly different collecting practices. It lies between the Renaissance collecting of rare and wondrous objects – as a political tool and used as gifts by princes and scholars – and the later involvement of more and more people in the profitable processes of collecting, studying, selling and consuming natural history. Individual engagement with objects shifted from scholarly wonder to popular curiosity; and, by the late eighteenth century, European Enlightenment had erected distinct disciplines across what was previously a less differentiated field. As a result, the period between about 1680 and 1750 represents an uncertain transition between modes of collecting dominated by curiosity on the one hand and encyclopaedic classification on the other.[10]

Collectors of natural history did not simply gather objects though. Their collections of specimens were understood in relation to both texts and images. Collectors often assembled libraries of books that were related to their work and interests and therefore, these different sorts of objects were regularly housed

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[8] H.J. Cook, *Matters of exchange: commerce, medicine, and science in the Dutch Golden Age*, London, 2007, 40; J. Thomas, Compiling 'God's great book [of] universal nature': the Royal Society's collecting strategies, *Journal of the History of Collections* 23:1 (2011) 1-4.

[9] A. MacGregor, *Curiosity and enlightenment: collectors and collections from the sixteenth to the nineteenth century*, London, 2007, 121-122.

[10] See B. Moran, *Patronage and institutions: science, technology, and medicine in the European court, 1500-1700*, Rochester, 1991; P. Findlen, *Possessing nature: museums, collecting and scientific culture in early modern Italy*, London, 1994; L. Daston and K. Park, *Wonders and the order of nature, 1150-1750*, New York, 1998; O. Impey and A. MacGregor, *The origins of museums: the cabinet of curiosities in sixteenth-century Europe*, Oxford, 2001; B. Ogilvie, *The science of describing: natural history in Renaissance Europe*, Chicago, 2006; L. Daston and P. Galison, *Objectivity*, New York, 2007; B. Benedict, *Curiosity: a cultural history of early modern enquiry*, Chicago, 2002; R. Evans and A. Marr (Eds), *Curiosity and wonder from Renaissance to Enlightenment*, Aldershot, 2006; R. Anderson, M. Caygill and A. MacGregor (Eds), *Enlightening the British: knowledge, discovery and the museum in the eighteenth century*, London, 2004; K. Arnold, *Cabinets for the curious: looking back at early English museums*, Aldershot, 2006.

together.[11] For example, the famous collection of Ulisse Aldrovandi (1522-1606) in Bologna, Italy, which was a stopping point for many foreigners as they passed through on their tours of the country, was famous for its specimens of fossils, animals and plants, but his rich library also contained thousands of printed books, as well as extensive manuscript collections. Aldrovandi's notes in his surviving manuscripts show that, while he had a museum room for natural specimens and objects, he also had two rooms dedicated to his library, and they occupied almost twice as much space. [12] Similarly, the English naturalist John Ray (1627-1705) had a library containing over 1,350 books, and the natural philosopher Robert Hooke (1635-1703) also had a large library.[13] Books were also sent in exchange for specimens, and this was still evident in the early eighteenth century. The physician Richard Richardson (1663-1741), who lived in Yorkshire and was a collector of plants, fossils and curiosities, created a large library that spanned his interest in antiquarianism, botany, geology, medicine and natural history.[14] Richardson often exchanged books with his contemporaries, including William Sherard (1659-1728) who had travelled on the continent and been consul at Smyrna, Turkey. Sherard, in turn, bequeathed not only his impressive herbarium to the University of Oxford, but also his library, notes and manuscripts.[15]

So different parts of a collection served different purposes. Yet this does not mean that they were isolated or distinct from one another. This is particularly evident in the formation of herbaria, one of the earliest methods of gathering and preserving natural history objects. In the simplest sense, a herbarium is a collection of dried specimens (originating from the term 'Hortus Siccus' which means dried garden). Plants would be pressed, dried and then mounted on to sheets made of heavy paper and bound into volumes but the format of herbaria has changed broadly over time. While most seventeenth- and early eighteenth-century herbaria were bound in

[11] M. Swann, *Curiosities and texts: the culture of collecting in early modern England*, Pennsylvania, 2001, 3.
[12] C. Duroselle-Melish and D. Lines, The library of Ulisse Aldrovandi (†1605): acquiring and organising books in sixteenth-century Bologna, *The Library* 16:2 (2015) 134-137.
[13] C.E. Raven, *John Ray: naturalist: his life and works*, Cambridge, 1942, 180.
[14] J. Edgington, Natural history books in the library of Dr Richard Richardson, *Archives of Natural History* 43:1 (2016) 58.
[15] See University of Oxford's online management system BRAHMS for information about the Sherard Herbarium, http://herbaria.plants.ox.ac.uk/bol/sherard/WSherard/ last accessed 4 Dec 2016; D. Allen, 'Sherard, William (1659–1728)', *ODNB*, online edition, 2013.

volumes, these could – especially if large – present particular practical difficulties of organisation. This meant that by the late 1720s people were beginning to mount specimens on unbound sheets.[16] Herbaria range in size and scale, from small personal collections (perhaps including only a few hundred specimens) to much larger collections now preserved in all sorts of institutions. The characteristics of these botanical collections were often the result of personal preference – as their collectors favoured particular means of mounting and describing the plants – as well as resource availability. For example, the size of paper on which the specimens were mounted can vary, and so too can the number of specimens pasted on each page, as well as the amount of information supplied with the plants. Some volumes contain sheets with one or two neatly arranged specimens while others include many more specimens mounted in a less regular manner. While this multiplicity was often the case in the seventeenth and eighteenth centuries, Carl Linnaeus's (1707-1778) herbarium was prepared and organised quite differently. Single specimens were mounted on unbound sheets of paper, allowing for new material to be more easily incorporated as well as facilitating reorganisation of the collection.[17] In herbaria, plant specimens are sometimes annotated with additional notes (including field notes) or labels, but classification systems varied greatly through time and were also dependent on the collector. For example, Leonard Plukenet (c.1641–1706) preferred to arrange plants alphabetically according to their Latin names while James Petiver (c.1665–1718) arranged plants by geographical origin.[18] In many instances these collections of plant specimens formed the basis of print publications. The French botanist Joseph Pitton de

[16] Examples of herbaria with this format include those of John Clayton (held in the NHM), George Clifford, Carl Linnaeus, and Pier Antonio Micheli. See J.E. Dandy, *The Sloane Herbarium: an annotated list of the Horti Sicci composing it, with biographical accounts of the principal contributors*, London, 1958; M. Griffiths, Clifford's banana: how natural history was made into a Garden, *The Linnean Special Issue 7* (2007) 19-36.

[17] See C.E. Jarvis, A concise history of the Linnean Society's Linnaean herbarium, with some notes on the dating of the specimens it contains, *The Linnean Special Issue* 7 (2007) 5-18; C.E. Jarvis, *Order out of chaos: Linnaean plant names and their types*, London, 2007.

[18] Petiver's initial arrangement was geographical (as to each volume), but within a geographical area, the plants would be arranged taxonomically generally following Ray's Historia Plantarum. See W.T. Stearn, *An introduction to the "Species Plantarum" and cognate botanical works of Carl Linnaeus. Prefixed to the Ray Society facsimile of Linnaeus's Species Plantarum*, 1, London, 1957; W.T. Stearn, Sources of information about botanic gardens and herbaria, *Biological journal of the Linnaean Society* 3 (1971) 225-233.

Tournefort (1656-1708), for example, used his considerable herbarium to write and publish *Elemens de botanique ou métode pour connaître les plantes* which was produced in three volumes in 1694. It explained his classification system and included 10,146 species.[19] Herbaria, with their form of plants and paper and the natural history that they contained could, therefore be considered as a sort of hybrid of book and plant specimen collections.

Centuries of pressing, drying and storing plants in herbaria have proved to be a successful method of preservation and collecting, and herbarium material remains an important source of measurable data (for example the size and shape of leaves). Studies however, continue to show that plants raise particular problems when it comes to understanding their role in the production of knowledge. When plants are preserved in object form some of the elements that differentiate them are lost, such as their colour. Therefore, collections such as herbaria need to be considered (and were used) alongside pictorial representations as well as libraries of books and manuscripts.

Pictorial representations of natural knowledge have become increasingly well understood within the history of science, and the impact of European expansion on natural knowledge has been considered through the lens of such representations. Traditionally, historians of science did not consider images as central to the production of natural knowledge, while art historians perceived them as only minor works. However, studies by Henry Noltie, Beth Tobin, Daniela Bleichmar and Sachiko Kusukawa are particularly useful for considering this aspect of the relationship between natural knowledge and collecting.

Noltie's examination of Indian botanical drawings held at the Royal Botanic Gardens in Edinburgh has highlighted the importance of artists' portrayals of the natural world for discoveries of new worlds because they could be brought back to Britain for study and safekeeping.[20] However, Beth Tobin's analysis of late eighteenth-century botanical illustration in Britain argues that the way in which plants were depicted was heavily influenced by the botanical concerns of the period. For example, the stems, leaves and flowers of a plant would be shown on a white background but with no representation of the entire plant, or its size, shape and

[19] For Tournefort see E. Hawks, *Pioneers of plant study*, New York, 1928.

[20] It was difficult to collect, make accurate descriptions of and successfully transport dried plant specimens from the East. Scottish botanists were assiduous in their efforts to record unknown flora that they encountered in India and they often relied on Indian artists to do so. H.J. Noltie, *Indian botanical drawings 1793-1868: from the Royal Botanic Gardens Edinburgh*, Edinburgh, 1999, 13, 30, and 45.

relationship with the environment. In this instance, pictorial representation was shaped by Linnaeus's botanical classification system which did not seek to represent the particular, the local or cultural context of plants but instead an 'ideal type' which was helpful in managing knowledge about new species.[21]

Bleichmar, who has also focused on the role of botanical images in the production and exchange of natural knowledge over long distances during the eighteenth century, has examined those created by artists on Spanish scientific voyages. Spanish expeditions to the New World were part of a process in which naturalists produced botanical images and collected them together in the imperial metropole in order to make the Spanish empire in the Americas more visible, knowable, governable and exploitable. Bleichmar argues that the Spanish empire functioned as an image-making machine and churned out illustration after illustration allowing nature to be collected, classified and transported. But it was no easy process to produce these images. Each illustration required the input of all sorts of people, multiple observations and expertise, while the voyages themselves were expensive and dangerous. These scientific images therefore, are reflective of the importance that European empires gave to knowing, and making visible, the natural world.[22]

Other forms of visual representation of knowledge, namely those that appeared in scholarly and scientific works, are now also considered important in ideas about natural knowledge. In her work on the sixteenth century, Kusukawa examines the usefulness of pictures to students of nature. By investigating examples of printed books that were used by physicians for learning and teaching, Kusukawa argues that pictures of nature were part of the formation and establishment of new knowledge about nature. The focus here is on one select group and form of image: the educated physician and printed books about plants and anatomy. Yet this example shows that images became fundamental to physicians' knowledge claims and could be used to persuade readers of the validity of scholarly contributions to knowledge.[23] Once again, this was not an easy or stable practice because there was no set rule or visual regime

[21] B.F. Tobin, *Picturing imperial power: colonial subjects in eighteenth-century British painting*, Durham, 1999, 178-189.
[22] D. Bleichmar, *Visible empire: botanical expeditions and visual culture in the Hispanic enlightenment*, London, 2012, 4-10.
[23] Kusawaka uses the example of educated physicians who explicitly wrote about the use of these images in their knowledge claims to show that without these images, these physicians' knowledge claims would not have made sense. S. Kusukawa, *Picturing the book of nature: image, text, and argument in sixteenth-century human anatomy and medical botany*, London, 2012.

for creating scientific studies of nature.[24] In other research, Kusukawa has explored the uses of images and drawings in the Royal Society's weekly meetings as well as in *Philosophical Transactions.* At Royal Society meetings it was common to direct that drawings should be made of objects that had been examined and discussed, using more than one medium to represent natural knowledge.[25] The value of using natural history drawings alongside other media such as texts, books and objects has also been considered by Kay Dian Kriz. She argues that the most sophisticated readers of natural history texts would have been expected to understand both the scientific and emblematic aspects of the images and have an aesthetic appreciation for the execution of their engravings.[26] In this way, images were 'tools for expressing ideals, pursuing and preserving knowledge and disseminating findings within a collective institution for investigating nature'.[27] The surviving drawings from archives such as those of the Royal Society have given an opportunity for historians of art and science to consider the ways in which such images developed, shaped and presented early modern natural knowledge alongside collections of objects and books.[28]

An influential way of exploring natural history collections that include objects, texts and images has been to focus more closely on their collectors. In particular, this has involved examining the identity of collectors and the ways that was shaped by context and objects. For example, objects that formed part of a gift exchange are seen to reinforce a 'sense of self worth', and establishing early modern collections has been considered as a way of constructing a social self through which objects could become part of a process of 'image management'.[29] These studies highlight the value of

[24] These sorts of misgivings had been put forward by medical and natural authorities such as Galen and Dioscorides, see Kusukawa, *Picturing the book of nature*, 20-24.
[25] S. Kusukawa, Picturing knowledge in the early Royal Society: the examples of Richard Waller and Henry Hunt, *Notes and Records of the Royal Society* 65 (2011) 273.
[26] See K.D. Kriz, Curiosities, commodities, and transplanted bodies in Hans Sloane's Natural History of Jamaica, *The William and Mary Quarterly* 57:1 (2000) 38.
[27] Kusukawa, Picturing knowledge in the early Royal Society, 273.
[28] Kusukawa, Picturing knowledge in the early Royal Society, 274.
[29] A. Shelton, Cabinets of transgression: Renaissance collections and the New World, in: J. Elsner and R. Cardinal (Eds), *The cultures of collecting*, London, 1994, 187. See also Swann, *Curiosities and texts*, 5-6; MacGregor, *Curiosity and enlightenment*, 66 and 69; see Findlen, *Possessing nature*, 294 for a discussion of the courtly world of early modern Italy and the way in which collecting was a method of 'aestheticizing the self' so that a museum provided a way to construct an identity and the means to publicize it because self-knowledge was social knowledge. See A. Cunningham, The culture of gardens, in: N. Jardine et al, *Cultures of collecting*, Cambridge, 1996, 38-56

focusing on the collector for understanding natural history. However, while various sorts of natural history collections have been present at different times, and to some extent these may represent the will of the collector, the centrality of the collector to the collection is something that needs to be examined and established in each case rather than simply assumed.

With these points in mind, we can turn back to Sir Hans Sloane's collection, one of the most significant collections of the early modern period which encompassed a wide range of types of object, including plant specimens, animal remains, anatomical curiosities, coins, fossils, scientific instruments, antiquities, ethnographic artefacts and, of course, a huge library. This thesis is part of a collaborative project to investigate Sloane's collection. 'Reconnecting Sloane', a series of three Collaborative Doctoral Awards funded by the Arts and Humanities Research Council, looks to explore and understand the encyclopaedic nature of Sloane's collection. It is an interdisciplinary partnership involving other research students who are focused on different and particular aspects of Sloane's collection: Alice Marples (KCL) has been focusing on 'texts', investigating Sloane's medical and scientific correspondence at the British Library, and Felicity Roberts (KCL) has been researching Sloane's albums of prints and drawings at the British Museum. This overall project, therefore, recognises the importance of connecting text, image and object in understanding how collections were involved in the making of natural history knowledge, while also examining particular parts of Sloane's collection.

There have been previous attempts to explore Sloane and his collection as a whole, including work by Arthur MacGregor, and more recent studies by historian of science, James Delbourgo.[30] While there are benefits to this style of investigation – offering overviews of the whole collection – the methodology supporting 'Reconnecting Sloane' highlights the importance of focusing in detail upon particular sub-sections of Sloane's wider collection and what this can reveal in terms of their role in making natural knowledge. This thesis, therefore, investigates one part of

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for discussion about the Renaissance garden as an instrument to make claims about power, as well as classical learning.

[30] See G. De Beer, *Sir Hans Sloane and the British Museum*, London, 1953; A. MacGregor (Ed.), *Sir Hans Sloane: collector, scientist, antiquary*, London, 1994; K. Sloan, *Enlightenment: discovering the world in the eighteenth century*, London, 2003; J. Delbourgo, "Exceeding the age in everything": placing Sloane's objects, *Spontaneous generations: a journal for the history and philosophy of* science 3 (2011) 41-54; A. Walker, A. MacGregor and M. Hunter (Eds), *From books to bezoars: Sir Hans Sloane and his collections*, London, 2012.

Sloane's collection – the 'Vegetable Substances' – which is a relatively bounded collection given coherence by its individual boxing of specimens and their corresponding listing in its own (and separate) contemporaneous manuscript catalogue. However, like other natural history collections formed during this period, Sloane's 'Vegetable Substances' is not completely distinct from other parts of his collection which are also separated – at least in terms of Sloane's cataloguing of them – into fossils, shells, insects and 'miscellanies'. In particular, the 'Vegetable Substances' is closely related to his 265-volume herbarium. As a result, the exploration of the 'Vegetable Substances' in this thesis must be attentive to the ways in which its contents relate to other parts of Sloane's collection. It also needs to give careful consideration to the 'Vegetable Substances' as a collection of collections, raising questions about how it was put together, what was included in this specific collection, what was included in others, and how objects or ideas may have moved between these different parts of Sloane's wider collection.

Having established that it is important to understand natural history collections through their contents, cataloguing and organisation, and the ways in which they were related to other collections, it is also crucial to attend to the basic question of from where the objects within them came. This involves remembering that these were in some sense global collections. They included objects that came from many different people, for all sorts of reasons, and from all over the then-known world. It is through these varying contexts and connections that the relationship between collecting, empire and natural history knowledge needs to be considered.

Empire, connections and the movement of natural knowledge

Understandings and practices of natural history were mutable and shaped by their varying contexts. For the eighteenth century, therefore, European expansion and trade are important lenses through which to consider the gathering, movement and establishment of natural history collections. By this period, Britain had experienced a global-scale growth in empire, trade and scientific discovery, and the imperial connections that had been established had a substantial impact on natural knowledge.[31] Various studies have looked to understand the effects of this imperial

[31] L. Stewart, Global pillage: science, commerce, and empire, in: R. Porter (Ed.), *The Cambridge history of science, volume 4, eighteenth-century science,* Cambridge,

and global context on natural knowledge by examining how knowledge of nature was produced and transferred between different sites, and who and what this involved. From the literature discussed above, it is clear that natural history collecting changed over time, but so too did the range of relationships and connections that were required in order to collect this natural history. These stories of collecting appear very differently depending on the perspective that is taken, for example whether the focus is local or global, whether it is on the collector or intermediary, who might be anyone from a slave to a wealthy prince. Therefore, the ideas surveyed in this section will consider the many and varied people involved in the exchange of natural knowledge during this period. By reflecting on how ideas of 'networks' – or, more broadly, the patterns of relationships through which ideas were made and mobilized – have been used to consider connections between different actors, this section will raise the question of when it is appropriate to use the idea of the 'network' for exploring the exchange of natural knowledge.

Bruno Latour argues that the word network 'indicates that resources are concentrated in a few places – the knots and the nodes – which are connected with one another – the links and the mesh', and that 'these connections transform the scattered resources into a net that may seem to extend everywhere'.[32] This vision of what a 'network' might be has certainly been very fruitful for considering the production and circulation of knowledge in the early modern period. Intensive research into manuscript archives has, for example, over the past decade or so, greatly expanded our understanding of 'correspondence networks'. 'Electronic Enlightenment' and 'Cultures of knowledge: networking the Republic of Letters, 1550-1750' at the University of Oxford, the multi-partner Dutch project on the 'Circulation of knowledge and learned practice in the seventeenth-century Dutch Republic', Lisa Smith's (University of Saskatchewan) 'Sir Hans Sloane's correspondence online' and 'Six degrees of Francis Bacon: reassembling the early modern social network' have all aimed to re-assemble and navigate the correspondence of various early modern

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2003, 826: though this had been taking place for centuries. See R. Iliffe, Science and voyages of discovery in R. Porter (Ed.), *The Cambridge history of science, volume 4, eighteenth-century science*, Cambridge, 2003, 620 for discussion of the importance of voyages of discovery for expanding natural and geographical knowledge about the world.

[32] B. Latour, *Science in Action: how to follow scientists and engineers through society*, Cambridge, Massachusetts, 1987, 180. See also B. Latour, *Reassembling the social: an introduction to actor-network-theory*, Oxford, 2005.

individuals, libraries, cabinets of artefacts and grand tour itineraries. As letters can be thought of as individual data points with origins and destinations that allow them to be effectively mapped, these sorts of networks can be analysed and their changing configurations brought to the fore. Such highly collaborative projects are producing valuable digital resources and allowing researchers the opportunity to investigate vast corpora of correspondence in new and exciting ways.

There are, however, various methodological questions to be asked about how these sorts of 'networks' are being constructed, and the difficulties associated with partial archival evidence. Sloane's own surviving collection of incoming letters for example, offers an opportunity to map a Sloane correspondence network, but what about the out-going mail, or the correspondence that is more difficult to locate? We also need to consider whether it is fair to assume that a correspondence network and a network based on non-textual material, can amount to the same thing. Letters were of course sent along with all sorts of other things – both textual and non-textual – including notes, books, drawings, diagrams and a variety of objects. While we could explore how letters and non-letters are connected, perhaps as 'documentary networks', defining the boundaries between these and their role in knowledge exchange, is problematic.[33] Similarly, is receiving a sample the same sort of engagement with another person or place as sending a letter? In other words, what is the relationship between the form of a network and its contents, and, more specifically, how does natural history content affect the shape of a network? So while what is meant by a 'correspondence network' may reveal interesting connections between different people and places, thinking in this way may not be entirely appropriate for an archive of the exchange of knowledge when that archive is made up of natural history specimens.

One useful product of thinking about networks has been that scholars have endeavoured to determine more fully who was involved in the production and exchange of natural knowledge, particularly in response to understanding the effects of empire, trade and exploration on natural history. Collecting exotic materials involved and created many different sorts of collectors, from Renaissance princes to

[33] See for example. C. Van Den Huevel, Mapping knowledge exchange in early modern Europe: intellectual and technological geographies and network representations, *International Journal of Humanities and Arts Computing*, 9:1 (2015) 94-114.

ship's captains, sailors and merchants.[34] However, local and indigenous communities were also involved in the collection and understanding of natural objects within various forms of encounter, and these agents played a crucial role in the movement of natural history from the New World to the Old and from East to West. These actors, their roles and trajectories, cannot always be neatly defined and separated but ongoing studies continue to show the advantages of shifting our focus away from collectors in the metropole to these connections and relationships, or 'networks' as they are often called.[35] The edited volume *The Brokered World* (2009) is one such example, highlighting the very many different people involved in the global movement of natural knowledge in the late eighteenth century. It has examined who these agents were and how they 'changed the contents and paths of knowledge'.[36] The argument presented by Simon Schaffer, Lissa Roberts, Kapil Raj and James Delbourgo is not just about people engaging with and observing the world around them, but about the mobile lives of those who were part of different worlds and cultures, and who were able to move and translate between them. These intermediaries existed because they were required for the success of knowledge transactions, a type of third party who was able to mediate between the other two.[37] What these essays show is just how important it is to bring the activities of people previously considered to have had only minor roles in the exchange and movement of early modern knowledge, in its broadest sense, to the fore. By doing this, historical debates about the effects of global trade and exploration on natural history begin to shed light on the knowledge and expertise

[34] See P. Smith and P. Findlen (Eds), *Merchants and marvels: commerce, science, and art in early modern Europe*, London, 2002; Cook, *Matters of exchange.*

[35] For more specific work on the use of social network theory in the humanities and correspondence in particular see A. Russnock, Correspondence networks and the Royal Society, 1700-1750, *British journal for the history of science*, 32 (1999) 155-69; B. Latour, *Reassembling the social: an introduction into actor-network theory*, Oxford, 2005; A. Sairio, Methodological and practical aspects of historical network analysis: a case study of the Bluestocking letters, in: A. Nurmi, M. Nevala and M. Palander-Colin (Eds), *The language of daily life in England, 1400-1800*, Amsterdam, 2009, 107-136; X. Lamikiz, *Trade and trust in the eighteenth-century Atlantic world: Spanish merchants and their overseas networks*, Woodbridge, 2010; R. Ahnert and S.E. Ahnert, Protestant letter networks in the reign of Mary I: a quantitive approach, *English literature history* 82 (2015) 1-35.

[36] S. Schaffer, L. Roberts, K. Raj and J. Delbourgo (Eds), *The brokered world: go-betweens and global intelligence, 1700-1820*, Sagamore Beach, 2009, x.

[37] S. Subrahmanyam, Between a rock and a hard place: some afterthoughts, in: Schaffer et al, *The brokered* world, 430.

of a variety of 'go-betweens', and create more thorough views of knowledge production, exchange and transfer.

In other studies, it was merchants who were crucial for transporting natural knowledge. Hal Cook, examining the seventeenth-century Netherlands, argues that it was merchants and travellers who ensured the successful exchange of natural objects and information across the world. Therefore, ship's captains and officers, sailors and surgeons, diplomats and merchants in foreign lands collected information and sent specimens back to Europe.[38] Merchants took a deep interest in natural facts because they were essential to business.[39] People involved in other types of trade have also been regarded as important for exchanging natural objects and information such as those who were involved in the transatlantic slave trade.[40] Recently, Kathleen Murphy's work on the apothecary James Petiver (ca.1663-1718) and his museum has shown how the commerce of the slave trade greatly influenced his natural history collecting practices. Some slaving captains and surgeons would collect botanical samples themselves while others would transport items on behalf of others on ships also carrying enslaved Africans.[41] These merchants were ideally placed for collecting and transporting natural material because of the time they spent in different remote regions and the knowledge and expertise they gained there.

Concentrating on these mobile agents and their role as go-betweens decentralises natural knowledge production away from the vantage point of imperial metropoles and their established institutions. Knowledge produced outside the metropolis involved the active participation of indigenous collaborators within processes that have been shown to be highly nuanced and complex.[42] Therefore, historians of science have been required to more closely consider encounter and the role of colonial 'peripheries' for understanding the production and movement of such

[38] Cook, *Matters of exchange*, 2.
[39] Cook, *Matters of exchange*, 49, 410 and 413. Findlen also recognises this diversity in her argument that objects of curiosity provided bargaining power for merchants: see P. Findlen, Inventing nature: commerce, art, and science in the early modern cabinet of curiosities, in: Smith and Findlen, *Merchants & Marvels*, 300.
[40] See M. Govier, The Royal Society, slavery and the island of Jamaica: 1660-1700, *Notes and Records of the Royal Society of London* 53:2 (1999) 203-217; S. Douglas, The making of scientific knowledge in an age of slavery: Henry Smeathman, Sierra Leone and natural history, *Journal of Colonialism and Colonial History* 9:3 (2008).
[41] K.S. Murphy, Collecting slave traders: James Petiver, natural history, and the British slave trade, *The William and Mary Quarterly* 70:4 (2013) 637-670.
[42] K. Raj, *Relocating modern science: circulation and the construction of scientific knowledge in South Asia and Europe*, Delhi, 2006, 103.

knowledge. For example, Anna Winterbottom has used a periphery-based view of knowledge-making and transfer in her work on East India Company (EIC) settlements. Her examination of the botanical and medical networks that developed around Madras, rather than those in London, highlights the crucial and active role played by Europeans living in India (as well as local and indigenous populations) for the successful collection and movement of natural knowledge.[43]Similarly, Susan Scott Parrish focuses on plantations in eighteenth-century British colonies in the Americas in her argument about the amount of Enlightenment science and knowledge that was produced outside European cities.[44]

Examining natural knowledge in British colonies in the Caribbean also raises interesting and important questions about hybrid knowledge because much information about the natural world found amongst 'local' populations had already been transported across the Atlantic by the slave trade.[45] Indeed, certain knowledge – of poisons or abortificents – could be kept secret as a tool for dealing with enslaved lives.[46] However, Europeans had to rely on this hybrid knowledge even while denying the expertise of those from whom they gathered it. For example, Miles Ogborn has explored the complexities of botanical knowledge-making and encounter in Jamaica. His focus on oral encounters between healers and patients in Jamaica has shown that many different sorts of people were engaged in 'botanical talk'. This played a crucial role in plant knowledge-making in the eighteenth century and allowed European doctors and botanists access to the medical knowledge and practices that enslaved Africans used to deal with New World plantation slavery.[47] Broadly, then, studying spaces outside European metropolitan centres has been an important method for examining the multiple sources of natural knowledge produced through global forms of encounter and exchange.[48]

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[43] See A. Winterbottom, *Hybrid knowledge in the early East India Company world*, London, 2016.
[44] See S. Scott Parrish, *American curiosity: cultures of natural history in the colonial British Atlantic world*, Chapel Hill, 2006.
[45] See, for example, J. Carney and R.N. Rosomoff, *In the shadow of slavery: Africa's botanical legacy in the Atlantic world*, London, 2009.
[46] Scott Parrish, *American curiosity*, 23.
[47] M. Ogborn, Talking plants: botany and speech in eighteenth-century Jamaica, *History of Science* 51:172 (2013) 251-282.
[48] See work from historians of science and historical geographers that similarly argues the importance of studying local sites and regional perspectives for understanding scientific knowledge: D.N. Livingstone, *Putting science in its place: geographies of scientific knowledge*, London, 2003; J. Secord, Knowledge in transit, *Isis* 95 (2004)

The complexities of encounter and knowledge transfer are found at the heart of a number of authors' works, including those of Kapil Raj and Pratik Chakrabarti. In *Relocating modern science* (2006), Raj uses interdisciplinary frameworks to discuss what he calls 'circulation', showing that localities were constantly shifting within regional and global spaces.[49] For Raj, it is important to connect both the local and the global to show how local meanings operated across larger distances. By focusing on people who were engaged in long-distance networks, for example individuals within trading companies, it has been possible to answer how global trade and empire affected natural knowledge. Through this lens he argues that we can more fully view the trajectories of different agents and, furthermore, understand the effects of colonial encounters on certain types of knowledge exchange and circulation.[50] Such complexities of encounter and knowledge transfer are also found in Chakrabarti's research on the medical material and knowledge that came out of colonial networks. By focusing on the medical establishments of the colonial East and West Indies, Chakrabarti has asked how medicine engaged with local and indigenous resources, and what was the nature of the knowledge that emerged from them.[51] This has highlighted that, while colonial networks allowed for all sorts of information to be gathered, the motivations of surgeons, missionaries and others in colonial settlements were not always aligned with those of the metropolis, leading to a selectivity in what knowledge was transferred and how it was altered in the process.[52] Others have focused directly on the non-transfer of such information (and objects).[53] For example, Londa Schiebinger has identified in her study of the peacock flower in the seventeenth

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654-672; S. Naylor, Introduction: historical geographies of science – places, contexts, cartographies, *British journal for the history of science* 38 (2005) 1-12; C.W.J. Withers, *Placing the Enlightenment: thinking geographically about the age of reason*, Chicago, 2007; D.A. Finnegan, The spatial turn: geographical approaches in the history of science, *Journal of the history of biology* 41 (2008) 369-88; C.W.J. Withers and R. Mayhew, Geography: space, place and intellectual history in the eighteenth century, *Journal for eighteenth-century studies* 34 (2011) 445-452.

[49] Raj, *Relocating modern science*, 22-23.

[50] Raj, *Relocating modern science*, 93; and much like the arguments discussed in *The Brokered World.*

[51] P. Chakrabarti, *Materials and medicine: trade, conquest and therapeutics in the eighteenth century*, New York, 2010, 3.

[52] Chakrabarti, *Materials and medicine*, 197.

[53] See Timothy Walker's research on the early modern Portuguese empire and the ways through which healing sciences were transferred between cultures in a context of a globalised world: T. Walker, Acquisition and circulation of medical knowledge within the early modern Portuguese colonial empire, in: D. Bleichmar et al (Eds), *Science in the Spanish and Portuguese Empires 1500-1800*, Stanford, 2009, 278.

and eighteenth centuries, the presence of culturally induced ignorance. In other words, knowledge about the peacock flower (which was used by slave women in the West Indies to prevent children being born into bondage) did not successfully transfer to Europe from the New World.[54]

In assessing the form and stability of the relationship between imperial and commercial networks and the collecting and making of natural knowledge, much depends on the time period being considered. Just as Britain's imperial and trading connections solidified over time, so did their natural historical counterparts.[55] For example, David Miller has examined the influence and power of Joseph Banks on natural history collecting in the late eighteenth century to explore what was necessary to render distant places mobile, stable and combinable in order for them to be represented in Europe in different sorts of collections and forms. To do this Miller has used Latour's notion of 'centres of calculation' to show the importance of considering power as active, not static. According to Miller, Banks's success was his ability to deploy information gathered and then his subsequent management and marshalling of these accumulating resources. But of course this was no easy task and even Banks's power had its limits. Knowledge from far away places then, was constantly being accumulated in European spaces as ships returned from voyages: a process referred to as a 'cycle of accumulation'. But in order for this knowledge to be rendered mobile, stable and combinable, the centre of calculation is required to maintain power through disciplining individuals and institutions across society.[56]

While the focus of histories of natural history has been increasingly, and understandably, global and imperial, it is important to remember that despite the expansion of European horizons that empire and trade produced, not all natural history collecting was occurring in the Americas, Asia and Africa. Historian Alix Cooper has, like many others mentioned focused on the subject of local indigenous natural knowledge, but has asked how increasing discoveries of the world affected local knowledge in Europe. While Cooper argues that decisions about creating local knowledge were always made at the local level, this became more complicated in a

[54] L. Schiebinger, Agnotology and exotic abortifacients: the cultural production of ignorance in the eighteenth-century Atlantic world, *Proceedings of the American Philosophical Society* 149:3 (2005), 316; 333; 310.
[55] M. Ogborn, *Global lives: Britain and the world, 1550-1800*, Cambridge, 2008.
[56] D.P. Miller, Joseph Banks, empire and "centers of calculation" in late Hanoverian London, in: D.P. Miller and P.H. Reill (Eds), *Visions of empire: voyages, botany, and representations of nature*, Cambridge, 1996, 21-31.

European context experiencing great influxes of natural objects from far-off continents. Though European authors wrote about these exotic objects, compiled encyclopaedias and established catalogues for their collections, it was these authors who decided what combinations of natural features to offer in their own worlds and which systems of classification and nomenclature should be used. Local knowledge, therefore, was no longer local, as Europeans focused on how they should situate themselves in this ever-expanding and changing world. As people in early modern Europe grappled with the diversity of the period (issues of geography, identity and natural origins) they came to look inwards as well as outwards, paying attention to an 'indigenous' within Europe itself. Therefore, in a context where rare and exotic goods were highly desired, many naturalists would never leave Europe, travel overseas and engage with nature themselves. Cooper argues that this context encouraged more attention to the 'common' natural worlds that surrounded them, including the 'lowly' and 'humble' weeds and pebbles on their doorsteps. In doing so, they were attempting further understanding of indigenous natural knowledge and the influences of the places in which they were found.[57]

Intrinsic to these discussions about the effects of global connections on natural knowledge are questions about how information was trusted and authenticated. In a world where the naturalist, collector and reader had often not been to the places where these exotic objects and observations originated, how did they trust reports of what they were? In this vein, scholars have focused on the different ways in which eighteenth-century natural philosophers, the public, scientific societies and those they corresponded with, acted as agents in affecting the stabilisation of information. Stephen Shapin has written extensively on the ways in which forms of trust dependent upon gentility affected how factual knowledge came to be known as truth in the seventeenth century.[58] The gentility of the Fellows of the Royal Society meant that the truth of scientific knowledge was secured by trusting those with whom one was 'familiar'. The Royal Society's motto, 'Nullius in verba' which roughly translates as 'take nobody's word for it' was an expression of determination by the Society to

[57] A. Cooper, *Inventing the indigenous: local knowledge and natural history in early modern Europe*, Cambridge, 2007, 2-32: labels and terminology varied depending on location however. For example, the English spoke of the 'native', the 'alien', and the 'strange, while Latin speakers would refer to 'indigenous' and the 'exotic'.
[58] S. Shapin, *A social history of truth: civility and science in seventeenth-century England*, London, 1994, 7.

verify all statements by experiment.[59] After all, real knowledge was claimed to arise from going out and engaging with the natural world, from gathering information.[60] However, what those experiments showed was dependent on the testimony of reliable witnesses.

These ideas on trust have, as Miller's work on Banks shows, used Latour's ideas to demonstrate how 'networks' can work to produce and reproduce stabilized truth claims over time and space. For example, the long-distance institutional networks of established and chartered organisations including the Dutch and English East India companies shared structural features that are important in this respect such as their legal status, hierarchical and centralised organisation, and their corporate membership. They also had defined strategies for employing and training their 'agents'. [61] As a result, these long-distance corporations mastered the social, administrative and technological challenges required to extend social and cognitive conventions beyond local settings. However, when we consider that countless people were often involved in the gathering, transfer and accumulation of natural knowledge, and they did so through a very wide range of relationships, these arguments about 'networks' and 'trust' might not always be as straightforward as examples drawn from the East India Companies or Banks's botanical empire might suggest. This is particularly the case where the difficult questions of the credibility and legitimation of indigenous knowledge is concerned, knowledge that was often concealed, ignored or lost.[62]

The idea of a 'network' then, appears to present something of a clear, if complex, structure of points and lines whose connections endure over time and space, and it continues to be used to consider and describe the movement of knowledge. As the literature surveyed above has shown, such 'networks' can be multi-layered, of

[59] History, The Royal Society Website (2012) http://royalsociety.org/about-us/history/ last accessed 1 Apr 2013.
[60] Cook, *Matters of exchange*, 40.
[61] See S.J. Harris, Networks of travel, correspondence, and exchange, in: K. Park and L. Daston (Eds), The *Cambridge history of science, volume 3, early modern science*, Cambridge, 2006, 347-357; D.S. Lux and H. Cook, Closed circles or open networks?: communicating at a distance during the scientific revolution, *History of science* 36 (1998) 179-211.
[62] See K.S. Murphy, Translating the vernacular: indigenous and African knowledge in the eighteenth-century British Atlantic, *Atlantic Studies* 8:1 (2011) 29-48; S. Shapin, *Never pure: historical studies of science as if it was produced by people with bodies, situated in time, space, culture, and society, and struggling for credibility and authority*, Baltimore, 2010.

different scales, viewed from different perspectives and involve both human and non-human entities. Sloane and his surviving collections would, on the surface, appear to offer another effective example of a 'network' of people and things through which natural knowledge was made.[63] But it is worth asking if the term is often applied without adequate attention to whether it properly describes the patterns of connection through which knowledge is produced and circulated. In this case there is the question of whether the clean lines and enduring connections of a 'network' are adequate for describing the intricacies and variety of Sloane's relationships, his connections with people and places, and his collecting practices. Is it possible to reconcile this idea of a 'network' with the more messy connections of people engaging with knowledge that is coming to them in different ways, and in relation to multiple contexts? Moreover, does the stability of patterns of interconnection that the term 'network' implies adequately describe more singular or ephemeral forms of connection? So, rather than assuming that natural knowledge is formed within and through 'networks' based on particular forms of 'trust', what is important is understanding in each instance (including for each collection) what sorts of relationships were formed between those involved in making natural knowledge, and how that shaped the transfer of knowledge and the forming of collections. This may, in certain cases, add up to being a 'network', but in other cases it will not. However, the patterns that are formed will have implications for the uses that those collections were intended to serve.

Botanical collections and their uses

Plants and Power

An important way in which scholars have focused on answering questions about imperial networks and natural knowledge has been through making links between science and economy in the early modern period, with political concerns forming significant considerations too. Scholars writing in volumes such as *Visions of Empire* (edited by David Philip Miller and Peter Hanns Reill in 1996) and *Merchants and Marvels* (edited by Pamela Smith and Paula Findlen in 2001) have made it abundantly

[63] See J. Delbourgo, *Collecting the world: the life and curiosity of Hans Sloane*, London, 2017.

clear that the pursuit of natural history was inextricably linked with that of profit and power. In the early modern period, natural objects were becoming deeply 'enmeshed within political and commercial networks that looked at nature in new ways because it was a tangible sign of a mastery over the natural world'.[64]

As natural knowledge has been increasingly considered as central to the expansion of European nations, there has been a trend to look more specifically at botany in this relationship. The interdisciplinary volume *Colonial Botany* edited by Londa Schiebinger and Claudia Swan, for example, has firmly argued that those seeking botanical knowledge both facilitated and benefited from European colonisation and long-distance trade.[65] In this way, natural history played a crucial role in European struggles for land and resources, and botanists were 'agents of empire' because their plant inventories, classification and transplantations were 'instruments' in the European order.[66] The seventeenth and eighteenth centuries in particular highlight the extent to which Europeans moved plants around the world to great economic effect.

The early modern Spanish Empire has been used to emphasize these connections between plants and political economy. Paula de Vos, for example, has shown that new world natural history collecting allowed the Spanish crown to gather together raw materials to manufacture new products – including those associated with luxury, commerce, subsistence and medicine – in the Spanish Empire and thereby remove dependency on foreign trade and potentially 'lead to improvement in the material and moral well-being of society as a whole'.[67] Similar attention to the Spanish search for natural commodities is seen in Daniela Bleichmar's research. Her work has argued that Spanish expeditions to its colonies between the late eighteenth and early nineteenth centuries often had botany as their sole or central aim.[68] With the firm intention of exploiting profitable natural commodities, the Spanish crown viewed

[64] Smith and Findlen, *Merchants and marvels*, 9-10.
[65] L. Schiebinger and C. Swan (Eds), *Colonial botany: science, commerce, and politics in the early modern world*, Pennsylvania, 2005.
[66] L. Schiebinger, *Plants and empire: Colonial bioprospecting in the Atlantic world*, Cambridge, MA, 2004, 5.
[67] P. De Vos, Natural history and the pursuit of empire in eighteenth-century Spain, *Eighteenth-Century Studies* 40:2 (2007) 230.
[68] D. Bleichmar, Atlantic competitions: botany in the eighteenth-century Spanish empire, in: J. Delbourgo and N. Dew (Eds), *Science and empire in the Atlantic world*, Abingdon, 2008, 225.

botanical expertise as a valuable form of practical knowledge.[69] However, the use of natural specimens to advantage the Spanish Crown politically and economically is also reflective of wider movements taking place within Europe during this time.

With expanding imperial networks and the great influx of unknown material and information about the natural world that came with them it became necessary to manage and order this knowledge, especially as part of the economic, political and social strategies of various European empires. After all, as Ann Blair argues, the 'sheer bulk of accumulation was a valuable step on the path toward mastery and knowledge of nature'.[70] Therefore, the organisation and management of different collections has been used to explore this relationship between nature and power. Scholars have long argued that ordering, classifying and naming natural objects were important for controlling knowledge associated with these specimens, and historians of collecting in particular have focused on the importance of the process of cataloguing itself, especially in the early modern world.[71]

The majority of naturalists and collectors, however, struggled to accurately identify and organise the variety and abundance of this exotic plant material; a problem that historians have shown to recur time and time again. For example, in the early modern period, the successful communication and exchange of natural items required a form of common language and understanding.[72] Naturalists attempted to manage this by relying on encyclopaedias of natural history to identify and label natural objects. In doing so they used works such as those of the Swiss botanist Caspar Bauhin (1560-1624) who wrote *Prodromos Theatri Botanici* (1620) and the

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[69] Bleichmar, Atlantic competitions, 226.

[70] This was Francis Bacon's view. See Anne Blair's work on information management and the notion that every period experienced some form of information overload and the methods that were developed to deal with this were always context dependent: A.M. Blair, *Too much to know: managing scholarly information before the modern age*, Yale, 2010, 15.

[71] See Cook, *Matters of exchange*; S. Schwartz (Ed.), *Implicit understandings: observing, reporting and reflecting on the encounters between Europeans and other peoples in the early modern era*, Cambridge, 1994; I. Yaya, Wonders of America: the curiosity cabinet as a site of representation and knowledge, *Journal of the History of Collections* 20:2 (2008) 173-188; J. Keating and L. Markey, Captured objects: inventories of early modern collections, *Journal of the History of Collections* 23:2 (2011) 209-213.

[72] For the exchange of specific specimens that were asked for (in different contexts), see D. Margocsy, "Refer to folio and number": encyclopedias, the exchange of curiosities, and practices of identification before Linnaeus, *Journal of the History of Ideas* 71:1 (2010) 63-89.

Pinax Theatri Botanici (1623). These publications reflect an ambition to classify the wealth of plant material that was becoming available in Europe. The references to them that are found amongst catalogues, manuscripts and correspondence suggest the considerable effort being made by Europeans (namely naturalists) to connect natural material.[73] As more and more unknown plants were introduced into Europe from the New World and the East, pressure increased to classify, organise and order this natural knowledge. Whether organised geographically, by species or their medicinal efficacy, such ordering could imply new ways of thinking.[74]

However, these arguments about the connections between knowledge of plants and colonial and imperial power were not simply matters of identification and classification – they were more practical than that. In order to be able to effectively use these plants, and thereby realise their political and economic potential, it was crucial to understand how they grew and how they could be used, especially in relation to health. [75] Thus, spaces such as botanical gardens held the potential for solidifying the 'link between natural knowledge and claims to power' through their ability to collect, name and display plants, and the natural knowledge of botanists intersected with that of those engaged in medicine, broadly conceived.[76]

[73] M. Caygill, Sloane's catalogues and the arrangement of his collection, in: A. Walker, A. MacGregor, and M. Hunter (Eds), *From books to bezoars: Sir Hans Sloane and his collections*, London, 2012, 134.

[74] For the growing interest in the use of paper-based technologies by scholars and naturalists in the early modern period to cope with information overload across print, manuscript and correspondence, see for example Blair, *Too much to know*; P. Becker and W. Clark (Eds), *Little tools of knowledge: historical essay on academic and bureaucratic practices*, Ann Arbor, 2001; P. Beal, Notions in garrison: the seventeenth-century commonplace book, in: W.S Hill (Ed.), *New ways of looking at old texts*, Binghampton, 1993, 131-147 and for Linnaeus's use of paper slips see S. Müller-Wille and I. Charmantier, Natural history and information overload: the case of Linnaeus, *Studies in the history and philosophy of biological and biomedical sciences* 43 (2012) 4-15; I. Charmantier and S. Müller-Wille, Carl Linnaeus's botanical paper slips (1767-1773), *Intellectual Historical Review* 24:2 (2014) 215-238.

[75] P. Findlen, Anatomy theatres, botanical gardens, and natural history collections, in K. Park and L. Daston (Eds), *The Cambridge history of science, volume 3, early modern science*, Cambridge, 2006, 282-283.

[76] Stewart, Global pillage: science, commerce, and empire, 828.

Gardens

Gardens played many roles in the culture of early modern Europe. Not only were they the source of vegetables and drugs but they also offered spaces for rest and pleasure, function and delight much like other ways through which natural history was collected, especially in *Wunderkammers*. In this way gardens could be status symbols as well as microcosms where men might organise the government of the world.[77] However, it has also been argued that gardens reflect something more about the relationship between plants and power, in particular, how they acquired political significance. This is seen in the work of Emma Spary who traces the transformation of Paris' ancien regime botanical garden, the Jardin du Roi, through the French Revolution to argue that natural history and botanical gardens were important for French rulers from absolutist monarchs to the centralising policies of revolutionary regimes.[78]

Richard Drayton also makes a strong case for the political importance of botanic gardens in the relationship between science and imperial expansion. Thanks to the work of Sir Joseph Banks (1743-1820), himself a botanist, Kew Gardens became the centre of a web of collectors and intimately linked to other botanical gardens around the British Empire. Drayton understands Kew in terms of the ideology of 'improvement': that humanity should make God's gift of the natural world productive by the study of natural law. In this way, agricultural improvement became considered as a key impulse and justification of imperial expansion. Drayton argues that from the second half of the eighteenth century, botanic gardens became instruments through which kings sought to show the virtue of their authority, and that Banks and his contemporaries considered agriculture – supported by botanical knowledge, as the way to make colonies and nations both self-sufficient and wealthy. Though this was not a new concept, Banks and Kew from the late eighteenth century helped made agricultural improvement 'an almost sacred cause'.[79]

As a result, Kew in particular played an important role in the transfer of various plants from their native habitats to British colonies. Through the study of

[77] R. Drayton, *Nature's government: science, imperial Britain and the 'improvement' of the world*, London, 2000, 26.
[78] E.C. Spary, *Utopia's garden: French natural history from Old Regime to Revolution*, London, 2000.
[79] Drayton, *Nature's government*, 50.

horticulture, plant management, harvesting and crop planting, botanists at Kew advised on and supervised the transfer of plants including rubber, tea, sugar and coffee. Frans Stafleu highlights Kew Garden's role in the development of empire as a result of introducing over 7000 new plants into England from all around the world (particularly under Banks's supervision between 1772-1820), including both useful and ornamental plants.[80] This meant that Kew became the centre of Britain's management of tropical and subtropical agriculture, encouraging trading companies such as the East India Company to invest in the cultivation of various plants such as cotton, indigo, pepper, cinnamon and hemp. For historian of medicine Lucile Brockway, the Royal Botanic Garden at Kew was able to alter the patterns of world trade as a result of the plant transfers and scientific development of new plantation crops for tropical colonies. This was especially the case in the nineteenth century when the garden's emphasis was on economic botany, or the planting of seeds and reintroduction of plants for their commercial value. Brockway uses cinchona bark, from which quinine is extracted to treat malaria, as an example for both its medicinal and economic roles in the nineteenth-century British Empire. The British government had been spending over £50,000 per year to buy quinine to treat soldiers in India so botanists from Kew were sent to South America to collect cinchona seeds and these were planted in southern India. The successful transfer of this plant to Asia not only allowed medicine to be supplied to soldiers in tropical climates but also ensured that Kew contributed to the strength of the British Empire.[81] In such ways, gardens, and the information they enabled and produced about the cultivation of plants, were crucial spaces for natural knowledge.

Medicine

As the foregoing discussion suggests, the medicinal properties of plants have been a constant source of discussion within the history of natural history, especially in relation to networks of knowledge and the political economy of European nations. In addition, scholars have considered the effects of imperial networks on natural objects by exploring the medical market place for increased drug imports and exotic goods.

[80] As quoted in Tobin, *Picturing imperial power*, 176.
[81] L.H. Brockway, *Science and colonial expansion: the role of the British Royal Botanic Garden*, London, 2002, 104-133; L.H. Brockway, Science and colonial expansion: the role of the British Royal Botanic Gardens, *American Ethnologist* 6:3 (1979) 449-465.

Early modern physicians of the sixteenth and seventeenth centuries played a key part in the study of nature.[82] The ancients believed that natural history emphasised the importance of understanding the natural world through its medical efficacy and that knowledge of nature was needed in the improvement of health.[83] Therefore, the professional concerns and intellectual outlook of physicians meant that they took a deep interest in helping to develop natural knowledge.[84] Believing that the ancients had possessed excellent remedies, many early modern physicians wished to return to the original sources for their medicines. Through imitating Hippocrates, physicians developed a deep appreciation for natural history and used it as a base on which to build knowledge of health and illness.[85]

The eighteenth century, however, has been argued to have experienced a change in theories of medicine in line with developments of the 'new science' that saw an emphasis on the importance of a healthy lifestyle and personal hygiene.[86] While the view that society could be medicalised was not a new phenomenon, it was during the eighteenth century that a pervading interest in health was put on a more formal footing.[87] Both Andrew Wear and Roy Porter have argued that sickness during this period was understood as something that was personal and internal, requiring careful attention to 'regimen' or lifestyle to prevent disease. This focus on diet and regimen for health meant that all sorts of foodstuffs became in a sense 'medical' and related to health. Therapeutic procedures such as bleeding and purging remained prominent in both medical and domestic practice, the latter often using a range of botanical means.[88]

England is also understood to have become increasingly medicalised during the seventeenth and eighteenth centuries in the sense that more of the population were

[82] H. Cook, Medicine, in: K. Park and L. Daston (Eds), *The Cambridge history of science, volume 3, early modern science,* Cambridge, 2006, 407.
[83] P. Findlen, Natural history, in: K. Park and L. Daston (Eds), *The Cambridge history of science, volume 3, early modern science*, Cambridge, 2006, 438.
[84] To treat disease (*ars)*, physicians required knowledge about the uses of animals, plants and minerals, see H. Cook, Physicians and natural history, in: N. Jardine et al, *Cultures of Natural History*, 91.
[85] Cook, Physicians and natural history, 93, 101-102.
[86] A. Wear (Ed.), *Medicine in society: historical essays*, Cambridge, 1992.
[87] Wear, *Medicine in society*, 4.
[88] A. Wear, Health and the environment in early modern England, in: A. Wear (Ed.), *Medicine in society: historical essays*, Cambridge, 1992, 121.

able to readily access professional medicine.[89] In recent years Ian Mortimer has concluded that the seventeenth century experienced a medical revolution with the emergence of the general practitioner alongside a massive increase in the consumption of medicines and medical advice by all social groups in almost all areas of England.[90] A similar trend has been identified within the European 'medical marketplace'. As European trade and exploration increased alongside this medicalisation, historians have made important connections between the introduction of exotic goods into Britain and their use as medicines. This has shown that the seventeenth and eighteenth centuries witnessed a rapid rise in Europe of the use and consumption of goods such as tobacco, coffee, cocoa, tea and distilled spirits introduced from newly discovered lands.[91] Looking directly at medicines, Patrick Wallis contends that between the late sixteenth and late eighteenth centuries a substantial increase in English drug imports took place. Analysing a range of different commodities being imported into Britain, Wallis argues that by the period 1699 to 1701, 174 different types of medical drugs were being imported, and that the leading medical drugs had changed considerably from a century earlier. Asian commodities were reaching England directly from the ships of the East India Company and there was large-scale commerce in rhubarb, opium and frankincense (olibanum).[92] The Americas had also become an important source of drugs including guaiacum and Jesuit's bark.[93] Thus, natural knowledge was tightly bound up with the medical uses of plants, either known or to be discovered.

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[89] R. Porter, The patient in England, c.1660-1800, in: A. Wear (Ed.), *Medicine in society: historical essays*, Cambridge, 1992, 100.

[90] I. Mortimer, *The dying and the doctors: the medical revolution in seventeenth-century England*, London, 2009.

[91] R. Matthee, Exotic substances: the introduction and global spread of tobacco, coffee, cocoa, tea and distilled liquor, sixteenth to eighteenth centuries, in: R. Porter and M. Teich (Eds), *Drugs and narcotics in history*, Cambridge, 1995, 29.

[92] P. Wallis, Exotic drugs and English medicine: England's drug trade, c. 1550-c.1800, *Social History of Medicine* 25:1 (2011) 26, 30, 32.

[93] There has been a trend to focus on particular exotic goods often linking contexts of medicine, medical marketplaces, trade and consumption, see B. Cowan, *The social life of coffee: the emergence of the British coffeehouse*, New Haven, 2005; M. Ellis, *The coffeehouse: a cultural history*, London, 2004; A. Goldgar, *Tulipmania: money, honour, and knowledge in the Dutch golden age*, Chicago, 2007. M. Romaniello and T. Starks (Eds), *Tobacco in Russian history and culture: the seventeenth century to* present, Oxford, 2011. See J. Brewer and R. Porter (Eds), *Consumption and the world of goods*, London, 1997; D. Roche, *A history of everyday things: the birth of consumption in France, 1600-1800*, Cambridge, 2000; M. Berg and E. Eger, *Luxury in the eighteenth century: debates, desires and delectable goods*, Basingstoke, 2007;

The 'Vegetable Substances' and the making of natural knowledge

As this chapter has shown, Hans Sloane's 'Vegetable Substances' is a vast collection of natural history samples that, up until now, has not been considered as a whole, or from historical and geographical perspectives. This thesis therefore, will explore what is in this collection, where (and from whom) this content came, and what discussions there were relating to how this collection was used or conceived as useful.

Part one will consider what is in this collection. Using a thorough investigation of Sloane's manuscript catalogue and its numbered descriptions of material, it will explore Sloane's methods of cataloguing these botanical samples analysing how they have been described, labelled, annotated and organised. This discussion will be based upon the digital transcription of Sloane's manuscript catalogue that was produced as part of the process of studying this collection.

Part two will then explore the geography of the 'Vegetable Substances'. Across three chapters (chapters three, four and five), it will consider how material came from the West, the East as well as the British Isles and across Europe. The aim of these chapters is to identify what this collection reveals about the sorts of connections and relationships that Sloane developed, established and relied upon in order to gather, collect, move and exchange natural knowledge from around the world. These chapters have been split geographically, but there are common issues found within and across them such as the role of British and European knowledge in exchanging natural knowledge across the world and the concept of 'networks' so often used in discussions about the exchange of natural knowledge.

Part three of this thesis will explore the contents of this collection from the perspective of utility. These two chapters will broadly consider the concept of 'use' and, particularly, the use of these objects outside of the collection itself. The first chapter (chapter six) will therefore focus on the relationship between the 'Vegetable Substances' and the cultivation of plants. It will consider how Sloane was in dialogue with different sorts of garden spaces and gardeners and what Sloane's botanical collection reflects about his involvement in collecting and 'using' these plants in different ways. Chapter seven will continue this discussion of 'use' by examining the medicinal uses of material found within and across this collection. During a time of

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S. Hazareesingh and J. Curry-Machado, Editorial - commodities, empires, and global history, *Journal of global history* 4:1 (2009) 1-5.

increasing exotic goods and drugs being imported into Europe, and physicians interested in the medical efficacy of natural material, this chapter is interested in how this collection might be considered as formed primarily of *materia medica*.

By examining what is in the 'Vegetable Substances' collection, from where and from whom this material came, and considerations about its functionality, the following chapters will consider the role of this collection in the production of natural knowledge.

Part One
The Contents of a Natural History Collection

Chapter Two

The 'Vegetable Substances' Collection: Contents and Methods

The 'Vegetable Substances' collection comprises two main elements: the specimen boxes and a manuscript catalogue which numerically lists those boxes and provides some description of their contents. This chapter looks to address the basic question of what is in the 'Vegetable Substances' collection. It will do this by first considering the boxes themselves, describing their form and materiality and interpreting what this suggests about the organisation of the collection. Attention will then turn to a more detailed analysis of Sloane's manuscript catalogue and its relationship to the boxed specimens. The chapter will explain the form of the catalogue and its entries and the methods and assumptions that were used to digitise the catalogue to create an electronic tool that could be used in a number of ways to understand the 'Vegetable Substances' collection as a whole, and from different perspectives. The chapter will detail Sloane's system of cataloguing and the multiple forms of organisation that can be found within this collection by undertaking a close reading of the catalogue. Then, by using data compiled from the catalogue, the chapter will outline the contents of this collection and give an overview of from whom and from where it came which provides the basis for the much more detailed investigation of the historical geography of the 'Vegetable Substances' collection presented in Part Two.

The Boxes

The most striking characteristic of the 'Vegetable Substances' collection is the materiality of the boxes in which most of the specimens are contained. As the examples in figure 2 clearly show, botanical material has been sealed into various small-size boxes that have been constructed using four sides of wood and tops and bottoms made of thin sheets of glass. Decorative paper has then been used to cover the wooden sides and is gummed down to seal the tops and bottoms at their edges. These

marbled papers give the collection a distinctive appearance. The practice of decorating paper with colourful and intricate patterns that imitated marble and textiles probably originated in China and, by the fifteenth century, such techniques would have reached Central and East Asia, and become widespread in Europe by the seventeenth and eighteenth centuries. Marbled paper was made by swirling pigments, which were often viscous oil-based paints, in a large and shallow pan of water. Paper would then be gently but swiftly placed on the surface of this water absorbing the pigments without disturbing the patterns. Dutch gilt paper is also used in the 'Vegetable Substances' collection. This brightly gilded paper, which became popular across Europe during this time thanks to its low cost and decorative nature, was produced in Germany from 1700.[1]

Figure 2: Surviving examples of 'Vegetable Substances' boxes, now in the Natural History Museum. Photography by Charlie Jarvis, © Trustees of the Natural History Museum, London.

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While being decorative, these boxes, and their marbled or gilt paper coverings, appear to provide some basic functions for the collection: namely, preservation and

[1] R.J. Wolfe, *Marbled paper: its history, techniques, and patterns*, Philadelphia, 1990; R.B. Loring, *Decorated book papers: being an account of their designs and fashions*, Cambridge, 1973; Anon, Early European papermaking methods 1400-1800, *The paper conservator* 13:1 (1989) 7-27.

the making of specimens themselves. The boxes have ensured that these botanical specimens have been protected from damage for centuries, particularly from damp and from attack by insects, but also from dispersion. European pharmacies had long been using different sorts of wooden containers for storing dried botanical drugs and these were often varnished and made of boxwood or linden wood. They would also have closely-fitted lids to prevent the absorption of atmospheric moisture.[2] In Sloane's case the oiled and gilded marbled and gilt papers provided additional protection for the specimens. Similarly, the use of glass in Sloane's collection would have proved an ideal material for containing this botanical matter because of its imperviousness to gases and odours, as well as chemical attack. The clear glass used to create the 'Vegetable Substances' boxes suggests that more expensive flint glass – a colourless and translucent glass that was developed in the late seventeenth by George Ravenscroft – was being used.[3]

As figure 2 shows, in addition to preservation the boxes also allow groups of seemingly identical botanical items – seeds or beans for example, like the coffee beans shown here – to be gathered together as one specimen. Significantly, this is a 3-D collection. Most of what is contained in it is not amenable to be being stored flat, such as in a herbarium. Since the boxes were not intended to be opened, there was evidently a defined point at which plant material received by Sloane was made into a 'Vegetable Substance' specimen; the moment at which it was sealed into this box form, and its state seemingly fixed, no longer providing a user with the ability to touch, smell or taste the natural material but, instead, only the ability to look at it (although see below, and Part Three).

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[2] By the mid seventeenth century, apothecary shops in particular incorporated a variety of containers for their material, but these were becoming increasingly standardized in form – especially the ceramic and glass jars arranged on shelves. Shapes could be dependent on their specific use: 'vials' with cork stoppers (like those found in the 'Vegetable Substances' collection) were used to dispense medicines while 'rounds' or 'squares' stored remedies. See P. Wallis, Consumption, retailing, and medicine in early-modern London, *Economic History review* 61:1 (2008) 26-53. Also see A. te Heesen, Boxes in nature, *Studies in the History and Philosophy of Science* 31:3 (2000) 381-403 for the uses of boxes and cases in early eighteenth-century natural history collecting in Siberia.

[3] Macfarlane and Martin argue that there is a strong connection between the development of glass and science in the seventeenth century, particularly in experimental science and the use of glass for microscopes and other scientific instruments. This period also experienced changes in furnace technology and the availability of purer raw materials. See A. Macfarlane and G. Martin, *Glass: a world history*, Chicago, 2002,12.

The point of the collection, however, is not the individual box but their multiplicity. As figure 3 shows, there are thousands and thousands of similar boxes, alike in their form and scale, and providing the overall 'Vegetable Substances' collection with a sense of uniformity even if the precise sizes and colours of the boxes may differ. This uniformity of material form allows, perhaps, closer attention to be paid to the differences between what is contained within the boxes. However, it is important to stress that there is more variety in the forms that the specimens take than perhaps first appears. For example, in the drawers of the Natural History Museum's Historical Collections room we also find small glass jars and ceramic pots that appear to have contained gums and oils, as well as skeletonised leaves that have been mounted on to black paper and a number of apothecary trays (see figures 3 and 4). These apothecary trays have been adorned with decorative paper similar to that found on the 'Vegetable Substances' specimen boxes but they do not have lids, which means that their contents can be removed and examined in a number of ways, unlike the rest of the 'Vegetable Substances' collection.[4]

Figure 3: A pharmacopoeia drawer and a drawer containing boxes of 'Vegetable Substances', now in the Natural History Museum. © Trustees of the Natural History Museum, London.

[4] While sections of these apothecary trays do have some labels and numbers within them, it has not been possible to identify all of this material correctly and to correlate them with entry numbers and descriptions listed in Sloane's 'Vegetable Substances' catalogue.

The material form of the 'Vegetable Substances' collection would have shaped, through its modes of order and its aesthetics, the ways in which contemporary viewers and users of it, understood the natural world. There is very little however, in accounts of visits to the collection, to make a sustained analysis of that possible.[5] What can be said though, is that the experience of the collection is quite different from engaging with its contents through a digitalised database, as a modern historian can do. For example, it is important to note that the boxes themselves bear little information about what they contain. The vast majority carry only a small label with a number which keys them to Sloane's catalogue for the collection. Where they are adorned with labels (see figure 2), those labels predominantly repeat what appears in the catalogue. It is to that record of the collection that we now turn.

[5] Per Kalm, a pupil of Linnaeus visited Sloane's collection in 1748 and made a particular note about the method of storing insects in glass boxes, similar to those of the 'Vegetable Substances'. See A. MacGregor, The life, character and career of Sir Hans Sloane, in: A. MacGregor (Ed.), *Sir Hans Sloane: collector, scientist, antiquary*, London, 1994, 11-44: 29.

Figure 4: Examples of specimens found in the 'Vegetable Substances' collection. Among them are skelontised leaves, seeds, beans, the ox vertebra with an oak shoot growing through it, a ceramic pot that once contained an oil or balm, as well as a pharmacopeia tray, now held in the Natural History Musuem. Photography by Charlie Jarvis, © Trustees of the Natural History Museum, London.

The Catalogue

The material nature of this collection highlights very clearly that Sloane was able to separate, box, seal, number and record natural knowledge in a way that allowed all sorts of material to be effectively gathered in a small space and for a natural history collection to be created. However, while the boxes raise interesting questions about

the material nature of this natural knowledge, information about what is in this collection, where it came from and for what it was used, can only be systematically discovered through a detailed analysis of the manuscript catalogue that corresponds with these boxes. On opening Sloane's handwritten catalogue to his 'Vegetable Substances' collection, we are met with the following entry:

Sir Hans Sloane.
Vegetables and Vegetable Substances:
being the original register of the
plant collections of Sir Hans Sloane
excluding his Herbarium,
arranged in the order of their
acquisition - [W. Carruthers] [6]

William Carruthers (1830-1922), the author of this comment, began working at the British Museum (hereafter referred to as BM), in the Department of Botany, in 1859. He was appointed Keeper of Botany in February 1871 and also served as President of the Linnean Society between 1886 and 1890.[7] The note of Carruthers's name is an important reminder of the history of museums of which the 'Vegetable Substances' form a part.

As was shown in the previous chapter, Sloane amassed a huge collection during his lifetime and, in his will, he bequeathed it to King George II for the nation in return for payment of £20,000 to his heirs. Parliament accepted Sloane's gift and on June 7, 1753 an Act of Parliament establishing the BM received royal assent. The museum opened to the public in 1759. By 1860, Sir Richard Owen (1804-1892), who had been in charge of the natural history collections, believed that a new building was required to accommodate them. The site of the 1862 International Exhibition building in South Kensington was chosen as the ideal location and the Waterhouse Building, which had been designed by architect Alfred Waterhouse (1830-1905), opened to the public on April 18, 1881. Natural history items in the BM, including surviving objects from Sloane's collections, were moved to South Kensington. At that point, Sloane's

[6] The title of this catalogue which appears as 'Vegetables and Vegetable Substances' on the first page in Sloane's hand suggests that this is the name that Sloane specifically assigned to this catalogue and part of his collection. It is a seventeenth-century name rather than a nineteenth-century one.
[7] J. Britten, In memory of William Carruthers, *Journal of Botany* 60 (1922) 249-256.

botanical material consisted of 265 bound volumes of pressed plants and his collection of 'Vegetable Substances'.[8]

Since the 1880s, Sloane's collections have been divided and separated in numerous ways across the Natural History Museum (hereafter referred to as NHM). On their arrival at the Museum, objects would have been divided between zoology and botany, and then later the insect specimens moved to the entomology department once it had been established.[9] The early establishment of botany in the Museum may well account for the particular form of preservation we find in this part of Sloane's collection (books and boxes), and also their successful long-term survival. Today, the Sloane Herbarium and 'Vegetable Substances' are found in the NHM's Historical Collections Room, housed on specially designed shelves and in a purpose-built cabinet of drawers (see figure 1). Controlled access is accorded to researchers, so in order for this collection to be examined in the detail that was necessary, this research has relied upon an Arts and Humanities Research Council Collaborative Doctoral Award that has ensured a close collaboration with the NHM and its curators. This has not only facilitated access to the 'Vegetable Substances' collection and catalogue, but also unparalleled access to museum researchers and curators. Their expert knowledge has been crucial to investigating this collection and has shaped this thesis in a variety of ways.

As noted above, each 'Vegetable Substance' box is labelled with a number that corresponds to a consecutively numbered list, chiefly in Sloane's hand, in the three-volume manuscript catalogue. From the catalogue we can determine that this collection originally consisted of 12,523 items, because this is the number of entries listed and described by Sloane. The first entry, labelled as number one is found on the first page of the catalogue, under the overall title 'Vegetable Substances', and this numbering system suggests that Sloane described these items in a roughly chronological order, boxing and cataloguing them as he received them.

[8] See De Beer, *Sir Hans Sloane and the British Museum*; MacGregor (Ed.), *Sir Hans Sloane*; W.T. Stearn, *The Natural History Museum at South Kensington: a history of the Museum, 1753-1980*, London, 1981, reprinted 1998; J.C. Thrackray, *Nature's treasurehouse: a history of the Natural History Museum*, London, 2013.
[9] See Stearn, *The Natural History Museum*.

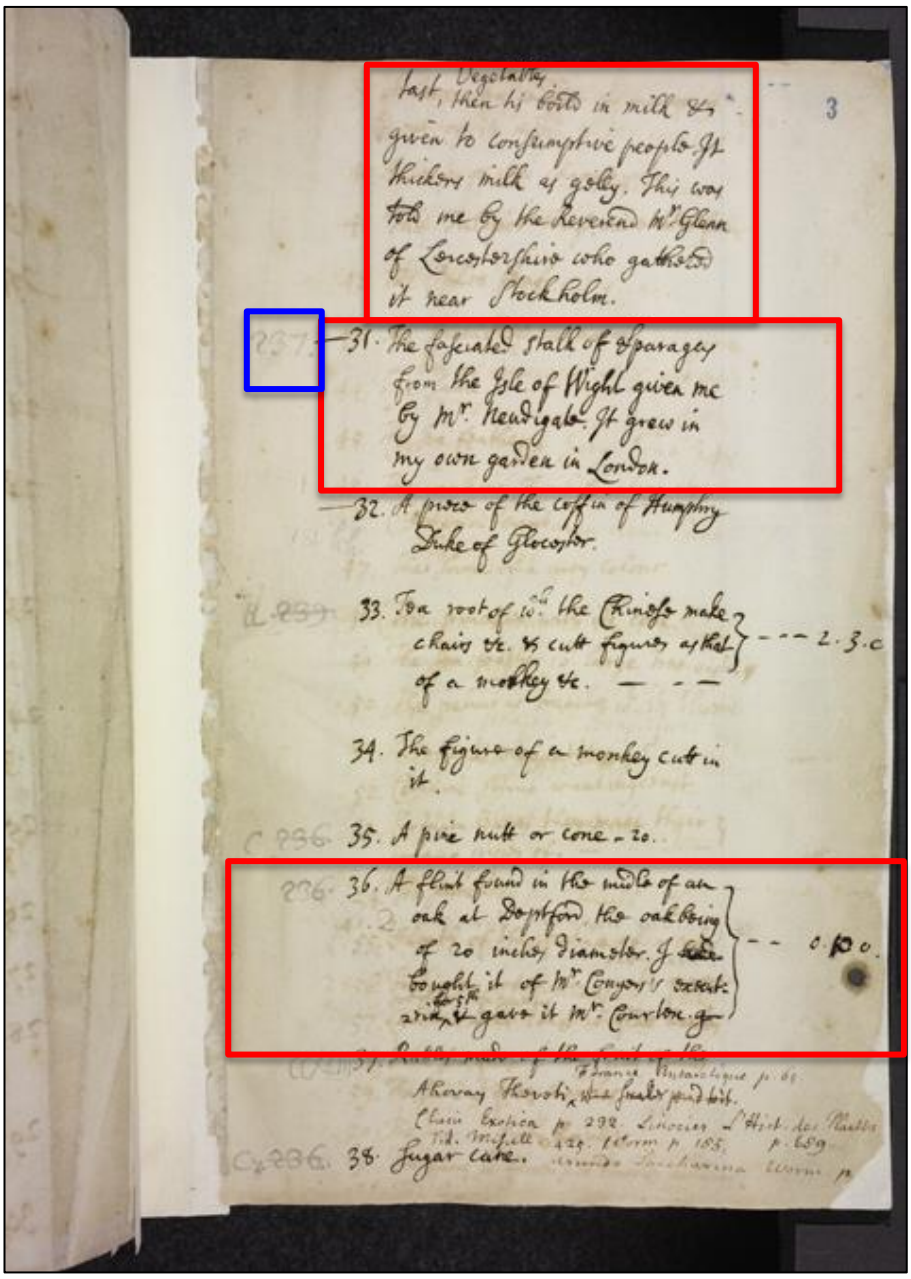

Figure 5: Sloane's 'Vegetable Substances' Catalogue: page numbered as 3 and listing descriptions 30-38. © Trustees of the Natural History Museum, London.

From surveying the entire 'Vegetable Substances' catalogue, it is clear that the information included is varied, but not infinitely so. Thus, an ideal description provides detail about what the material is as well as who sent it and from where, the utility of the material and whether Sloane paid for the object. Figure 5 shows page three of the first volume of the catalogue and it includes nine entries: from the second half of VS 30 to VS 38. In the lower highlighted section is the written description for VS 36 which appears as 'A flint found in the middle of an oak at Deptford the oak

being of 20 inches diameter. I bought it of Mr Conyer's executors for 5sh & gave it Mr Courten. gr'. This is an interesting description for a number of reasons because it not only informs us what this natural object is, but it gives specific details about where it came from and the multiple hands it came through before Sloane received it.[10] In addition, a monetary amount has been given in the right hand margin of this entry appearing as '2.10.0', suggesting that Sloane purchased this item for his collection. It also reminds us that not everything in the 'Vegetable Substances' collection was, itself, of vegetable matter.

Likewise, the entry found at the top of the page, and which continues from the previous page, is VS 30 and describes 'Muscus Islandicus'. This, apparently, 'tis boiled in milk & given to consumptive people. It thickens milk as yolks. This was told me by the Reverend Mr Glenn of Lancastershire who gathered it near Stockholm'. Again, in this instance, Sloane's cataloguing system is providing information not just about who sent this material and from where it came, but something of the collecting activity itself and the medical use of the material. The description for VS 31 is also rich in detail. The entry appears as 'The fasciated stalk of asparagus from the Isle of Wight given me by Mr Keadgale. It grew in my own garden in London'. Not only does the reader learn that a gentleman known as Mr Keadgale gave this item to Sloane from the Isle of Wight, but also gains an insight into other uses of this material beyond the catalogue (see Part Three of this thesis).

However, other descriptions in the catalogue are much more basic in the information that they provide. Looking to the same page of the catalogue (see figure 5), but at the numbered entries for VS 35 and VS 38, it is only possible to extract information about what the material might be. In these instances the objects include 'A pine nutt or cone' and a 'Sugar cake'. So while some descriptions reveal something of the collecting activities of different people or the uses of this botanical material,

[10] This is most likely to be John Conyers (c.1633-1694), an apothecary and collector in London who formed a collection of curiosities over a period of thirty years. It was sold around 1693 with the minerals, fossils and shells being bought by Dr John Woodward, a FRS and correspondent of Sloane. See S. Kusuwaka's recent study of William Courten's collection who references A. MacGregor, Collectors and collections of rarities in the sixteenth and seventeenth Centuries, in: A. MacGregor (Ed.), *Tradescant's rarities*, Oxford, 1983, 70-97: 86; J. Burnby, Conyers, John (*c.*1633–1694), *ODNB.* See S. Kusuwaka, Appendix 1: a transcription of William Courten's (1642-1702) price lists from Sloane MS 3961, BL which is supplementary to S. Kusuwaka, William Courten's lists of 'Things Bought' from the late seventeenth century, *Journal of History of Collections* (2016) 1-17.

many do not include any information about who or where they came from or on their uses. Working with the entire catalogue suggests that this is because this information was unknown, and there is a sense its entries were often copied directly from letters and notes which accompanied the object being recorded. These more minimal entries leave no doubt, however, that Sloane's priority was to state what the object was, whether this was through a basic description or something much more thorough.

Varying amounts of detail is not the only consideration that needs attention in relation to Sloane's method of cataloguing this collection. His use of annotations is an important aspect in understanding how the 'Vegetable Substances' was organised as a collection and how it may have been used. There are a range of annotations throughout this manuscript and they are often inconsistent, shortened, and without a key. For example, all three volumes show Sloane's consistent practice of using the abbreviations 'id' and 'ejusd' which are shortened versions of *idem* and *ejusdem* respectively. Both terms reflect the meanings 'ditto' or 'of the same' and they have been used to denote when information provided in the catalogue description is the same as the previous entry. There are, however, variations in this usage because it could mean that either the material itself, the place it came from or the person, are being referred to. In the majority of instances, however, it is fairly clear which part of the information is being duplicated. Sloane often used this sort of abbreviation when entering into the catalogue the descriptions of groups of objects that came from the same person. This means that at the top of a catalogue page there is often a reference to a specific name and the entries that follow simply state 'id'.

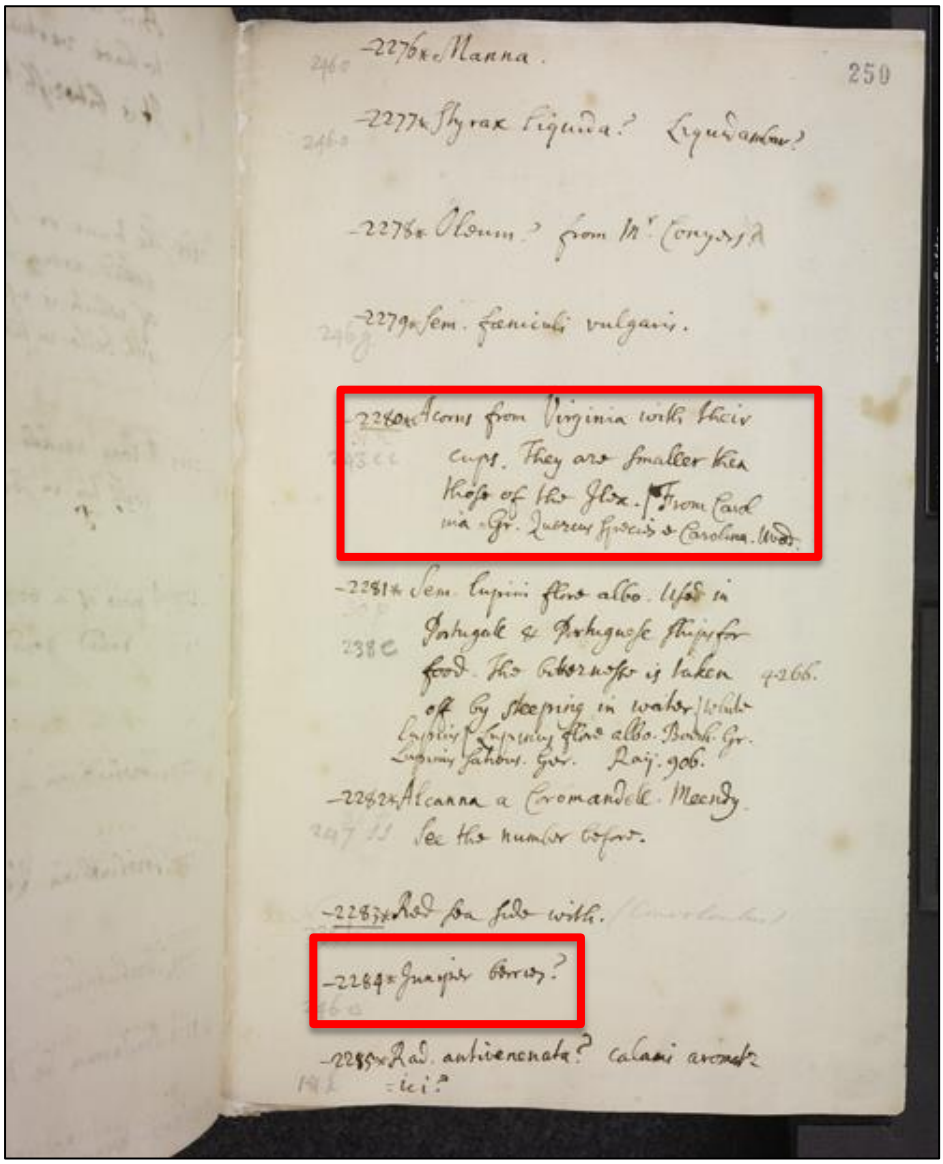

Figure 6: Sloane's 'Vegetable Substances' Catalogue: page numbered as 259 and containing entries 2276*-2285*. The sections outlined in red highlight examples where Sloane has used different sorts of abbreviations in the catalogue. © Trustees of the Natural History Museum, London.

Another example of Sloane's use of abbreviations includes those that make reference to a publication. These markings highlight Sloane's continued efforts to make connections between objects and publications throughout his collection as well as his approaches to organising and understanding this assortment of material. These annotations (examples seen in figure 6) appear in varying forms and were probably intended for Sloane's own use and as a cross-reference to his library.[11] In this way, Sloane's catalogues point to other sources including his own work, such as the Latin

[11] Rather than the catalogue being a resource for others to use, since there is no key or form of instruction provided to aid others in reading or using it.

catalogue of Jamaican plants he published in 1696 on his return from the Caribbean, having brought back to London specimens of over eight hundred different species.[12] Sloane refers to this text in its broadest sense as 'Cat. Jam', as well as to specific pages within the publication. Sloane also makes reference to his *A voyage to the islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the natural history of the herbs and trees, four-footed beasts, fishes, birds, insects, reptiles, &c* (London) (hereafter referred to as *NHJ),* which he published in two volumes: the first in 1707, and the second in 1725. For example, Sloane makes reference to a specific page in the first volume of his *NHJ* in the entry for VS 12,424 where he describes 'Arundo maxima folio dentate. Vid. My Nat. History of Jamaica tom. 1. P. 109'.

Sloane also refers to other publications throughout his catalogue. The most commonly cited include John Ray's *Historiae generalis plantarum* which was published in three volumes between 1686 and 1704. Seven hundred and four catalogue records, or 6% of the catalogue include a reference to 'Raii' and seventy-six of these specifically reference Ray's *Historiae* by using the abbreviation 'Raii. Hist'. Published works by the Swiss botanist brothers Caspar (1560-1624) and Jean (1541-1613) Bauhin are also found throughout Sloane's catalogue. Casper published *Prodromus theatri botanici* in 1620 and *Pinax theatri botanici* in 1623, while Jean published *Historia plantarum universalis* in 1650. Three hundred and seventy two records (or 3% of the catalogue) include the abbreviation 'C. B' and forty-nine of these specifically include 'C. B. pin', most likely a note to Casper Bauhin's *Pinax.* There also appear to be at least one hundred and seventy eight records in the catalogue that include the abbreviation 'J. B', and VS 103 includes the notation 'J. B. Hist plant. tom 2. p. 221'. This is most likely a reference to Jean Bauhin's *Historia plantarum.* There are also five entries in the catalogue that appear to reference Bauhin more generally because they contain the abbreviation 'Bauh'. In these instances, however, neither a specific author or work have been cited. Another publication abbreviation, appearing as 'Worm', is found within seventy-three catalogue entries and is often accompanied with a page reference. This is probably a reference to *Museum Wormianum,* a catalogue publication based on the comprehensive inventory of Ole Worm's (Olaus Wormius 1588-1654) collection describing a variety of curiosities and

[12] H. Sloane, *Catalogus plantarum quae in insula Jamaica sponte proveniunt…pars prima*, London, 1696.

objects that were gathered together between 1620 and 1654. This volume was published in 1655 by Worm's son Willum after Worm died.[13]

Publications by Ray, the Bauhin brothers and Worm would have been considered as significant natural history works of the period and their continued appearance in Sloane's catalogue is not, therefore, unusual. Early eighteenth-century naturalists often used natural history encyclopaedias to help in the identification and classification of botanical material and, as Margocsy has argued, these works also helped in the global and commercial exchange of natural material.[14] The 'Vegetable Substances' catalogue also contains references to more niche publications and, again, highlights Sloane's attempts to compare incoming natural material with older observations. For example, Robert Plot's (1640-1696) *Natural History of Staffordshire* (printed in Oxford in 1686), appears in four catalogue entries as 'Plot. n. h. Staff', while John Morton's (1671-1726) *Natural History of Northamptonshire with some account of the Antiquities* (1712) has been noted within seven descriptions as 'Mor. n.h.n'. [15] Morton's publication also appears once as 'Morton. N. h. Northamtonshire. p. 386', as well as 'Fasciated ash twigg mentioned by Mr. Morton n.h.n. p. 387. 5. 68' in VS 5,158. Indeed, it was these particular references that helped to ascertain what the abbreviation 'Mor. n.h.n' represented. Sloane's catalogue also contains references to Nehemiah Grew's *The Anatomy of Plants* (1682), Albertus Seba's (1665-1736) *Thesaurus of animal species* (1734) as well as Willem Piso's *Historia Naturalis Brasilliae* (1658). Piso, a medical pioneer and one of the earliest northern European authorities on tropical medicines, published *Historia Naturalis Brasiliae* in fourteen volumes and it contains numerous observations on Brazilian remedies.[16] Sloane denotes this publication in entries such as VS 12,436 as 'Piso Editionis 1658. vide p. 135'. There is also a reference to *Museum Calceolarium* which was published in 1622 by Benedicto Ceruto and Andrea Chioco. This is a catalogue of

[13] See Raven, *John Ray, naturalist: his life and works, &c*.
[14] Marcocsy, "Refer to folio and number": encyclopedias, 63-89.
[15] Plot also published *The natural history of Oxford-shire: being an essay toward the natural history of England*, Oxford, 1677. For John Morton see Y. Foote, Morton, John (1671–1726), *ODNB*, online edition, 2004.
[16] See J. Ferreira Furtado, Tropical empiricism: making knowledge in colonial Brazil, in: J. Delbourgo and N. Dew (Eds), *Science and empire in the Atlantic World*, Abingdon, 2008, 127-152.

the collection of Francesco Calzolari (1521-1600), one of the most famous apothecaries in Verona.[17]

Sloane's catalogue also contains other forms of annotation. In figure 5 (highlighted in blue) there is an example of a pencil annotation – the number '237'. In the 'Vegetable Substances' catalogue there are 8,428 similarly formatted marks found in the left hand margin alongside entries. A further seventy-five codes can be found in the right hand margin. These are all thought to be location codes for these objects in Sloane's overall collection. Recent research into Sloane's catalogues by Marjorie Caygill has argued that these location codes are evidence for a shelving and drawer system inside Sloane's house in Bloomsbury, London, and, later, his Chelsea Manor House. There are hundreds of different location codes throughout Sloane's catalogues and, using the results of Caygill's research, it can be argued that 'Vegetable Substances' specimen boxes may have been grouped thematically or by utility.[18] Location codes specific to this part of Sloane's collection and the uses of this material will be discussed in much more detail in Part Three of this thesis.

Other variations between entries that are apparent in Sloane's cataloguing of these objects can be seen in instances where there is uncertainty in the accuracy of the object information. In figure 6, the entry for VS 2,284 is 'Juniper berries?' The use of the question mark suggests that either Sloane or the contributor of this material were tentative as to the exactness of this information. Sloane appears to have used a question mark for this purpose throughout the catalogue with at least 4,530 entries incorporating this annotation. Sloane also looks to have used 'or' for a similar purpose, and VS 35 (see figure 5) is a clear example of this, questioning whether the object is a pine nut or a cone.

[17] See B. Ceruti, *Musaeum Francisci Calceolarii*, Verona, 1622; D. Bleichmar, Seeing the world in a room: looking at exotica in early modern collections, in: D. Bleichmar and P.C. Mancall (Eds), *Collecting across cultures: material exchanges in the early modern atlantic world*, Philadelphia, 2011, 15-30; Findlen, *Possessing nature*, 37-38.
[18] Caygill, Sloane's catalogues and the arrangement of his collections, 120-136.

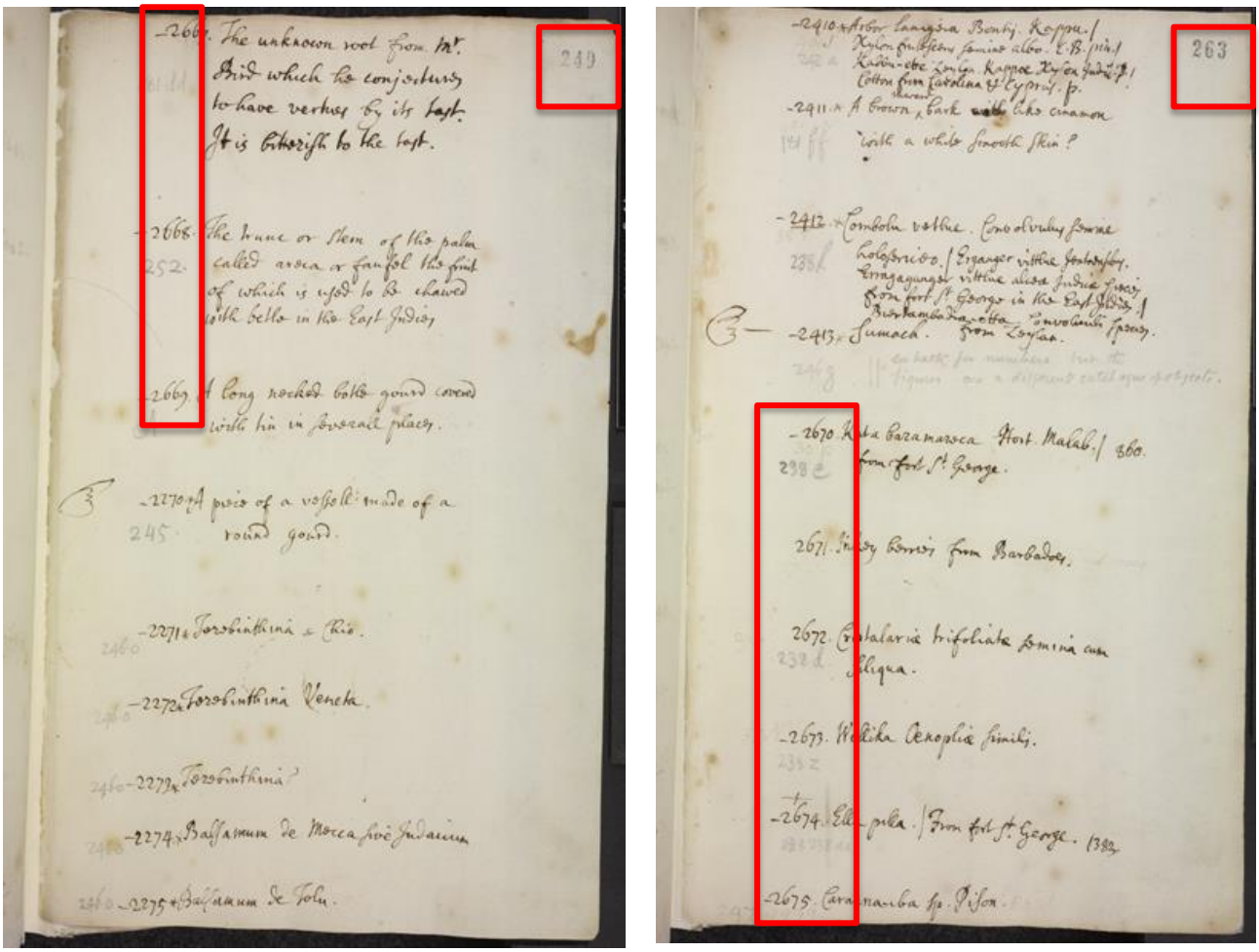

Figure 7: Sloane's 'Vegetable Substances' Catalogue: two recto pages numbered as 249 and 263. The sections highlighted in red show instances of duplicated numbers found in the catalogue. © Trustees of the Natural History Museum, London.

A number of entries also include a small red asterisk symbol which has been marked next to the catalogue number. This indicates that these particular catalogue numbers have been duplicated. Often, a similar asterisk symbol in red ink has been made on the correlating specimen boxes to denote that this is the duplicated catalogue number. There are two prominent groups of numbers that have been duplicated in the catalogue. The first group includes numbers VS 2,270 to VS 2,414. The original numbers run from page 215 to page 228, and then the duplicated numbers can be found between pages 249 and 263. So this means that VS 2,669 is located on page 249 and then VS 2,270 is on page 263 (see figure 7). The second significant group of duplicated catalogue numbers run from VS 4,271 to VS 4,325. The original numbers can be found starting on catalogue page 455 while the duplicated versions run from

page 535. The other groups of numbers that have been duplicated are significantly smaller in size, only including four or five numbers, or are one-off duplications. These are often found listed sequentially. For example, VS 7,914 has been duplicated and the first time this catalogue number appears is on page 939 while the next version of this number is found on the next page, 940. It is possible that these duplications were a way for Sloane to make comparisons between objects. When these entries are compared, however, between the first time a catalogue number is used and its duplicated version, the descriptions appear to be very different with distinctive objects being listed. For example, VS 7,914 appears in the following ways:

> 7,914 (p. 939) A sort of small black pepper from the same. [the same here refers to Mr Goldwin and Guinea]
>
> 7,914 (p. 940) * Extr. from the great root. Contra-yerva? dose [ej.] from Barham.

Evidently, these are different objects sent from different places and people. It seems more probable therefore, that these duplications of catalogue numbers are simply mistakes that Sloane has attempted to correct with the use of red asterisk markers. There are also five catalogue numbers missing completely and these are VS numbers 770, 1,367, 2,981, 3,124 and 3,125, and again these are likely to be the product of simple cataloguing errors. This means that in total there are 12,766 entries in the 'Vegetable Substances' catalogue, including all duplicated numbers and missing numbers. The percentages provided in this thesis have therefore been given out of this number and reflect these particular characteristics of the catalogue.

The 'Vegetable Substances' catalogue also reflects Sloane's mode of collecting, especially his method of incorporating other collectors' collections into his own. Figure 6 highlights some of the ways in which Sloane uses abbreviations to refer to other collections and collectors. VS 2,280* appears as 'Acorns from Virginia with their cups. They are smaller than those of the Ilex. | From Carolina. Gr. Quercus species e Carolina. Uved'. includes the shortenings 'Gr' and 'Uved' which most likely refer to 'Grew' and 'Uvedale' (Nehemiah Grew and Robert Uvedale respectively) according to the key to some of the abbreviations he uses that Sloane gives at the beginning of the catalogue:

> G. & Gr. Dr Grew mus. S. Reg. & collection of seeds fruits &c. which I bought.
> P & Pet. are Mr. James Petivers collections of all sorts wch, I bought likewise.
> P. & PL. Dr. Plukenets collections wch. I likewise bought from Dr. Moor Bsp. of Norwich who bought them of his Exec.[19]

'Dr Grew mus' is most likely a reference to the botanist and physician Nehemiah Grew (bap. 1641, d. 1712), who was secretary to the Royal Society from 1677. As Michael Hunter has explained, Grew collected botanical specimens and engraved gems, which were auctioned after his death, and Sloane made sure to acquire a proportion of these items.[20] Collating the catalogue entries that refer to *G* or *Gr* (as Sloane has explained in his index), shows that 12% of the 'Vegetable Substances' is made up of items that came from Grew's collection.[21]

Sloane also uses the abbreviation 'P' in his catalogue to refer to the collections of other collectors. 'P' appears in 1,279 entries in the 'Vegetable Substances' catalogue (or 10%) and, as Sloane explains in his index, this abbreviation represents either the collections of Leonard Plukenet (1642-1706) or James Petiver (1665-1718). Sloane's 1706 purchase of Plukenet's collection from Dr Moor, Bishop of Norwich, saw him incorporating over 8,000 specimens into his own botanical collection. Plukenet, somewhat famously, had been very keen to ensure that Sloane did not receive his collection. In contrast, the London apothecary James Petiver was a good friend of Sloane who had established a large and well-known collection during his lifetime that would eventually end up in the possession of Petiver's sister after his death. Sloane acquired Petiver's botanical collection of over 50,000 dried plants from her and incorporated it wholesale into his own collection from 1718. Both of these collections would have caused considerable organisational difficulty for Sloane because Plukenet and Petiver had differed in their arrangement of plant specimens. Plukenet had organised his dried specimens neatly and alphabetically according to their Latin names, while Petiver had organised his collections first geographically, and then systematically within each volume or group of volumes.[22]

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[19] This notation is found at the beginning of Sloane's catalogue for the 'Vegetable Substances'.
[20] M. Hunter, Grew, Nehemiah (*bap.* 1641, *d.* 1712), *ODNB*, online edition, 2009.
[21] This equates to 1,497 samples described in the catalogue and therefore, 11.7%.
[22] See. R.P. Stearns, James Petiver: promoter of natural science, c. 1663-1728, *Proceedings of the American Antiquarian Society* 62 (1953) 243–365; Dandy, *The*

Sloane is known to have struggled with the lengthy process of incorporating these collections into his own, and the 'Vegetable Substances' catalogue reflects the difficulties of absorbing so many objects.[23] The 'P' abbreviation occurs in entries throughout all three volumes of the catalogue, suggesting that Sloane numbered, described and entered these items in the 'Vegetable Substances' when he had time and not necessarily when he received them. This also means that it can be problematic to establish the chronology of this collection.

The other major difficulty posed when faced with abbreviations that reference the collections of other collectors is ascertaining whether an object was sent directly to Sloane from the collector or whether Sloane received it as part of his acquisition of that collection. This is very much the case with catalogue entries that make reference to Petiver. 1,113, or 9% of catalogue entries appear to be objects that were linked to Petiver in some way. Petiver may have actively collected some of these samples, he may well have directly contributed a number of these specimens to Sloane's collection, but a significant proportion will have been part of the collection that Sloane acquired on Petiver's death. It is not always entirely clear how Sloane obtained these particular objects.

Sloane also makes specific reference to other collections in the catalogue, though these do not appear to be as extensive in number as the items connected to Petiver and Grew. Four objects listed in volume one seem to have come from 'Mr Thornton's Collection'. These items – numbered between VS 235 and VS 238 – appear to be pieces of fossilised wood. Another collection mentioned is 'Mr Barret's Collection', of which there are four entries in volume three listed between VS 8,864 and VS 8,867. These objects include a 'resin', an 'oblong cocoon', seeds and 'An East India Fruit'. One other collection mentioned is 'Mr Aycrigg's Collection' which is found in one description of a 'Petrified worm eaten wood' (VS 9,843).

Sloane Herbarium, 175–187; D.E. Allen, Petiver, James (*c.*1665–1718), *ODNB*, online edition, 2009.

[23] See T. Turner, *Extracts from the literary and scientific correspondence of Richard Richardson, M. D., F.R.S., of Bierley, Yorkshire*, Yarmouth, 1835, 163-166.

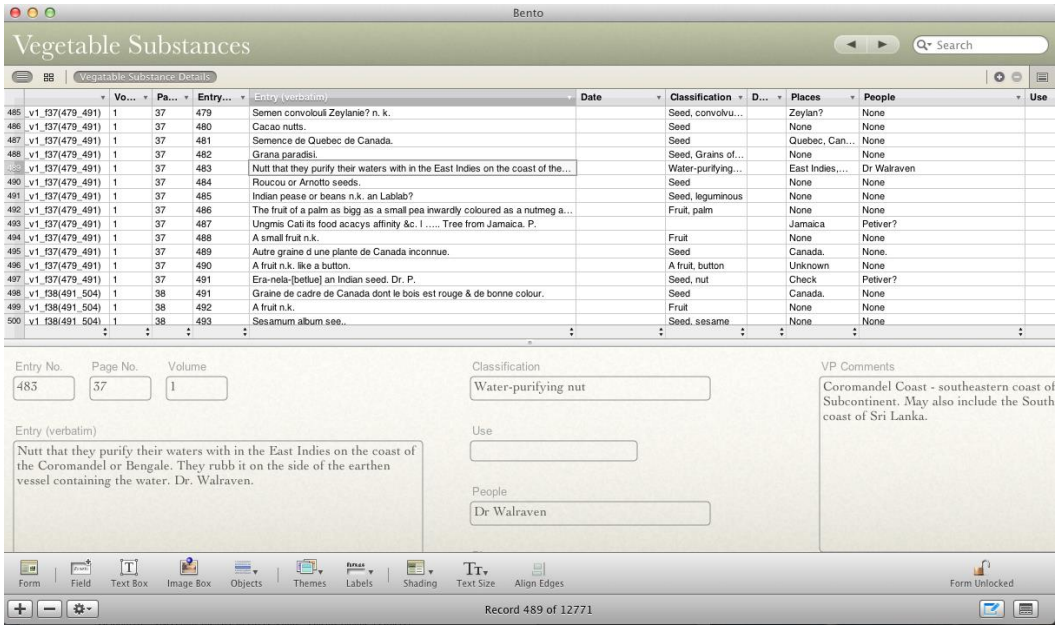

Figure 8: A screenshot of the 'Vegetable Substances' digital database created for this thesis. The top half of the image shows how the catalogue entries appear as a sequential list and the bottom half of the image shows one particular description in full view. Image by Victoria Pickering, 2016.

Since the 'Vegetable Substances' catalogue entries supply detail about what is in the collection and where its contents came from, albeit varying from entry to entry, the catalogue sits at the heart of this collection. By describing the collection's contents in this way the catalogue also has the ability to reflect the motivations behind the creation of the 'Vegetable Substances'. It was, therefore, important for this thesis to make the catalogue into a more easily accessible research resource: allowing it to be searched, sorted, sifted and formatted. In order to do this, approximately six months were spent transcribing Sloane's catalogue into an electronic database using a domestic software package called Bento. This is a domestic product of Filemaker, a well-known business solution for database creation and management, and it was important that this software was compatible with different sorts of technology and had the necessary durability for working with this manuscript catalogue. Bento has been an ideal tool for turning Sloane's manuscript catalogue into an electronic list thanks to its usability and simple format (see figure 8 and appendix 1). The data compiled in this way can also be easily exported to other formats and used in other research

projects.[24] Throughout this process of transcribing the catalogue entries, all the other markings in the catalogue were noted. Where there was information about the use of an item, where it came from, or who sent it, it was noted down in separate columns in the database. In addition, in instances where abbreviations such as 'id' have been used to denote that information is the same as a previous entry, names and places have been assigned so that when key word searches are made, the database returns a more accurate number of results.

Moreover, if an item's catalogue description appeared particularly unusual, then the entry would be highlighted in the database to denote this characteristic. If we return to the example of catalogue page three above (see figure 5), two such examples can be located: VS 32, 'A piece of the coffin of Humphrey, Duke of Gloucester' and VS 33 which appears as 'Tea root of which the Chinese make chairs &c & cut figures as that of a monkey &c'. Similarly, some objects have been described as appearing as something else, such as VS 11,603: 'The root of white bryony resembling the body of a man out a ditch at Hammersmith with a mandrake'. Highlighting these particular entries indicates something of the nature of early modern collecting and the blurred boundaries between items of nature and curiosity.

After transcribing all three volumes of Sloane's catalogue, an attempt was made to differentiate groups of entries in this collection by classifying them according to some basic botanical characteristics. For example, whether they were a seed, a leaf or a gum, then what sort of seed they were. This task was not attempted during the process of transcribing, partly because it would have taken much longer to create a usable electronic tool, and partly because it was not until the entire catalogue had been surveyed that it was possible to understand its contents as a whole and what these botanical categories might include. During the early stages of undertaking this process, however, it was deemed too time-consuming and problematic to complete. This is because it was difficult to decide on relatively few meaningful botanical categories. Also, Sloane's understanding of what the object would have been does not necessarily correspond with modern day botanical names and categories. Similarly, after completing the catalogue transcription and gaining an overall comprehension of the nature of the botanical descriptions in the catalogue, it became clear that the form

[24] The 'Vegetable Substances' database can be searched for references to specific material, people and places and the results of these searches can then be extracted and formatted separately for example in an Excel worksheet. See Appendix 1 of the thesis (pp. 314-316) for an account and description of the 'Vegetable Substances' database.

of the material is not always obvious. In many cases a plant has been described but not the state of the sample: whether a seed or a leaf. Many catalogue entries also contain seventeenth- or eighteenth-century Latin, further complicating the process of understanding what these objects were and are. These complexities have meant that the entries in the catalogue have not all been categorised in a botanical sense. However, it is clear from both the catalogue and the boxes themselves that the majority of the 'Vegetable Substances' are in the form of seeds, along with numerous examples of fruits, roots, pieces of wood, fossils, stones, flowers, leaves, fungi and pieces of slate.

During the course of transcribing the catalogue a survey of each drawer containing 'Vegetable Substances' specimen boxes was completed. This meant that every surviving sample has also been listed. This allowed the identification of more unusual items, such as the different containers and pressed skeleton leaves shown in figure 5, or items that had not been described in the catalogue. This process highlighted that while boxes sometimes have additional handwritten labels, rarely do these give more information than has been included in the catalogue. It was also possible to create, for the NHM, a list of every box that survives today, and this can now be connected with single descriptions or as groups of entries for further study and identification.

With the content of Sloane's catalogue now contained within this electronic database and made into a searchable tool, it has been possible to establish a broader understanding of how this botanical material came to be in the Sloane collection in London.[25] Using Sloane's specimen descriptions, and where there is evidence of people and places, including the examples which have been seen in the figures above, more specific analysis of what is in this collection and where it came from can be undertaken. This catalogue database, therefore, informs us that 5,494 entries in the catalogue, or 43% of the catalogue, refer to an individual in some way.[26] In all, 322 contributors are named in the catalogue and this roughly correlates, at least in terms of

[25] In part because the entire collection (the catalogue and boxes included) has not previously been surveyed in the way that this thesis has done.
[26] Even without identifying individuals, the remaining descriptions can also show how this collection is made up and where its contents came from.

numbers, with the information we have from James E. Dandy's mid-twentieth-century analysis of the collectors found in the Sloane Herbarium.[27]

However, identifying these individuals presents its own difficulties. Across most of Sloane's catalogues it is common to find that Sloane has spelt the names of individuals in a number of different ways, and this can make correlating data on contributors difficult. Where different spellings obviously represent the same contributor, these catalogue entries have been collated together. The collector James Cuninghame (c.1665-1709) is a good example of this because Sloane writes his name as Cunningham, Cuningham, Cuninghame and Cunninhame. In this instance, Cuninghame has been used, which is the spelling that the collector used consistently in his own correspondence.

After transcribing the 'Vegetable Substances' catalogue and gaining an overview of how Sloane made references to people (for example with or without titles, shortenings of names, different spellings) it has been possible to order all 322 named individuals according the amount of material they contributed to this collection.[28] At the upper end of this scale it is clear that some people contributed hundreds of items, and these groups of samples have often been accessioned together, sometimes keeping their own numbering system alongside Sloane's catalogue numbers.[29] Thus, twenty-five people sent fifty items or more (ranging from fifty items to 481 items), which means that these twenty-five people could be considered to have a combined contribution of 30% of the whole collection.[30] The most significant contributors include the Swiss physician Jean Rodolphe Lavater (who is associated with 481 catalogue entries), the aristocratic Mary Somerset, Duchess of Beaufort (394 catalogue entries) and the schoolmaster Robert Uvedale who lived in Enfield (356 entries).[31] The naturalist Mark Catesby sent a considerable amount of American material while he was in South Carolina (215), while James Petiver (160) and the

[27] This is the figure as of September 2014. It is possible that these figures will change in the future with more research and information. See Dandy, *The Sloane Herbarium.*
[28] That is their contribution according to the catalogue, or, the number of catalogue entries associated with a particular name.
[29] Examples include a group of samples sent from Petiver and described in the catalogue as 'Chinese druggs', of these 'No. 1' is listed as VS 3,862, also a group of specimens (of over 200 in number), the first of which and appears as 'No. 1. of Indian druggs… From Siam by Dr. Uvedale' (VS 4,429).
[30] 3,790 entries.
[31] Sixty of the samples listed from Somerset came from Richard Bradley, FRS, who sent Somerset samples from the Cape of Good Hope while he was in Holland in 1713/14.

Jamaican physician Henry Barham (154) also contributed over one hundred and fifty items each to Sloane's collection.[32] Collectors who have their name associated with over fifty entries in the catalogue include the Dutch collector Albertus Seba (87), the merchant and antiquary James Theobald (87), the West Indies plant collector William Houstoun (85), the ship's surgeon James Cuninghame (81), the physician George Cheyne (71), the East India Company trader Nathanael Maidstone (66), and the physician and collector Richard Middleton Massey (62).

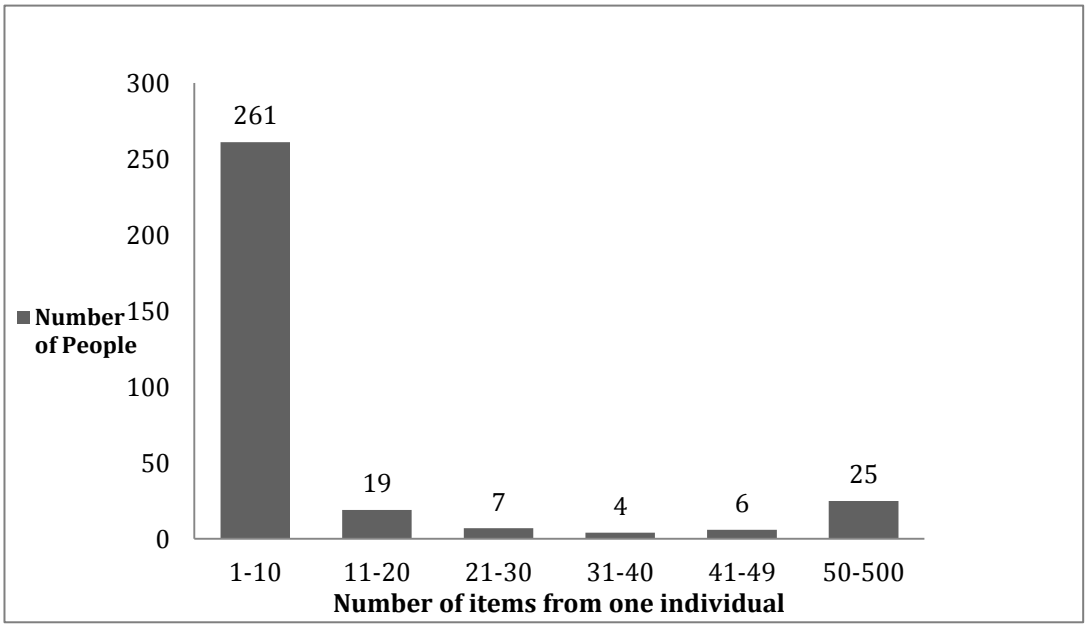

Figure 9: A chart reflecting the number of individuals named in the 'Vegetable Substances' catalogue in relation to the number of items they contributed. Victoria Pickering, 2016.

At the other end of the scale, 156 items look to have been singular transactions, or single objects that appear to be the only ones ever sent to Sloane by these individuals. People that sent these specimens spanned society and included men and women, ship's captains, members of the aristocracy, Jamaican plantation owners, physicians and many others. Figure 9 shows the relationship between the number of items

[32] Included in the samples sent by Catesby are sixty-eight labelled as from John Clayton. Other significant contributors include Patrick Adair who contributed 196 samples, Reverend Clerk (185 samples) and Henry Talbot and 'Barrow' who sent 164 samples. It is difficult to confirm the identity of 'Reverend Clerk', but he appears to have collected several items on behalf of Sloane in Virginia such as 'An Indian drum made of a hollowed tree carvd the top being brac'd wt pegs & thongs wt the bottom hollow from Virginia by Mr Clerk' and listed as number 1,368 in Sloane's catalogue of 'Miscellanies'.

included in the 'Vegetable Substances' collection and the number of people who contributed them. This chart shows that two hundred and sixty one people are listed as sending between one and ten pieces of plant material, nineteen individuals contributed between eleven and twenty items and only seven people sent twenty one to thirty samples. Whether or not any of these individuals knew they were contributing directly to this collection is unknown, but it is clear from this data that the majority of people named in this catalogue contributed only one or a few items.

As identified above, significant and active contributors to this collection included people such as Mary Somerset and Mark Catesby, and these individuals had interesting personal relationships with Sloane which will be explored in Part Two of this thesis. There are, however, individuals who added to the 'Vegetable Substances' in more complex ways. Petiver's various contributions to Sloane's collection have been discussed above, and are one such example of this, highlighting the multiple forms of order that exist within the 'Vegetable Substances' collection as a whole. Petiver directly contributed material to Sloane's vegetable collection while he was alive (at least 160 items), but contributed more significantly after his death when Sloane purchased his entire collection. In these instances I have separated the catalogue entries so that they are either an item described explicitly as being sent from the collector or an entry that refers to the person, as explained in Sloane's annotation index. This means that Grew, for example, does not feature in the contributors list above in the same way as someone like Catesby or Barham, since he did not make direct contributions. Petiver, however, appears to have knowingly engaged and exchanged plant specimens with Sloane during his lifetime and, as such, he still remains one of the most significant direct contributors to the 'Vegetable Substances'.[33]

Just as contributors may not have actively engaged with Sloane and the 'Vegetable Substances', these correspondents did not always send samples from their place of origin. Instead, many of them acted as conduits for the plant material that they sent to Sloane. For example, the naturalist Mark Catesby sent material from, and brought American natural productions back from, South Carolina in the 1720s, while the Jamaican physician Henry Barham sent items from Jamaica in the early eighteenth

[33] As Part Two will show there are nuances and complications to this process and in certain instances it is not clear until investigating the context of samples that they were part of Sloane's process of collecting collectors and collections. See, for example, the discussion of Engelbert Kaempfer in chapter four.

century. The aristocratic Mary Somerset, however, sent Sloane a huge amount of plant material from her gardens in London and Badminton, which she herself had received from people all over the world. Likewise, the Cambridge-educated schoolmaster Robert Uvedale, who kept a garden in Enfield, North London, sent Sloane items he had received from the East Indies. Although in 1711 Petiver travelled to the Netherlands in 1711 for the auction of Paul Hermann's (1646-1695) collection on behalf of Sloane, he too predominantly remained in Britain rather than travelling abroad. Yet Petiver had a diverse set of contacts around the world who ensured that he received material, which in turn was contributed to Sloane's collections in various ways.[34]

Along with the other significant contributors to Sloane's 'Vegetable Substances', these correspondents were involved in numerous and complex 'networks' and exchanges which can be explored by using the thousands of letters to Sloane and about Sloane housed in the British Library (hereafter referred to as BL) and other archives such as the Bodleian Library in Oxford. Sloane kept the majority of his incoming correspondence, but not copies of letters he wrote and sent, and this can be accessed at the BL with the help of Edward Scott's *Index to the Sloane manuscripts in the British Museum,* published in 1904. [35] Although Sloane's 'Vegetable Substances' catalogue reveals 322 contributors and the number of items they added to the collection, it has been Sloane's surviving manuscript collection at the BL that has enabled the relationships that Sloane had with these people to be studied and to set the 'Vegetable Substances' in a variety of different contexts that will be explored in later chapters of this thesis. This work of contextualisation has also involved other collections of letters. In particular, the correspondence of Richard Richardson (1663-1741), a physician and botanist who was based in Yorkshire, has been an invaluable resource for understanding the creation of the 'Vegetable Substances'. Richardson and Sloane exchanged many letters and Richardson's correspondence comprises twelve volumes within the Radcliffe Trust manuscripts at the Bodleian Library. These volumes contain thousands of letters exchanged between Richardson and his own botanic circle. The conversations between Richardson, Uvedale, the botanist William

[34] See Dandy, *The Sloane Herbarium*; J. Delbourgo, Listing people, *Isis* 103:4 (2012) 735-742; Murphy, Collecting slave traders, 637-670; D. Margócsy, *Commercial visions: science, trade, and visual culture in the Dutch Golden Age*, London, 2014.
[35] E.J.L. Scott, *Index to the Sloane manuscripts in the British Museum*, London, 1904.

Sherard and many others have shown something of the nature of botanical exchange that was taking place around Sloane.[36]

These archival sources have been used to generate information about where the specimens in the 'Vegetable Substances' boxes came from. Part two of this thesis will explore in detail the geography of the 'Vegetable Substances' in terms of the people who were sending Sloane plant material. However, the brief descriptions from the catalogue itself can give an overall idea of the geographical scope of the collection. Including duplicated numbers, 7,463 entries (58%) do not refer to the location from which the items came. However, 1,957 of these do give information about contributors so it is possible that these samples can be linked to more specific localities.[37] A case in point is that 817 of these named, but geographically non-located, items are linked to Petiver and may have come from his collection.

The remaining 5,303 catalogue entries (42%) paint an interesting picture of the geography of the 'Vegetable Substances' collection. The database (see figure 10) shows that 39% of the specimens with locations given came from the Americas and the islands of the Caribbean (West Indies) and roughly half (992) of these originated from North American colonies including Carolina, Maryland, New England, Virginia, Philadelphia and Pennsylvania.[38] Mark Catesby sent 130 of these items from Carolina when he was sponsored to travel there in the 1720s by a group of gentleman including Sloane, Sherard and the physician Richard Mead.[39] Also, fifty-seven of these 'Vegetable Substances' came from Philadelphia from John Bartram via Richard Middleton Massey. Looking further into this New World plant material, an equal number (988 specimens) were sent from the Caribbean islands of Jamaica, Barbados and Montserrat, where the British had established settlements during the seventeenth century. The largest amount of Caribbean material came from Jamaica (517 specimens in total) and, according to the catalogue, Henry Barham and William Houstoun played vital roles in sending this material directly to Sloane from the

[36] See Edgington, Natural history books in the library of Dr Richard Richardson, 57-75; Turner, *Extracts from the literary and scientific correspondence of Richard Richardson.*

[37] This means that 43% of entries in the 'Vegetable Substances' catalogue do not contain information about the origin or contributor of the material.

[38] This is 2,072 New World samples as a percentage of 5,308. 2,072 as percentage out of the total number of catalogue entries, however, is 16%.

[39] See V.R.M. Pickering, Mark Catesby's Natural History of Carolina, in: J. Magee (Ed), *Rare treasures: from the library of the Natural History Museum*, London, 2014, 68-75.

Americas.[40] Correspondents including Petiver and George Cheyne would not have travelled to Jamaica to collect the specimens they contributed, but they also ensured that material from the Caribbean made its way to Sloane.[41] Likewise, Maidstone appears to have ensured that groups of items from Antigua reached London.[42] Significantly, there are only a few references to Caribbean colonies that were controlled by the French, including Martinique, Guadeloupe and Saint-Domingue, which was known as the 'Pearl of the Antilles' and was a major French settlement on the island of Hispaniola. Similarly, only seven samples were collected and sent from the island of Saint Thomas where the Dutch West India Company had established a post in 1657 and the British only invaded in 1801. Overall, then, the majority of items in the 'Vegetable Substances' that came from the West were sent from British colonies.

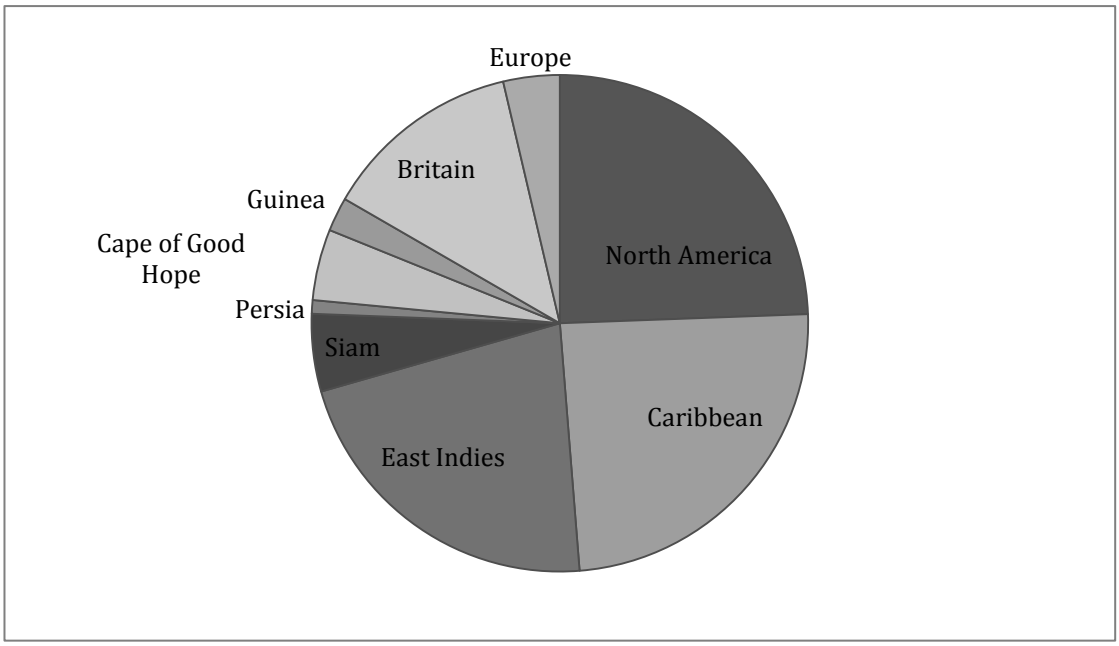

Figure 10: This pie chart illustrates the geographical origin of the samples found described in the 'Vegetable Substances' catalogue. It depicts the proportion of the collection that were sent from broad areas of the then known world including North America and the East Indies. Victoria Pickering, 2016.

The 'Vegetable Substances' is also made up of a large amount of material that originated from the East Indies. Of the entries where locations are given, 1,718 (or

[40] A significant quantity of 'Vegetable Substances' also came from Barbados.
[41] See Murphy, Collecting slave traders.
[42] Sloane's surviving correspondence however, is uninformative as to whether Maidstone travelled to Antigua, or if he acquired the material from someone else.

32%) were sent from the East Indies, and 490 of these specimens (42% of the East Indian entries) were simply described as being sent from the 'East Indies' with no further detail about their geographical origin apart from the inclusion of names such as 'Mr Goffe' who was probably Henry Gough, 'Dr Stuart', 'Dr Walraven', Patrick Adair, James Cuninghame, 'Dr Rugely', 'an Arabian Prince', Nicolas Waites and Engelbert Kaempfer. Sloane would have considered anywhere east of the Cape of Good Hope (South Africa) as the East Indies but, as discussed before, not all of these collectors would have sent this material directly from the East. For example, a substantial amount of this material was received from Fort St George (Madras) in India by Uvedale and sent on to Sloane, but Uvedale never travelled to India. Instead, individuals including Samuel Brown and Edward Bulkley, both of whom were stationed and resident at Fort St. George as surgeons in the East India Company, played important roles in the exchange of natural material (see Part Two).

Material considered to have come from the East Indies also includes those specimens listed from Surat and South East Asia, which includes references to 'Zeylan' (modern-day Sri Lanka).[43] There are also a number of items that were sent from Persia and Arabia. Similarly, 10% or 547 entries in the catalogue with identified locations are described as being sent from China.[44] Though this material has been specifically noted as originating in China in the catalogue, it has been included in the percentage of samples sent from the East Indies because Sloane would have considered China as part of the East Indies. There are fewer references to material that came from Africa (188 items), with the majority of items being sent from the Cape (South Africa) and Guinea (West Africa). Richard Bradley sent some of this material from the Cape to Mary Somerset in London while he was in Holland in 1713, and James Brydges, the Duke of Chandos (1674-1744), contributed ninety items from Guinea. Brydges had bought a controlling stake in the Royal African Company in 1720, after it lost its monopoly over the slave trade, and was seeking to reorient its trade in Africa away from enslaved people to botanical and mineral resources.[45]

[43] Spellings include 'Zeylan', 'Zeylon', 'Ceylan' of which there are 104 items listed.
[44] Out of the total number of catalogue entries (12,766) this is 4.3%.
[45] M.D. Mitchell, "Legitimate commerce" in the eighteenth century: the Royal African Company of England under the Duke of Chandos, 1720-1726, *Enterprise & Society* 14:3 (2013) 544-78. For Brydes and his links to botanists see, R. Coulton's unpublished thesis: Coulton, Curiosity, commerce and conversation, and L. Stewart, *The Rise of public science: rhetoric, technology, and natural philosophy in Newtonian Britain, 1660-1750*, Cambridge, 1992.

Compared to the numbers of samples sent from the East and West Indies, fewer 'Vegetables' are described as originating in the British Isles and across Europe (677 samples in total, or 13%). Of the 528 catalogue entries described as British, 338 were sent from London and 309 of these are linked to Somerset and her garden in Chelsea. References to the Chelsea Physic Garden are also found amongst these London items, with other samples originating in Deptford, South East London. Seven items were sent from Ireland (by 'Dr Stack') and twenty-one from Scotland, nine of which came from the Orkney Islands via George Preston (1664-1749) who had been in charge of the botanical garden at the University of Edinburgh. In terms of material that came from Europe, 149 'Vegetables' were sent from Amsterdam, Portugal, Italy, France, Germany and the Low Countries.

Entries in the 'Vegetable Substances' catalogue that can be termed non-located samples due to the lack of information they contain about their geographical origins, amount to 7,463 entries in total, or 58%. While this is a significant proportion of the collection, it is reasonable to suggest that these samples were not distributed differently from the located samples. For instance, one sample appears as 'Sour sop tree seed from Mr. Handisyd' (VS 1,720) and George Handisyd was a ship's surgeon.[46] Similarly, much of this non-located material originally formed part of the collections of Grew and Petiver which had been gathered from around the world.

It is important to remember that samples described in the 'Vegetable Substances' catalogue could be linked to more than one place around the world. Examples of material sent from Uvedale and Somerset, which will be more fully explored in Chapter six as well as in Part Two, show that there were often many more people and places involved in the creation of this collection than its catalogue would initially suggest. Somerset, who was based in England and did not travel, acted as a conduit through whom material from around the world moved and further exemplifies the complexity of the relationships involved in creating the 'Vegetable Substances'.

Sloane's manuscript catalogue has been fundamental in developing a broad understanding of the 'Vegetable Substances', particularly in relation to the collection's contents. The varying level of detail supplied by Sloane in these numbered entries (as a result of the sort of information he received with these objects) has shown that, for Sloane, it was of fundamental importance to at least state what these items were, and often descriptions seem to have been directly copied from

[46] Dandy, *The Sloane Herbarium*, 134.

information supplied. A detailed analysis of this catalogue has also revealed some of the different characteristics of Sloane's method of cataloguing. His use of abbreviations, for example, highlights the ways through which he referenced significant natural history publications of the period as well as more specific works. Sloane also uses other indicators to acknowledge where he has incorporated the collections of other collectors as well as points in the catalogue where mistakes have been made (the duplication of numbers). Evidently, Sloane was making continued effort to organise this ever increasing amount of natural material beyond a simply list format.[47] His constant cross-referencing to both publications and other objects in his collection, but a lack of index or key, suggests that this was a catalogue intended to be of use to himself.

The data compiled from this catalogue also allows a broad overview of where this material came from, both in terms of specific people, other people's collections, and different global locations. This sort of data, however, requires additional historical context and other sources in order to appreciate the complexities that underpinned the movement of this material and its varying journeys to London. Such sources and context are invaluable for revealing more about the people who contributed to Sloane's botanical collection and the relationships he had and developed with them. It is these connections that can help to describe and explain Sloane's collecting activities and the multiple historical geographies of the Vegetable Substances collection. The next part of the thesis will identify in more detail the different people in and across the West, the East, Britain and Europe who contributed to the 'Vegetable Substances', revealing the varied and multiple ways that Sloane interacted (or did not interact) with them, and, in turn, how this affected the form and scope of this particular botanical collection.

[47] See Delbourgo, Listing people.

Part Two

Geographies of a Natural History Collection

The 'Vegetable Substances' collection contained over twelve thousand primarily botanical samples and, as Part One discussed, these included a variety of seeds and beans in all sorts of shapes and sizes, as well as other plant matter, balms and oils, and skeletonised leaves. A close analysis of the collection's manuscript catalogue has identified the names of over three hundred individuals who, from around the world, made contributions which were boxed, numbered, catalogued and added to the collection. These people varied in their backgrounds, their professions, their status and their relationships with Sloane. While some items came directly to him, others passed along complex chains – including coming as part of his acquisition of other collections – giving him access to many different sorts of natural history specimens. Part Two of this thesis examines these contributors in more detail, discussing who they were, how they interacted with Sloane, what sorts of relationships Sloane formed with them to make the 'Vegetable Substances' collection and whether these patterns of contributors and relationships were shaped by where in the world the contributions came from. It will also consider the extent to which these contributors can be understood as part of a 'network' that supplied Sloane with natural historical material.

To explore from where and how natural material came to be part of the 'Vegetable Substances' collection in London, it is useful to examine the term 'network' and consider its meaning and use in relation to Sloane's collecting practices. For Bruno Latour, the 'word network indicates that resources are concentrated in a few places – the knots and the nodes – which are connected with one another – the links and the mesh: these connections transform the scattered resources into a net that may seem to extend everywhere'.[1] What is crucial here is that the term 'network' suggests that it is the connections that are formed between people, meanings and things that are important. In this sense, for Latour, a loose notion of a 'network' which incorporates all sorts of connections that are not confined by scale (local or global for example) may help to comprehend how so few people can seemingly cover the entire world. For the 'Vegetable Substances' then, it will be

[1] B. Latour, *Science in action: how to follow scientists and engineers through society*, Cambridge, MA, 1988, 180.

considered whether the term 'network' can be used to describe the relationships between Sloane and the contributors to the collection.

According to Michael Guenther, scientific 'networking' in the late seventeenth and early eighteenth centuries focused on the establishment of many horizontal ties between actors rather than hierarchical flows of information and exchange. During this period, he argues, naturalists were constantly attempting to build personal connections among friends and acquaintances, making extra effort to bring different people into contact. This is the reason why so many people wrote letters of introduction and encouraged the exchange of objects. The correspondence of people like Sloane and his contemporaries devoted just as much time to bringing people together as to the discussion of scientific topics.[2] The eighteenth-century culture of collecting, particularly in the field of natural history, embraced a variety of communities and the correspondence networks of such collectors were essential for making introductions and requests concerning items and payments, especially at a time when Europeans were so keen to discover new and unknown plants. It was also not uncommon for collectors to exploit existing contacts for their own purposes.

It is notable, however, that the word 'network' was not used in the early modern period to describe groups of interconnected people as it is today. Instead, historian Lindsay O'Neill argues that 'networks' described 'crosshatched pieces of metal or wood, or … loosely woven pieces of clothing.' For O'Neill, letter writers in the early eighteenth century, such as many of the individuals who will be discussed in the chapters that follow, sought to connect and weave together different threads of friendship through their letters. Accordingly, O'Neill treats 'network' as a verb not a noun and describes the early modern British world as a networking society not a society with networks. These were, therefore, webs of connection which were not static entities, but active and changeable forms of organisation. The British elite, she argues, navigated, with varying degrees of success, their changing world by weaving, nurturing and playing on these webs rather than relying on centres of power fixed in

[2] See M.B. Guenther, *Enlightened pursuits: science and civic culture in Anglo-America, 1730-1760*, unpublished thesis, Northwestern University, 2008, 162; A. Goldgar, *Impolite learning: conduct and community in the Republic of Letters 1680-1750*, London, 1995; L. Daston, The ideal and reality of the Republic of Letters in the Enlightenment, *Science in context* 4 (1991) 367-86; M. Ultree, The Republic of Letters: learned correspondence, 1680-1720, *The seventeenth century* 2 (1987) 95-112; A.A. Rusnock, Correspondence networks and the Royal Society, 1700-1750, *The British journal for the history of science* 32:2 (1999) 155-169.

the localities and the Court.[3] What follows will use these ideas to explore whether the 'Vegetable Substances' collection was the product of such a network.

Within the history of science, the discussion of the place of connections within networks has made important use of Latour's notion of 'centres of calculation'. This is a significant way of understanding the modes of global encounter and exchange afforded by collections like the 'Vegetable Substances'.[4] Here, 'cycles of accumulation' bring back 'home' to the 'centre of calculation' the 'events, places and people' encountered out there in the world. This is done by 'inventing means that (a) render them *mobile* so that they can be brought back; (b) keep them *stable* so that they can be moved back and forth without additional distortion, corruption or decay, and (c) are *combinable* so that whatever stuff they are made of, they can be cumulated, aggregated, or shuffled like a pack of cards'. After this, Latour argues, places 'that were at first as weak as any other place will become centres dominating at a distance many other places'. This, he argues, is 'simply a question of scale', since those centres of calculation mean that scientists 'in their Natural History Museums, without travelling more than a few hundred metres and opening more than a few dozen drawers, travel through all the continents, climates and periods'. As a result they '*see new* things… that's all there is in this mysterious beginning of a science'.[5]

The idea of centres of calculation has been helpful when dealing with the inadequacies of the centre and periphery models so often used to think about the production and exchange of natural knowledge. This is because 'centres' are no longer only bound to specific spaces but are defined by the practices which form them. Yet, in turn, this means examining in detail those practices of making connections, forming networks and accumulating ideas and things. The 'Vegetable Substances' is open to such an interpretation. However, rather than assuming that this collection is a 'centre of calculation' within a network, this Part of the thesis sets out to examine what sorts of connections Sloane was making, whether these amount to a 'network' of some form, and whether this constitutes his collection as a 'centre of calculation.' Accordingly, the three chapters that follow explore the great range of interactions and connections with all sorts of people that brought materials together into the 'Vegetable

[3] See L. O'Neill, *The opened letter: networking in the early modern British world*, Philadelphia, 2015, 7.
[4] See Latour, *Science in action*; D.P. Miller and P.H. Reill (Eds), *Visions of empire: voyages, botany, and representations of nature*, Cambridge, 1996.
[5] Latour, *Science in action*, 223 and 225.

Substances'. The interpretation of these relationships means not only examining who Sloane's contributors were, but situating them and Sloane both within early modern London and in the particular connections with the world that Britain was making in the late seventeenth and early eighteenth centuries.[6]

In keeping with this location of the 'Vegetable Substances' collection within a broad global historical geography, the chapters examine in turn how material came into Sloane's hands from the Americas, the East Indies and the British Isles and Europe. Doing so allows different patterns to be determined for these world regions. Chapter Three, which examines Sloane's connections with individuals in the New World, pays particular attention to the nature of the relationships that he was able to form and influence. These included resident collectors in North America and the Caribbean as well as people whom he sponsored to travel and collect in the Americas. It is argued that these relationships needed extensive work on the part of Sloane and his correspondents because they did not have the infrastructural support that is apparent in Chapter Four, which focuses on the East Indies. Natural material that originated in the East was most often contributed by people connected to established trading companies, and Sloane was able to utilise these sorts of 'networks' in different ways. The complex connections that formed the 'Vegetable Substances' are further highlighted in Chapter Five, when British and European plant material is considered. Familiar faces who sent material from the New World and the East Indies are, in this chapter, found to be contributors of material from closer to hand and can be placed within correspondence 'networks' or 'circles' shaped by the Royal Society and the Republic of Letters.

The geographic regions which structure this part of the thesis are defined according to the ways that Sloane and his contemporaries broadly described and mapped the world.[7] The 'New World' (also referred to as the 'Americas') would have broadly considered areas to the west of Britain while the 'East Indies' would have described anywhere east of the Cape of Good Hope. Sloane's use of these terms in the 'Vegetable Substances' catalogue can be problematic and does not always help us in recognising the exact origin of this material. A simple search for 'East Indies' in Sloane's catalogue, for example, returns over six hundred entries.[8] When we look in

[6] M. Ogborn, *Global lives: Britain and the world, 1550-1800*, Cambridge, 2008.
[7] Namely other naturalists, physicians and gentleman.
[8] During the time that Sloane was amassing his enormous collection, Europeans broadly viewed the world as quadrants of the world: America, Asia, Africa, and

more detail at the content of this catalogue though, we find that at least 1,718 items can be described as originating in the East. This figure not only includes items described as being sent from the 'East Indies', but also samples that came from China, India and Sri Lanka (South Asia), Thailand, the Philippines and Vietnam (Southeast Asia), as well as Arabia and Oman (the Arabian Peninsula). However, grouping locations together according to their geography, and defining that geography in relation to Sloane's location in London, allows for an effective survey of this collection's origins. It helps in bringing to life the actors who played prominent roles in the movement of natural history across the globe as well as the types of connections and relationships that underpinned the production of this collection.

Europe. See for example F. Nussbaum, Introduction, in: F. Nussbaum (Ed.), *The global eighteenth century*, London, 2003, 1-7: 2.

Chapter Three

‘A Parcel of Seeds 103. in no. sent from Jamaica’: New World Material[1]

At least 2,072 specimens described in the ‘Vegetable Substances’ catalogue are believed to have come from the New World. This means that we could consider up to 39% of located samples in this collection as originating from places within the Americas.[2] As has already been shown, 992 ‘Vegetable Substances’ were sent from areas within North America, including Carolina, New England, Georgia, Virginia, Maryland, Hudson’s Bay, New York, Philadelphia and Newfoundland. A further 998 samples were sent from islands in the Caribbean, the majority of which came from Jamaica and the Bahamas. These items were sent by all sorts of people, some of whom were resident in the Americas and others who were travellers of various sorts, including individuals who were purposely sent to the Americas to examine and collect its natural history. This chapter will explore the whole range of New World contributions, beginning with an examination of the many different people who sent this material (see Table 1). This chapter will then draw out the similarities and differences found between the two most prominent groups of contributors: those I have called ‘resident collectors’ and ‘sponsored collectors’. Examining individuals who lived in the New World and had access to local natural knowledge, and comparing them and their interactions with Sloane to people whom Sloane sponsored to collect, will set out the different ways through which Sloane was able to engage in the process of gathering natural material from the West. Doing so means examining in detail the differing characteristics and contexts of these individuals, including their professions, the sorts of things that they sent, and the nature of their correspondence with Sloane (and others). It will examine how Sloane’s interactions with different, distant people, and the relationships formed with them, affected the formation of the ‘Vegetable Substances’ collection and, more broadly, his involvement in the movement of natural history knowledge.

[1] This is the catalogue entry for ‘Vegetable Substance’ number 11,467 and represents the seeds sent from Jamaica by ‘Mr Robert Millar’ who was a ‘sponsored collector’.
[2] 2,072 as a percentage from the entire catalogue (12,766 entries) is 16 %.

Table 1: A list of contributors of New World material to the 'Vegetable Substances' collection based on the descriptions found in Sloane's manuscript catalogue of the collection.

The names appear in order of the significance of their contribution to the collection. The table includes information about the form of the contributor's name in Sloane's catalogue; the minimum number of entries in the catalogue associated with that person; identification of the contributor where possible; the origin of the material; whether the contributor travelled to that place; whether the contributor had direct contact with Sloane; whether the contributor was a Fellow of the Royal Society.

Name as it appears in catalogue	Minimum total number of catalogue entries	Contributor details [where known]	Origin of material according to catalogue (minimum number of entries)	Did contributor travel to country specified?	Did they have direct contact with Sloane (letter or in person)?	FRS?
Millar	354	Robert Millar (fl. 1734-1742)	Cartagena Panama (242) Jamaica (66) America (46)	Y	Y	N
Catesby	215	Mark Catesby (1674–1744)	Carolina (153) Bahamas (56)	Y	Y	Y (Apr 26, 1733)
Revd. Mr. Clerk, Clerk (or Clark)	185	Unconfirmed	Virginia (87) Jamaica (15 Bahamas (18)	Unconfirmed	Unconfirmed	Unconfirmed
Mr. Barham	155	Henry Barham Senior (1670-1726), physician in Jamaica	Jamaica (155)	Y	Y	Y (Nov 14, 1717)
William Houstoun	88	William Houstoun (c.1695-1733)	Jamaica (43)	Y	Y	Y (Jan 18, 1733)

Jenkins Captain Jenkins	83	Captain Robert Jenkins	Jamaica (63) Carolina/Georgia (6)	Y	Unconfirmed	N/?
Dr Massy	63	Richard Middleton Massey (c.1678-1743)	Philadelphia (31) Hudsons Bay, Pennsylvania (9)	Y	Y	Y (Oct 23, 1712)
Scott (Andrew Scott)	49	Andrew Scott (died 1767) physician	Maryland (49)	Y	Y	Unconfirmed
Winthorpe	45	Could be John Winthrop (1714–1779), scientist in Colonial America	New England (45)	Y	Y	Y (Apr 4, 1734)
Bartram	37	John Bartram (1699-1777), Quaker and plant collector	Philadelphia (35)	Y	Y	Unconfirmed

Dr. Cheyne	17	George Cheyne (1671?-1743)	Jamaica (17)	N	Y	Y (Mar 18, 1702)
Mrs Newport	15	Mrs Newport	Barbados (14)	Y	Unconfirmed	N
Read	14	Could be George Reid	Barbados (14)	Y	Y	N
Captain Walker	12	Captain Thomas Walker?	New England (12)	Y	Unconfirmed	N
Coll. Nicholson	7	Could be the colonial governor Sir Francis Nicholson (1655-1728)	South Carolina (4)	Y	Y	Unconfirmed
Bird/Byrd	6	William Byrd II (1674–1744)	Virginia (6)	Y	Y	Y (Apr 29, 1696)
Le Grand	5	Mrs le Grand who is thought to have stayed with Mary Dering while in London.	South Carolina (5)	Y	Y	N
Mrs Blechynden	5	Mrs Blechynden, possibly the wife of the tea merchant Thomas Blechynden.	America (1)	Unconfirmed	Unconfirmed	N
Captain Hall	4	Captain Hall	Carolina (4)	Unconfirmed	Unconfirmed	N

Dr. Brickell	4	Could be John Brickell (1710-1745)	North Carolina (4)	Y	Unconfirmed	Unconfirmed
Mr. Ayre	4	Perhaps James Ayrey (fl.1697-1706) see Dandy, 83-84	Barbados (4)	Unconfirmed	Unconfirmed	Unconfirmed
Mrs. Dering	3	Mary Dering	Carolina (3)	Y	Y	N
Dr. Krieg	1	David Krieg (1667-1713)	Maryland (1)	Y	Y	Y (Jan 11, 1699)
Mrs Colleton	1	Mrs Colleton	Barbados (1)	Y	Unconfirmed	N

Exchanging natural history in the New World

By the late-seventeenth century, North America and the Caribbean were characterised by colonialism and a plantation economy. Voyages to the West including Sloane's voyage to Jamaica in the late 1680s, and the sorts of collecting and natural knowledge exchange that accompanied them, were therefore, underpinned by this context and a triangular trading route across the Atlantic. Long-distance botanical collecting posed a series of problems, and transporting specimens by sea was by no means an easy task. While dried plant material such as seeds, bulbs and tubers could be packed in secure containers, preserved in sugar, or dried and pressed between papers, it was extremely difficult to successfully transport living plants. All of this botanical material was at the mercy of sea conditions and, in their letters to Sloane, many of the collectors discussed in this chapter exemplify these and other difficulties of moving natural history objects across the Atlantic. For example, the English naturalist Mark Catesby had sent a 'cargo of plants, Birds, Shells &c' to London that had fallen foul of pirates in 1723.[3] But even if a box had successfully crossed the Atlantic it was not uncommon for cargo to be held at the Custom House and, it seems, for items to be removed. Sometimes, as William Sherard wrote to Sloane, the only problem was the delay:

> By ye Bearer I send yr Box from Mr. Catesby, I hope 'tis in much better condition then ye last you rec'd from him. 'twas apprehended by ye Customs house officers, but I believe nothing taken out.[4]

In other instances items would be missing completely. For example, Sloane received a box that had been sent from Virginia by the British planter William Byrd II (1674–1744).[5] According to Byrd's letter this box should have contained a selection of seeds and roots, and yet Sloane found the cargo to have been opened at the Custom House and samples of 'Stick weed' removed. All of the other items listed by Byrd were in tact, leaving Sloane to conclude that the 'Stick weed' had either been taken out deliberately or accidentally left behind at the Custom House.[6] Despite such

[3] Mark Catesby to Hans Sloane, Charles Town, Nov 15 1723 (BL Sloane MS 4047), f. 90.
[4] William Sherard to Hans Sloane, Feb 7 1724 (BL Sloane MS 4047), f. 126.
[5] See P.D. Nelson, Byrd, William (1674–1744), *ODNB*, online edition, 2004.
[6] VS 2,666 appears as: 'Jerusalem oak seed. Botrys ambrosioides mexicana. C. B. used a spoonful wt. honey three mornings to kill worms in the stomach or gutts. | Jerusalem oak. Gr'.

complications, the extensiveness of Sloane's botanical collection shows the effort put in to overcoming them in order for there to be successful exchanges of natural history between many different individuals across the Atlantic.

Many previously unknown species of flora and fauna being studied, observed and consumed in London in the seventeenth and eighteenth centuries originated in the Caribbean and North America, and were brought to the capital by European trading ships operating within the Atlantic economy. Vessels that were used to transport slaves from West Africa to the Caribbean and North America were also used to move natural history specimens alongside the products of colonial plantations including sugar, tobacco and rice.[7] What we might consider as 'networks' of natural history were unsurprisingly entangled with those of trade and exploration in the early eighteenth century, and involved colonial officers, governors, travellers and naturalists who supplied objects and observations and were actively encouraged by people like Sloane, as well as others involved in scientific institutions and communities.

The 'Vegetable Substances' catalogue reflects, therefore, a range of different actors who were contributing to natural history collections from the New World. It includes references, sometimes obscure, to numerous people who observed, collected and dispatched objects for Sloane. This includes a number of ships' captains. 'Captain Jenkins' contributed at least eighty-three items, sixty-three of which were described as being sent from Jamaica. Jenkins, who may have been the Captain Robert Jenkins of the merchant ship *Rebecca* which sailed to Jamaica in the 1730s, is described in the catalogue as contributing a 'Collection of Woods, the growth of Jamaica'.[8] Similarly, four items, including samples of acorns were sent by 'Captain Hall' from Carolina as well as twelve plant samples from New England by way of 'Captain Walker'.[9] Some of these objects were those used locally for medicinal purposes, including a 'root used externally & internally agt. the biting of the rattle snake' (VS 11,100), a sort of Indian

[7] See J. Delbourgo, Gardens of life and death, *British journal for the history of science* 43:1 (2010) 113-18; J. Delbourgo, Slavery in the cabinet of curiosities: Hans Sloane's Atlantic world, online edition, 2007, 1-29; Murphy, Translating the vernacular; Murphy, Collecting slave traders.

[8] A few letters written by 'Jenkins' can be found in Sloane's manuscript collection, but information on Captain Robert Jenkins and his voyage in the merchant ship *Rebecca* comes from the *Gentleman's Magazine*, 1, June 1731, 265 which reported that the ship had been voyaging from Jamaica when she was attacked by a Spanish guarda-costa. Their violence against him sparked the War of Jenkins' Ear.

[9] Dandy includes an entry for a 'Capt. Thomas Walker, Judge of the Vice-Admiralty Court in the Bahamas', see Dandy, *The Sloane Herbarium*, 229.

wood believed to cure gout (after being burnt) (VS, 11,101), and an 'Indian stomach root for the colick & a cordiall' (VS 11,107). A sample has also been listed and described as 'A bark the Indians use instead of candles. Id. Birch bark' (VS 11,104). Also from the Americas are two samples of Lagetto (*Lagetta lagetto*), or lace bark. '[A branch] of the Lagetto wt. halfe of its bark upon it' (VS 11,682) and 'A rope made of the inward bark of the Lagetto' (VS 11,683) were sent from 'Capt. Jackson who had [them] from Havana in Cuba.[10]

Significantly, a number of women in the New World also contributed to the 'Vegetable Substances', including 'Mrs Dering', 'Mrs le Grand', 'Mrs Newport', 'Mrs Blechynden' and 'Mrs Colleton'. Mary Dering had left England in 1728, and sent from Carolina the bellyache root, a sample of cane that local people used to make tobacco pipes, petrified wood and a squash.[11] She and Sloane also exchanged letters. In 1728 she wrote to him regarding her interactions with natural history in Charles Town and assured him 'that what ever comes to my hand worth your acceptance shall turn travelour as soon as I have it'.[12] Sloane replied, encouraging her collecting activities, and in the following year Dering apologised to him 'for not answering the letter you did the favour of to Carolina last year' and notified him of the samples she had returned to London with, offering that 'any thing amongst 'em worth your acceptance they are at your service'.[13] In Dering's correspondence with Sloane we also learn of her relationship with another female contributor of New World samples to the 'Vegetable Substances'. Sloane describes in the catalogue five items from South Carolina from 'Mrs le Grand', including 'persimone seed' which tasted 'like a preserved plum' (VS 8,679). Dering, it transpired, had been staying with le Grand after her return to London.[14] Another fifteen 'Vegetable Substances' were also sent from a female collector in Barbados, a 'Mrs Newport'. Newport sent Sloane a variety of plant samples including 'prickly yellow wood' (VS 8,331), a 'coco nut entire' (VS

[10] 'Lagetto' is the vernacular name for lace bark, see article on anthropology and collections regarding specimens of Lagetto: G. Pearman and H. Prendergast, Plant portraits: items from the lacebark tree [*Lagetta Lagetto* (W. Wright) Nash; Thymelaeaceae], *Economic botany* 54:1 (2000) 4-6.
[11] See catalogue entries for VS numbers 8,711; 8,858; 8,880; 8,881.
[12] Mary Dering to Hans Sloane, Charles Town, Apr 29 1728 (BL Sloane MS 4049), f. 151.
[13] Mary Dering to Hans Sloane, Spring Garden, Sep 20 1729 (BL Sloane MS 4050), f. 199.
[14] Mary Dering to Hans Sloane, Spring Garden, Sep 20 1729 (BL Sloane MS 4050), f. 199.

8,344), dried limes and red and white 'oyl' nuts (VS 8,469 and VS 8,470). 'Mrs Blechynden' is another female contributor whose name is listed alongside five records in the catalogue including a large piece of bark that came 'from the Continent of America' (VS 8,390).[15] Among the samples from her are 'red chips of a wood' (VS 8,393) that have been listed in the catalogue with information about medical use and experimentation on enslaved Africans on New World plantations:

> Red chips of a wood experimented by a principale person in this place called by him Bitsow[?] wood. 5 drams will turn 25 lit of sugar made into syr[up] to a bitter, a few chips steept in a little spring brings down the stopt catamenia. The same drank upon a bruise or blow received occasions stools or vomits or sometimes both. gives ease & cures. The same waters drank takes away inflamations of the body or belly tho of a long standing in eight or ten times drinking, its also of great service in fevers. The same chips boiled in Spring water & drunk cures ulcers in the body & other sores occasioned by the foulnesse of the body & by washing with the same it cured a prodigious inflammation in a legg by taking inwards & applying outwards to the part that was rendered incurable by the physitians & this in a short time. The same chips steeped in cold water or boyled cures the itch or pimples in the body. A little of this water drunk after hard labour or any fatigue presently eases the body. These cures the author hath. experimented upon his own slaves. Mrs Blechynden.

A further sample sent from Blechynden, 'the bark Copalchi', was described as 'of great use in Costa Rica concerning which see its vertues', and it was noted that 'It was carried to Spain by Dr. Antonio Jordan for the great vertues it had' (VS 8,374). The last example of these New World female contributors is 'Mrs Colleton' who is listed as sending a sample of 'Waterweed' from Barbados which also had therapeutic properties. A decoction of this weed was given by 'the negro & Indians' to those afflicted with worms to put them into a deep sleep and, thereby, cure them (VS 8,348). It is likely that Sloane knew Mrs Colleton personally since he refers to Sir John Colleton's plantation in Barbados in the introduction to his *NHJ*, and the Colleton family had long been plantation owners on the island.[16]

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[15] 'Mrs Blechynden' was possibly the wife of the tea merchant, Thomas Blechynden and therefore, provides an example of the connections and exchange with the commercial world, visible through the 'Vegetable Substances' collection.

[16] See the introduction in Sloane's *Voyage to Jamaica…*(London, 1707). Sir John Colleton, 3rd Baronet (1669-1754) was the son of Sir Peter Colleton, 2nd Baronet. He inherited his father's share of Carolina in 1694 and supposedly lived in South Carolina at his plantation. He was grandson of Sir John Colleton, 1st Baronet, an enterprising Barbadian planter and a relative of 1st Duke of Albermarle. See Colleton, Sir Peter, 2nd

Sloane was keen to receive botanical material from the New World and engaged with different people in order to gather this material into his collection. As the details of these contributors begins to show, observations about the natural world, the collection of associated objects, and their communication to people like Sloane was undertaken by those involved in the multiple crossings of Atlantic trade, those resident in the Americas, and those who might, across their lives, live in both the colonies and then in Britain. Ships' captains and women from New World land- and slave-owning families were both integral parts of the Atlantic world economy and its exploitation of nature, and demonstrated an interest in collecting that nature too. Indeed, what is striking about the contributors of this material from the Americas is the variety in the sorts of people who were involved in collecting and exchanging natural history. The 'Vegetable Substances' reveals that Sloane received material from landowners, merchants, ship's captains, surgeons, women, plantation-owners, naturalists, Royal Society Fellows, farmers, and others, all using their own means to observe, amass and exchange natural knowledge. Yet, if the focus is on those individuals who contributed the greatest number of items to the collection it is possible to identify two broad categories of people with different sorts of relationships to Sloane and the process of collecting. The rest of this chapter will focus on substantial contributors who were 'residents' – particularly Henry Barham and John Bartram – and those who were 'sponsored collectors' – such as Mark Catesby and William Houstoun. By exploring these contributors in more detail, and drawing comparisons between them on the basis of who they were, their collecting activities and their interactions with Sloane, the ways in which Sloane's relationships with contributors of New World material shaped the collection can be determined.

Resident Collectors

All manner of correspondents in the New World provided Sloane with material for his botanical collection, including the women described above. Some people, however, are notable because of their interactions with Sloane as well as their substantial contributions to the 'Vegetable Substances'. Individuals including the physician Andrew Scott (died 1767), the surgeon Henry Barham Senior (1670-1726) and the

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Bt. (1635-94), of Exmouth, Devon and Golden Square, Westminster, in: B.D. Henning (Ed.), *The History of Parliament: the House of Commons 1660-1690*, London, 1983.

American Quaker John Bartram (1699-1777) all feature significantly in the 'Vegetable Substances' catalogue. Many of their contributions were sent to Sloane as 'gifts' which was common practice during this period and part of the relationship that existed between gift exchange, knowledge expertise and patronage.[17]

Andrew Scott for example, contributed forty-nine specimens to Sloane's collection and was resident in North Carolina having previously practised medicine in Maryland. In 1739, Scott wrote to Sloane offering him 'a collection this year by the latter ships of seeds fruits &c!' and Sloane listed 'A Parcell of Seeds (49. in No.) from Maryland collected, named & sent by Dr. Scott in 1738' in his 'Vegetable Substances' catalogue.[18] Scott had additionally looked to Sloane for his influence in being appointed sheriff of Prince George's County, Maryland.[19] Scott also sent natural history specimens to other correspondents in London including Lord Petre (1713-1742) and the English botanist Richard Middleton Massey (1678-1743).[20] Sloane and Scott's interactions went beyond one-way exchanges of natural history, and further examination of the 'Vegetable Substances' collection reveals the complexity of the connections that were active across the Atlantic. These, it will be argued, were by no means simple or constitute a singular 'network' with Sloane at the centre.[21]

Just like Andrew Scott, Henry Barham and John Bartram were resident collectors in the Americas who feature strongly in the 'Vegetable Substances' catalogue. In these cases, the rich manuscript material which details their interactions with Sloane allows for a closer examination of Sloane's connections with the Americas and how these particular relationships effected the collection and contribution of plant material into the 'Vegetable Substances'.

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[17] See M. Biagioli, Etiquette, interdependence, and sociability in seventeenth-century science *Critical Inquiry* 22:2 (1996) 193-238; Findlen, *Possessing nature*; T. Kinukawa, Learned vs.commercial?: the commodification of nature in early modern natural history specimen exchanges in England, Germany, and the Netherlands, *Historical Studies in the Natural Sciences* 43:5 (2013) 589-618.

[18] W.S. Powell (Ed.), *Dictionary of North Carolina biography, volume five, P-S,* Chapel Hill,1994, 301.

[19] See Andrew Scott to Hans Sloane, Maryland, Aug 6 1739 (BL Sloane MS 4056), f. 110.

[20] See chapter five for detail on Robert James Petre, 8th Baron Petre and Richard Middleton Massey.

[21] Andrew Scott to Hans Sloane, Maryland, Aug 6 1739 (BL Sloane MS 4056), f. 110.

British-born Henry Barham had been apprenticed to a surgeon and served on warships including HMS *Vanguard*.[22] He then travelled to Spain and Madras and later settled in Jamaica where he successfully established his own medical practice.[23] Barham sent many letters and plant samples to Sloane from Jamaica, and Sloane listed 155 (7% of New World material) of these items in his 'Vegetable Substances' catalogue.[24] They included examples of Jamaican fruits, roots, seeds, barks and gums, and some appear to have had domestic value, such as number 8,294 which was described as a 'Long & short podded ocra cutt for use in soupes being unripe. From Mr. Barham'. Other samples had medicinal properties, characteristics that Barham would keenly discuss in his correspondence with Sloane.

The farmer and plant collector John Bartram, on the other hand, was born on a farm in Marple, Pennsylvania and is perhaps best known for his friendship with the Quaker Peter Collinson. Through their partnership, Bartram successfully sent seeds and seedlings from America to Collinson in England who then distributed them to naturalists (and others) across Britain and Europe.[25] This initiative proved popular among influential landscape planters like the Duke of Richmond, Philip Miller at the Chelsea Physic Garden, and naturalists such as Stephen Hales and John Ellis. They were all keen to receive boxes of American seeds to cultivate in their gardens.[26] The contents of these boxes were often mixed and included a range of seeds and dry plant specimens packed with root-balled plants, stuffed animals, preserved insects, birds' nests and fossils. However, people often requested seeds because they were far easier to transport than live plants and could be more easily distributed across Europe. The

[22] Henry Barham to Hans Sloane, London, Oct 21 1717 (BL Sloane MS 4045), ff. 55r-v.
[23] T.F. Henderson, Barham, Henry (1670?-1726), rev. Anita McConnell, *ODNB*, online edition, 2004.
[24] This is 155 as a percentage of 2,072.
[25] Bartram became well known for his methods of packing seeds and plants to withstand the long arduous journey across the Atlantic including protecting them in bottles, gourd and other containers. See J. Corden, Gardening thoughts – a distant view, *The Royal Society, The Repository*, 2010, https://blogs.royalsociety.org/history-of-science/2010/09/17/gardening-thoughts/ last accessed 4 Oct 2016.
[26] Collinson appears to have met Bartram (and a number of other Americans) through his family's extensive trade in the cloth business with North America. They became close friends. Bartram, Collinson and their botanical endeavours have been well documented, see for example E.G. Swem (Ed.), *Brothers of the spade: correspondence of Peter Collinson, of London, and of John Custis, of Williamsburg, 1734–1746*, Barre, MA, 1957; A. Wulf, *The brother gardeners: botany, empire, and the birth of an obsession*, London, 2008.

range of plant species that Bartram and Collinson were able to distribute relied heavily on the success of the previous growing season and the consequent availability of seeds. By 1753, Bartram and Collinson's boxes of seeds had become a successful enterprise and cost around five guineas each.[27]

While others were raising these American seeds in their gardens, Sloane sealed thirty-seven samples from Bartram into his 'Vegetable Substances' boxes and described them in his catalogue under the heading: 'The following seeds were sent from Philadelphia by Mr. John Bartram 1748'. Sloane also described other botanical material from Bartram including petrified wood, samples of snakeroot from Pennsylvania (VS 10,546), and 'Tophi wt. vegetables substances intermixt' that had been gathered on the 'highland mountains halfway between Delaware and Hudsons River' (VS 12,407). Sloane distinguished two items in the collection that had come from Collinson – 'Sugar made from the sap of the broad leaved Virginia maple' (VS 11,118) and 'A bunch of eighteen common small hazell nuts' (VS 11,119) – which may also have originated with Bartram. A further ten items have been listed as originating 'From Mr. John Bartram in the wilds of Pensylvania', and these samples appear to have medicinal value including a 'litle tuberous root' called there the 'devils bit because the farther end appears mostly to have a bit taken of[f]', which was judged 'to have a wonderful vertue to ease many inward pains especially griping of the bowels' (VS 10,553).

While Bartram and Barham differed in their professions, social standing and location within the New World, they both had local knowledge and expertise about American natural history which they were able to provide Sloane. Both men initiated the written communication with Sloane who would go on to encourage these exchanges, using these interactions as a way of adding material to his 'Vegetable Substances' collection.

Barham wrote his first letter to Sloane in 1712, and used the publication of the first volume of Sloane's *NHJ* as an opportunity to introduce himself to the author and offer his own knowledge and expertise about Jamaican plants. In his letter he proposed to Sloane that he could help to make the *NHJ* an invaluable publication to every planter in Jamaica. While Barham appears to consider the *NHJ* as a great and

[27] M. Laird and K. Bridgman, American roots: techniques of plant transportation and cultivation in the early Atlantic world, in: P.H. Smith, A. Meyers and H.J. Cook (Eds), *Ways of making and knowing: the material culture of empirical knowledge*, Ann Arbor, 2014, 170-172.

useful work, he suggests that the majority of people in Jamaica had not thought the same:

> Worthy S^{r}, ever Since I had the Happiness to Read your first Volume (the Second I Never did See) I could not be contented without makeing you Some Acknowledgement of the great Benefitt I have Received thereby and I think the Whole Island ought unanimously Joyne in theire Thanks to you; for the great Pains, Industry & labor in Compileing Soe usefull a work butt Such is the ungratefulness of Some men (and those that the Rest have an Eye on or Regard too) because they are not Consulted with, or had not a hand in itt; under Values & exploads that that they Scarse gave themselves time seriously to Read or unprejudiced to Consider some of these men who are thought by the Rest to be more Capeable of Reading & Judging; believe what ever they say; Soe that a book is oftimes Condemned in Generall before ever it is Particularly Read or Considerd; Such misfortune your Laborious and usefull History hath mett with Here; for you shall not meet with one in tenn that Spakes Slightly of it that ever Read itt. Some are Dissatisfyed with putting names in your Observation of Diseases others that the Practis is very mean & Plaine (I am sure it is Safe) Butt the main Objection is; that you have writt the Names and their Severall Kindes of Plants in Latin w^{ch} very few understands in this Island; Although you have Described their groath in English yet they are to Seek for a Name, they alsoe wish you had been larger in the Virtues of them.[28]

In short, Sloane's work had been criticised by English settlers in Jamaica for its lack of immediate utility in helping them to identify local plants (and ones that could be transplanted) that had medicinal or commercial value. Regarding themselves as best qualified to assess the *NHJ*'s effectiveness, these readers were unimpressed by the practical knowledge it contained as well as its academic style and use of botanical Latin.[29] The *NHJ*'s layout and form meant that its readers were required to cross-reference information and authors with further references. Jamaican settlers, however, considered this format impractical because they had expected a self-contained reference tool for identifying local plants and assessing their medical and commercial utility.[30]

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[28] Henry Barham to Hans Sloane, St Jago de la Vega, May 10 1712 (BL Sloane MS 4043), ff. 45r-46v. James Robertson has written on Jamaican critiques of Sloane's *NHJ* in his chapter: Knowledgeable readers: Jamaican critiques of Sloane's botany, in: A. Walker et al., *From books to bezoars*, 80-89.

[29] J. Robertson, Knowledgeable readers, 82-86.

[30] J. Robertson, Knowledgeable readers, 88. Here there appears to be a similarity with Sloane's system of cataloguing. In other words, both Sloane's *NHJ* and his catalogues appear more as tools for cross-referencing and may have been more effective for Sloane's own use because of his own understanding of his collection and its organisation.

Barham, however, was sure that with his own knowledge of the use and value of Jamaican plants he could assist Sloane in ensuring that the *NHJ* became an invaluable publication, if that is what the London gentleman wanted. Listing some of the plants which featured in Sloane's book, and demonstrating what he knew about them, Barham wrote that he had 'for these many years made It my Indavors to finde out the Specifick qualityes of Plants'. He informed Sloane about the 'Tree Bark' which was useful for 'intermitting Fevers' as well as a 'Herb that Cured Capt^{n} Pickerings Eye when it was to all appearance Thrust out of its place with a Stick', saying that it 'is wonderfully esteemed with the Planters'. Barham also mentioned the 'The Hogg Gum as its Called' which he explained was in more 'use than ever taken while fresh & New from the Spurrs of the Tree with a little Sugar & Water passes Through in the most Violent Bellyach'.[31] Barham concluded his letter to Sloane by writing,

> These are only Some Hints I give you w^{ch} if of any Service to you I can inlarge Uppon them; & many Other things; butt I am afraid I have been to Prolix, bold & Troublesome w^{ch} if admits of Pardon I shall always Subscribe myself your most Devoted & faithfull Servant to Command.[32]

Barham evidently used the status of Sloane's *NHJ* to his benefit, making of it a way to form a relationship with Sloane and begin to exchange ideas about natural history. Barham told Sloane that he was keen to observe and collect plants mentioned in the original 1707 publication of *NHJ* as well as those of which Sloane seemingly had little or no knowledge.[33]

Interacting with Sloane in this instance was also important for Barham's own prospective natural history publication and other endeavours. During their long correspondence Barham was also in the process of producing his own *Hortus Americanus*. This was an account of the trees, shrubs and other vegetable matter of Jamaica (and South America more generally) with accompanying medical observations of these plants and their uses in diet and 'mechanics'. The plant entries

[31] Henry Barham to Hans Sloane, St Jago de la Vega, May 10 1712 (BL Sloane MS 4043), ff. 45r-46v.
[32] Henry Barham to Hans Sloane, St Jago de la Vega, May 10 1712 (BL Sloane MS 4043), ff. 45r-46v.
[33] Sloane's first volume of his *NHJ* was published in London in 1707. In 1725, Sloane published his second volume, which included amendments and comments relating to Barham.

were listed alphabetically, included references to other publications, and it was designed, according to Barham, to accompany Sloane's *NHJ* and make it more useful to the sorts of Jamaican planters who had slighted Sloane's book. Barham made sure to send his manuscript to Sloane, eager for comments, improvements and recommendations.[34] *Hortus Americanus* would not be published during Barham's lifetime, but Sloane described Barham and his work in the second volume of the *NHJ*:

> Mr. Barham above-mentioned, an ingenious Physician in Jamaica, amongst many other curios and useful Observations he sent to me by Letters and in a Manuscript, call'd Hortus Americanus, which I hope he will publish.[35]

Since Sloane had undertaken (some of) his own botanical fieldwork in Jamaica and documented the patients he had both treated and observed there – often prescribing local remedies – he surely recognised the value of the experience of locally-based physicians like Barham.[36] Sloane, therefore, considered the establishment of a correspondence with Barham worthwhile because for the next fifteen years Barham would write to Sloane many times, using each letter as an occasion to send further information about Jamaican natural history. Barham's letters include descriptions of poisons used by enslaved Africans, the natural hot water springs found in the Eastward part of Jamaica, as well as the experiences and knowledge he gathered from encounters with different people in Jamaica, particularly Africans. He also referred to mutual acquaintances in London, such as those who frequented coffee houses. Barham also discussed some of the plant material he was sending to Sloane. In 1724, he mentions the Logwood seeds that are listed in Sloane's catalogue as 'Logwood seeds from trees growing in Jamaica to Leeward of St. Jago de la Vega planted seed procured by Mr. Barham who gave them to me'.[37] Barham describes young Logwood plants as making the best and closest fences because of their prickly nature, and describes them as always being green in colour, emphasizing the way in which wild

[34] H. Barham, *Hortus Americanus: containing an account of the Trees, Shrubs, and other Vegetable productions, of South-America and the West-India Islands; and particularly of the Island of Jamaica; Interspersed with many curious and useful Observations, respecting their uses in Medicine, Diet, and Mechanics. By the late Dr Henry Barham. To which are added, A Linnaean Index, &c. &c. &c*, Kingston, Jamaica, 1794.
[35] See H. Sloane, *Voyage to the islands*, London, 1725.
[36] Robertson, Knowledgeable readers, 87.
[37] VS 7,670.

bees and flies 'are very Busy about them when in full Blossom'.[38] Barham had given seeds of the Logwood and the Blood Flower to Sloane when he had been in London in 1716.[39]

So while Barham was a significant contributor to the 'Vegetable Substances' collection, he was also able to add to, and amend, Sloane's published work on Jamaican botany. His letters to Sloane, his unpublished manuscript of *Hortus Americanus* as well as Sloane's *Catalogus Plantarum* and the volumes of *NHJ* indicate that Sloane used Barham's Jamaican natural historical knowledge in numerous ways – by adding objects to his collections, and incorporating information into his own work. Part Three will look more closely at the ways in which Sloane used Barham's medical knowledge to amend Volume Two of his *NHJ*, but here it is worth noting the mutual benefit afforded to Sloane and Barham by forming a relationship. Sloane was able to use Barham's local knowledge of Jamaican natural history, which he evidently held in high esteem, to correct and add to his own. For his part, Barham, a largely unknown physician from Jamaica, would be made a Fellow of the Royal Society of London on November 11, 1717 and two of his letters would be published in *Philosophical Transactions* in the same year.[40] His letters also suggest that he visited Sloane when he was in London, and the 'Vegetable Substances' catalogue indicates that Barham was able to add a significant amount of material to Sloane's botanical collection, to both men's benefit.

John Bartram also appears to have corresponded directly with Sloane. He did so for the first time in the summer of 1741 with Collinson acting as a broker for this exchange and those that ensued. Bartram wrote:

> My good, faithful friend Peter Collinson, in his last letter to me, that I received, acquainted me that thee desired I would send thee some petrified representations of Sea Shells. Accordingly, I have sent thee a few, which I gathered toward the northward. However, I design to send thee another

[38] Henry Barham to Hans Sloane, Apr 30 1724 (BL Sloane MS 4047), ff. 165r-166v.
[39] Henry Barham to Hans Sloane, Apr 30 1724 (BL Sloane MS 4046), f. 165.
[40] See H. Barham, A Letter of That Curious Naturalist Mr. Henry Barham, R. S. S. to the Publisher, Giving a Relation of a Fiery Meteor Seen by him, in Jamaica, to Strike into the Earth; With Remarks on the Weather, Earthquakes, &c. of That Island, *Philosophical Transactions (1717)* 30 (1717-1719) 837; H. Barham, A Letter of the Curious Mr. Henry Barham, R. S. Soc. To Sir Hans Sloane, Bart. Vice-President of the Royal Society; Giving Several Experiments and Observations on the Productions of Silk-Worms, and of Their Silk in England, as Made by Him Last Summer, *Philosophical Transactions (1683-1775)* 30 (1717-1719) 1036.

> collection by Captain Wright […] when I hope to give thee a fuller demonstration that I am thy vigilant and industrious friend.[41]

Having sent Sloane a collection of seashells in the hope that they would encourage further correspondence, Bartram must have been delighted when Sloane replied and thanked him for his generous offerings:

> I am very much obliged to you for several Natural Curiosities, Shells and Petrifactions, which my very good friend, Mr Peter Collinson, hath delivered to me with great care; and for which I rekon myself very much obliged to you, especially on account of the remarks that you had sent along with them, in your letter to me.[42]

Sloane then, in one of the only direct references to the 'Vegetable Substances' collection, expressed his desire 'to have some seeds, or samples of your plants, for my collections of dried herbs, fruits, &c. I should be extremely pleased to know wherein I can be useful to you, and retaliate the obligation you have laid upon'.[43] For James Delbourgo, Bartram's modest background intensified his desire for distinction and he would have relished the opportunity to send Sloane American natural productions.[44] However, Sloane's letter also suggests that he did not anticipate that these would be one-way exchanges and that he did not hesitate to encourage a relationship with Bartram, sending him a copy of his *NHJ* as well as his published catalogue of Jamaican plants. Sloane was also interested in Bartram's collection of botanical books, and in April 1743 he requested that Bartram send him a catalogue of them. This was quickly done, and in the following September Bartram recorded some of the natural history publications he owned and who had given them to him, including Lord Petre's gift of 'Miller's Second Part'.[45]

In November of 1742, Bartram gave the impression that Sloane presented him with a gift: a silver cup with his name engraved upon it 'so that when my friends drink

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[41] John Bartram to Sir Hans Sloane, Jul 22 1741, in: W. Darlington, *Memorials of John Bartram and Humphrey Marshall with notices of their botanical contemporaries*, Philadelphia, 1849, 302.
[42] Hans Sloane to John Bartram, Jan 16 1742, in: Darlington, *Memorials of John Bartram and Humphrey Marshall*, 303.
[43] Hans Sloane to John Bartram, Jan 16 1742.
[44] J. Delbourgo, *Collecting the World: The Life and Curiosity of Hans Sloane*, London, 2017.
[45] John Bartram to Sir Hans Sloane, Sep 23 1743, in: Darlington, *Memorials of John Bartram and Humphrey Marshall*, 305.

out of it, they may see who was my benefactor'.[46] The engraving read 'The Gift of Sir Hans Sloane, Baronet, to his Friend, John Bartram, Anno 1742'. However, this was something that Bartram had commissioned rather than Sloane, allowing, as James Delbourgo puts it, Bartram to 'collect and display Sloane as a highly desirable object in the eyes of his American friends'. However, Sloane did give his permission for one of his five guinea payments to be used to purchase the cup.[47] It perhaps functioned in similar ways to Barham's visits to Sloane in London to further cement the relationships with the great collector to the mutual, if different, benefit of both sides.

As noted above, Sloane described a number of seeds in his 'Vegetable Substances' catalogue that had been sent from Bartram. They appear from VS 12,475 onwards. In writing their entries Sloane included the numbering system that Bartram had assigned to them, which was separate from the catalogue's own numbering. They appear as follows:

> The following seeds were sent from Philadelphia by Mr. John Bartram 1748.
>
> See specimen no. 21 in Hort. Sicus. 334.
> " no. 27. Id.
> " no. 31. Id.
> " no. 32. Id.
> " no. 34. Id.
> " no. 35. Id.
> " no. 41. Id.
> " no. 42. Id.
> " no. 43. Id.
> " no. 44. Id.
> " no. 47. Id.
> " no. 50. Id.
> " no. 52. Id.

These non-consecutive numbers are part of Bartram's use of his own labelling and numbering system and, as his own letter indicates, they were used as a convenient method for describing the plants in his letter and fixing their identities within this exchange. He explained his reasons when he wrote,

[46] Hans Sloane to John Bartram, Jan 16 1742.
[47] Delbourgo, *Collecting the World*, chapter five.

> I have first, sent a quire of paper filled with dry specimens of plants, numbered, so that if thee wants any more of any sort there, or any more particular remarks on any of them, please to mention it to each number.[48]

Bartram also made sure to send Sloane other items including insects (which he labelled with numbers in a similar way to the seeds) and 'other curiosities'.[49] These objects included an Indian tobacco pipe made entirely from stone, which had been taken out of an old Indian grave; an Indian musical instrument; the head of an arrow made of white sparr and pots used by the Indians and collected on the sea coast. Sloane listed these items in his 'Miscellanies' catalogue.[50]

While both Barham and Bartram sent a variety of natural history objects to Sloane, some of which were included in the 'Vegetable Substances' catalogue, both collectors were also connected to other people around the world. Barham, for example, explains in one of his letters to Sloane that he had visited the Chelsea Physic Garden and Hampton Court Palace to see the outcome of the 'American Seeds' he had sent them. Only thirty-four out of eighty types of seed he had sent were growing successfully in Chelsea, but at Hampton Court all except one of the approximately one hundred seeds sent had grown well and were thriving. Barham was enthusiastic that Jamaican plants listed in Sloane's *NHJ* might be successfully appropriated and brought to perfection in Britain and the seed cultivation he witnessed in the gardens at Hampton Court was an encouraging sign to him.[51] Barham was also interested in the development of silk in Jamaica, as well as various mining ventures, demonstrating that his interests in natural history were not solely pursued through Sloane and his collections.

Bartram had other transatlantic connections. He was very much part of what Starr Douglas has termed an 'Anglo-American Quaker community'. She argues that in the early eighteenth century this 'network' developed with particular means and motives for collecting that differed from other collecting networks. It also had its own

[48] John Bartram to Hans Sloane, Nov 14 1742, in: Darlington, *Memorials of John Bartram and Humphrey Marshall*, 303-304.
[49] John Bartram to Hans Sloane, Nov 14 1742.
[50] John Bartram to Hans Sloane, Nov 14 1742; Sloane's 'Miscellanies' catalogue, entry numbers 2037, 2038, 2067 and 2068.
[51] Henry Barham to Hans Sloane, Chelsea London, Apr 29 (or Jul) 1718 (BL Sloane MS 4045), f. 110r-v.

distinct global geography.[52] Collinson, for example, was a Royal Society Fellow who had corresponded with numerous American naturalists, many of whom were Edinburgh-educated men interested in natural history. Also, many of those who collected and sent specimens from the Americas to Collinson were associated with the Pennsylvanian Quaker community and a significant proportion were abolitionists. Bartram had been one of Collinson's major Quaker correspondents who had helped to introduce over three hundred American species to Europe.[53]

As a result of these on-going and different interactions between Barham, Bartram and Sloane, the 'Vegetable Substances' contains numerous samples of New World botanical material. Barham and Bartram had different backgrounds and professions, and while Barham would travel to London in 1716 and be proposed as a Fellow of the Royal Society (by Sloane in 1717), Bartram would seemingly never leave the Americas or be elected a Fellow of the Royal Society.[54] These men, however, were both resident in the Americas with strong interests in their local natural histories. Just like Andrew Scott who sent samples from Maryland, Barham and Bartram had access to local information and knowledge about the natural world, which they collected in their own ways and sent to Sloane. These men also had other natural history pursuits, had letters published in *Philosophical Transactions*, and were connected to a variety of people around the world.[55] The written communications and natural history exchanges that took place within these relationships differed, and yet both Barham and Bartram developed fuller relationships with Sloane. The material found in the 'Vegetable Substances' therefore, was part of this process of establishing,

[52] See S. Douglas and F. Driver, Imagining the tropical colony: Henry Smeathman and the termites of Sierra Leone, in: L. Martins and F. Driver (Eds), *Tropical visions in an age of empire*, Chicago, 2005, 91-112; S. Douglas, Dr John Fothergill: significant donor, in: M. Campbell, E.G. Hancock and N. Pearce (Eds), *William Hunter's world: the art and science of eighteenth-century collection*, Farnham, 2015, 165-176, 165.
[53] J. Kastner, *A world of naturalists*, London, 1978, 49.
[54] Bartram's close friend Collinson was an active member of the society. In 1739 Bartram suggested a society for the study of nature and arts, and in 1743 Benjamin Franklin established the American Philosophical Society of which Bartram was a founder member. See F.N. Egerton, Bartram, John (1699–1777), *ODNB*, online edition 2004.
[55] As well as Barham's letters in the *Philosophical Transactions*, see H. Barham, *An essay upon the Silk-worm*, London, 1719. Collinson had seven of Bartram's letters published in *Philosophical Transactions* between 1734 and 1757 with topics relating to zoological observations and the aurora borealis seen in Philadelphia, as well as another on plant experiments which was published in *The Gentleman's Magazine* in September 1755.

developing and continuing these Atlantic relationships. And it was not just Sloane who benefitted from these New World interactions. These resident collectors profited in different ways, both socially and professionally, and Sloane and Bartram's interactions in particular suggest notions of reciprocity that were less likely to be present in the connections Sloane had with ship's captains, merchants and other distant collectors in the New World.

However, not all interactions with resident collectors in the Americas were as productive for Sloane's 'Vegetable Substances' collection as these. This is highlighted when exploring the contributions made by William Byrd II. Byrd was another contributor of New World material to the 'Vegetable Substances', an individual who lived in the Americas and someone who, once again, directly corresponded with Sloane. Unlike Barham and Bartram, however, Byrd had inherited a great fortune, social position and political prestige from his father William Byrd (1652-1704), a colonial officer.[56] Born in 1674 in Virginia, Byrd spent his early years in England before settling at his plantation, Westover, on the banks of the James River from 1726.[57] From Virginia, Byrd sent Sloane objects related to natural history including samples of a 'Jamestown weed seed' (VS 2,665), the 'Jerusalem oak' (VS 2,666) seed, as well as an 'unknown root' (VS 2,667).[58] He described their appearance and use in his letters to Sloane who then listed them together in his 'Vegetable Substances' catalogue. Six items in total appear to have been contributed by Byrd from Virginia.

Byrd, like Barham and Bartram, had access to local knowledge and resources but considered the men in Virginia who were 'calle'd Doctors' as 'discarded Surgeons of Ships' who knew very little about 'common Remedys'. In writing, Byrd opined to Sloane that these medical men were 'not acquainted enough with Plants or the other parts of Natural History, to do any Service to the World'. Byrd also complained that while Virginia was 'a large field for natural inquirys', it was 'much to be lamented'

[56] Nelson, Byrd, William (1674–1744), *ODNB*.
[57] O'Neill, *The opening letter*, 12.
[58] These are described as 'a dangerous seed of a Plant which we here [call] Jamestown Weed, both the seed and the root are rank poison and so are the leaves when they are grown to their full bigness, but these are only poison if taken inwardly for both the Root and the leaves make a Poultis that cures a burn immediately. In another paper is a seed of the Jerusalem oak as we call it, which kills worms better than any wormseed I ever heard of. The way of takeing it, is to mix a spoonful of the seed with honey, which must be eat 3 mornings together', William Byrd II to Hans Sloane, Virginia, Sep 10 1708 (BL Sloane MS 4041), f. 202.

that there were few 'people of skil and curiosity' among them. He knew 'no body […] capable of making very great discoverys, So that Nature has thrown away a vast deal of her bounty upon Us to no purpose'.[59]

Byrd, another Royal Society Fellow (elected in 1696), also recognised his own lack of knowledge. He confessed that 'I wish I were acquainted with the ways of trying the virtues of Plants, of which we have here a surprizing variety: but our ignorance makes 'em of no use to us'.[60] And when Sloane received a box from Byrd containing New World natural productions, he was prompted to write back to Virginia with corrected information about the plants and their uses. As he explained to Byrd, 'The root you call Poke is not Jalap but the root of the Solanum racemosum Americanum of Mr. Ray in his history of plants. This plant I met with in the Caribe Islands & Jamaica'. Sloane also mentions the 'James town weed' which he said to Byrd was 'a Stramonium', and which he had also 'met with in Jamaica & the Caribes'. It 'is', he wrote, 'without question a great poison'. Sloane also explained to Byrd that the plant he had called the 'Jerusalem oak' was in fact 'the Botrys Ambroscioides Mexicana of Casper Bauhine & other herbarists'.[61]

As a result, Sloane wrote addenda to his catalogue entries for the items that Byrd sent to him. For the 'Poke root' (VS 2,664), Sloane inserted a note to Ray's *Historiae* (1686-1706) and his own catalogue of Jamaican plants (1696), as well as listing it as a plant that purged instead of Byrd's original claim that it could be used as a dye.[62] This was a carefully considered judgement. So, while many of Sloane's catalogue entries imply that he simply inserted the information he received with the objects themselves, his exchanges with Byrd are evidence that Sloane did not always rely on the botanical information supplied by his contributors. Instead, Sloane cross-referenced this information with his own knowledge and from that process created a catalogue entry that combined information he judged to be true.

Byrd, then, although able to send Sloane samples of American plants, appears less able to provide accurate and detailed explanations of these items and their uses, compared to other resident collectors such as Barham and Bartram. While these circumstances did not prevent Sloane from encouraging Byrd to send plant samples

[59] William Byrd II to Hans Sloane, Virginia, Apr 20 1706 (BL Sloane MS 4040), f. 151.
[60] William Byrd II to Hans Sloane, Virginia, Sep 10 1708 (BL Sloane MS 4041), f. 202.
[61] Hans Sloane to William Byrd, Dec 7 1709 (BL Sloane MS 4068), f. 54.
[62] Abbreviations appear in entry as: 'Ray. hist. cat. Jam. p. 84'.

from Virginia, their exchanges suggest a different set of interactions to those Sloane had with Barham and Bartram.[63] For whatever reason, Sloane was a less than assiduous correspondent. Byrd, for instance, writes in 1708 that 'About two years since I saluted you and gave you the trouble of a few of our natural productions. I have had the pleasure of one letter from you upon that Subject, which gave me hopes of a full answer by the next opportunity. But I have heard no more since…. It was, the having been without that Favour has very much discouraged my inquirys'.[64] Byrd also seems to have approached Sloane very differently to Barham and Bartram. For example, many years later, in 1741, Byrd requested that Sloane send a number of scientific instruments to him in Virginia:

> I have a Son that is entering upon natural Philosophy, and I shoud be obligd to you, if you wood be so good as to send me one of the Reflecting Telescopes, a very good Barometer and Thermometer, With an Air Pump foundation.[65]

Byrd, a 'polished gentleman… with a circle of distinguished friends among the English gentry and nobility' was perhaps happy to make requests of Sloane in a way that is not so evident in the communications from Barham and Bartram.[66] His social status may have afforded him the ability to interact with Sloane in ways that Barham and Bartram could not. When Byrd requested that Sloane send him samples of minerals, Sloane responded by writing that 'As to ye mineralls you mention there are such varietys that 'tis next to Impossible to send you over the severall sorts, tis much easier to you to send over what you want to be informed of in which Case you shall receive the best Satisfaction I can give you'.[67] Such written exchanges between Sloane and Byrd suggest that social status did matter and made a difference in the process of collecting natural history. It could alter the nature of interactions that Sloane had with resident collectors in the Americas. The asymmetries in status found amongst Sloane, Barham and Bartram, and the degrees of connection they made possible, may well

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[63] As suggested by Sloane's comment to Byrd: 'When you send any other herbs pray send their leaves and flowers dryed between papers and their seeds that they may be known and raised here'. See Hans Sloane to William Byrd II, Dec 7 1709 (BL Sloane MS 4068), f. 54.
[64] William Byrd II to Hans Sloane, Virginia, Sep 10 1708 (BL Sloane MS 4041), f. 202.
[65] William Byrd II to Hans Sloane, Virginia, Apr 10 1741 (BL Sloane MS 4057), f. 20.
[66] Nelson, Byrd, William (1674–1744)', *ODNB*.
[67] Hans Sloane to William Byrd II, Dec 7 1709 (BL Sloane MS 4068), f. 54.

have proved more productive for making a natural history collection like the 'Vegetable Substances'.

Material in the 'Vegetable Substances' sent by resident collectors in the Americas reveals an 'exchange' element in the movement of natural history across the Atlantic. While all sorts of people, including ship's captains, merchants, plant collectors and women, contributed material to Sloane's collection, these were often one-way movements of botanical material. Sloane's interactions, and development of relationships, with collectors like Barham, Bartram, Scott and Byrd, however, suggest that resident collectors allowed for natural history (in different forms) to be directly *exchanged,* and in more substantial quantities. This meant that these individuals benefitted in some way from establishing more enduring relationships with each other and exchanging natural history. For Sloane, this went beyond the formation of his botanical collection because he was able to use resident collectors in the New World to amend his own *NHJ* (1725). Also, these resident collectors and their interactions with Sloane highlight the 'networking' nature of the Atlantic. In other words, Sloane was considered as one of several European contacts with whom the likes of Barham, Bartram, Scott and Byrd corresponded and to whom they sent American natural material. This was also the case for 'sponsored collectors' who were the other group of contributors who sent substantial amounts of New World material to London. These individuals were not resident in the Americas but they did have direct contact with Sloane and, importantly, were financially supported in their natural history endeavours by him. This affected their relationships and interactions in different ways to that of 'resident collectors'.

Sponsored Collectors

The expertise and knowledge of individuals resident in the New World allowed them to contribute to Sloane's botanical collection in particular ways, providing particular local objects and knowledge about them. Other collectors of New World material with whom Sloane interacted, including Mark Catesby, William Houstoun and Robert Millar, were specifically employed and sponsored to travel to the Americas to collect natural history specimens. In these instances, Sloane financially supported their collecting trips, and in doing so ensuring the formation of specific sorts of relationships with contributors to the 'Vegetable Substances'. This section examines

how far Sloane was able to directly make his collection through his interactions with these collectors of natural material.

Sponsored collectors made considerable contributions to the 'Vegetable Substances' collection. The English naturalist Mark Catesby (1683-1749) is listed as the contributor of 215 specimens (13% of American material in the collection), eighty-five of which came from North and South Carolina, and the remainder from other places in the Americas including the Bahamas and Gloucester County in Virginia. Sloane also received a number of plant samples from the surgeon William Houstoun (1695-1733). Eighty-eight have been listed in Sloane's catalogue, with forty-three having been sent from Jamaica and the rest from Vera Cruz, Cartagena and Buenos Aires. The Scottish-born surgeon Robert Millar (fl. 1734-1742) also contributed a considerable amount of New World plant material to Sloane's botanical collection and 347 items have been listed in the 'Vegetable Substances' catalogue as 'A Collection of Seeds, 347. in No. sent from Cartagena Panama &c by Mr. Robert Millar. Ao. 1737'.

Catesby, born in Sudbury in Britain on March 24, 1682, and interested in botany from a young age, had travelled with his sister to Williamsburg, the capital of Virginia, in April 1712.[68] He had been introduced to many local, influential, wealthy and powerful landowners including William Byrd whom he would later accompany on local trips to examine the natural productions of the country. Catesby created an impressive collection of plant specimens as well as animal and plant drawings while he was in America and returned to England in 1719 with extensive knowledge of New World natural history. A number of botanists, horticulturalists and gardeners – including Sloane and the highly regarded botanist William Sherard (1659-1728) – were struck by Catesby's work, and this encouraged a proposal for him to make a second trip to America with the aim of producing a publication on the natural history of Carolina. Catesby's second American visit saw him arriving in South Carolina on May 23, 1722. He was sponsored by the colonial governor Sir Francis Nicholson (1655-1728) and a small group of English patrons including Sloane and a number of his friends, such as the physician Richard Mead (1673-1754) and Charles Dubois

[68] In a recent biographical account of Catesby by E.C. Nelson, "The truly honest, ingenious, and modest Mr Mark Catesby, F.R.S.": documenting his life (1682/83-1749), in: E.C. Nelson and D.J. Elliott (Eds), *The curious Mister Catesby – a "truly ingenious" naturalist explores new worlds*, London, 2015, 1-20: the birth records for Catesby have been traced and establish that he was born on 24 March 1682, not a year later as other sources suggest.

(1656-1740).[69] These men were associated with medicine, through the Royal College of Physicians; natural philosophy, via the Royal Society; and commerce, through the East India Company, and were interested in the connections between natural history, colonial exploration, horticulture, and plant transportation and cultivation.[70]

Similarly, William Houstoun and Robert Millar were also employed to observe and collect plants in the Americas. Born in Scotland, Houstoun had studied at St Andrews University and was made a Royal Society Fellow in 1733. He travelled to the West Indies as a surgeon for two years in the late 1720s, after which he went to Leiden University and studied physic under Herman Boerhaave (1668-1738).[71] He then went to Paris, and a list from him dated 1730 in Sloane's manuscripts at the BL shows a number of plants in the Jardin du Roi. On his eventual return to London, Houstoun worked for the South Sea Company as a surgeon, travelling to Jamaica and Mexico (and neighbouring areas) where he collected plants. In October of 1732, Houstoun was commissioned by a number of wealthy botanists and cultivators of exotic plants, including Sloane, and in conjunction with the Georgia trustees, to make a three-year plant-collecting voyage to the West Indies at a salary of £200 a year. When Houstoun died in 1733, leaving his collecting mission uncompleted, Millar, an Edinburgh medical student, replaced him, travelling to America on behalf of the trustees of the Georgia colony.[72]

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[69] The botanist Charles Dubois (FRS), treasurer of the EIC between 1702 and 1738, was acquainted with London natural historians including Sloane, Petiver and William Sherard with whom he shared plants and observations on cultivation. His herbarium, which originally consisted of seventy-four bound volumes and approximately 13,000 specimens is now (disbound and with the specimens redistributed) part of the Oxford University Herbaria. See B.D. Jackson, Dubois, Charles (*bap.* 1658, *d.* 1740), rev. P. E. Kell, *ODNB*, online edition 2008; S.A. Harris, The plant collections of Mark Catesby in Oxford, in: Nelson & Elliott, *The curious Mister Catesby*, 173-188.

[70] For histories of Mark Catesby, his trip to the Americas and his *Natural History of Carolina* see G.F. Frick and R.P. Stearns, *Mark Catesby: the colonial Audubon*, Urbana, 1961; H. McBurney, *Mark Catesby's Natural History of America: the watercolors from the Royal Library Windsor Castle*, London, 1997; A. Feduccia, *Catesby's birds of colonial America*, Chapel Hill, 1985; A.R.W. Meyers and M. Beck Pritchard (Eds), *Empire's nature: Mark Catesby's new world vision*, London, 1998; Pickering, Mark Catesby's Natural History of Carolina; Nelson and Elliott (Eds), *The curious Mister Catesby*.

[71] Boerhaave was a famous Dutch botanist, chemist and physician who left an impressive legacy at the University of Leiden where he taught medicine for many years. See for example, G.A. Lindeboom, *Herman Boerhaave: the man and his work*, second edition, Rotterdam, 2007.

[72] See Dandy, *The Sloane Herbarium*, 139-140; G.S. Boulger, Houstoun, William (*c.*1704–1733), rev. D.E. Allen, *ODNB*, online edition, 2004.

Catesby, Houstoun and Millar all received specific instructions and had certain expectations placed on them during their collecting trips to the New World. Houstoun was explicitly instructed to sail via Madeira to study wine making and to procure vine cuttings. When he reached Jamaica he was, in co-operation with the South Sea Company, to visit the Spanish colonies at Cartagena, Porto Bello, Campeche and Vera Cruz. On returning to Jamaica, he was then to proceed to Georgia and oversee the laying out of a public garden and nursery in Savannah. Although Houstoun died in Jamaica in 1733, some of the collections he had made had already been shipped to Charles Town while others were safely in Jamaica.[73] Millar would then retrace Houstoun's steps, locating and collecting botanical specimens, seeds and plants that might be successfully propagated in Georgia. He voyaged on South Sea Company ships to Porto Bello and Panama and from there he went to Jamaica and Vera Cruz.[74]

Similarly, Catesby's sponsors were keen to receive plant and animal specimens as well as drawings made in the field.[75] Catesby sent dried plants to Sherard, who wrote to Richard Richardson on October 13, 1722 that,

> I had a letter this week from Mr Catesby at Carolina, who sent me two quires of dry'd plants, 40 of w^{ch} were new; by ye last ships, w^{ch} may arrive before Christmas, he promises me a much larger collection, wth seeds & fruits, w^{ch} you may depend on.[76]

Catesby's patrons were also interested in the knowledge that could be provided about sowing and growing imported American plant material. One of them, Sir Francis Nicholson, had been appointed governor of Carolina in 1720 and believed that greater knowledge of Carolina flora and fauna would advance the development of the colony.[77]

As a sponsor of Catesby's trip, Sloane also received a number of letters and New World natural productions from him, the majority of which were dated between 1723 and 1724 and sent from Charles Town and elsewhere in Carolina. The

[73] See Boulger, Houstoun, William (*c.*1704–1733).
[74] Stewart, Global pillage: science, commerce, and empire, 831.
[75] D.R. Brigham, Mark Catesby and the patronage of natural history in the first half of the eighteenth century, in: Meyers and Beck Pritchard (Eds), *Empire's nature*, 95.
[76] William Sherard to Richard Richardson, London, Oct 13 1722 (MS. Radcliffe Trust. C. 4), f. 84.
[77] Brigham also talks about the subscribers to Catesby's *Natural History of Carolina* and how it was not aimed at a single audience with a narrow set of concerns, see Brigham, Mark Catesby and the patronage of natural history, 98.

foundation of Sloane's relationship with Catesby seems to have been based on Sloane's financial support for Catesby's trip to America. Catesby's collection of natural history and the tone of his letters to Sloane suggest that, because of this patronage relationship, Catesby was particularly concerned with the value, quality and quantity of the objects he was sending to Sloane. For example, on May 10, 1723, Catesby wrote to Sloane from 'Charles City' and began with his apprehension that 'This Box contains so indifferent a collection that I am in a doubt whether to send it or not'.[78] Many of Sloane's correspondents would make such self-deprecating remarks when sending him objects of interest. Indeed, such remarks were a routine part of the rhetoric of gentlemanly modesty.[79] Catesby however, would have felt increasing pressure to justify his decisions and actions in America. For example, he blamed illness for not being able to provide a 'better collection', and noted that the shells he had sent to Sloane were all he could learn of and all he had seen.[80] The form of sponsorship that structured their relationship created specific roles – and with them duties and obligations – in the movement of natural history.

Catesby's correspondence with Sloane also indicates that Sloane was giving him more specific instructions beyond those outlined for the trip as a whole. This was a crucial aspect to their relationship that both would have accepted and acted upon. Catesby was part of an organised collecting trip and therefore took note of the instructions from his sponsors. He wrote to Sloane from Charles Town saying,

> I am at a loss to know for want of hearing from you whether all kinds of Birds thus preserved will be acceptable to you or whether those only that are remarkable for colour or shape.[81]

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[78] It is unlikely that this is Charles City situated in Virginia to the west of Jamestown because Catesby was in South Carolina in 1723 and in Virginia much earlier (1712-1719), see chronology of Catesby's trip, in Nelson and Elliott (Eds), *The curious Mister Catesby,* xiii-xviii. 'City' and 'Town' are therefore probably used interchangeably with 'Charles'.

[79] See E.T. Bannet, *Empire of letters: letter manuals and transatlantic correspondence, 1680-1820*, Cambridge, 2005; L. Pollock, 'The practice of kindness in early modern elite society, *Past and Present* 211 (2011), 121-158; A. Goldgar, *Impolite learning.*

[80] Mark Catesby to Hans Sloane, Charles City, May 10 1723 (BL Sloane MS 4046), f. 352; Mark Catesby to Hans Sloane, Charles Town, Mar 12 1723 (BL Sloane MS 4047), f. 147.

[81] Mark Catesby to Hans Sloane, Charles Town, Mar 12 1723 (BL Sloane MS 4047), f. 147.

Catesby, a man who considered himself a gentleman and above a simple merchant or collector, was obviously frustrated at times by the lack of communication from Sloane and was hesitant to waste time collecting specimens or making duplicate images if they were not wanted. However, some of Catesby's other letters to Sloane indicate that the expectations placed on him had not been made entirely clear or had altered during his trip to America, causing frustration. In one letter, Catesby expressed his discontent with his patron's expectations:

> My sending collections of plants and especially Drawings to every of my subscribers is what I did not think would be expected from me.
> My design was Sr (til you'l pleas to give me your advice) to keep my Drawing intire that I may get them [engraved?], in order to give you again the History of the Birds and other Animals, which to distribute separately would wholly frustrate that designe, and be of little value to those who would have so small fragments of the whole. Besides as I must be obliged to draw duplicates of whatever I send, that time will be lost: which otherwise I might proceed in the design and consequently be so much short in proportion to what is sent.[82]

Catesby was concerned about the effect on the production of his *Natural History of Carolina* of spending so much time collecting specimens, making drawings and communicating observations with his European sponsors. He would, therefore, request a favour from Sloane:

> I beg Sr. if you (as I flatter my self you will) think this reasonable that you will pleas to satisfy Lrd Persival, who no doubt but will be influenced by what you say That I might not be thought remiss and to give all content I can to my subscribers I designe to tarry here another year.[83]

Catesby obviously relied upon Sloane's ability to communicate to particular sponsors of his visit as well as Sloane's abundant enthusiasm for and interest in his trip to America. This is also seen in January of 1724 when Catesby told Sloane about his plans to travel to the Bahamas to continue with his natural history observations and collecting. This trip would prolong Catesby's presence in America for another year and, according to his letter, he was concerned his sponsors would not continue their financial support. Catesby appealed to Sloane in this situation, writing:

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[82] Mark Catesby to Hans Sloane, Charles Town, Aug 15 1724 (BL Sloane MS 4047), f. 212.
[83] Mark Catesby to Hans Sloane, Charles Town, Aug 15 1724.

> I am so preparing to goe to the Bahama Islands to make a further progress in what I am about. This will add another year to my continuance in America. And tho' I doe not expect a continuance of my full subscriptions yet I know partly by your interest and continuance of your Favours, I may expect the greater part of it.[84]

And, of course, Sloane did continue his favours to Catesby because we find fifty-six entries in the 'Vegetable Substances' catalogue described as 'From the Bahama Islands by Mr. Catesby'.[85] From there Catesby sent to Sloane 'the twigs and seed vessel & seed of a beautiful blew flowering acacia' (VS 8,410) as well as examples of calabashes, fruits, seeds and bark. But while Catesby may have used Sloane's influence, reputation and connections for his own advantage (to prolong his trip and his funding), this would have also benefitted Sloane. After all, Sloane was keen to receive new and unknown plants from the New World and recognised Catesby's ability to provide American natural history knowledge that he could preserve in his collection.

Sloane was certainly interested in receiving plants that he had not met with before and ensured that he requested this of those whom he interacted with around the world. As a result, Catesby wrote in detail about the objects he had sent and hoped that they would 'prove as different and new' to Sloane.[86] The items we find in Sloane's 'Vegetable Substances', therefore, in the case of these sponsored collectors, indicate the sorts of natural history that Sloane was interested in and the types of instruction he gave when he had the opportunity. This is evident (drawing on an example from beyond the 'Vegetable Substances') in Catesby's observations of American reptiles which became a recurring theme in his letters to Sloane. Catesby first mentioned snakes on March 12, 1723 when he wrote to Sloane that 'I shall Sr. send you a collection of Reptiles so soon as I can procure glasses to put them in'.[87] Catesby was in need of particular sorts of containers in which to put these snakes if he was to send them to London, and therefore requested glassware from Sloane:

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[84] Mark Catesby to Hans Sloane, Carolina, Jan 5 1724 (BL Sloane MS 4047), f. 307.
[85] Listed between VS 8,410 and VS 9,947 in volume three of Sloane's 'Vegetable Substances' catalogue.
[86] Mark Catesby to Hans Sloane, Charles Town, Nov 15 1723 (BL Sloane MS 4047), f. 90.
[87] Mark Catesby to Hans Sloane, Charles Town, Mar 12 1723 (BL Sloane MS 4047), f. 147.

> Here are twelve different kinds of snakes that I have seen I am in great want of Wide Mouthed Bottles to put them in[.] I find Rum will not preserve large ones if your important affairs will let you think out Sr I desire you please order me a case of large Bottles for Reptiles with a few proper Boxes for Birds and Insects and to Honour me with what particular commands you have for me.[88]

Sloane replied to Catesby's letter and, according to Catesby, wrote from London on April 17, 1724 keen to receive this collection of snakes:

> I received yrs of the 17th Aprile last. I shall according to your order make a collection of snakes &c but the season is so far spoilt before I received the Bottles to put them in that I fear I shall make but a small progress this Summer especially in larger snakes, for which I have not had before now bottles large enough to put them in. I send now the first half of the Summers collection which I hope will afford you many new plants for many of them are ye same of those distroyed by the pyrates.[89]

In this instance at least we see a direct interaction between Sloane and a contributor to the 'Vegetable Substances' collection over what was being collected, although in this case it is a matter of snakes not seeds.

Figure 11: 'Vegetable Substances' specimen 8,453 which has been described as 'Lilly flowering thorn' in Sloane's manuscript catalogue of the collection. This sample was apparently sent from the Bahamas by the naturalist Mark Catesby and is now held in the Natural History Museum. Photography by Charlie Jarvis, © Trustees of the Natural History Museum, London.

[88] Mark Catesby to Hans Sloane, Charles City May 10 1723 (BL Sloane MS 4046), f. 352.
[89] Mark Catesby to Hans Sloane, Charles Town, Aug 15 1724 (BL Sloane MS 4047), f. 212.

The form of sponsorship of Catesby's collecting trip meant that he was sending seeds and specimens to many different people. Therese O'Malley has discussed the integral role played by Catesby in the international exchange and cultivation of plants that was so important for the history of gardens and botanical studies. A number of the seeds found in the 'Vegetable Substances' were also being grown in gardens across London, revealing Catesby's significant position in stocking eighteenth-century gardens.[90] One example is Sloane's description of a 'Lilly flowering thorn' (VS 8,453) (see figure 11), a plant specimen of *Catesbæa*, a genus named in Catesby's honour by Johan Gronovius (1686-1762) and a name subsequently adopted by Carl Linnaeus (1707-1778) in his *Species Plantarum* (1753).[91] Seeds of this plant were distributed by Catesby to a number of people in England to cultivate, and in 1726 several young plants were reported as having been raised successfully from them, including some by 'Mr. Powers a skilful and curious gardener, at Mr. Baithwait's, of Derham, near Bath'.[92]

Catesby's own set of contacts certainly reached beyond Sloane, both in terms of the people who ensured the safe collection and delivery of American material, and individuals who subscribed to his *Natural History of Carolina.* For example, Catesby relied on various 'go-betweens', including 'Mr Rogers', whom he spoke about in an early letter to Sloane, as well as merchants including 'Captain Rowe' and 'Captain Robinson' who carried Catesby's boxes of dried birds, shells and insects from Carolina to London.[93] Catesby later sent boxes of objects via the 'Blandford man of war' as well as by 'Captain Easton' on board the merchant ship *Neptune.*[94] Catesby also forwarded Sloane sixty samples of seed that came from John Clayton (1694-1773/4). These are listed in the 'Vegetable Substances' catalogue in Latin and are

[90] See T. O'Malley, Mark Catesby and the culture of gardens, in: Meyers and Beck Pritchard (Eds), *Empire's nature*, 147-183; M. Laird, From callicarpa to catalpa: the impact of Mark Catesby's plant introductions on English gardens of the eighteenth century, in: Meyers and Beck Pritchard (Eds), *Empire's nature*, 184-227.
[91] See J.L. Reveal, A nomenclature summary of the plant and animal names based on images in Mark Catesby's Natural History (1729-1747), *Phytoneuron* 11 (2012) 1-32.
[92] M. Catesby, *The Natural History of Carolina, Florida, and the Bahama Islands, Volume II*, 1771, 204.
[93] It is possible that 'Rowe' and 'Robinson' represent the same individual. See Mark Catesby to Hans Sloane, Charles Town, Mar 12 1723 (BL MS 4047), f. 147; Mark Catesby to Hans Sloane, Charles Town, Aug 15 1724 (BL MS 4047), f. 212; Mark Catesby to Hans Sloane, Charles City, May 10 1726 (BL MS 4046), f. 352.
[94] Mark Catesby to Hans Sloane, Charles Town, Nov 27 1724 (BL Sloane MS 4047), f. 290.

described as ‘A Parcel of seeds sent from Gloucester County in Virginia by Mr. Clayton to Mr Catesby: who gave them, March 25: 1737’ (VS 10,978). Clayton had been the Clerk of Gloucester County in Virginia for many years and was well regarded for his accurate observations and recordings of plants. Catesby and Clayton met in Virginia, and Clayton would go on to make important links with Linnaeus and Gronovius.[95] Catesby would also come to rely on at least one enslaved African to help him make his natural history collections in America. While writing to Sherard towards the end of 1722 from Charles Town, Catesby argued that his collecting activities meant that he needed to ‘buy a Negro Boy which will cost about 20 sterling’ from the next ‘Negro ship that arrives’. Catesby argued that buying an enslaved African was essential for building ‘a general collection’ because of the excessive heats, which had also caused him to be too unwell to collect in the recent months. [96]

The far-reaching nature of Catesby’s connections can also be seen in the list of subscribers to his *Natural History*; an interested audience on both sides of the Atlantic which included gardeners, merchants, physicians, nobleman and royalty. Prominent subscribers in horticulture included Thomas Fairchild (1667-1729), and botanists Isaac Rand (1674-1743) and Richard Richardson (1663-1741). Royal subscribers included Queen Ulrika Elenora of Sweden (1688-1741), and Catesby dedicated volume one to Queen Caroline of Great Britain (1683-1737). After her death, volume two was dedicated to Princess Augusta, the Princess of Wales (1719-1772) who also subscribed to the book.[97]

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[95] Clayton probably moved to Virginia before 1720, after his father settled there as secretary to the lieutenant governor, Edward Nott, in 1705. Clayton is known to have sent dried plant material to correspondents such as Gronovius many of which Linnaeus would have seen. Gronovius explicitly cites Clayton’s specimens in his published *Flora Virginica* in 1739 and 1743. See C. Jarvis, Carl Linnaeus and the influence of Mark Catesby’s botanical work, in: Elliott and Nelson (Eds), *The curious Mister Catesby*, 197; A. le Lièvre, Clayton, John (1694/5–1773/4), *ODNB*, online edition 2004; E.G. Swem (Ed.), *Brothers of the spade: correspondence of Peter Collinson of London, and of John Custis, of Williamsburg, Virginia. 1734-1746*, Massachusetts, 1957.

[96] Mark Catesby to William Sherard, Charles City, Dec 9 1722 (Sherard Correspondence at the Royal Society), f. 165; Mark Catesby to William Sherard, Jan 4 1722/3 (Sherard Correspondence at the Royal Society), f. 168.

[97] Sloane himself subscribed for five copies, see L.K. Overstreet, The publication of Mark Catesby’s *The natural history of Carolina, Florida and the Bahama islands*, in: Elliott and Nelson (Eds), *The curious Mister Catesby*, 155-172: 159; Brigham, Mark Catesby and the patronage of Natural history, 94.

Similarly, Houstoun and Millar's connections extended beyond Sloane. Both Houstoun and Millar's collecting activities in the Americas were part of the establishment of the 'Trustees Garden' in Savannah, Georgia, in 1734 by General James Oglethorpe (1696-1785).[98] A ten-acre site dedicated to botany and agriculture, this garden was modelled on the physic and botanical gardens of Oxford and Chelsea in England, and envisioned as part of a broader (and ambitious) colonial project to supply England with products otherwise imported from Europe.[99] The Georgia Trustees – many of whom were connected to the Royal Society – expected Houstoun, as the first manager of the garden, to embark on cultivating the seeds, roots, and cuttings of useful plants he collected across the New World. His salary was provided separately by Sloane and others, including Oglethorpe, Lord Petre, the Society of Apothecaries, Charles Dubois, the Earl of Derby and the Duke of Richmond, which seemingly allowed them to receive specimens for themselves.[100] When Houstoun died in Jamaica in 1733, Sloane recommended Millar as a replacement. Millar continued to make botanical collections for the Trustees as well as other subscribers including the Apothecaries' garden at Chelsea.[101] Though the letter is undated, Millar wrote to Sloane while he was in America and indicated his connections and exchanges with Peter Collinson. He said to Sloane: 'I have just now an opportunity of sending my collection of seeds I have gathered […] I have sent these seeds consisting of 182 different sorts to Mr Peter Collinson'.[102] And although Millar refers to Sloane as his 'best patron' he also informed him in 1734 that he was sending seeds and plants collected in Jamaica and the Leeward Islands to him and Lord Petre.[103]

Through these connections, these sponsored collectors played fundamental roles in the discovery of American natural productions previously unknown in Europe. For example, Houstoun helped to introduce more than seventy-five new plant

[98] This was two years after the founding of the Georgia Trust, which governed the colony between 1732 and 1752.
[99] S.B. Gober Temple and K. Coleman, *Georgia Journeys*, Georgia, 2010, 121.
[100] R.P. Stearns, *Science in the British Colonies of America*, London, 1970, 329.
[101] Some of the most active members of the Trust included James Vernon, Samuel Smith, Thomas Tower, Stephen Hales and James Oglethorpe. See E.J. Cashin, Trustee Georgia, 1732-1752, *History and Archaeology Colonial Era, 1733-1775* (2003).
[102] Robert Millar to Hans Sloane, not dated (BL Sloane MS 4059), f. 356.
[103] He writes to Sloane saying 'I leave this evening for Campeche and La Vera Cruz. You won't hear from me as I will be voyaging about for about 6 months and I didn't want my best patron to think I was neglecting him'. See Robert Millar to Hans Sloane, Kingston, Nov 25 1735 (BL Sloane MS 4054), f. 147; Millar to Sloane, Kingston, Jul 22, Dec 6 1737 (BL Sloane MS 4053), ff. 147-148.

species into Europe.[104] Also, Catesby's *Natural History of Carolina* saw him providing a reference tool for naturalists in their ordering of the natural world and, as has been shown, Fellows of the Royal Society, members of the aristocracy, horticulturalists, collectors, and many others supported him in his New World endeavours. Catesby also introduced specific plants into English and American gardens, including those bearing his name (*Catesbaea spinosa*, *Gentiana catesbaei* and *Lilium catesbaei*). Therefore, the significant contributions by Catesby, Houstoun and Millar to Sloane's botanical collection are part of a broader story about their roles in the movement of American natural knowledge across the Atlantic. But at the core of this natural history is Sloane's role in providing financial support and encouragement to their trips. In these contexts, the 'Vegetables Substances' sent from Catesby, Houstoun and Millar along with their subsequent and direct interactions with Sloane, reveal how relationships that Sloane formed with particular individuals shaped the material that he received and placed in his collection. Interactions with these 'sponsored collectors' suggest that these individuals were directed in their collecting activities by Sloane, but only in part because they were also instructed by others, and collecting for other people across the Atlantic in natural history endeavours that went beyond Sloane's formation of the 'Vegetable Substances'.

Conclusion

When considering the material from the New World that came into Sloane's 'Vegetable Substances' collection, it is important to note that, whether it came from contributors resident in the Americas or those sponsored to travel there, it most often came as part of varied contributions to Sloane's collection that went beyond plant matter. For example, at least eighty-seven items in the 'Vegetable Substances' look to have originated from Virginia and were sent by 'Mr Clerk'. Such samples include a 'cocoon from Virginia thrown up by the river' (VS 8,975), 'The fruit of the Virginian sumack' (VS 8,688), 'The pod of the honey tree' (VS 8,695), 'A very small bottle gourd' (VS 8,697), 'Seeds of the Marvellous Apple' (VS 8,922), and 'Seeds of a Beautiful Red Flower' (VS 8,924). However, it is also possible to identify numerous other items in other parts of Sloane's wider collection which also appear to have come from 'Mr Clerk' in Virginia. In Sloane's 'Miscellanies' catalogue, for example, we

[104] Cashin, Trustee Georgia, 1732-1752.

can identify 'An Indian drum made of a hollowed tree' (1,368) as well as a strum strum (1,369), a basket made of cane (1,370) and a tobacco pipe (1,387). Clearly those sending things from the New World might be contributing a range of sorts of objects that could end up distributed across different parts of Sloane's collection.

This was true of many of the contributors discussed in this chapter. Bartram's boxes contained a variety of sorts of things and Houstoun provided Sloane with an 'Earthen ware bak'd by the sun by the Indians at la Vercruz in America' which Sloane listed in his 'Miscellanies' catalogue (1,590).[105] Similarly, while over half of Catesby's contributions to the 'Vegetable Substances' were seeds, he was also sending Sloane more unusual items including the bottled snakes, 'an Indian Apron made of the Bark of Wild Mulberry' and 'a kind of Basket they make with Split Cane' which Catesby portrayed as the only 'Mecanick arts worth notice'.[106] Sloane also listed this Indian apron in his 'Miscellanies' catalogue exactly as Catesby described it in his letter. Similarly, Catesby's letters indicate that he sent a number of shells and birds including a cuckoo, a Virginia nightingale, a woodpecker and a King Bird (described as having a yellow spot on its crown) as well as numbers of dried pressed plants, which are now incorporated within two bound volumes of the Sloane Herbarium at the NHM.

As this chapter has shown, this variety of contributions was made by a great variety of contributors who differed in terms of their age, gender, profession, social standing, education and background, as well as their locality within the New World. This variety reflects the process of settlement and transatlantic trade, including the slave trade, which characterised the Americas. As this involved both men and women, merchants, planters, doctors, ships captains and soldiers, so they in various ways might take part in exchanging natural history with collectors like Sloane, sending natural material back to Britain and Europe. This context facilitated Sloane's collecting activities, allowing him to add a significant amount of New World material to his botanical collection thanks to the connections he had with people in that part of the world. It is the case, however, that looking at the most significant contributors of New World material listed in the 'Vegetable Substances' catalogue reveals the significance of Sloane's relationships with resident collectors as well as individuals who were directly sponsored to travel and collect. First, the case studies of Jamaican

[105] See Sloane's 'Miscellanies' catalogue.
[106] Mark Catesby to Hans Sloane, Charles Town, Nov 27 1724 (BL Sloane MS 4047), f. 290.

physician Henry Barham and plant collector John Bartram (as well as the counter example of William Byrd) have shown what such men had to gain from a connection with Sloane and what he, and his collections, had to gain from them. Their local knowledge of the natural world and connections with different people were crucial for the exchange of this plant material. The relationships that they forged with Sloane, often over long time periods, shaped what entered his collection, and in what quantities. Second, sponsored collectors such as Mark Catesby in the Carolinas and William Houstoun and Robert Millar around the Caribbean were also invaluable to Sloane. Their correspondence suggests that he was able to influence specific collecting activity in the Americas to benefit his own collection.

However, even if we consider those collecting in the New World on behalf of Sloane as part of a 'network' that he was central to, it cannot be assumed that these connections were in any way exclusive ones. After all, across all of these contributors and contributions is the sense that these individuals had their own myriad connections that extended beyond Sloane and across the Atlantic. In other words, numerous individuals played active roles in natural history collecting and this placed various limitations on Sloane's ability to directly control such collecting practices in the New World. He was, however, able to benefit from this collecting landscape, as shown by the very nature of the 'Vegetable Substances' and the abundance of New World botanical material that it contains. While the broad contours of this collecting landscape has been sketched out here the particular nature of the connections and relationships that brought this material from the New World can only really be appreciated by comparing how material came into Sloane's hands from other parts of the world, in particular from the East Indies which is the subject of the next chapter.

Chapter Four

'China tobacco from the Manillas': samples from the East[1]

Chapter three demonstrated that Hans Sloane was directly engaged with correspondents in the Americas who contributed to his 'Vegetable Substances'. It showed that he interacted with different sorts of people and developed direct lines of communication with contributors. These forms of engagement, interaction and communication were enabled and influenced by the New World context and shaped the formation of Sloane's botanical collection. However, the corresponding picture of trade, enterprise, and the movement and exchange of natural history specimens and ideas, looked very different in relation to the East where the structure of trading companies meant that Sloane received objects of natural history more through intermediaries rather than directly. The samples we find described in the 'Vegetable Substances' catalogue originating from the East Indies represent complicated lines of exchange and movement. Some were received through direct relationships that Sloane established with certain people, such as the ship's surgeon James Cuninghame, while other items passed through numerous hands involved in the East India Company (hereafter referred to as EIC). This chapter, therefore, will map the people and places that Sloane directly and indirectly engaged with in the East Indies. It will explore how the structure of the EIC determined the movement of material found in the 'Vegetable Substances' by considering how the contexts of established EIC factories, diplomacy and private trade created and facilitated the conditions for natural history exchange.

The 'networks' that linked Europe to places in the East were characterised by the established systems of trade set up by European trading companies. The correspondents who sent Sloane material from the East were men connected to the EIC and this provided a very different collecting landscape to that seen for the New World material. There are, for example, no women collectors of Eastern material listed in Sloane's catalogue, unlike for the Americas. In the late sixteenth century, the EIC was established by London merchants wishing to exploit the direct sea route from Asia, allowing them to bring valuable spices to European markets. They were granted a royal charter by Queen Elizabeth I in 1600, which ensured their lucrative monopoly on trade beyond the Cape of Good Hope. In the late seventeenth and early eighteenth

[1] The catalogue description for VS 9,574, contributed by Nathanael Maidstone.

centuries, the EIC sat at the heart of English overseas trade with Indian coastal factories set up in Bombay and Fort St George, Madras (now Mumbai and Chennai). The Royal Society (and Fellows within it) owned East India Company stock and the 'East' was considered as a potential source of exciting natural history observations.[2]

The trade routes and structures of the EIC effected the collection and exchange of natural history in the East, and these are crucial contexts for understanding both the formation and contents of the 'Vegetable Substances'. In order to successfully buy goods in Asian markets and sell them in Europe the Company required the location and establishment of sources of supplies, ship construction, able men, regular correspondence and an operational plan. English East Indiamen (EIC ships) commonly voyaged between England, the Cape of Good Hope and India, where their primary destinations were the ports of Bombay, Madras and Calcutta. It was at these points and along the coast that factories and settlements were set up to manage the relationships between the Court of Directors in London and its employees in India, as well as to control trade. Different coastal areas attracted European merchant companies for different reasons. For example, Malabar (along India's southwest coast) and Bantam (in western Java and Southern Sumatra), both in the southern part of the trade, were significant locations for supplying substantial quantities of pepper to the Company. By the second half of the seventeenth century, the EIC's major location on the East coast was Fort St. George. Founded in 1644 at the coastal city of Madras, the modern city of Chennai, Fort St. George was the first English settlement established in India and it primarily dealt with cotton cloth.[3]

The EIC, however, was not alone in benefiting from trade in the East Indies. The period between 1600 to the 1680s has been described as one of 'an aggressive Dutch East India Company' (VOC) because the Dutch company, which was founded in 1602 by the Dutch Republic, was expanding its influence in the Indonesian Archipelago as part of its goal to control the spice trade (often using military force against Portuguese areas including Malacca and Ceylon). During this period there was competition for spices between the VOC and the EIC and the Dutch emerged victorious. However, a second period, roughly between the 1680s and the mid-

[2] M. Ogborn. *Indian ink: script and print in the making of the English East India Company*, London, 2007, xvi-iii; V. Damodaran, A. Winterbottom and A. Lester (Eds), *The East India Company and the natural world*, London, 2015.
[3] K.N. Chaudhuri, *The trading world of Asia and the English East India Company, 1660-1760*, Cambridge, 1978, 41, 50-54.

eighteenth century, offered changing opportunities for both companies, particularly because of the booming trade in textiles, tea and coffee. Both countries had also become allies after the Glorious Revolution, with France a common enemy. There was more 'pure commercial competition' during this period, and relations between the Dutch and English companies appeared to relax.[4]

As a result, the movement and exchange of knowledge in different forms was heavily influenced by the administrative structures of these long-established companies, and the place of European employees (or 'servants') within them. Also, and importantly, this natural knowledge exchange was characterised by the collaboration and co-operation of Asian intermediaries.[5] In the seventeenth century, European companies could get nothing from trade in and with Asia without engaging with Indian merchants and ship-owners. For example, in the 1670s, relationships were forged between EIC employees and Indian traders who looked to profit from trade on the Coromandel coast. In addition, the 'country trade' with the rest of Asia was left to private merchants unattached to the Company, and the private trade of their own employees, all of whom collaborated with Indian intermediaries.[6] These and other forms of collaboration and cooperation influenced the practice of natural history in the East and, as this chapter will show, shaped the ways in which Sloane was able to add material to the 'Vegetable Substances' collection.

In order to understand the different sorts of connections and interactions that resulted in Sloane adding samples from the East to his collection, this chapter will begin with an exploration of the different people in Britain who acted as conduits for the movement of natural material as well as Sloane's wholesale purchase of other collectors' collections. It will then discuss EIC employees based in factories along the coast (including surgeons and clergyman) and how their placement in the Company's structure enabled them to utilise their local contexts, collect natural history and interact (or not) with Sloane and others. This chapter will then look to other elements

[4] F.S. Gaastra, War, competition and collaboration: relations between the English and Dutch East India Company in the seventeenth and eighteenth centuries, in: H.V. Bowen, M. Lincoln and N. Rigby (Eds), *The worlds of the East India Company*, Suffolk, 2002, 50-57; J.D. Tracy (Ed.), *The rise of merchant empires: long-distance trade in the early modern world, 1350- 1750*, Cambridge, 1990.
[5] K. Raj, Go-Betweens, travelers, and cultural translators, in: B. Lightman (Ed.), *A companion to the history of science*, West Sussex, 2016, 39-57; K. Raj, Mapping knowledge, go-betweens in Calcutta, 1770-1820, in: S. Schaffer et al (Eds), *The brokered world*, 105-150.
[6] Ogborn, *Global lives*, 79-84.

of the EIC's structure including voyages, diplomacy and private trade, and explore how these affected Sloane's natural history collecting activities. It will do this by using examples of ship's surgeons and other individuals who were directly and indirectly engaged with Sloane. The following examples of East Indian material and their contributors will shed light on the different sorts of relationships that enabled the 'Vegetable Substances' to be assembled and question how central Sloane was to these interactions, and that these connections and patterns were not confined to people and places in the East.

Table 2: A list of contributors who contributed material from the East to the 'Vegetable Substances' collection.

Based on the information supplied in the Sloane's catalogue of the collection, the names appear in order of the significance of their contribution to the collection. The information supplied in Table 2 takes the same form as that of Table 1.

Name as it appears in catalogue	Minimum total number of catalogue entries	Contributor details [where known]	Origin of material according to catalogue (number of entries)	Did contributor travel to country specified?	Did they have direct contact with Sloane (via letter or in person)?	FRS?
Uvedale	301	Robert Uvedale, Schoolmaster and garden owner in Enfield	Fort St George (96, 5) Siam/Thailand (200)	N	Y	N
Adair and an Indian Druggist	198	Patrick Adair, FRS	East Indies (198)	Y	Y	N
Talbot and Barrow	157	Unconfirmed	China (157)	Y	Unconfirmed	Unconfirmed
Petiver	104	James Petiver (1663-1718) London apothecary	East Indies (9) China (65) and 12 from own collection Ceylon (18) from own collection	N	Y	Y (Nov 27, 1695)
Cunningham	82	James Cuninghame (c.1667-1709), EIC ship's surgeon	East Indies (4) China (49) Bengale (5)	Y	Y	Y (Dec 20, 1699)
Theobald	79	James Theobald	East Indies (26) Fort St George (17) Arabia (11)	N	Y	Y (Nov 4, 1725)
Maidstone	67	Nathanael Maidstone	China (3)	Y	Yes but not about	N

			Bengale (9)		Natural History	
Stuart	60	Alexander Stuart (1673-1742)	East Indies (10) Philippines (11) Oman/Muscat (5)	Y	Y	Y (Nov 30, 1714)
Rugely	51	Unconfirmed but see discussion on p. 136, note 30.	Fort St George (51)	Unconfirmed	Unconfirmed	Unconfirmed
Heathcote	48	Sir Gilbert Heathcote (1652-1733)	China (24) Fort St George (16) Bengal (8)	N	Y	Y (Nov 30, 1705)
Captain Uvedale	46	Brother of Robert Uvedale	East Indies (46)	Y	No, via Robert Uvedale	N
Douglasse and Annesley	45	Unconfirmed	China (45)	Y	Unconfirmed	Unconfirmed
Alexander Brown	35	Alexander Brown, ship's surgeon	China (6) St Helena	Yes	Yes	N
Miller	26	Unconfirmed	China (26)	Unconfirmed	Unconfirmed	Unconfirmed
Kempfer	24	Engelbert Kaempfer	East Indies (20)	Y	No, Sloane purchased collection wholesale	N
Dr Lewis	21	Reverend George Lewis, EIC clergymen based at Fort St George.	East Indies (21)	Yes	Yes but mainly via James Petiver	Y (Jun 13, 1754)
Waldo	19	Daniel Waldo, physician	Fort St George (5) Surat (4)	Yes	Yes	N
Mr Jenner	17	Unconfirmed	East Indies (17)	Unconfirmed	Unconfirmed	Unconfirmed

Camel	14	Georg Joseph Kamel, Jesuit	Philippines (5)	Yes	No, via Browne/Bulkley and Petiver	N
Seba	13	Albertus Seba (1665-1736)	China (13)	N	Y	Y (Oct 24, 1728)
Massy	9	Richard Middleton Massey (see Massey mentioned in Table 1, p. 81)	East Indies (9)	N	Y	Y
Dr. Amman	8	Johann Amman (1707-1741) Professor of Botany at St Petersburg and Sloane's assistant	St Petersburg (8)	Y	Y	Y (Mar 18, 1731)
Father Fontenay	7	Jean de Fontaney, French Jesuit	China (6)	Y	Y	N
Robinson	7	Unconfirmed but could be Tancred Robinson, physician to George I	Ceylon (6)	Unconfirmed	Y	Unconfirmed
Browne	6	Samuel Browne, EIC surgeon at Fort St George	Fort St George (6)	Y	No, via James Petiver	Unconfirmed
Buckly	5	Edward Bulkley	Fort St George (5)	Y	No, via James Petiver	Unconfirmed

Nicolas Waites and an Arabian Prince	5	Nicholas Waite, New EIC governor	East Indies (5)	Y	Unconfirmed	N
Bell	4	George Bell (see Dandy, 90), physician	China (4)	Y	Y	Unconfirmed
Doyly	3	Doily or Doyley (see Dandy, 126)	East Indies (3)	Unconfirmed	Unconfirmed	Unconfirmed
Dolunus	3	Unconfirmed	Ceylon (3)	Unconfirmed	Unconfirmed	Unconfirmed
Duchess of Beaufort	1	Mary Somerset, 1st Duchess of Beaufort	China	N	Y	N
Gore	1	Unconfirmed - could be Father Goree	Surat (1)	Unconfirmed	Unconfirmed	Unconfirmed

Table 2 lists the people described in the 'Vegetable Substances' catalogue as contributing to the collection from the East Indies. At least 487 catalogue entries (or nine percent of located samples) describe material as originating from the 'East Indies' but without further explanation of which specific towns, cities, regions or countries they came from. These entries do, however, contain information relating to the people who sent this material to London. A further 547 samples originated from China, 418 from South Asia (including 273 from Fort St George/Madras, twenty-eight from Bengal, fourteen from Surat and 103 from Sri Lanka/Ceylon), as well as 236 from Southeast Asia (two hundred from Thailand, twenty-four from the Philippines and twelve from Cochin China/Vietnam) and roughly twenty from the Arabian Peninsula (including Arabia, Oman and Iran). Overall up to thirty-two percent of material can be said to have come from the East.

Table 2 also reveals that a range of people were involved in the movement of this natural material, and Sloane received it in a number of ways. It is notable that there is a variety of sorts of people present in this list, some of whom never voyaged to the East Indies and who had distinctive connections with Sloane. For example, this would include Mary Somerset, the Duchess of Beaufort, who will be discussed in much more depth in Part Three of this thesis. The table also indicates that certain groups of items from the East were absorbed into the 'Vegetable Substances' when Sloane acquired other collectors' collections. Samples such as 'long horse chestnut' (VS 5,165) and a 'fruit something like cacao' (VS 5,178) originated from Bantam (in what is now Indonesia) and came to be in Sloane's possession through his purchase of the collection of Nehemiah Grew (1641-1712). This is also the case for East Indian material – often from specific regions such as China and Japan – labelled with the names of Patrick Adair (fl.1674-1697), Engelbert Kaempfer (1651-1716) and James Petiver. Sloane acquired and purchased these collections in the early eighteenth century and absorbed the specimens they contained wholesale into his collection. While these samples may obscure our view of Sloane's connections with these contributors, they do provide important examples of the broader patterns of accumulation visible in the 'Vegetable Substances' collection.[7]

For example, one of the most significant groups of samples sent from the East Indies came from 'Dr Adair', or Patrick Adair. Adair was a British naval surgeon who

[7] These samples obscure our view of Sloane's connections with particular individuals because it is difficult to answer the question of whether Sloane received this material directly from them.

worked at the Naval Hospital in Chatham, Kent.[8] In 1687, the Scottish botanist Charles Preston (1660–1711) forwarded to Sloane a letter from Adair and informed him of Adair's trip to the 'Western Islands', where he expected that Adair would make 'severall new discoveries'.[9] Adair sent plants to a number of Sloane's contemporaries, including specimens from the Cape to Leonard Plukenet and seaweeds from Gosport to botanist Samuel Doody (1656–1706).[10] Plukenet would describe and depict some of the plants collected by Adair at the Cape in his publications *Phytographia* (1691) and *Almagestum* (1696). Adair's travels to South Africa, the Comoro Islands and India, where he gathered botanical specimens, are also reflected in the 'Vegetable Substances' collection. In the catalogue we find descriptions of samples and references to Turkey and 'Island Johanna' (the modern day Comoro Islands) that reveal the extent of Adair's collecting practices in the East. Entries include a 'yellowish wood wt. a white bark from the East Indies. from Dr. Adair? […] From Turkey a yellow bark' (VS 1,115) as well as 'A green resin or gum from the Island Johanna from the same' (VS 1,620).[11]

However, it appears to have been with the help of an 'Indian druggist' that Adair was able to gather together at least 198 samples that would eventually be housed in the 'Vegetable Substances'. Descriptions include 'Small long poppie heads from an East Indian Druggist by Dr. Adair' (VS 3,627) as well as 'Baragila a sort of redish large bean or cocoon from the East Indies from a druggists by Dr. Adair' (VS 3,119). Some of these entries are also identified as items that came from an 'East India drugg shop'. There are no markers or annotations in Sloane's manuscript catalogue to suggest that these samples came to be in Sloane's possession only after he acquired Plukenet's collection, rather than them being sent directly to him. However, Adair had written to Plukenet as follows about some 'Seeds of Bangue', of which there are three examples described in Sloane's 'Vegetable Substances' catalogue,[12]

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[8] M. Gunn and L.E.W. Codd, *Botanical exploration of Southern Africa*, Cape Town, 1981, 52; Dandy, *The Sloane Herbarium*, 81.

[9] Charles Preston to Hans Sloane, Mar 1687/8 (BL Sloane MS 4037), f. 38; Charles Preston to Hans Sloane, undated (BL Sloane MS 4037), f. 232.

[10] R. Desmond, *Dictionary of British and Irish botanists and horticulturalists*, London, 1994, 3.

[11] The Island of Johanna was described as one of the Four Isles of Comora in J. Ovington [H.G. Rawlinson (Ed.)], *A voyage to Surat in the year 1689*, London, 1929, 67.

[12] One example includes 'Bangue. | Bangue of Marlow.| Bang bichal from Indian druggist by Dr. Adair' (VS 1,126).

> Honoured Sir Be pleased to accept of the inclosed Seeds of Bangue, (the freshest I could pick out) together with some of the Plant; untill I can Spare So much time, as to examine whither there may be any other worth your tryall amongst those samples I brought from India: which I shall doo sometime this week, or in the beginning of the next, And you shall then, be attended by Sir Your true friend & humble Servant.[13]

It is possible, therefore, that it was Plukenet who received these samples of seeds rather than Sloane. Sloane may have only acquired these and other objects from Adair when he purchased Plukenet's collection in 1710 after Plukenet's death in 1706. If the entries in Sloane's catalogue are understood to have been written in roughly chronological order (albeit with the caveats that have been discussed in chapter two), then the placement in the catalogue of the descriptions of these objects from Adair would suggest that Sloane did indeed acquire these items, or at least the majority of them, via Plukenet. This is because the majority of catalogue entries labelled from Adair are consistently listed between numbers 2,870 and 3,661. These appear towards the end of volume one and in volume two of Sloane's catalogue after objects collected by William Byrd in 1708 (found listed between VS 2,664 and 2,666). This would date most of Adair's contributions to the 'Vegetable Substances' at around 1710.[14]

The 'Vegetable Substances' material that Sloane received from the East Indies suggests that he also benefited greatly from the relationships that James Petiver formed with various contacts around the world and, in turn, those contacts' own connections with further correspondents which enabled them to collect and exchange plant material. For example, the catalogue lists samples that were collected by the EIC surgeons Samuel Browne and Edward Bulkley who were both based in Fort St George, as well as specimens sent from the Philippines by the Jesuit George Josef Kamel. This material would certainly have come to Sloane via Petiver. However, Petiver was not the only one of Sloane's contacts who enabled him to add to his 'Vegetable Substances' from the East. Like Petiver, these individuals did not necessarily voyage to the East, but acted as important intermediaries for the movement of natural history specimens. Listed in the catalogue (and shown in table 2)

[13] Patrick Adair to Leonard Plukenet, London, undated (BL Sloane MS 4066), f. 250-251.

[14] There are earlier entries in the catalogue such as 'A sort of tea, by Dr. Adair' (VS 1,008) which may mean that Sloane received these samples before 1710 via Plukenet but this cannot be verified.

are significant contributions made by 'Mr Uvedale', 'Mr Theobald', 'Mr Heathcote' and 'Mr Massy'. 'Uvedale' was the schoolmaster Robert Uvedale who had a well-known garden in Enfield and was a regular correspondent with Sloane and other naturalists of the period such as William Sherard and Richard Richardson. Uvedale contributed at least 357 items to Sloane's 'Vegetable Substances' from the East Indies, and he had received this significant amount of material from Fort St George (101 items) as well as two hundred items from Siam (Thailand).[15] Fifty of these samples also came to Robert Uvedale from his brother, Henry Uvedale, an EIC Captain on board the *Herbert* that sailed to Bengal in 1682 as well as to Benkulen in Sumatra in 1685.[16] The majority of these entries describe pieces of root with local therapeutic properties.[17]

'Mr Heathcote' appears to have been another useful contact for Sloane, contributing material from Bengal, Fort St George and China. Sloane kept up a correspondence with several individuals named 'Heathcote', including the brothers Sir Gilbert (1652-1733) and Samuel Heathcote (1656-1708). The former, a successful and prominent London merchant and politician, had trading activities that reached far and wide. In the 1690s he gained particular prominence through his connections with East Indian commerce.[18] In total, forty-eight catalogue records list material provided by Heathcote and their descriptions emphasise the intermediary nature of Heathcote's role in the exchanging of this material. For example, VS 8,650 describes 'seeds sent from Fort St. George to Mr Heathcote' while VS 8,642 is found to be a 'Gourd or Water Melon from China. Sent to Mr. Heathcote in 1727'.

Similarly, 'Theobald' is most likely a reference to the merchant and antiquary James Theobald (1688–1759) who, along with his brother Peter Theobald (1656-1742), was a prominent timber merchant. James Theobald was elected to the Royal Society in 1725 and played an active role in the society, including supplying its

[15] Uvedale's contributions to the 'Vegetable Substances' and his relationship with Sloane will be discussed at length in Part Three.
[16] See A. Farrington, *A biographical index of East India Company maritime service officers 1600-1834*, London, 1999; A. Farrington, *Catalogue of East India Company ships' journals and logs, 1600-1834*, London, 1999.
[17] See samples listed between VS 3,812 and 3,861.
[18] J.M. Price, Heathcote, Sir Gilbert, first baronet (1652–1733), *ODNB*, online edition, 2008; D. Hayton, E. Cruickshanks, S. Handley (Eds), HEATHCOTE, Gilbert (1652-1733), of St. Swithin's Lane, London; Leyton, Essex, and Normanton, Rutland, in: *The History of Parliament: the House of Commons 1690-1715*, 2002, http://www.historyofparliamentonline.org/volume/1690-1715/member/heathcote-gilbert-1652-1733/ last accessed 3 Sep 2015.

firewood, conserving its museum collections and being a pallbearer at Sloane's funeral in 1753 and one of his trustees.[19] Theobald was evidently establishing his own natural history collection by the 1720s, and in the 'Vegetable Substances' catalogue we can identify at least seventy-seven items he contributed from Fort St George and Arabia. Theobald was probably acting as an intermediary for ensuring that botanical material reached Sloane. The first group of 'Vegetable Substances' entries associated with his name consist of diverse food plants such as 'Cloudberrys from Norway used wt. Sugar, by way of desert' (VS 10,714), cocoa pods, allspice, and a 'fruit of a Palm thrown up by the sea on Montserrat' (VS 10,720). The plants received from the East Indies include examples of amaranthus, the shaddock tree, and the genus *Althaea* which, according to John Appleby, were probably cultivated for their 'showy, practical or nutritious qualities'.[20]

Richard Middleton Massey (1678-1743) was another English contact through whom Sloane was able to receive East Indian material. Massey lived in Wisbech, Cambridgeshire, where he practised medicine and regularly corresponded with Sloane and Petiver between 1705 and 1741.[21] A much later entry in the catalogue describes a specimen given to Sloane by Massey as 'A hollow brownish coloured cane of a bitterish taste' (VS 10,199). This piece of cane had come from Surat by way of several intermediaries including someone named as 'Mr Sison' and another as 'Capt. Worth'. While Massey's letters to Sloane do not allude to the East Indies material we find listed in the 'Vegetable Substances' catalogue, it is clear that Massey and Sloane were exchanging a significant amount of other natural history items including samples of fossils and stones. Massey and Sloane seem to have been friends and this is a relationship that will be explored more fully in chapter five.[22]

Attention to these individuals and their contributions shows that Sloane relied on various merchants, Royal Society Fellows, acquaintances and friends who lived in England to pass him material that they received from the East Indies. These contributions varied in significance. Some people were able to supply Sloane with

[19] J.H. Appleby, Theobald, James (bap. 1688, d. 1759), *ODNB*, online edition, 2004.
[20] J.H. Appleby, James Theobald, F.R.S. (1688-1759), merchant and natural historian, *Notes & Records of the Royal Society of London* 50:2 (1996) 186.
[21] Desmond, *Dictionary of British and Irish botanists and horticulturalists*, 474.
[22] Richard Middleton Massey to Hans Sloane: Wisbech, Isle of Ely, Oct 29 1705 (BL Sloane MS 4040), f. 84; Oct 6 1707 (BL Sloane MS 4041), f. 34; Wisbech, May 7 1710 (BL Sloane MS 4042), f. 129; Wisbech, Oct 18 1709 (BL Sloane MS 4042), f. 51.

hundreds of items while others provided only a small number. The very nature of these different connections, where Sloane relied on the interactions of others, means that it is difficult to separate contributors of material collected across the East and the West neatly. Such mediated connections also enabled Sloane to place material into the 'Vegetable Substances' collection that indirectly expanded and complicated his own connections to the East. There are particular groups of samples in this collection that came into Sloane's hands as a result of his wholesale purchase of other collections. These include those from Adair, Kaempfer and Petiver, of which Petiver's is particularly problematic because it involved numerous natural history exchanges right across the globe. Overall, therefore, these examples suggest that Sloane's connections with the East were more complex than simply being part of an extensive, continuous or coherent 'network', even though they were connected into the 'networking' of the East India Company.

EIC and the 'Vegetable Substances'

While Sloane was able to build his botanical collection through the contributions of multiple people based in Britain, as well as the wholesale acquisition of collections, both these and more direct contributions show that the structure of the EIC had an important impact on the movement of natural things that would end up in his possession. The EIC sought to operate across the Indian Ocean world and to extend their trading activities as far as China and Japan. They traded cloth, spices and luxury goods and partly as a result of wealth generated by the Dutch Easi India Company (VOC) trade in drugs from the east, the EIC were interested in the identification and collection of botanical materials that might find market in Europe.[23] The first impact to be discussed therefore, is that of the Company's settlements, predominantly in the Indian subcontinent. The EIC set up 'factories', or trading depots, along the coast where goods purchased from Indian merchants could be stored until the Company's ships arrived. In 1639, on the southeast coast, the Company established a settlement that would later become Madras and one of the three greatest port cities of India. The centre became known as Fort St George and by 1700 it contained approximately a quarter of a million inhabitants. The Company's settlement consisted of Company

[23] See. H.J. Cook, *Matters of exchange*; V. Damodaran et al (Eds), *The East India Company and the natural world*.

servants, an 'English' community of over one hundred people and an increasing number of private traders.[24] It was through this established structure that surgeons and clergymen employed by the Company were able to make natural history collections, some of which would end up in Sloane's 'Vegetable Substances'.

EIC Surgeons

Only a small number of items are listed as from 'Brown' and 'Buckly' in the 'Vegetable Substances' catalogue, and yet these English botanists and surgeons, Samuel Browne (?-d.1698) and Edward Bulkley (1651-1713), played a fundamental role in the collection and exchange of botanical material at Fort St George (and across the East Indies more broadly). These two important individuals made and sent substantial collections of plant and animal specimens to Petiver in London, and these volumes passed into Sloane's hands when he acquired Petiver's collection. They now form part of the Sloane Herbarium in the NHM. Browne had been employed by the EIC as a surgeon at Madras in 1688, and there he collected plants and sent them, along with items collected by other agents, to England. After joining Browne at Fort St George in 1692, Edward Bulkley succeeded Browne in 1697, remaining in this position until 1709.[25] Both surgeons corresponded with other botanists, gardeners and physicians such as Sloane, Petiver, Ray, Plukenet, Mary Somerset, Georg Joseph Kamel and Charles Dubois. Petiver would also publish a series of papers in the *Philosophical Transactions* in 1698 and 1703 describing some of the specimens they sent.

While Browne and Bulkley may not appear in the catalogue as significant named contributors to Sloane's 'Vegetable Substances' collection, their important role in collecting and exchanging natural history in the East would prove crucial in allowing Sloane to add material from the East to his collection. Anna Winterbottom shows how the collections and descriptions of plants made in Madras by these surgeons were influenced and shaped by their local and personal contexts.[26] For example, on occasion, the gathering of plants by Browne and Bulkley formed part of

[24] D. O'Connor, *Chaplains of the East India Company 1601-1858*, London, 2012, 71.
[25] Bulkley resigned from this position in 1709 and became 'land customer' and member of council and Justice of the Peace until his death in 1713. See A. Winterbottom, *Hybrid knowledge in the early East India Company world*, London, 2016, 113.
[26] Winterbottom, *Hybrid knowledge*, 113 and 124.

missions that combined military, medical and diplomatic aims, and Browne completed tours of duty with the Mughal army which gave him opportunities to collect plants.[27] These Company surgeons were also required to procure drugs from bazaars to supply both the hospital in Madras and for their own private apothecary endeavours. In order to get hold of medicinal material as well as to observe local practices their 'network' was one that relied on local people with medical knowledge. This included different sorts of relationships such as the establishment of more equal friendships, which Bulkley appears to have formed with a high-status Telugu speaking 'Gentue' doctor. 'Gentue', or Telugu, speakers experienced a higher status compared with 'Malabar', or Tamil, speakers. Winterbottom suggests that Browne and Bulkley viewed these Telugu and Tamil-speakers 'informants' as colleagues, collaborators, friends and rivals. It was these immediate 'networks' of trade and politics then, that shaped Browne and Bulkley's plant-gathering activities in India.[28]

Winterbottom's discussion of these EIC surgeons is partly based on the seven bound volumes of dried and labelled plants that Browne sent to England. These are also particularly relevant to the East Indian material we find described in the 'Vegetable Substances' catalogue. Many of the specimens sent by Browne had their Tamil names written on bark in the original script in transliterated form. These herbarium volumes also contain accounts of the medicinal properties of these plants and reveal some of the major medical problems encountered by the EIC surgeons such as fever and smallpox. The dried plant specimens were produced through a close collaboration with a Tamil medical practitioner who travelled with Browne and helped him in the processes of selection, collection and naming of plants, as well as the explanation of these specimens and their virtues. In addition, Browne had spoken with a Telugu-speaking doctor, and we know this because he left space for a Telugu or 'Gentue' name in the books, some of which would be completed later.[29]

In 1698, Bulkley took over from Browne in Madras, and Browne wrote to Petiver from Fort St George informing him that he had 'sent to Bulkley one of the Malabar Doctors who is well skilled in the nature of Indian Plants from whome he or

[27] He collected grasses in Tirupati in 1696 and volumes of plants and information about their medical virtues in Arcot in1707.
[28] Winterbottom, *Hybrid knowledge*, 117-120.
[29] Winterbottom, *Hybrid knowledge*, 130 and118-119.

his people may transcribe their virtues'.[30] Together, Bulkley and this physician began the transliteration of the Telugu ('Gentue') names of plants and gathered accounts of their medicinal properties. In 1703, Bulkley sent the results of this collaboration to Petiver along with drawings and paintings copied from or by local artists, some of which would be included in Petiver's printed works.[31] As Bulkley wrote to Petiver in 1703:

> By the next you shall have the largest & best collection you ever yet received: with the Gentue, as well as Mallabar names, which: is the most important of their names & physical virtues.[32]

Considering Sloane's inclusion of plant material from these surgeons in his herbarium, and the amount of overlap that can be identified in general between the Sloane Herbarium and the 'Vegetable Substances', it is curious that searching for Browne and Bulkley in the 'Vegetable Substances' catalogue yields so few results. However, when delving deeper into the 'Vegetable Substances' material that originated from Fort St George we find fifty entries that have been listed as 'Dr. Rugelys druggs from the East Indies'. The first entry for this group of specimens in the catalogue appears as:

> No. 1 of Dr. Rugelys druggs from the East Indies, the roots leaves [illegible] & stalks of a sort of sena, used in the East Indies at Fort St. George & called there by the Jentue Nala tanguedo, & in Malabar, nela avari. Whose vertues are shown in a book for that purpose wrote there. p. i (VS 4,626).

This entry seems to corroborate Winterbottom's research on the material that was collected by Browne and Bulkley. It clearly indicates that attention has been given to identifying the 'Jentue' and 'Malabar' names for this botanical sample, a distinction that, as we have seen, both Browne and Bulkley regularly made when sending plants and information about them to London.

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[30] Samuel Browne to James Petiver, Fort St George, Sep 30 1698 (BL Sloane MS 4062), f. 290

[31] Winterbottom, *Hybrid knowledge*, 119.

[32] Edward Bulkley to James Petiver, Fort St George, Feb 12 1702/3 (BL Sloane MS 3321), ff. 110-11.

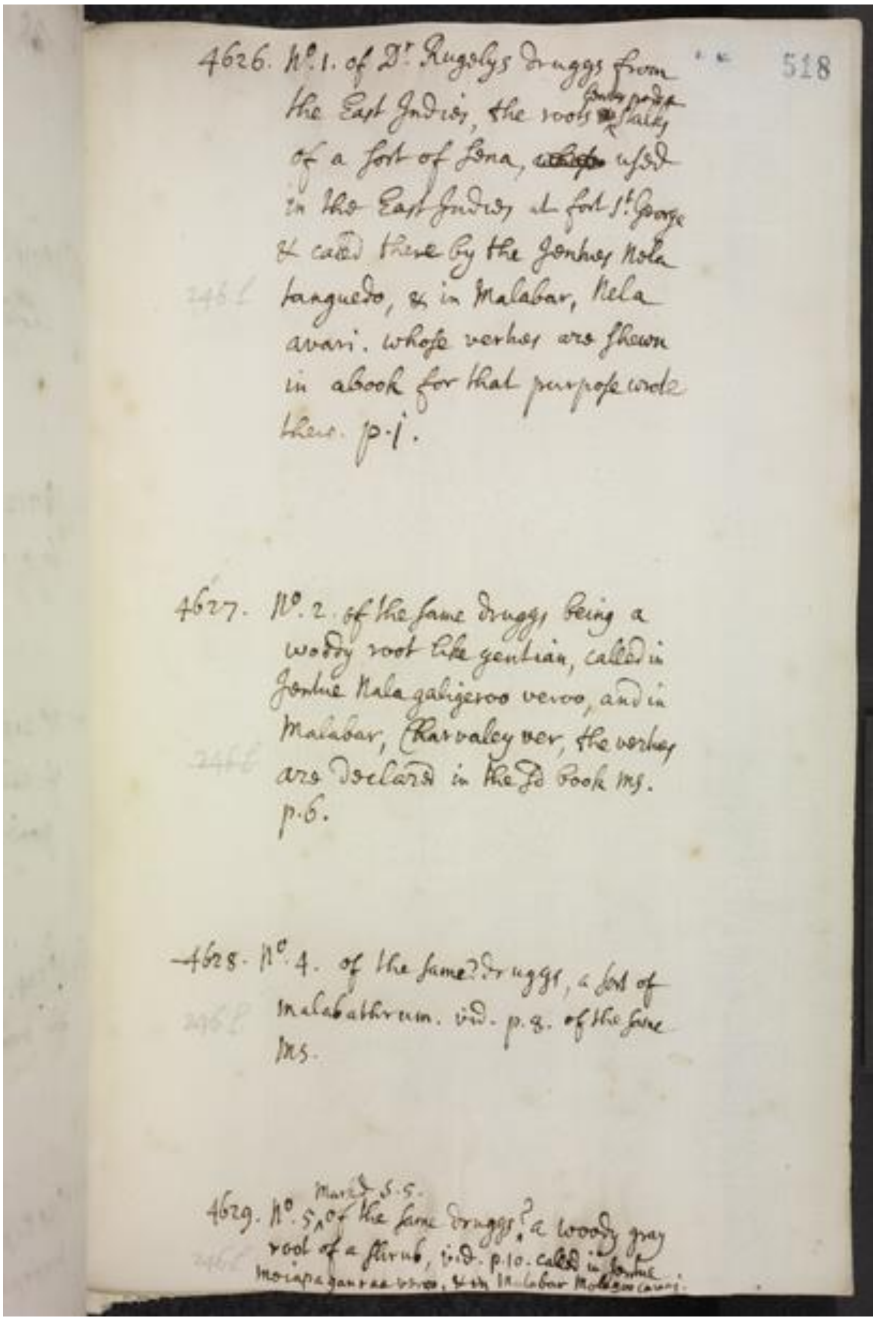

Figure 12: A page from the ‘Vegetable Substances’ catalogue numbered 518 and listing entry 4,626 at the top, which appears as ‘No. 1 of Dr. Rugelys druggs from the East Indies’. © Trustees of the Natural History Museum, London.

Furthermore, this group of fifty ‘druggs from the East Indies’ is listed together in the catalogue (see figure 12) with its own numbering system, and contains assorted descriptions of ‘woody roots’ (VS 4,627), ‘rough bark’ (VS 4,634), stalks and leaves. While these entries do not contain details of the medicinal properties of the plants, the phrase ‘Whose vertues are shown in a book for that purpose’ is most likely a reference to *Hortus Malabaricus*, the first printed book on the plants of Malabar. In the seventeenth century, the Dutch governor of Cochin, Hendrik Adriaan Van Rheede

(1636-1691), recognised the importance of documenting the valuable plants of Malabar and used the help of a famous Malabari physician and three Konkani Brahmin priests to produce this twelve-volume treatise which was published in parts between 1678 and 1693. Written in Latin, it contains descriptions and illustrations of 742 useful plants, 650 of which had medicinal properties which are described along with the diseases that they could treat and the methods of preparation and application.[33] *Hortus Malabaricus* was a crucial work for the EIC surgeons, and Petiver sent all twelve volumes to Browne who then sold them to Bulkley.[34] Both surgeons would consistently refer to this work in the volumes that they sent to Petiver, and Petiver embarked upon a summary translation of it intended for use in the East Indies.[35]

While the 'Dr. Rugely' whose name is assigned to this 'Vegetable Substances' material remains something of a mystery – both in terms of his relationship to the EIC or to Sloane – the details that are present in the catalogue entries suggest that this was a collection facilitated by Browne and Bulkley which corresponds with the dry pressed plants found in the Sloane Herbarium.[36] This group of fifty 'druggs from the East Indies' therefore, most likely came to London as a result of the work by Browne, Bulkley and the connections they established and maintained in the East. In this way, we could consider this group of Indian medicinal plants found in the 'Vegetable Substances' – in terms of the methods of collection and knowledge exchange which

[33] See K.S. Manilal, *The Botany & History of Hortus Malabaricus*, Rotterdam, 1980; J. Heniger, *Hendrik Adriaan Van Reede tot Drakenstein (1626-1691) and Hortus Malabaricus: a contribution to the history of colonial botany*, Rotterdam, 198l*;* K.S. Manilal, Medicinal plants described in Hortus Malabaricus, the first Indian regional flora published in 1678 and its relevance to the people of India today, in: G. Maiti and S.K. Mukherjee (Eds), *Multidisciplinary approaches in angiosperm systematics, volume two*, India, 2012, 558-568.

[34] Edward Bulkley to James Petiver, Feb 23 1699/1700 (BL Sloane MS 3321), f. 28.

[35] This mammoth task would only be completed in the twentieth century. See A. Winterbottom, Company culture: information, scholarship, and the East India Company settlements 1660-1720s, unpublished PhD thesis, Queen Mary University of London, 2010, 89.

[36] There are no accounts of 'Rugeley' in Farrington's index of EIC maritime service officers or in Scott's index to Sloane's manuscripts. Plausible candidates include the apothecary George Rugeley and the seventeenth-century chemical physician Luke Rugeley. Sloane purchased the collection and library of the latter in the late 1690s which included 'a very curious *Materia Medica* left by him', see W.W.D. Thompson, Some aspects of the life and times of Sir Hans Sloane, *The Ulster Medical Journal* 7:1 (1938) 1–17; The Sloane collection of manuscripts, *British Museum Quarterly* 18:1 (1953) 6-10; A. Walker, Sir Hans Sloane and the library of Dr Luke Rugeley, *The Library, The Transactions of the Bibliographical Society* 14:4 (2014) 383-409.

brought them to Sloane – as part of what Winterbottom describes as 'complexes of both Asian and European thought' that 'demonstrate the tensions of the different allegiances and influences that the two surgeons were susceptible to'.[37]

In order to collect and exchange natural material, Browne and Bulkley utilised other individuals as well as local people with medical knowledge. They made sure to regularly correspond with surgeons in other EIC settlements, and those of other companies and missions, as well as gardeners, botanists and apothecaries across Europe.[38] Fort St George was central to the trading operations of the EIC along the Coromandel Coast, and especially for later attempts to establish trade in China, Japan and Bengal. Its location, therefore, enabled these EIC surgeons to distribute instructions and materials to others for collecting botanical material, especially as ships would frequently (but not invariably) stop there before continuing on further East.[39] They could also exchange material when ships stopped on their returning voyages home. This allowed Browne and Bulkley to acquire collections from other people, such as the ship's surgeon James Cuninghame and the Jesuit Georg Josef Kamel.[40] Kamel contributed to Sloane's botanical collection via Browne, Bulkley and Petiver, while Cuninghame also corresponded with Sloane and Plukenet.

Born in Brno, Moravia, today the Czech Republic, the Jesuit missionary Georg Josef Kamel (1661-1706) joined the Society of Jesus (Jesuits) in 1682 as a lay brother and studied pharmacy at the Jesuit College in Český Krumlov. In 1688 he was sent to the Philippines and established the college pharmacy in Manila where he planted a garden that would become well known for its rare medicinal plants. The 'Vegetable Substances' catalogue lists fifteen contributions 'From Father Camelli from the Philippines' (see figure 13), but Kamel also made significant contributions to late seventeenth- and early eighteenth-century understandings of the natural world while he was in the Philippines, collecting botanical and zoological specimens as well as making ink and watercolour representations of them.[41] He made descriptions of flora

[37] Winterbottom, *Hybrid knowledge*, 139.
[38] Winterbottom, *Hybrid knowledge*, 112-139.
[39] Some of these instructions came from Petiver as well.
[40] Cuninghame however did not stop in India on either of his voyages to China and it is unlikely that the material he collected in Cochinchina (post-1703) would have passed through Bulkley's hands, see C. Jarvis, The collecting activities of James Cuninghame; Winterbottom, Company culture: information, scholarship, and the East India Company settlements, 103; Winterbottom, *Hybrid knowledge*, 112-139.
[41] See R.A.G. Reyes, Botany and zoology in the late seventeenth-century Philippines: the work of Georg Josef Camel SJ (1661-1706), *Archives of natural history* 36:2

and fauna found throughout the Philippine archipelago and included notes on how they appeared, their medical and therapeutic properties as well as details about their cultivation.[42] As a result, the Sloane Herbarium contains the oldest herbarium collection of plants from the Philippines in existence. These were plants that were collected by Kamel and sent to Petiver and Ray, to be acquired later by Sloane. They are scattered through several of the bound volumes and include samples of ferns, grasses and tree specimens. Similarly, Sloane's manuscript collection shows something of the breadth of Kamel's collecting activities with over 525 pages of drawings and descriptions of natural objects. Kamel's contemporaries across Europe regarded him with high esteem and Ray even described him as 'destined by nature to advance the history of botany, most deserving of immortal praise'.[43]

Kamel had his own 'network' of contacts around the world. He corresponded with Petiver and Ray in London as well as a Dutch physician in Batavia named Willem ten Rhijne (1647-1700).[44] While Kamel's reputation as a physician may have encouraged Petiver to write to him from London in 1696, it was Browne, stationed at Fort St George, who played a key role in Kamel's movement of natural history specimens. In fact, Browne sent Kamel copies of Petiver's publications and asked Kamel to collaborate with him in sending botanical items to London. Kamel, spurred on by Browne's correspondence, would eventually become an important and regular contact for both Browne and Petiver, and would provide them with samples of seeds and specimens. This implies, therefore, that samples such as VS 8,476, 'Folia. arboris. … sent by Father Camelli from the Philippine Islands. to Mr. Petiver' were in fact sent via Browne from Fort St George. There are also a number of samples that appear to have been part of Petiver's own collection and which I would now propose were originally sent from Kamel. Kamel also sent plants that had been introduced into the Philippines by Chinese immigrants. Therefore, it is also possible that some of the Chinese plants that Browne sent to Petiver had in fact come from Kamel.

(2009) 262-276; S. Kroupa, *Ex epistulis Philippinensibus*: Georg Joseph Kamel SJ (1661-1706) and his correspondence network, *Centaurus* 57 (2015) 229-259.

[42] Reyes, Botany and zoology in the late seventeenth-century Philippines, 265.

[43] L.A. Callum, Georg Joseph Kamel: Philippine botanist, physician, pharmacist, *Philippine Studies* 4 (1956) 327.

[44] Kroupa, *Ex epistulis Philippinensibus*, 229.

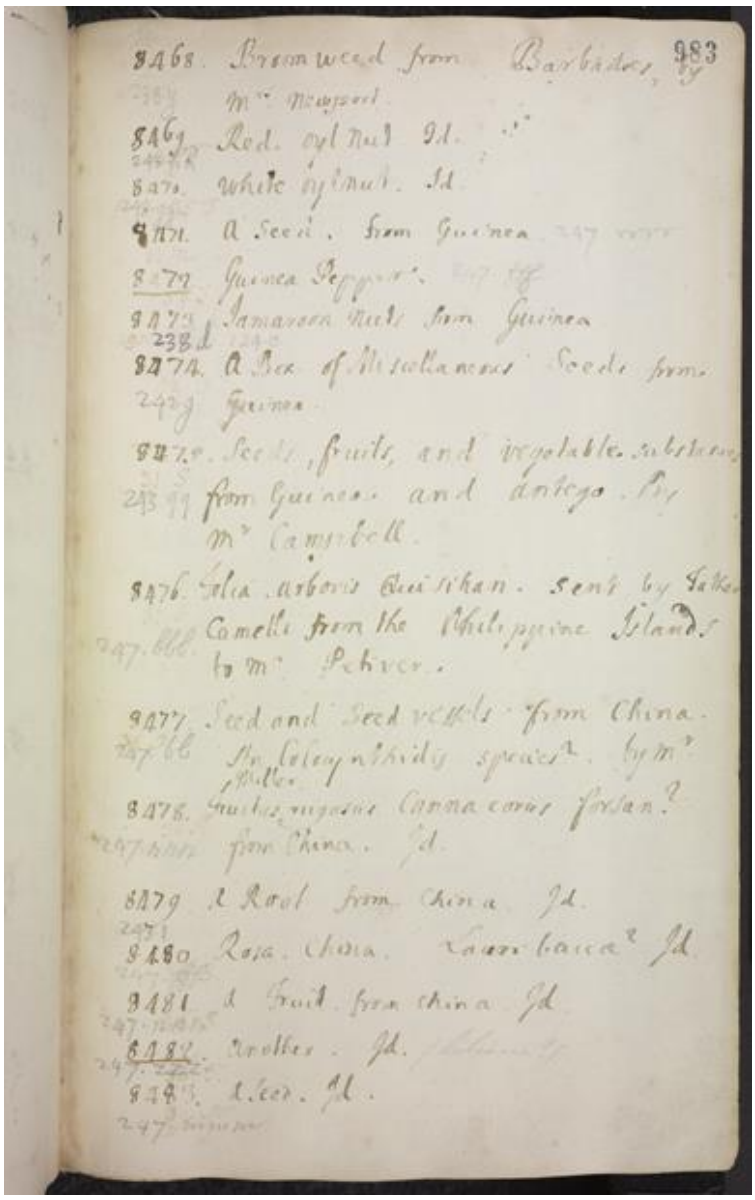

Figure 13: A page from the 'Vegetable Substances' catalogue numbered 983 and containing entries 8468-8483. Entry number 8476 includes a description of material sent by Georg Joseph Kamel from the Philippines. © Trustees of the Natural History Museum, London.

This movement of material between Kamel and Browne (and then Petiver) was by no means an easy one. The difficult relationship between English and Spanish territories during this period meant that the successful transportation of natural materials could not simply happen on EIC ships. This could include employing foreign vessels and other intermediaries such as individuals who were merchants of other nationalities and who had free access to Spanish colonies.[45] For Kamel and Petiver though, such efforts

[45] See Kroupa's references to S.D. Quiason, The English 'country trade' with Manila prior to 1708, *Philippine Economic Journal* 2 (1963) 64-83; G. Winius, A tale of two

would have been well worthwhile. Petiver was delighted to receive specimens from the Philippines, a largely unknown source of natural history to Europeans, while Kamel, a lay brother, considered both Petiver and Ray important links to London and a way of fulfilling his scholarly ambitions.[46]

In the East Indies then, Browne and Bulkley were important for Sloane because they enabled him to add material from a variety of places in the East to his botanical collection. These were, however, not direct contributions like those made by resident or sponsored collectors in the New World and Sloane had much less control over what was collected. Browne and Bulkley used myriad connections established as surgeons in the EIC not only to exchange natural history specimens, but to influence the collection and movement of natural material in places like the Philippines and China. This is somewhat similar to the landscape of collectors in the Americas where collectors including Barham, Bartram, Catesby and Byrd all made use of their local interactions and resources to gather material. However, these individuals had direct contact with Sloane, whereas he does not appear to have formed strong or personal relationships with Browne or Bulkley. It was in part, then, a result of their positions within the EIC, and in combination with Petiver's own natural history pursuits and the relationships that he formed, that this material found its way to London and into Sloane's collection. Yet, as the next section will show, Browne and Bulkley were not the only contributors of material from the East to the 'Vegetable Substances' who were connected to the EIC.

EIC Clergymen

Among these other contributions, twenty-one samples of seeds, wood and fruit are described in the catalogue as being 'brought from India by Dr. Lewis'.[47] This is most likely to be George Lewis (ca.1666-1729) who had been educated at Queen's College, Cambridge in the 1680s and then entered the Church. He travelled to India in 1692 and was appointed to Fort St George with the main purpose of 'ministering to the slaves and the Portuguese Eurasians'. Four years later he became the principal

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Coromandel towns: Madraspatam (Fort St. George) and Sao Thome de Meliapur, *Itinerario* 18:1 (1994) 51-64.

[46] Kroupa, *Ex epistulis Philippinensibus*, 242-243.

[47] These are listed together from VS 8,158 to VS 8,223 in volume three of the manuscript catalogue.

chaplain at Fort St George and remained there until 1714 when he returned to Britain, taking up a position as chaplain to the Right Honourable Charles, Earl of Peterborough.[48] Like Browne and Bulkley, Lewis was another contributor to the 'Vegetable Substances' who lived for an extended period in the East Indies as an EIC employee and whose collecting activities were held in high esteem by Petiver (and probably Sloane). Lewis, however, was not a medical man like Browne or Bulkley and this meant that he had access to, and interacted with, a different set of people in the East while still remaining part of the EIC's structure.

During this period the EIC's Court of Directors strongly believed in the necessity of placing a Church of England clergyman in each of its voyages and factories. Therefore, wherever the Company operated, a number of clergymen could be found – especially on the Indian subcontinent. In 1685 a requirement was introduced that all EIC clergymen candidates had to have approval from the Bishop of London and, in 1698, chaplains sent to reside in India had to learn the 'native language of the country so that they could better instruct agents, servants and slaves of the Company in the Protestant religion'.[49] In light of these concerns about the calibre of the Company's chaplains, it is not a surprise that Lewis was proficient in Persian and apparently chosen for Fort St George because of his linguistic abilities.

In Fort St George, where Lewis was based, the Company consisted of twenty-seven servants and one chaplain who oversaw the neighbouring subordinate factories as well as their own. By 1757, forty-two different Company chaplains had served at Fort St George, averaging a four-year period each. Lewis, however, served there for twenty-two years, an exceptional amount of time considering that most chaplains either died or returned home in their first year.[50]

At present we find only one letter in Sloane's correspondence sent by Lewis. Undated, it was written from Cheapside, London, about a book he was sending to Sloane so that it could be forwarded on to the 'Lord of Oxford'.[51] In Petiver's correspondence, however, there are a small number of surviving letters written by Lewis which give a flavour of his role in the movement of East Indian natural history

[48] P. Frank, *The church in Madras*, London, 1904, reprinted 2013, 666-667.
[49] This meant that there were hundreds of Company clergyman stationed in the East Indies, see S.J. McNally's typescript, Chaplains of the East India Company, compiled between 1935 and 1976, 70. This is an alphabetical list of 665 chaplains, containing varying degrees of information and held at the BL.
[50] O'Connor, *Chaplains of the East India Company*, 71.
[51] George Lewis to Hans Sloane, undated (BL Sloane MS 4059), f. 273.

and the formation of the 'Vegetable Substances' collection. In February of 1702 he wrote to Petiver from Fort St George informing him of a small box that he had sent 'conteyning a parcell of shells, flyes & the best I have been able to procure'. He also complained that 'this place' does not 'afford any thing that is rare in those kinds, the countrey round us being a dry bare sand for a great way'. Lewis was also not impressed by the natural history knowledge of the people there. Whether local or not, he commented that 'the gentlemen that voyage up and down in these parts, seldom mind what is recommended to them in that nature. For picking of shells is but picking of straws to them'.[52]

Lewis wrote to Petiver again in early 1704 about some natural objects that he had sent to London 'by Mr Chadley a small box containing a collection of butterflys and insects and some nutts of which trust I designed you some account but had not time at their putting up'. Lewis then goes on to give some explanations of these 'nutts', including some interesting detail about their provenance, names and uses, knowledge that must have come from exchanges with local inhabitants:

> the long nutt with ye three kernells is Coco of ye Nicobar Islands, the smooth flatt nutt is not of ye Maldiva as you suppose they are washed up by ye sea here abouts and as I believe are brought down by some great River. But what Countrey or what tree they come from I cannott learn, the nutt with ye rough mossie shell is called by the Portuguees here Coco das Ilhas or Coconutt of ye Islands, but whether of ye Maldives I am not certain, the Kernall ground with bezoar and Rhinoseras horn taken inward is esteemed and us'd by ye natives as a great antidote against poison.[53]

But Lewis not only made collections of natural history, he also collected 'Manuscripts of these parts' which seem to reflect his own interests and expertise. Some of these collections also appear to have been made as part of requests from individuals in England. For example, a number of religious texts, manuscripts on grammar and dictionaries, as well as 'Three Volumes of China Books, stamped on Wood' and various books translated from Tamil and Telugu were sent from India by Lewis.[54] According to Lewis, 'Mr. Elihu Yale, late Governor of this Place, got a learned

[52] George Lewis to James Petiver, Fort St George, Feb 18 1702 (BL Sloane MS 4063), f. 143.
[53] George Lewis to James Petiver, Feb 12 1704/5 (BL Sloane MS 4064), f. 54.
[54] The Archdeacon and his 'Bibliotheca Orientalis': George Lewis, *Cambridge University Library*, 2012, http://www.lib.cam.ac.uk/exhibitions/shelf_lives/lewis.html/ last accessed 9 Dec 2016.

Brahmin to translate out of Sanscreet into the Tulinga Language some of their Sacred Books'.[55] Similar to the way in which Lewis would have relied on collaboration with local informants to make collections of natural history, these references to an elite 'learned Brahmin' suggests something of the East Indian knowledge he had access to, even indirectly, and how he was able to acquire and exchange this through different means.[56]

Lewis sent these translated Indian manuscripts to Arthur Charlett (1655-1722) and Edward Bernard (1638-1697) at the University of Oxford. Charlett, who was Master of University College between 1692 and 1722, wrote to Sloane on numerous occasions and on April 12, 1697 informed Sloane of these Indian manuscripts. He wrote that he was 'very desirous you should make what use you please of our Indian MSS, and have accordingly here enclosed a Copy of the letter sent to me from Fort St George. It seems to me very proper to desire the Favour of you to publish an account of them in the Transactions, that so the Learned world may know what we have of this nature'.[57] The manuscripts were shared with the Royal Society who subsequently published Lewis's letter in *Philosophical Transactions* in 1698.[58]

Charlett sent a variety of other things to Sloane including news, books and catalogues of collections and, in turn, 'receaved so many Presents' such as copies of *Philosophical Transactions* and books.[59] He updated Sloane on his travels, his

[55] This seems to be in response to a specific request for he begins his letter with the phrase 'In pursuance to your joint letter […] I have procured you some of the Manuscripts of these parts', *Philosophical Transactions* 20 (1698) 421. Elihu Yale (1649-1721) appears to have joined the EIC in 1672 as a writer and book keeping clerk and was quickly promoted within the Company and appointed Governor of Madras in 1687. He took advantage of the private trade opportunities available to him in his position and returned to England in 1699 with a private fortune of £175,000 allowing him to endow the American university that bears his name. See R. Miller, *The East Indiamen*, Canada, 1980, 83; I.B. Watson, Yale, Elihu (1649–1721), *ODNB*, online edition, 2015.

[56] L.C. Fleetwood, How to dissect an elephant: surgeons, clergymen, local informants and the production of knowledge at Fort St George, unpublished Masters thesis, University of British Columbia, 2014.

[57] Arthur Charlett to Hans Sloane, University College Oxford, Oct 22 1698 (BL Sloane MS 4037), ff. 141-142.

[58] G. Lewis, Part of a Letter from the Reverend Mr. George Lewis, at Fort St. George; to the Reverend Dr. Arthur Charlett, and the Late Dr. Edward Bernard; Concerning Some Indian Manuscripts, Lately Sent to the University of Oxford, *Philosophical Transactions* 20 (1698) 421-424.

[59] See Arthur Hans Charlett to Sloane, Jun 11 1700 (BL Sloane MS 4038), ff. 18-19. Sloane donated manuscripts to the Bodleian Library and Charlett thanks him

medical complaints (including a swollen leg) and thanked Sloane for his hospitality towards students that Charlett had recommended.[60] Charlett and Sloane most likely met in person as well, for in 1700 Charlett wrote that if his 'Servant will be willing to open your Doors to morrow Morning, I intend to be with you as soon as light, and hope in 2 or 3 hours to examine most of the Duplicates, especially if I can borrow another of Dr Hyde's Bodleian Catalogue'.[61] As well as direct contact with Sloane though, Charlett corresponded and mixed with a variety of individuals across the university, politics and the Royal Society.[62] Sloane added Indian material to his 'Vegetable Substances' collection, therefore, because of both Lewis's interactions with local people in India and the chaplain's contact with Petiver and scholars at the University of Oxford such as Charlett. Lewis's 'network' appears to have been less medically based than that of Browne and Bulkley, but across these different sets of correspondents were multiple individuals who were nodes and conduits in different ways and facilitated the movement of natural history in and from the East.

Browne, Bulkley and Lewis's exchanges with Petiver and Sloane, and their contributions to the 'Vegetable Substances', reveal that they were able to use the established structures of the EIC in, around and through Fort St George to make collections of natural history. While the EIC accepted such information gathering efforts, these contributions were also enabled by the personal relationships that these surgeons and clergymen established and then later maintained. By living permanently in Fort St George they were able to engage with local knowledge and traditions, later maintaining these relationships in different ways. These coastal settlements also facilitated connections with individuals further east such as with Kamel in the Philippines. In contrast to the contributions made by Browne, Bulkley, Lewis and Kamel are those made by the sorts of people who were employed by the EIC but who did not necessarily live permanently in a specific region but voyaged across the East, including ship's surgeons and merchants on board EIC ships.

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numerous times in his letters, see Arthur Charlett to Hans Sloane, Dec 30 1718 (BL Sloane MS 4045), ff. 179-180.

[60] Arthur Charlett to Hans Sloane, University College Oxford, Apr 12 1697 (BL Sloane MS 4036), f. 301; Bath, Aug 15 1709 (BL Sloane MS 4042), ff. 33-34. See also, letters to Sloane: Ld Guildfords at Wroxton, Oxfordshire, Sep 29 1702 (BL Sloane MS 4039); Dec 21 1696 (BL Sloane MS 4036), f. 280; University College Oxford, May 13 1698 (BL Sloane MS 4037), f. 68.

[61] Arthur Charlett to Hans Sloane, Aug 21 1700 (BL Sloane MS 4038), f. 57.

[62] R.H. Darwall-Smith, Charlett, Arthur (1655–1722), *ODNB*, online edition, 2004.

EIC Voyages

The English lagged behind the Portuguese and the Dutch when it came to the successful navigation of sea-borne trade to the East. The Portuguese in particular had reaped the benefits of a much earlier discovery of a route round the Cape of Good Hope and, thereafter, guarded the secrets of how to navigate its passages. Early EIC voyages had relied on charts and other written accounts derived from the experience of the Portuguese and others, but by the mid-eighteenth century there were many more charts and publications such as John Thornton's *Oriental Navigation* (1703). As trade to and across the East altered, so too did the destinations of EIC ships. Early EIC voyages were usually sent to Bantam or Surat, and from there to the Coromandel Coast and ports in the Far East to explore possibilities of trade with China and Japan.[63]

On leaving Gravesend (on the south bank of the Thames), East Indiamen often made their first stop at the island of Madeira and then picked up the northeast trade winds for the long and arduous journey across the Atlantic towards the Cape of Good Hope. Cape Town was an ideal halfway point between Europe and Asia. India-bound ships would then likely stop at Johanna in the Comoro Islands, and from there complete the last, and most dangerous, leg of the journey. A complete operational cycle in which a ship completed a round trip from London to Asia and back called for a minimum period of sixteen months and involved a distance of over six thousand miles.[64]

When it came to China the situation was more complicated. The EIC had always been keen to establish a trading post at a successful Chinese port and this need became more pressing at the beginning of the eighteenth century with the increased demand for tea. However, internal policy considerations and the political realities in China differed from the Company's trading organisation in other parts of Asia. The Ming Dynasty in particular, which ruled the Celestial Empire in the early seventeenth century, held European merchants in low regard, sentiments sustained by the Manchu

[63] Vasco da Gama discovered the route round the Cape of Good Hope in 1497. Both the Dutch and English had attempted various other routes including a northeast passage over the top of Europe and Asia, and a northwest passage through the frozen islands north of the American continent. See Miller, *The East Indiamen*, 10; Ogborn, *Indian ink*, 48; J. Sutton, *Lords of the East: the East India Company and its ships*, Gravesend, 1981, 104, 105, 107.

[64] Chaudhuri, *The trading world of Asia and the English East India Company*, 74.

Dynasty from 1644. Despite having no legal access to a Chinese port, the EIC continued to send ships to the Chinese coast and by 1676 had established 'tenuous trading links' on the island of Taiwan and at the coastal city of Amoy (present-day Xiamen).[65] At the turn of the century, the EIC increasingly traded at Canton, a sheltered port situated near the Pearl River that offered good trading facilities. A system of 'supercargoes' was also established in order to trade with China. Chinese authorities allowed only a specific group of passengers on board East Indiamen to go on to dry land. These individuals were employed by the EIC's Court of Directors and not the ships' private owners. It was their responsibility to oversee the procurement of goods that would be carried back to London. So, having rounded the Cape, East Indiamen would set out across the Indian ocean heading northeast towards modern day Indonesia, passing through the Sunda Straits between Sumatra and Java, and heading towards the coast of China.[66]

On board these ships were men who sent natural history objects to Sloane. A number of East Indies plants were gathered by Nathanael Maidstone (fl.1698-1723), for example, who had been employed as a chief trader (supercargo) on a New Company ship, the *Trumbull*, bound for China in 1698.[67] Dandy has remarked on the dried (and largely unstudied) plants sent by Maidstone from the East Indies in herbarium volume HS 59, as well as several zoological specimens.[68] In the 'Vegetable

[65] Manchu armies captured Amoy in 1680 after which trading became even more difficult although trading ships did continue to visit Amoy. For example, the New Company ships, *Trumbull* and *Nassau* stopped at Amoy in 1698, see C.E. Jarvis and P. Oswald, The collecting activities of James Cuninghame; Chaudhuri, *The trading world of Asia and the English East India Company*, 55.

[66] See Chaudhuri, *The trading world of Asia and the English East India Company,* 89-95; M. Ellis et al (Eds), *Empire of Tea*.

[67] In 1709, the Old and the New East India Companies, the two rival contenders to the trade since 1698, formally merged to form the United Company, establishing a period of stability which saw less of the vigorous experiments, continuous search for new trade routes and commodities and fresh outlets for both exports and imports of the earlier period. See Chaudhuri, *The trading world of Asia and the English East India Company.*

[68] Recently, Jane Kilpatrick noted a dried bird's head in this same volume, which has subsequently been studied by NHM scientists and identified as a species of woodpecker. C.E. Jarvis and J.H. Cooper, Maidstone's woodpecker – an unexpected bird specimen in the herbarium of Sir Hans Sloane, *Archives of Natural History* 41:2 (2014) 230-239 suggest that this bird's head, along with the plant specimens found in this volume, were acquired during Maidstone's voyage to China in 1698. Jarvis & Cooper suggest that this bird's head, along with the plant specimens found in this volume, were acquired during Maidstone's voyage to China in 1698. Many of the

Substances' catalogue, sixty-eight entries have been linked to Maidstone including Lignum Aloes 'from Cochin China' where it was 'sold very dear' (VS 2,322), 'A substance said to be the froth of the sea from the East Indies' (VS 8,984) as well as a number of items that came from Bengal, Pulo Condore, the Philippine Islands, 'Antego' and Turkey. There also appears to have been some degree of direct written communication between Maidstone and Sloane, with Maidstone consulting Sloane on the health of his mother, wife and daughter.[69] The EIC ship's surgeon, Alexander Brown (fl.1692-1698) is another Company employee who collected natural history. He gathered plants at the Cape of Good Hope during voyages to the Far East between 1697-98. In the 'Vegetable Substances' catalogue we find that Brown contributed at least thirty-four items from China, St. Helena and the Cape.[70] For both Maidstone and Brown, specimens came to be in Sloane's collection via Petiver, and Brown in particular sent specimens to naturalists other than Sloane. For example, he sent samples (and records of experiments with drugs and animal dissections) to both Plukenet and Petiver in London as well as to Jacob Bobart in Oxford.

The ship's captain and Royal Society Fellow James Cuninghame (ca.1665-1709) was one of the earliest Europeans to successfully gather and bring back to England botanical collections made in China. He contributed at least eighty specimens to the 'Vegetable Substances'.[71] These items are described in Sloane's manuscript catalogue as broadly coming from 'China' as well as the Crocodile Islands, Chusan, Cochinchina, Pulo Condore and Bengale.

Towards the end of 1697, Cuninghame had left England for the Chinese island of Amoy. While in Amoy for six months, Cuninghame collected many specimens of flora and fauna, both for Sloane and for Petiver. He also commissioned approximately eight hundred paintings of 'useful' plants from Chinese artists and arrived back in England in mid-1699. Cuninghame had not been back long before he joined an EIC ship, the *Eaton*, bound for China.[72] It was destined to arrive at the island of Chusan (present day Zhoushan). The EIC had hoped to establish a trading settlement there, but

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plant specimens are common to coastal areas in the East Indies, so it is difficult to deduce more exact locations.

[69] See J.H. Barnhart, *Biographical notes upon botanists*, 2 (1965) 437.

[70] Alexander Brown is listed in Anthony Farrington's index of EIC seaman as 2nd mate on board the *Caesar* in 1721 and then 1st mate on the *Lynn* in 1724 and again in 1728. See BL Sloane MS 1689.

[71] Jarvis and Oswald, The collecting activities of James Cuninghame,1.

[72] Cuninghame's first voyage was upon the ship *Tuscan*, an interloper, not an EIC ship, see Jarvis and Oswald, The collecting activities of James Cuninghame.

as a result of difficulties had to shift to Cochin China (Vietnam) in 1702, where they eventually established a 'factory' on the island of Pulo Condore. Although wounded, Cuninghame would survive a local dispute and massacre in 1705 but be imprisoned on the mainland. He was released in April 1707 and travelled to Batavia (Jakarta). Cuninghame was then sent to Banjarmassin in Borneo to become chief of the factory, but only three weeks after his arrival the factory was attacked and destroyed. Though he tried to return to England in Autumn 1708/9, and wrote to Petiver and Sloane from Calcutta in 1709 about these plans, the last anyone heard of him was on board the *Anna* which disappeared after leaving Bengal.[73]

During his three voyages (between 1696-97, 1698-99, and 1699-1709), Cuninghame made extensive collections of natural history. In China, he collected on the islands of Amoy and Chusan as well as the 'Crocodile Islands' (Matsua Islands, northeast of Fuzhou), but because of his 'enthusiastic and conscientious' collecting he also gathered specimens wherever he touched land. This meant that he collected in the Canary Islands (La Palma) in 1698, Ascension in 1699, St Helena, the Cape of Good Hope, Java, Malacca, Pulo Condore and Cochinchina. Quite often the specimens he sent back to London were unusual in their origins and their novelty meant that they were actively used as the basis for published descriptions. Petiver mentions over fifty of them in his *Musei Petiveriani.* Cuninghame also sent many plants to other botanists including Dubois and Plukenet. While he may not have published a great deal, the specimens he collected were numerous and significant, and distributed to experts of the day.[74]

In the 'Vegetable Substances' catalogue we find that Cuninghame sent Sloane samples of different seeds, examples of fruits and pieces of wood. He also sent some of the earliest samples of tea from China, along with edible curiosities including 'A fucus […] with wch. the birds taking it up in their beaks & letting it dissolve in their crops make the nests of wch. the inhabitants feed' (VS 499). In cases like this one the descriptions of items that came from Cuninghame provide insight into how they were used locally. One particular 'delicious fruit of Canton' was described as being dried by the Chinese in order to eat them the whole 'year & take it in their tea as sugar' (VS 759). Similarly, Sloane lists a 'piece of a logg of wood on one of the inward rings of which are the 3 words, da, Goa, ora', which was found on an Island of the East Indies

[73] See Jarvis and Oswald, The collecting activities of James Cuninghame, 2.
[74] G. Goodwin, Cuninghame, James (*fl.* 1698–1709), rev. D.J. Mabberley, *ODNB*, online edition, 2010.

and believed to give good luck. It was apparently brought on board to be used as firewood (VS 573). Also, a sample of 'Ricini semina from St. Helena' has been listed as VS 2,703, and was supposedly used for its oil, which was 'taken from them being pounded & putt into hott water' so that three spoonfuls could then be used in a purging recipe.

Sloane's other catalogues, as well as his manuscript collection, show something of the numerous exchanges that took place directly between Sloane and Cunninghame. In Sloane's 'Miscellanies' catalogue, for example, we find a number of more curious items sent by Cuninghame, including 'A hatt from Tunquin where it belonged to the Queen. It is made of 2 Talipot leaves on the upper side & cane underneath' (number 9), and 'A Baskett or hatt made of cane splitt & palm leaves' (number 221) that Cuninghame had sent from China. Similarly, among the frequent and detailed letters written by Cuninghame it becomes clear that he was not only informing Sloane of the botanical collections he was making and sending, such as a 'Book of Plants about 200 specimens such as I have met with', but also that Sloane was responding to Cuninghame and returning his favours. Thus, Cuninghame wrote from Chusan in August 1702:

> I received yours (being the first since I left London) by Mr Corbet in the Macklesfield which arrived here the 6th of this instant. You have formerly so preingaged me by your extraordinary favours that I can never reckon myself sufficiently capable to acknowledge the same. And now I must return you my hearty thanks for these Books you were pleasd to send me; any thing that's new & curious will allways be very acceptable. If you'll but entertain the assurance of my inclinations to serve you in the advancement of Natural History or any thing else, there will be no need of tedious Apologies when times & places are not favourable thereto, by reason of our floating circumstances no way answering our expectations.[75]

The following February Cuninghame wrote to Sloane again, and gave a sense of how it was not only his own individual collecting activities that enabled him to gather natural history specimens, but a range of interactions with people across different places:

> I send You & Mr Petiver a Box of shells, which I had of Mr Henry Smith Supercargo to the Liampo Frigatt, who gathered them upon the Island of Pulo

[75] James Cuninghame to Hans Sloane, Chusan, Aug 26 1702 (BL Sloane MS 4039), ff. 17v-r.

> Vereo in the Straits of Malaca […] And a Collection of Butterflies for Mr Petiver. I likewise send Betwixt you both a Book of Plants containing about 180 Specimens with duplicates, most part whereof are new & pretty well preserv'd, to the better part whereof I have affix'd labels giving their descriptions (so farr as I had time & opportunitie to observe) according to Turneforts method, whereby they may be the more easily reduced to their proper Tribes. And this is all I can serve you in at present, being bound for Pulo-Condore.[76]

Cuninghame's contributions to the 'Vegetable Substances' came as a result of his position in the EIC. As a ship's surgeon on board various East Indiamen, he was able to voyage across the East towards China and make significant collections of natural history whenever he had the opportunity. This made him in some sense a 'floating collector' because he both voyaged on ships and was resident in Amoy for six months and in Chusan for two years. While Cuninghame's stays at these EIC trading posts did not have the long-term or permanency of Browne, Bulkley or Lewis's positions, he was still able to use the established structures of the EIC to his advantage. Cuninghame evidently utilised local knowledge and other Company servants and private traders to aid him in his movement of this material.

There are similarities to these interactions with Cuninghame in Sloane's connections with another ship-board collector bound for the East. Sixty items in the 'Vegetable Substances' catalogue were contributed by the physician Alexander Stuart (1673-1742), encompassing items from across the East, including the Cape of Good Hope, the Philippines, Oman and Muscat. Stuart, probably born in the north-east of Scotland, was practising as a surgeon-apothecary by 1698 and like many other Scottish medical men became a ship's surgeon. He was on the trader *London* from 1701 to 1704 and on the *Europe* from 1704 to 1707.[77]

Stuart corresponded with Sloane while on board ship, and their correspondence was marked and sustained by expressions of gratitude and feeling.[78] From the *London*, moored at Deal, he wrote that 'Being just now gott, on board I thought it my duety to let you know, & to give you my humble thanks for your extraordinary kindnesses towards me on all occasions'. Just as Sloane had done with Cuninghame, he sent Stuart a number of books. This was something for which Stuart was particularly grateful to Sloane and continued on in his letter: 'I cannot also omitt

[76] James Cuninghame to Hans Sloane, Chusan, Feb 12 1702/3 (BL Sloane MS 4039), f. 85r-v.
[77] A. Guerrini, Stuart, Alexander (1673?–1742), *ODNB*, online edition, 2008.
[78] See Bannet, *Empire of Letters*; Pollock, The practice of kindness.

to thank you for these books you pleased to allow me which encourages me to ask you one more viz Bellinis opuscula'.[79] After requesting that Sloane find 'Bellini's Opuscula' on February 16, 1701, it was only a week later that Stuart wrote again to thank him for the book,

> Yesterday's morning I had yours together with Bellini's Opustrula I ow you a great many thanks that you was at all pleased to take nottice of my Letter much more that ye sho'd have done it after such a manner even beyond my request I humbly acknowledge this and all your former extraordinary favours.[80]

Sloane seems to have happily supported and encouraged Stuart, perhaps knowing that he would receive objects of natural history from the surgeon's travels. For the following few years Stuart would inform Sloane on his movements, his location and his collecting activities. He remained constantly enthusiastic to serve Sloane however he could. This becomes particularly clear when he writes:

> Since I had the honour to see you, I have engaged, as Surgeon in a Trading Voyage to China, & shall God willing have occasion of being in Battavia, Borneo & Surat: And being wth that we are to sail, in ten dayes. I presume to give you the truble of this letter, that ye may acquaint me by the penny post, when I may wait of you, to receive your comands. Sir if it lye in my power to serve you in any of these places, ye may, assure your self I will do it very cheerefully.[81]

Stuart, then, appears to have been keen to receive direction from Sloane on what sort of natural material to collect while in the East Indies as part of established trade links with places such as Batavia and Surat. When Stuart later wrote from on board the *Europe*, however, he had not had much luck in collecting anything of interest to send to Sloane. While they had 'had a safe & prosperous Voyage, to Persia, Surat, Bombay & Carwar' and were soon to be heading towards 'Bombay, & from thence to Mocco, China, or Persia', Stuart was concerned that 'Nothing [had] hithertill fallen in my way, worthy of being sent or wrot of to you: if it does, I think my self obliged to

[79] Alexander Stuart to Hans Sloane, London Ship, Feb 16 1701/2 (BL Sloane MS 4038), f. 305.
[80] Alexander Stuart to Hans Sloane, Deal, Feb 28 1701/2 (BL Sloane MS 4038), f. 306.
[81] Alexander Stuart to Hans Sloane, undated (BL Sloane MS 4061), f. 142.

contribute my endeavours: tho I believed nothing will be new to you'.[82] Here there are some similarities between Stuart and the 'sponsored collector' Mark Catesby in the Americas, including the way in which Stuart has taken it upon himself to collect for Sloane while he is travelling. This however, is not his primary duty while in the East. For both relationships with Sloane though, there is a sense of expectation that interesting material will be forthcoming, and a need to explain to Sloane when it is not.

Despite these initial concerns, Stuart not only succeeded in sending natural history specimens back to Sloane, but he also sent them to others including Charles Dubois. He sent Sloane 'A silk cotton fruit of a white colour from the East Indies' (VS 1,604) as well as 'a sort of nux vomica, bitter used in malignant diseases from the Philippine Isles' (VS 683) and 'Dammer wch. is a resin from a tree of the same name very common on the shores of Malabar & Canara wt. wch., Lime, & fish oil the Indians besmear their ships' (VS 1,602). He also interacted with other individuals in order for his London correspondents to receive objects from the East. Stuart passed on objects that he received from 'Doctor Waldo', including books of plants, a book of butterflies, a small box of insects, a dried bird and a serpent. These were to be divided between Sloane and Dubois.[83] Stuart also had 'pieces of tee' which he wished to share with Sloane and the Royal Society.[84]

Both Cuninghame and Stuart were able to make collections of natural history because of their positions on board ships voyaging in the East, and Sloane engaged with them both directly. Not only did he receive material from them, which he placed into his collection, but he also sent them letters and objects in return.[85] These are signs of the sort of reciprocal relationships that have so far been more evident in Sloane's

[82] Alexander Stuart to Hans Sloane, Jan 1706 (BL Sloane MS 4040), f. 289.
[83] Alexander Stuart to Hans Sloane, undated (BL Sloane MS 4061), f. 150. 'Dr Waldo' is possibly the physician Daniel Waldo who may have been based at Bombay in 1701, Surat in 1702/3 and Persia in 1704, listed in D.G. Crawford, *Roll of the Indian Medical Service 1615-1930, volume two*, London, 1930, 395. Three letters appear in Sir Hans Sloane's Correspondence Online, https://drc.usask.ca/projects/sloaneletters/doku.php?id=letter&letterid=1162/ last accessed 9 Dec 2016. Waldo sends balms, a bird, a small box with a Chinese serpent, a large shell, and some red beans to Sloane, see Daniel Waldo to Hans Sloane, Surat, Jan 20 1704/5 (BL Sloane MS 4039), f. 424; Jan 22 1704/5 (BL Sloane MS 4039), f. 425.
[84] Alexander Stuart to Hans Sloane, undated (BL Sloane MS 4061), f. 150.
[85] Some of these items were sent in the form of 'gifts' and again alludes to the importance of gift exchange in natural history collecting, knowledge exchange and patronage.

interactions with collectors in the New World (such as Barham and Bartram). But, importantly, other individuals in London were also able to take advantage of the collecting activities of these men in the East. Sloane was not the only London-based contact to whom EIC ship employees such as Cuninghame and Stuart (as well as Maidstone and Brown) sent natural history specimens.

Botanical collections made by individuals such as Maidstone, Brown, Cuninghame and Stuart reveal that Sloane undoubtedly benefitted from the movement of EIC ships and, in particular, from the surgeons on board who made observations about the natural world and collected specimens. Captains and merchants can be found named throughout the 'Vegetable Substances' catalogue, but these larger groups of samples signal the importance of specific EIC-facilitated collecting and the way in which go-betweens in these East Indies 'networks' were often collectors in their own right.[86] With all of these examples, Sloane was not the only important contact for these collectors in London. He appears to have been one of several to whom they sent natural material. However, Sloane must have recognised the value of corresponding with EIC ship's surgeons like Cuninghame or Stuart who had the foresight to make collections across the East whenever they had the opportunity to do so. As the next section will highlight, Sloane was also able to benefit from other characteristics of EIC trade and movement.

Private Trade and Diplomacy

Other aspects of the EIC's structure affected what material entered the 'Vegetable Substances' collection. While the factory at Fort St George enabled surgeons and clergymen to nurture their own 'networks' of medical and missionary exchange, and those employed on Company ships were able to make collections as they stopped at different ports, there was also a diplomatic aspect to the Company's operation and a system of private trade that Sloane benefitted from. For example, five catalogue entries refer to Nicholas Waite. The first (VS 6,712), appears as follows:

[86] Another 157 vegetable substances appear as 'from China as a sample of druggs used there brought by Mr. Talbot & given to me by Mr. Barrow' (VS 9,602). These descriptions include Chinese names but no descriptions of specific therapeutic properties. Talbot and Barrow cannot be identified at this point.

> Balm of Gilead given by an Arabian prince to a friend of Sr. Nicolas Waites in the East Indies who gave it to me for the truest balm of Gilead.

The EIC had established a permanent trading post, and its first Asian factory, at Bantam in the early seventeenth century. Trading with much of western Java and Southern Sumatra (Indonesia), Bantam was an important source of pepper and it was to here that many of the Company's other factories reported during the first half of the seventeenth century. As part of the Old East India Company, Sir Nicholas Waite had held the position of chief at Bantam, and there gained much experience in East Indian trade. By 1699, however, Waite had moved to Surat on the north west coast of India, and an important location for access to Mughal marketplaces in the interior.[87] Here, Waite named himself '"Consul General and Public Minister" for the whole west coast' and this time, was part of the 'English Company Trading to the East Indies', otherwise known as the New Company. This had been established in 1689 and was financially supported by the state as well as stockholders of the Old Company. Both companies competed with each other for trade in the East until 1708 when they merged under the name of the 'United Company of Merchants of England Trading to the East Indies'. Waite is thought to have been particularly deceitful against the Old Company and engineered Mughal hostility against it by blaming it for the breakdown of the protection of Mughal shipping against the depredations of English pirates.[88]

Waite's appearance in the 'Vegetable Substances' catalogue offers a somewhat different perspective on how Sloane was able to take advantage of the EIC for adding to his botanical collection. Compared with the surgeons, whose interests in the surrounding natural history would have been a very accepted extension of their day-to-day professional activities, Waite's position in the EIC would have seen him engaging in very different social, economic and political contexts. His connections with an 'Arabian Prince' demonstrate something of how his diplomatic relations stretched beyond India to Arabia, thereby allowing him to engage with natural knowledge in a different way from that of Browne and Bulkley, and even Lewis.

Private trade was another important characteristic of the EIC structure that affected the collection and movement of natural history. First of all, the Company hired its vessels from private owners, who in turn often supplied their own captains.

[87] See Miller, *The East Indiamen*.
[88] G. Goodwin, Gayer, Sir John (*d.* 1711), rev. A. Grout, *ODNB*, online edition, 2008; J. Keay, *The Honourable Company: a history of the East India Company*, Hammersmith, 1993, 183.

This made the command of an East Indiaman a much sought-after position in its own right. Secondly, the majority of EIC employees not only received a salary for the work they did as part of the Company, but also travelled east with the aim of making their fortune through private trade. In fact, the EIC attracted relatively well-educated men because of the promise that Asia and the Indian subcontinent offered as a land of opportunity for merchants. As private merchants, these individuals were part of an Asian trading world as well as commercial transactions with people in London. Taking various forms, this trade could involve buying and selling all sorts of commodities such as cloth, spices and precious stones, both for themselves and others.[89] On EIC ships, space was even allotted to company employees to stow the goods that they hoped to sell at the end of a voyage.[90]

With this in mind, a further forty-five catalogue entries refer to 'seeds which were brought from China entitled Graines des diverses leagumes from No. 1. to 10 by Mr Douglasse who gave them to Mr. Annesley from whom I had them'. There is no clear sense in Sloane's surviving correspondence of who either 'Mr Douglasse' or 'Mr. Annesley' were, or their precise connections to him. However, EIC company records highlight a prominent figure based in Surat in the late seventeenth century. This was Samuel Annesley the younger, who was appointed president in 1694 and then dismissed five years later after some problems between the Mughal authorities and the New Company.[91] After this, Annesley continued as a private trader, passing

[89] See Ogborn, *Indian ink*, 72; E.L. Saxe, *Fortune's tangled web: trading networks of English entrepreneurs in eastern India*, Unpublished PhD thesis, Yale University, 1979; I.B. Watson, *Foundation for empire: English private trade in India 1659-1760*, New Delhi, 1980; S. Mentz, *The English gentleman merchant at work: Madras and the city of London, 1660-1740*, Copenhagen, 2005; I.B. Watson, Indian merchants and English private interests, 1659-1760, in: A. Das Gupta and M.N. Pearson (Eds), *India and the Indian Ocean, 1500-1800*, Calcutta, 1987, 303. There is an argument that, on the one hand, private trade was an incentive to keep Company servants loyal while at the same time, the Company existed, in part, because of its private-profit seeking merchants in London,

[90] Sutton, *Lords of the east: the East India Company and its ships*, 81-84.

[91] These catalogue entries are listed between numbers 5,038-5,082. A previous entry in the catalogue is dated: VS 5,036 described as 'Graine de Quamoclit (Camoeclit) de la Guadeloupe le 22. Dec. 1711'. Similarly, VS 5,142 appears as 'The fruit of the tree passion flowr wch. ripend at Mr. Palmers in sommersetshire 1713. & was sent me from thence by Mr. Musgrave. who wrote to me that it ripen'd there every year'. This would suggest that Sloane received these samples from Annesley and Douglasse between 1711 and 1713.

away in Surat in 1732.[92] Annesley, a fairly well educated young man, was thought at the beginning of his career to have had 'some capacity for literacy expression' and a knowledge of accounts. In letters dated March 1678, the EIC Directors were particularly keen to ensure the successful operation of their mint at Surat (to make coins) in which Annesley had been trained. It was around this time that Annesley is thought to have sailed to India.[93] The Surat council records reveal that Annesley made steady progress as a junior official and gained importance in the factory.[94]

While the English in Surat may have been embracing a wide range of merchandise, it was probably more likely to have been the profits of private trading than the official Company incomes that attracted men to careers in the Company's service. In fact, Annesley eventually became an independent merchant, a 'Free Trader' in the terminology of the EIC, allowing him to buy and sell when and where he could in the East, restricted only by local regulations and disruptive conditions such as piracy. Indeed, it seems as though Annesley's private trade was partly encouraged by the New Company's Surat council, with EIC records indicating that Annesley was trading in diamonds in 1704. Diamonds were, after all, a very effective way of making money and EIC commanders were often advised to purchase precious stones for trading.[95] Wright suggests that Annesley's position as an independent merchant allowed him to exercise an influence that went far beyond the confines of Surat, and that he had correspondents in many parts of the East. It would have been this 'network' that could have facilitated his acquisition of the Chinese natural materials which Sloane would eventually preserve in his 'Vegetable Substances'.[96]

Evidently Sloane was not just receiving botanical material from surgeons based in EIC factories or those on board ships. Rather, other characteristics of the EIC structure including diplomacy and private trade were also able to provide a means for Sloane to add to his botanical collection. This is not a surprise considering the

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[92] A. Wright, *Annesley of Surat and his times. The true story of the mythical Wesley fortune*, London, 1918, 6-7, 330-1.
[93] Wright, *Annesley of Surat*, 41; C. Scarre and J. Roberts, The English cemetery at Surat: pre-colonial cultural encounters in western India, *The Antiquaries Journal* 85 (2005) 283.
[94] Wright, *Annesley of Surat,* 113-118.
[95] Wright, *Annesley of Surat,* 31-32; B.P. Lenman, The East India Company and the trade in non-metallic precious materials from Sir Thomas Rose to Diamond Pitt, in: H.V. Bowen, M. Lincoln and N. Rigby (Eds), *The worlds of the East India Company,* Woodbridge, 2002, 98-107; Mentz, *The English gentleman merchant at work*, 73-79.
[96] Wright, *Annesley of Surat*, 300-326.

significant position of both diplomatic work and, especially, private trade in the structure of the EIC. Undoubtedly, many of those employed by the Company who contributed to the 'Vegetable Substances' were utilising the trading links established by the EIC to trade and to make collections of natural history for their own personal gain.

Collecting beyond the EIC

Trading companies such as the EIC and the VOC played a crucial role in moving natural history (of various sorts) both across the East and back to Europe. The material found described in the 'Vegetable Substances' catalogue is testament to the effects on collecting of some of the different structures that characterised these companies, including established factories, trading links, voyages and private trade. However, there are groups of samples in Sloane's collection that highlight the movement of natural material that, in various ways, went beyond the 'networks' of the EIC. These instances reveal the complexities of collecting natural history in the East

Sloane lists seven entries in the 'Vegetable Substances' catalogue from 'Father Fontoney', or Jean de Fontaney (1643-1710), a French Jesuit who led a small group of missionaries to China. Leaving Brest, France in March 1685, they experienced a long voyage and stopped for some time in Siam, eventually reaching Chinese territory at Ningpo in July 1687.[97] In February 1688 they arrived in Peking with the aim of spreading French and Catholic influence, including the transmission of scientific knowledge. Fontaney returned to Europe in 1702.[98]

This Jesuit missionary sent Sloane medicinal teas, such as a 'Tea from China with which they cure colds' (VS 173), as well as the seeds of different fruits, all of which are listed within the first fifty pages of volume one of the 'Vegetable Substances' catalogue.[99] Fontaney and Sloane corresponded directly many times – especially between 1704 and 1708 – and Sloane appears to have sent books and seeds to the Frenchman in 1704 so that he could deliver them to another contact in

[97] See F.C. Hsia, *Sojourners in a strange land: Jesuits and their scientific missions in late imperial China*, London, 2009.
[98] D.E. Mangello, *Curious land: Jesuit accommodation and the origins of Sinology*, Hawaii, 1989, 330.
[99] This, therefore, corresponds with the chronology of Fontaney's trip to China in the 1680s.

Avignon.[100] The following year, Fontaney had hoped to send more missionaries to China but was facing difficulties because of the effect of war on French shipping. He asked Sloane for his help, hoping that their passage might be obtained on an English ship.[101] Six months later, Fontaney wrote again about missionaries destined for China, eager that Sloane might be able to recommend them to the EIC for their travel as well as obtaining passports for them so that they could safely and directly voyage from London to China.[102] In these letters Fontaney made sure to mention that these missionaries would happily collect curiosities for Sloane, and that he would let them know in advance what Sloane wished to receive.[103] Two years later, Fontaney asked Sloane to provide recommendations for friends of his who were trapped in Amsterdam while trying to travel to China, as well as requesting that Sloane meet with missionaries who had recently returned from the East, believing this would be of mutual benefit.[104] In 1708, Fontaney continued to write to Sloane from Nancy, in northeastern France, enquiring as to whether Sloane would like to procure books from China.[105]

While Fontaney's travels were facilitated by the EIC, he was not a Company servant like resident employees in Fort St George (Brown, Bulkley and Lewis) or surgeons on EIC voyages (Cuninghame, Stuart and Maidstone). Fontaney could be considered as a correspondent of Sloane in the East who was collecting in some sense beyond the EIC. Fontaney and Sloane had direct written communication and more direct interactions that relied less upon intermediaries in the East or in Britain (in other words, Petiver does not seem to have been involved in these exchanges). The exchanges that took place between them also suggest something of a more reciprocal relationship which brought Sloane materials from China.

Starting at VS 8,183 is another group of twenty-four samples that have been listed as originating from the East Indies 'from Dr. Kempfer'. Engelbert Kaempfer

[100] Jean de Fontaney to Hans Sloane, Nancy, Aug 1 1704 (BL Sloane MS 4039), ff. 334-335.
[101] Jean de Fontaney to Hans Sloane, Nancy, Jun 12 1705 (BL Sloane MS 4040), ff. 39-42.
[102] Jean de Fontaney to Hans Sloane, Nancy, Oct 25 1705 (BL Sloane MS 4040), ff. 81-82.
[103] Jean de Fontaney to Hans Sloane, Nancy, Dec 1 1705 (BL Sloane MS 4040), ff. 99-100.
[104] Jean de Fontaney to Hans Sloane, Nancy, Oct 30 1707 (BL Sloane MS 4041), ff. 50-51.
[105] Jean de Fontaney to Hans Sloane, Nancy, Oct 22 1708 (BL Sloane MS 4041), ff. 232-233.

(1651-1716) was a German physician who, after attending the universities of Krakow, Konigsberg and Uppsala, had travelled to Persia and Russia as a doctor to the Swedish embassy. From there, Kaempfer went on to further his travels by way of the VOC and voyaged to the Far East. He travelled through Muscovy, Baku, the Caspian Sea, Isfahan and Shiraz to the Persian Gulf, and then via India to Batavia in Java. From there he joined an annual voyage further east and, after stopping in Siam, reached Japan on November 20, 1690, where he spent two years acting as a medical officer on the island of Deshima at Nagasaki. This was a Dutch trading outpost that has subsequently been described as at the 'very heart of the closed empire of Japan' because at this time – known as the Edo period between 1600-1868 – Japan was very much closed to the outside world except for a few Chinese merchants.[106] It was here, on Deshima, an artificial island from which the Dutch were allowed to trade, that Kaempfer was able to gather together various Japanese items including books, maps and natural curiosities. When Kaempfer died at the age of sixty-five in November 1716, Sloane recognised the significance of this early Japanese material for Britain and commissioned George I's Hanoverian doctor Steigerthal to investigate what was to become of Kaempfer's library and collections. It would not take long for a sale to be arranged and, between 1723 and 1725, all of Kaempfer's material was transferred to Sloane's home in London.[107] Sloane would later ensure that Kaempfer's manuscript *Heutiges Japan* ('Present-day Japan') was translated by Dr John Gasper Scheuchzer, and published in 1727 as *The History of Japan… Together with a Description of the Kingdom of Siam.* This two-volume history included Kaempfer's field notes and drawings. It was a work that Kaempfer had hoped to publish during his own lifetime, but he had failed in attracting adequate funding and a publisher.[108]

When Sloane purchased Kaempfer's collection wholesale in the 1720s, he acquired a number of botanical specimens and Dandy has described Sloane's herbarium volume H.S. 211 as 'one of the most important volumes in the [Sloane] Herbarium'. Many of these specimens are small, but in excellent condition, and appear on small sheets affixed to the larger ones of Sloane's volume. They bear names

[106] B. Gray, Sloane and the Kaempfer collection, *The British Museum Quarterly* 18:1 (1953) 20-21; D. Mervart, A closed country in the open seas: Engelbert Kaempfer's Japanese solution for European modernity's predicament, *History of European Ideas* 35 (2009) 321-329.
[107] Gray, Sloane and the Kaempfer collection, 21.
[108] Y. Brown, Kaempfer's album of famous sights of seventeenth-century Japan, *British Library Journal* 15 (1989) 90-103.

that have been written in Kaempfer's hand.[109] As noted above, the 'Vegetable Substances' catalogue describes twenty-four items 'From the E. Indies by Dr. Kempfer', including a number of samples of fruit and wood. Some of these entries also give some insight into the local uses of this natural material. For example, one sort of fruit 'of a small triangular coco-nut' was esteemed in the East Indies as a 'great antidote' although no detail is given of what ailment this fruit cured (VS 8,184). Other intriguing descriptions include that of a reddish-brown wood and bark that was supposedly used in the East Indies as an astringent (VS 8,188); 'Splitt Ratan' which was used to make chairs (VS 8,191); as well as a 'bright wood' that grew in swamps 'of which the Indians keep bezoar' (VS 8,192). These descriptions clearly indicate that this material was collected by Kaempfer but give no hint of more specific geographic locations. Sloane probably acquired all this material in the 1720s with his purchase of Kaempfer's estate. While there is no direct indication of this in the catalogue, their listing between VS numbers 8,183 and 8,310 would roughly corresponded with these dates.

These contributors of samples to the 'Vegetable Substances' and their routes into the collection, although both from the East, are very different from each other. While Fontaney had a lot of direct contact with Sloane, and therefore established and developed a particular relationship with him, this does not appear to have been the case between Kaempfer and Sloane. Instead, Sloane absorbed Kaempfer's collection into his own by purchasing it post-mortem. These instances remind us of the apparent complexities involved when collecting in the East, especially beyond the 'networks' established by the EIC, and that a variety of contexts enabled Sloane to add to his collection. The samples contributed by Fontaney and Kaempfer highlight the importance of movement beyond the EIC for Sloane's formation of the 'Vegetable Substances'. They reveal the different ways in which Sloane either facilitated or utilized the knowledge of others, who in turn benefitted from their own myriad connections and interactions throughout the East.

[109] Dandy, *The Sloane Herbarium*, 144-145; P.A. Hinz. The Japanese plant collection of Engelbert Kaempfer (1651-1716) in the Sir Hans Sloane Herbarium at the Natural History Museum, London, *The Bulletin of The Natural History Museum London, Botany* 31 (2001) 27-34.

Conclusion

Material in the 'Vegetable Substances' collection that was collected in, and sent from, the East highlights that, unlike the New World, the range of people sending material was less varied. There are no female contributors listed in the catalogue and the majority of individuals were connected to trading companies in various ways. This included people employed by the EIC who were resident in the East as part of factories, people such as surgeons and clergymen at Fort St George. These individuals were a form of 'resident collector' and were able to engage with all sorts of different people, locally as well as further afield, sometimes involving medical 'networks' and, at other times, other 'networks' that were military or economic. These individuals were able to make collections of natural history over a different timescale to the sorts of people who may have just been passing through, such as ship's surgeons and merchants on board EIC ships.[110] Despite these differences, though, collectors like Browne, Bulkley, Lewis, Cuninghame, Maidstone and Stuart all engaged with local knowledge in some form and this allowed them to contribute to Sloane's collection from beyond their own immediate locations: Browne, for example, sent material from China. In these ways, the characteristics of the EIC, including its factories, ships and private trade, were all important in both allowing Sloane to form his botanical collection and shaping what it contained.

An important and defining characteristic of material that came from the East is that much of it appears to have been underpinned by a multitude of individuals and to have passed through many hands. Especially significant here is James Petiver and his own 'network' of individuals around the world. Broadly, Sloane appears to have had less control over what was collected in the East than in the West. Instead, he seems to have utilized the sorts of 'networks' and connections that were already in place. This is seen not just through the material that he received from Petiver, but also through his active purchase of the collections of Grew, Kaempfer and Plukenet (and with it the material from Adair).

However, Sloane did also have direct connections with some of the contributors of material from the East just as he did with those who sent material from the New World. He actively engaged with Fontaney, Cuninghame and other surgeons

[110] See discussion of 'contact zones' in M.L. Pratt, *Imperial Eyes: Travel Writing and Transculturation*, London, 1992.

on board EIC ships. Often, in these cases, private trade in the East Indies played an important and underlying role in the formation of the 'Vegetable Substances' collection. Sometimes this was an extension of an EIC network, as in the case of Samuel Annesley, but at other times Sloane's relationship with merchants was more familiar, as with Alexander Stuart. In fact, the relationship that Sloane developed with Stuart will be briefly explored now to show the complexities involved in understanding how material was collected in the East and added to the 'Vegetable Substances'. It also acts as important link to chapter five, highlighting that people and things can not be neatly separated geographically and that there are connections between contributors across this part of the thesis.

Stuart's contributions to the 'Vegetable Substances' collection, which are found in volume one of the catalogue, not only correspond with the dates of his voyages east upon the *London* and the *Europe* but also with his later decision to go to medical school at the University of Leiden. This is an important context for these samples because of what it implies about his relationship with Sloane. It was with the help of Sloane's sponsorship that Stuart attended the University of Leiden, where his professor was Herman Boerhaave. He matriculated on December 14, 1709 at 36 years of age. While Stuart was in Leiden he continued to correspond with Sloane, showing his constant enthusiasm for supplying Sloane with collections of plants. He wrote in 1710,

> I have some thoughts of makeing a Collction of plants by way of a Dry Herbal cut of the Physick Garden here; but understand it is not commonly permitted; therefore have not yet ventured to ask Mr Boerhaave about it: If I can be any wayes serviceable to you in this, & find any Difficulty in obtaining Leave, I shall presume to let you know, that if you think fitt you may mention it to Mr Boerhaave, who I beleive woud readily grant me that liberty at your Request. If it is in my Power to render you any service here, I beg you'l favour me with your commands of which I shall be very fond, as of all opportunityes of expressing how sensible I am of your undeserved Freindship [111]

However, Stuart sent more than 'presents' of plants to Sloane. In the same year, he wrote again from Leiden about a slave whom he had sent to Sloane. Stuart was concerned to hear about this 'Blackboy', as he called him, and to hear whether he 'behaves himself to your satisfaction, that being what I proposed to my self in

[111] Alexander Stuart to Hans Sloane, Leyden, Feb 25 1710 (BL Sloane MS 4042), f. 105.

makeing you such a present'.[112] Sloane must have responded to Stuart's letter because Stuart wrote again that,

> I'm extremly troubled that [you] shou'd have had such trouble with that Black Boy, whom tho I judged bad enough by what I had lately seen & of which I informed you, yet cou'd not have imagined he wou'd have turn'd such a rogue as I perceive by yours he is; therefore I beg of you that you'd be pleasd to dispose of him as you shall think best, in sending him to the West Indies or elswhere: and pray pardon my haveing given you the trouble of such a rogue; who I thought might perhaps be of use to you, but am sorry to find that it's quite otherwayes.[113]

For Stuart, the gift of an enslaved person might help cement his relationship with someone he saw as his patron, just as much as the exchange of natural history materials: both were objects for exchange. However, when this gift caused 'trouble', threatening to undermine that relationship, matters could, it seems, be made right by consigning the 'Black Boy' to the terrors of West Indian slavery.

After a period in Flanders with the British army, Stuart had settled in London by 1712 where he slowly progressed in his medical career. He had a number of publications in *Philosophical Transactions* and, in November 1714, was elected a Fellow of the Royal Society and then Fellow of the Royal College of Physicians in 1728. Just like Sloane, Stuart was an early advocate of smallpox inoculation and conducted several trials among his patients in 1725 and in 1728. He was named one of Queen Caroline's physicians-in-ordinary, and he and his colleagues founded St George's Hospital where he served until July 1736. In 1740 he was awarded the Copley Medal by the Royal Society.[114] In other words, from having been an EIC ship's surgeon, Stuart became an established member of London's medical and natural history community, just like Sloane. Once again, Sloane's medical profession and position forms a backdrop to his relationship with a contributor to his collection. This might go some way towards explaining the particular relationship that developed between Sloane and Stuart and that comes to the fore when exploring Stuart's contribution to the 'Vegetable Substances'.

The degree of personal engagement between Stuart and Sloane appears much more developed compared with other people who contributed material from the East.

[112] Alexander Stuart to Hans Sloane, Leyden, Jan 4 1710 (BL Sloane MS 4042), f. 83.
[113] Alexander Stuart to Hans Sloane, Dukes Place, Wednesday Morning (BL Sloane MS 4061), f. 138.
[114] See A. Guerrini, Stuart, Alexander, *ODNB.*

It involved the exchange of very different sorts of ‘gifts’ and elements of patronage which involved Stuart himself also becoming a physician, collector and active member of the Royal Society. As the next chapter shows, in this sense Stuart is more representative of the sorts of people who contributed material from Britain and Europe and the sorts of relationships that Sloane had with them.

Chapter Five

'Wheat from France', 'Petrified wood out of Bohemia' and 'ye. Turks head coffee house in Bathe': British and European Content and Contributors[1]

Chapter Three has shown that Sloane had specific sorts of connections and interactions with contributors of New World material. Not only did he benefit from resident collectors but he also sponsored the collecting activities of others. In the East Indies, as Chapter Four demonstrated, plant material was often sent by individuals who were connected through established trading companies. In both cases complex lines of communication underpinned Sloane's ability to add samples – sent from around the world – to his collection. Sloane's catalogue reveals that these samples were often sent in large batches. While there were exceptions of course, such collectors tended to send material from their broad geographic regions. Barham and Catesby in the New World, for example, only really sent material from the Americas, while ship's surgeons or those based in Madras more often than not sent material from the East. When it comes to considering material that came from Britain and across the continent, however, these specimens were predominantly contributed as single, and often relatively informal or incidental transactions, by many different people. Such individuals can also be found to have contributed material to the 'Vegetable Substances' that they received from other locations around the world, suggesting that they acted as both conduits of natural history and as collectors themselves. These contributors were, as will be shown, connected to each other as well as to Sloane.

The aim of this chapter is to demonstrate who these contributors of British and European material were and to set out the sorts of connections and interactions that Sloane had with them. It will begin with an exploration of the individuals named in the 'Vegetable Substances' catalogue who contributed this material. By establishing who these people were, it will become clear that there were overlapping similarities between them and that it is not always possible or productive to differentiate between British and European contributors or material. To build on this data from the catalogue, the chapter will then establish the context of these contributions and the different sorts of interactions that took place between these individuals. This means

[1] Catalogue entries for VS 7,829; 9,012 and 4,359.

considering not just the interactions and relationships between Sloane and those he corresponded with, but the interactions of those contributors involved in other correspondence 'networks' too. It will, therefore, examine the extent to which Sloane was or was not at the centre of these 'networks' of exchange of natural historical material. These complexities of Sloane's involvement with a range of people are especially shown through the examples of Richard Richardson and later in the chapter, William Sherard. Finally, this chapter will look in more detail at the contents of these interactions, considering how this British and European material was sent to Sloane as part of, and alongside, discussions about medicine, collecting and the transfer of things from across the globe.

Table 3: A list of contributors of material from the British Isles and Europe to the 'Vegetable Substances' collection.

Based on the information supplied in the Sloane's catalogue of the collection, the names appear in order of the significance of their contribution to the collection. The first part of the table refers to British material and the second part consists of material from Europe. The information supplied in Table 3 takes the same form as that of Tables 1 and 2.

Name as it appears in catalogue	Minimum number of samples	Contributor details [where known]	Origin of material according to catalogue	Did they have direct contact with Sloane (letter or in person)?	FRS?
Mr Morton	25	John Morton (1671-1726), naturalist, educated at Emmanuel College, Cambridge	Northamptonshire	Y	Y (Nov 30, 1703)
Dutchesse of Beaufort	17	Mary Somerset (-1714), Duchess of Beaufort	Chelsea (Beaufort)	Y	N
Mr Richardson	14	Richard Richardson (1663-174), physician in North Bierley, Bradford, wealthy landowner	Yorkshire	Y	Y (Oct, 23 1712)
Petiver	9	James Petiver (1663-1718)	Buckinghamshire	Y	Y (Nov 27, 1695)
Dr Preston	7	Charles Preston (1660-1711), physician, professor of botany at the University of Edinburgh – botanical garden	Orkney Islands	Y	N
Mr Millar	7	Philip Miller (1691-1771), Chelsea Physic Garden	Chelsea Physic Garden	Y	Y (Jan 22, 1730)

Mr Knoulton	5	Thomas Knowlton (1691-1781), botanist and gardener employed by James Sherard, duke of Chandos and others	Yorkshire	Y	N
Mr Papillon	5	David Papillon?	Kent		
Dr Woodward	4	John Woodward (1665-1728), physician, natural historian, antiquary	Norfolk	Y	Y (Nov 30, 1693)
Dr Stack	3	Thomas Stack (died 1756), physician	Ireland	Y	Y (Jan 26, 1738)
Mr Bonivert	3	Gideon Bonivert	Isle of Wight	?	N
Bradley	2	Richard Bradley (1688-1732), naturalist, sent plant material from Holland	Harwich	Y	Y (Dec 1, 1712)
Dr Martin	2	Perhaps Martin Martin who writes to Sloane about curiosities he has collected in Edinburgh, not a FRS; perhaps John Martyn (1699-1768)	○	Unconfirmed	Y

Mr Hodges	2	Unconfirmed	Dorset	Unconfirmed Unconfirmed	Unconfirmed
Mr Neal	2	Perhaps Dr John Neale (found in Sloane MSS) or FRS Thomas Neale (1641-1699) elected Jun 1, 1664	Staffordshire	Y	Unconfirmed
Mr Taylor	1 or 2	Robert Taylor, apothecary in Hitchin, Hertfordshire, published in Phil Trans.	Hitchin	Y	N
Coll Plumers	1	Perhaps John Plummer who appears in Sloane medical MSS	Hertfordshire	Unconfirmed	N
Dr Cheyne	1	George Cheyne, physician	Scotland	Y	Y (Mar 18, 1702)

Dr Massy	1	Richard Middleton Massey, same Massey as found in Table 1 and Table 2.	Lancashire	Y	Y (1712)
Dr Thorpe	1	John Thorpe (1682-1750), physician and antiquary	Sussex	Y	Y (Nov 30, 1705)
Lord Petre	1	Robert James Petre, 8th Baron Petre (1713-1742), patron of botany and garden designer	Essex	Y	Y (1731 sponsored by John Martyn)
Lord Reteris	1	Unconfirmed	Essex	Unconfirmed	Unconfirmed
Mr Aisabys	1	Unconfirmed	Yorkshire	Unconfirmed	Unconfirmed
Mr Ashe	1	Perhaps St George Ashe, Bishop of Clogher	Bath	Y	Y (Feb 3, 1686)
Mr Ranby	1	John Ranby (1703-1773)	Nottinghamshire	Y	Y (Nov 30, 1724)
Mr Calvent	1	Unconfirmed	Essex	Unconfirmed	Unconfirmed

Mr Congen, Mr Courten	1	William Courten (Charleton) (1642-1702), naturalist and collector	Deptford	Unconfirmed	Unconfirmed
Mr Corry	1	Unconfirmed	Kent	Unconfirmed	Unconfirmed
Mr Dale	1	Samuel Dale (1659-1739), apothecary	Harwich	Y	N
Mr Lhwd.	1	Edward Lhuyd (Lhwyd, Lloyd) (1659-1708)	Bedfordshire		Y (Nov 30, 1708)
Mr Lluid, Dr Lavater	1	Jean Rodolphe Lavater (d. 1716)	Glamorgan		Y (Nov 30, 1708)
Mr Maidstone	1	Nathanael Maidstone (1698-1723)	Lancashire	Y	N
Mr Moore	1	Perhaps John Moore (d.1734)	Fulham	Y	Y (Nov 10, 1715)
Mr Mortimer	1	John or Cromwell Mortimer	London/ Essex	Y	Unconfirmed
Mr Newton	1	Unconfirmed	Islington	Y	Unconfirmed
Mr Palmer, Mr Musgrave	1	Unconfirmed	Somerset	Y	Unconfirmed
Mr St. John	1	Unconfirmed	Ireland	Unconfirmed	Unconfirmed

Mr Tho. Drake, Vicar of Bozeate	1	Unconfirmed	Northamptonshire	Unconfirmed	Unconfirmed
Mr. de La Pryme	1	Abraham de la Pryme (1671-1704), antiquary	Lincolnshire	Y	Y (Mar 18, 1702 – proposed by Sloane)
Mr. Southwell	1	Sir Robert Southwell (1635-1702), Diplomat and Government Official	Ireland	Y	Y (1662)
Mrs Deco	1	Unconfirmed	London	Unconfirmed	N

Names as appears in catalogue	Minimum total number of catalogue entries	Contributor details [where known]	Origin of material according to catalogue	Did they have direct contact with Sloane (letter or in person)?	FRS?
Albertus Seba	86	Albertus Seba (1666-1736)	Amsterdam	Y	Y (Oct 24,1728)
Erhart	30	To be confirmed but mentioned in other correspondence	Bohemia	Unconfirmed	Unconfirmed
Dr. Ruysch	19	Frederik Ruysch (1638-1731) Dutch botanist and anatomist	Amsterdam	Y	Y (Jun 9, 1715)
Mr Ranby (as above)	16	John Ranby (1703-1773)	Lisbon		Y
Catesby's brother	6	John Catesby	Gibralter	Unconfirmed	N
Mr Pajot	5	Louis Léon Pajot (1678-1753) – Parisian physician.	Paris	Y, fr om Paris	Unconfirmed
Dr Woodward	2	John Woodward (1665/1668–1728), physician, natural historian, and antiquary. Actually contributes over 20 items in total from all sorts of places	Italy	Y	Y
Mr Ball	2	Could be Robert Balle (d. 1733) who appears in Sloane manuscripts	France/ Carolina	Y	Y (1708)

Dr Fuller, Mons. Geofroy	1	Likely to be Rose Fuller (1708-1777), Sloane's grandson. 'Mons. Geoffroy' is probably either Claude Joseph Geoffroy (1685-1752) a chemist, apothecary and botanist in Paris or his brother, Etienne Francois Geoffroy (1672-1731) a physician and chemist in Paris. Both corresponded with Sloane.	Lisbon	Y	Y R. Fuller (Apr 20, 1732) C.J. Geoffroy (Jun 9, 1698) E.F. Geoffroy (Jul 6, 1698)
Dr Sherard	1	William Sherard	Italy	Y	Y
Dr Stuart	1	Possibly Alexander Stuart discussed in chapter 2.	Portugal	Y	Y (Nov 30, 1714)
Dr. Lavater	1	Jean Rodolphe Lavater	Switzerland	Y	Y (Nov 30, 1708)
Lady Essex	1	A 'Lady Essex' is found in Sloane MSS	Italy	Unconfirmed	N
Lord Colerane	1	Henry Hare, third Baron Coleraine (1693-1749)	Lisbon	Y	N
Mr Adens	1	Unconfirmed	Dublin	Unconfirmed	Unconfirmed
Mr Bale	1	Possibly Charles Bale (1692-1730) physician	Italy	Unconfirmed	Y (Nov 30, 1719)
Mr Green	1	Unconfirmed	Italy	Unconfirmed	Unconfirmed
Mr Olt	1	Unconfirmed	Lyon	Unconfirmed	Unconfirmed

Mr Surrey	1	Unconfirmed	Portugal	Unconfirmed	Unconfirmed
Mr Winthorpe	1	Could be John Winthrop (1714–1779), scientist in Colonial America. See also table 1, p. 81.	Lisbon	Unconfirmed	Unconfirmed

528 samples, or 10% of located 'Vegetable Substances', are labelled as originating from the British Isles, and a further 149 came from continental Europe. Sloane's catalogue shows that a number of different individuals added this sort of material to the collection (see Table 3). Broadly, British and European plant material was sent primarily from men who were Fellows of the Royal Society and interested in natural history for a variety of reasons. They included apothecaries, physicians and antiquaries, as well as clergyman, gardeners and merchants.

Much of the British and European botanical material found in this collection was contributed as part of single transactions. The entry for VS 867, for example, appears as 'A piece of the same with prickly & knots. an of the whitethorn? from Mr. Taylor of Hitchin'. This could be Robert Taylor, an apothecary in Hertfordshire. While not a Royal Society Fellow, Taylor's work was published in *Philosophical Transactions* and he directly corresponded with Sloane in 1706 about a 'monstrous bird'.[2] Other individuals named in Sloane's catalogue are more difficult to identify, but examples include 'Mr Moore', 'Mr Mortimer', 'Mr Newton', 'Mr Palmer', 'Mr Musgrave', 'Mr St. John', 'Mr Corry', 'Mr Congen', 'Mr Ashe', 'Mr Adens' and 'Mr Aisabys'. Such contributions reflect a sporadic sense of collecting because this material originated from across Britain. Chelsea, Islington and Bloomsbury Square in London, Deptford, Harwich, Kent, Essex, Norfolk, Sussex, Hitchin, Dorset, Bath, Buckinghamshire, Northamptonshire, Yorkshire, Dublin, Staffordshire, Hertfordshire, Lancashire, Nottinghamshire, Lincolnshire, the Isle of Wight, the Orkney Islands, Scotland and Ireland all appear in the catalogue.

A similar variety can be seen amongst the European material. Locations include Amsterdam, Bohemia, Lisbon, Gibraltar, Paris, Lyon, Italy and Switzerland. Sometimes town names are specified, at other times it is a city, and quite often a broader reference to a county or country is provided. In a similar way to the British material, European samples were most often provided as single contributions by people such as 'Lady Essex', 'Lord Colerane', 'Mr Bale', 'Mr Green', 'Mr Jones', 'Mr Olt', 'Mr Surrey' and 'Mr Winthorpe'. Samples of European material among the 'Vegetable Substances' therefore, were just as likely to be contributed by someone

[2] See Robert Taylor to Hans Sloane, Hitchin, Sep 16 1706 (BL Sloane MS 4040), ff. 220-221: Taylor writes from Hitchin on behalf of the bearer who hopes to make a profit going abroad with Taylor's monstrous bird.

living in Britain as someone based in Europe. In other words, it would be unhelpful to consider British and European material in this collection as separate categories.

The list of more substantial contributors of British botanical material to the 'Vegetable Substances' includes the physician Richard Middleton Massey (who also contributed material from the East, see p. 122). Massey contributed at least seventy-three samples to Sloane's collection. Massey, who spent several terms at Brasenose College, Oxford, became a Royal Society Fellow in 1712 and was admitted an Honorary Fellow of the College of Physicians in 1725-6. Massey also acted as secretary of the Society of Antiquaries having been made a fellow in 1718.[3] Another notable physician who contributed British botanical material to Sloane's 'Vegetable Substances' is Richard Richardson (1663-1741) who lived in Yorkshire. Richardson, like Massey, had been educated at Oxford (University College) and would eventually settle where he had been born in North Bierley near Bradford, practising as a physician. Richardson was himself captivated and engrossed by the plant world. He travelled across England, Wales and Scotland searching for rare specimens, and exchanged plant material with well known and lesser known botanists around the world.[4] His own garden at Bierley Hall contained an array of native and exotic plants and he contributed at least thirteen samples to the 'Vegetable Substances'. Similarly, twenty-five records in Sloane's catalogue make reference to the naturalist John Morton (1671-1726), a graduate of Emmanuel College, Cambridge who served as rector of Great Oxendon, Northamptonshire between 1707 and 1726. Considered a keen local historian and botanist, he was, according to Yolanda Foote, part of a growing group of men who were gathering information about the British countryside.[5]

'Dr. Woodward' is also found listed in the 'Vegetable Substances' catalogue and is most likely to be John Woodward (1665-1728), a physician and natural historian who was appointed professor of physic at Gresham College in 1692.

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[3] See W. Munk, Richard Middleton Massey, Royal College of Physicians: Lives of Fellows, *Monk's Roll, Volume II*, http://munksroll.rcplondon.ac.uk/Biography/Details/2969/ last accessed 10 Dec 2016; D. Honeybone and M. Honeybone (Eds), *The Correspondence of the Spalding Gentleman's Society, 1710-1761*, Woodbridge, 2010.

[4] See Turner, *Extracts from the literary and scientific correspondence of Richard Richardson*; Edgington, Natural history books in the library of Dr Richard Richardson.

[5] Morton is the author of *The Natural History of* Northamptonshire (1712) referenced in an abbreviated form in the 'Vegetable Substances' catalogue and discussed in chapter two. Y. Foote, Morton, John (1671–1726), *ODNB*, online edition, 2010.

Woodward was elected Fellow of the Royal Society in 1693 and in 1702 became a fellow of the Royal College of Physicians.[6] Similarly, 'Dr Thorpe', most likely to be John Thorpe (1682-1750), was another physician who contributed to the 'Vegetable Substances'. Thorpe played an important role in helping Sloane to publish *Philosophical Transactions* and sent a sample of 'Pisum maritimum perenne. From the coast of Sussex' (VS 3,450).[7] Thomas Stack (died 1756), described in the Royal Society minutes as 'A Physitian well known to many members of this society for his skill in Anatomy, Chemistry, and natural history', contributed three items to the collection from Ireland including VS 12,519.[8] This is described as a 'Fossil wood half petrified from the neighbourhood of Lough Neagh in Ireland given me by Dr. Stack'. Stack also contributed 'The fruit of a Tree growing in Aleppo' (VS 12,507) as well as an 'Ægyptian Lettuce seed' (VS 12,508), both of which came from Cyprus.

Other Fellows of the Royal Society and contributors of British material include Samuel Doody (1656-1706), James Petiver, Philip Miller (1691-1771) and Robert James Petre (1713-1742). Doody, another botanical man and apothecary, was a correspondent of Sloane and other prominent naturalists of the period. He lived in London and succeeded his father at his shop in the Strand around 1696. Doody (elected as FRS in 1695) could often be found around London collecting and investigating new plants.[9] Petiver similarly contributed British material to the 'Vegetable Substances', and nine samples have been listed with the reference 'from Aspley. Bucks', and include examples of petrified wood, small plum stones and a variety of seeds.[10] Also based in London was Philip Miller, who donated seven samples from the Chelsea Physic Garden where he was employed as chief gardener. Miller (elected FRS in 1730) contributed items such as 'Ginger which grew in Chelsea garden' (VS 8,811). Robert James Petre, 8th Baron Petre (elected FRS in 1731), was also involved with early eighteenth-century gardens. From his impressive gardens in

[6] J.M. Levine, Woodward, John (1665/1668–1728), *ODNB*, online edition, 2004.
[7] N. Moore, Thorpe, John (1682–1750), rev. J. Whyman, *ODNB*, online edition, 2004.
[8] Stack's proposers included Sloane, Cromwell Mortimer, Mark Catesby and Richard Middleton Massey, see The Royal Society Archives, GB 117, Certificates of Election and Candidature 1737, 13; Stack and Sloane corresponded directly, see Thomas Stack to Hans Sloane, London, Oct 28 1728 (BL Sloane MS 4049), ff. 254-255.
[9] B.D. Jackson, Doody, Samuel (1656–1706), rev. R. Stungo, *ODNB*, online edition, 2010.
[10] The amount of British and European plant samples given by Petiver is likely to be much higher as 517 samples contributed by Petiver are not geographically located.

Essex he sent two items to Sloane including ‘A branch wt. double monstrous apples preserv'd in Sp. V. but taken out are shrivel'd up’ (VS 11,571).

Yet it was not just those with a professional interest in botany that contributed to the ‘Vegetable Substances’. The diplomat and government official Sir Robert Southwell (1635-1702) can also be found listed in Sloane’s catalogue having provided a sample of a ‘Firr tree found under ground in the boggs of Ireland, made into ropes bought in Newry market in Ireland’ (VS 2,310). Southwell had been elected FRS in 1662 by his friend and well-known natural philosopher, Robert Boyle (1627-1691).[11]

From Scotland, the physicians Charles Preston (1660-1711) and George Cheyne (1671/2-1743) contributed material to the collection. The seven items that have been described as sent by Preston were collected in Orkney. Preston’s interest in botany saw him establish a botanic garden on his family estate and he became well known among his contemporaries for his botanical knowledge. For example, John Ray, in his *Methodus plantarum* (1703), described Preston as ‘a most learned man, and a most diligent observer of plants’.[12] Cheyne, or ‘Dr. Cheyne’ as he appears in the catalogue, was born in Aberdeenshire and studied medicine in Edinburgh. He established a successful medical practice in Bath and many other prominent physicians of the time, including Sloane, would refer patients to him.[13]

Other contributors of British material include Edward Lhuyd (1659/60?-1709) and Abraham de la Pryme (1672-1704), both of whom were keen to collect information about local natural history.[14] Three samples in the catalogue have been assigned to the naturalist Lhuyd and originated from ‘Ashpley in Bedfordshire’ (VS 1,628) as well as from ‘Glamorganshire near Swanzey’ (VS 6,746). Lhuyd, another Fellow of the Royal Society (elected in 1708), was a Welsh naturalist and botanist who became Robert Plot’s assistant at the Ashmolean Museum in 1684, and then replaced him as keeper in 1690 (until 1709).[15] Abraham de la Pryme also contributed two samples to the ‘Vegetable Substances’, including ‘A fur cone fossil from Mr De la. Pryme’ (VS 215) and:

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[11] T. Barnard, Southwell, Sir Robert (1635–1702), *ODNB*, online edition, 2004.
[12] J. Ray, *Methodus plantarum*, London, 1703, 89.
[13] A. Guerrini, Cheyne, George (1671/2–1743), *ODNB*, online edition, 2008.
[14] B.F. Roberts, Lhuyd, Edward (1659/60?–1709), *ODNB*, online edition, 2004; C.E.A. Cheesman, Pryme, Abraham (1671–1704), *ODNB*, online edition, 2004.
[15] Plot, a naturalist and antiquary based in Oxford, elected FRS in 1677, its Secretary between 1682 and 1684 and edited numerous *Philosophical Transactions.* See A.J. Turner, Plot, Robert (*bap.* 1640, *d.* 1696), *ODNB*, online edition, 2004.

> 4,942. Some sort of fossil fruit. It broke as I gott it out of the rock so that I was forced to cement it together. From Mr. de La Pryme from Lincolnshire.

There were, of course, contributors of British and European material to the 'Vegetable Substances' who were not Fellows of the Royal Society. Mary Somerset and Robert Uvedale both provided significant amounts of material and neither were elected fellows (for a further discussion of their contribution see Part Three). Other, smaller contributions were made by Thomas Knowlton (1691-1781) and 'Mr Dale'. Knowlton was a gardener and botanist who contributed five items that have been listed as from 'Mr Knoulton' in Yorkshire including 'A beautifull stript sort of seleri' (VS 8,878). Knowlton had been superintendent of James Sherard's botanic garden at Eltham in Kent, the garden of the Duke of Chandos at Canons as well as Richard Boyle's garden in Londesborough in Yorkshire. Knowlton corresponded with many Fellows of the Royal Society, subscribed to Mark Catesby's *Natural History of Carolina* and was not only distinguished by his knowledge of indigenous plants but also became increasingly interested in exotic plants as well as the development of gardening technology.[16] 'Mr Dale' is most likely to be the apothecary Samuel Dale (1659-1739). Dale was a close friend of John Ray, correspondent of Sloane and another contributor to *Philosophical Transactions*. He created an impressive herbarium which was later donated, along with his library, to the Society of Apothecaries (and is now in the NHM).[17] Dale lived in Braintree and then in Bradford Street, London. The catalogue lists 'Lithoxylom from Harwich, from Mr. Dale' (VS 1612) as well as a sample that came much further away, from the New World, VS 11,741: 'Ipecacuanha a false sort from Carolina by Mr. Dale said to be [as] effectuall as the true'.[18]

Another five samples in the 'Vegetable Substances' were sent by 'Mr. Papillon', including VS 9,962 'The culmus of an oat wch. grew in Kent on new broken ground' and VS 9,963 'A round head of stramonium'. This is perhaps Thomas Papillon (1623-1702), a merchant and politician.[19] Another three catalogue entries describe material collected in Oxfordshire and the Isle of Wight, and sent to Sloane by

[16] Including the building of hot houses, see T. Seccombe, Knowlton, Thomas (1691–1781), rev. P.E. Kell, *ODNB*, online edition 2012.
[17] G.S. Boulger, Dale, Samuel (*bap.* 1659, *d.* 1739), rev. J. Burnby, *ODNB*, online edition, 2004.
[18] Dale was an early friend and correspondent of Catesby so this sample almost certainly originated from the latter.
[19] This cannot be confirmed as yet. See P. Gauci, Papillon, Thomas (1623–1702), *ODNB*, online edition, 2008.

'Mr. Bonivert'. They appear as 'A kind of gum found in the body of an elm at Dorchester in Oxfordshire' (VS 968), 'Nutts found underground in the Isle of Wight' (VS 1,136) and 'Jewes ears' (VS 1,137). In his description of Sloane's herbarium, Dandy refers to Gédéon Bonivert (1673-1703) who had been baptized in France, and became an officer in the army of Stadtholder William III. In 1690, Bonivert was in the north of Ireland as part of the campaign against James II, and while he was stationed in these various places he made sure to make collections of plants. Three volumes of these can be found in the Sloane Herbarium.[20] The EIC merchant Nathanael Maidstone (who featured in chapter four as a contributor of material from the East) likewise contributed an item from Britain to the 'Vegetable Substances'. Listed as VS 8,982, this sample of wood has been described as 'sort of firr wood' from Lancashire.

British Royal Society Fellows also contributed European material to the 'Vegetable Substances'. John Woodward provided two samples from Italy and 'Mr Ranby' looks to have provided sixteen varied specimens of seed, gum and fruit from Lisbon in Portugal. This could be John Ranby (1703-1773), a surgeon and Fellow of the Royal Society (elected in 1724).[21] Other European samples were collected by British naturalists themselves, including John Catesby (bap. 1697-?) the much-younger brother of Mark Catesby. In Gibraltar, John Catesby collected birds, a fish, plants, and what appear to be fossils now found described in Sloane's catalogue.[22] One appears as 'A grayish smooth blewstone in which are black resemblances of long mosse or trees wt. some yellow talcy matter in the stone. From Gibraltar by Mr. Catesby' (VS 10,154). European material was also sent by individuals who were resident in continental Europe. The Parisian physician Louis Leon Pajot (1678-1753) sent five samples from Paris, and 'Erhart', probably the German physician Johann Balthasar Ehrhart (1700-1756), appears to have provided thirty samples from Bohemia. One hundred and five samples in total originated in Amsterdam and were

[20] Dandy, *The Sloane Herbarium*, 93; D.O. Wijnands, Plants collected by Gedeon Bonivert (1651-1703) in the garden of Johan Stickers (1630-1701), *Archives of Natural History* 18:1 (1991) 27-29.
[21] See D'A. Power, Ranby, John (1703–1773), rev. M. Bevan, *ODNB*, online edition, 2004; Fellow details for John Ranby, The Royal Society Library Collections.
[22] E.C. Nelson, The Catesby brothers and the early eighteenth-century natural history of Gibraltar, *Archives of Natural History* 40:2 (2013) 357-359.

sent, albeit separately, from Albertus Seba (1666-1736) and the Dutch botanist and anatomist Frederik Ruysch (1638-1731). [23]

The five samples in the 'Vegetable Substances' that appear to have come from Pajot in Paris include a description of melon seeds, or 'Graines de melon'. Pajot was born in Paris and studied at the College Louis le Grand. His ancestors had occupied high official positions in the royal administration, and Louis Leon succeeded his father in 1708 as Intendant Général des Postes et Relais de France. After resigning, Pajot was entrusted with Louis XIV's confidential missions and could be found in the regent's inner circle.[24] From Amsterdam, specimens were sent by the Dutch pharmacist, zoologist, collector and Royal Society Fellow (elected in 1728) Albertus Seba. He sold his own personal collection of curiosities to Tsar Peter the Great of Russia in 1716 and would later publish a thesaurus of animals (1734).[25] The Dutch botanist, anatomist and Fellow of the Royal Society (elected in 1715), Frederik Ruysch (1638-1731), also contributed to Sloane's collection. Nineteen samples have been described as 'from Dr. Ruysch'. Born in The Hague, Ruysch had been fascinated by anatomy. After studying at the University of Leiden he became a forensic advisor to the Amsterdam courts. In 1685, Ruysch was appointed professor of botany in the Hortus Botanicus Amsterdam. He was particularly knowledgeable about indigenous plants and became known for his methods of specimen preparation and preservation in a secret *liquor balsamicum*. He also contributed a significant number of South African plants to the Sloane Herbarium.[26]

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[23] Seba mentions Ehrhart in a letter to Sloane dated May 17,1727 from Amsterdam, in: BL Sloane MS 4048, ff. 303-304. Seba sent a letter and package of books recommended by Ehrhart via Captain Givens of the Concordia. See R. Heinzelmann's study of Ehrhart's correspondence with the physician Christoph Jacob Trew (1695-1769) exploring the role played by botany in their communications. They exchanged seeds allowing them to expand their gardens and for Ehrhart to build an herbarium which he later sold, R. Heinzelmann, Johann Balthasar Ehrhart (1700-1756) und seine Korrespondenz mit Christoph Jacob Trew (1695-1769), unpublished PhD thesis, Friedrich-Alexander-University Erlangen-Nuremberg, 2011, 4.

[24] J. Augarde, The scientific cabinet of Comte d'Ons-en-Bray and a clock by Domenico Cucci, *Cleveland Studies in the History of Art* 8 (2003) 80-95.

[25] See reproduction of Seba's *Cabinet of natural curiosities: locupletissimi rerum naturalium thesauri 1734-1765* based on the copy in the Koninklijke Bibliotheek, The Hague, edited and published in 2005 by I. Müsch, J. Rust and R. Willmann.

[26] Recommended to the RS by Richard Bradley. See 'Fellow details' for Ruysch on the Royal Society website: *The Royal Society*, last accessed 10 Dec 2016; see Dandy, *The Sloane Herbarium*; F.N. Egerton, Richard Bradley's Relationship with Sir Hans Sloane, *Notes and Records of the Royal Society of London* 25 (1970) 59-77.

This range of collectors and place names associated with British and European botanical material in the 'Vegetable Substances' suggests a somewhat sporadic process of collecting across Britain, and also Europe. To some extent this reflects the fact that many of the individuals who contributed material travelled across Britain during their lifetime, especially as part of planned natural history collecting trips. The Welsh naturalist Edward Lhuyd, for example, travelled extensively around Britain. He visited most of Wales in the late 1680s in order to construct a list of local flora, after which he journeyed to and through Scotland, Ireland, Cornwall and Brittany gathering information about natural history, landscapes and antiquities, as well as collecting specimens of flora and fauna. During this time, Lhuyd actively corresponded with individuals such as Richardson and Woodward about his journeys and findings.[27] Similarly, Samuel Dale was known for his regular excursions into the area surrounding Braintree, where he lived, and further afield, often gathering plants professionally (for his apothecary business) and for pleasure in locations such as Harwich and Sudbury.[28]

As was common during this period, many of these British men also travelled across continental Europe as part of 'Grand Tours' and to further their medical training. Sir Robert Southwell had, for example, travelled to parts of France, the Netherlands, central Europe and Italy between 1659 and 1661. This allowed him to send to his friends in Ireland and England, rarities, books, artefacts and even Parmesan cheese.[29] It was through such travels that these individuals could meet many of the leading men of natural history and medicine. Sloane himself had worked in Paris at the Jardin du Roi and the Hôpital de la Charité where he had become acquainted with Tournefort, before attending the University of Orange and the University of Montpellier. Richard Richardson had likewise studied abroad, spending time at the University of Leiden where he had lived with professor of botany Paul Hermann. Charles Preston had also pursued his studies in medicine across Europe, including in France, Holland and Flanders, completing his doctorate of medicine at Reims in 1696. In the process Preston met Tournefort in Paris and Hermann at Leyden. In a similar way, William Sherard had journeyed across Britain and Europe. From December 1685, he had been in Paris and the Netherlands attending renowned botanical courses given at the Jardin du Roi by Tournefort, and furthering his links

[27] Roberts, Lhuyd, Edward (1659/60?–1709), *ODNB*.
[28] See Boulger, Dale, Samuel (*bap.*1659, *d.*1739), *ODNB*.
[29] See Barnard, Southwell, Sir Robert (1635–1702), *ODNB*.

with the likes of Hermann at the Leiden Botanical garden.[30] It had been visiting these sorts of spaces that had ensured Sherard was able to list the plants he found growing in them, and then later publish his *Schola botanica* (1689). Sherard had also stayed with the Irish baronet Sir Arthur Rawdon in County Down between 1690 and 1694, enjoying botanical collecting trips into the Ulster countryside and then acting as tutor on various Grand Tours across the continent and visiting botanical gardens throughout Italy. Sherard would return to Britain with all sorts of rare books and plant specimens. Pajot had likewise travelled from France to Holland. At the age of nineteen he met the physician Herman Boerhaave, as well as Frederic Ruysch (another contributor to Sloane's collection), and would go on to establish his own natural history collection.[31]

As well as there being similarities between the backgrounds, travels and institutional affiliations of these men, particularly through the Royal Society, the majority of them wrote and published their own work. Sometimes this took the form of larger natural history volumes and sometimes in the pages of the *Philosophical Transactions.* Samuel Dale, for example, published *Pharmacologia* (1693), which contained various plant descriptions and their medicinal uses.[32] Nine of his papers were also published in *Philosophical Transactions.* John Morton's systematic study of the history, mineralogy and geography of his local area allowed him to publish *The Natural History of Northamptonshire* in 1712, and Ruysch described his anatomical collection in his work *Thesaurus Anatomicus*. This was a series of twelve books published between 1701 and 1728 containing detailed drawings of specimens he had in his collection, as well as descriptions and poems.[33] Albertus Seba similarly published a work which he sent to Sloane in 1730. His vision had been to render his best homage to the 'Great Author of Nature' by displaying his curious and wonderful works in the best manner he could.[34]

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[30] D.E. Allen, Sherard, William (1659–1728), *ODNB*, online edition, 2013.
[31] See Augarde, The scientific cabinet of Comte d'Ons-en-Bray.
[32] *Pharmacologia* first appeared in 1693. A supplement was published in 1705, then a second edition in 1710, and a third in 1737. Others were published after Dale's death. *Pharmacologia* was the first systematic work of importance on the subject. See Boulger, Dale, Samuel (*bap.*1659, *d.*1739), *ODNB.*
[33] See D. Margocsy, Advertising cadavers in the Republic of Letters: anatomical publications in the early modern Netherlands, *The British journal for the history of science* 42:2 (2009) 187-210.
[34] Seba sent his work to Sloane in the hope that Sloane would recommend it and 'cast a veil over its faults and imperfections'. See Albertus Seba to Hans Sloane, Amsterdam, Feb 25 1735 (BL Sloane MS 4054), f. 13.

It is evident from this description of the contributors of British and European material to the 'Vegetable Substances' that it makes little sense to distinguish between Britain and Europe, either in terms of the content of the 'Vegetable Substances' collection or the contributors of that material. These men were similar in many ways: in terms of their professions, interests, and the people they were in contact with, but also in terms of their travels across Britain and Europe and their publication projects. More often than not these men were Fellows of the Royal Society, whether they lived in Britain or continental Europe, and in the cases where they were not they demonstrated significant overlapping similarities with those who were: as medical men, collectors and gardeners. Having established who these contributors were, the next section examines how they were connected and how they interacted, Sloane included.

Botanick Friends

Many of these contributors were in contact with both Sloane and each other across London and Europe, and this section will explore the ways through which they interacted and the nature of these interactions. The letters that they wrote to each other were central to the relationships that they formed and developed, as well as the botanical information that they exchanged (including physical plant specimens now in Sloane's collection). These individuals also met in person and shared more informal and personal news. These different sorts of interactions are seen in the correspondence 'networks' of Sloane as well as others, including that of Richard Richardson.

Written correspondence was one of the most important ways through which Sloane and contributors to his 'Vegetable Substances' interacted. It is unfortunate that very few of the letters that Sloane wrote and sent to others exist in comparison to those he received and kept. However, the different sorts of relationships that were developed between Sloane and his contributors, and between his contributors themselves, become clear from reading the surviving manuscript material.

While it will be shown that many of these relationships were based around notions of friendship, being a Fellow of the Royal Society and a contributor to Sloane's collection did not always signal the presence of a strong or close friendship. It could be more complicated and nuanced than that. John Woodward, for example, who was much like Sloane in a variety of ways, and active in the Royal Society in the

early eighteenth century, appears to have considered Sloane a major rival within the Society. These two men bickered on numerous occasions – especially when Sloane published a book review by Edward Lhuyd that included criticisms of Woodward's theories. When Sloane presented a paper on bezoars, Woodward attacked Sloane's thesis to which Sloane seemingly made faces and grimaces which were 'very strange and surprising, and such as were enough to provide any ingenuous sensible man to a warmth'.[35] Quarrels among Fellows were not uncommon though, and Woodward was known to have disputed with others including the London physician Richard Mead (1673-1754) over smallpox treatment.[36] So, while Woodward's insulting behaviour towards Sloane caused him to be ousted from the council in 1710, they remained in communication. Woodward wrote to Sloane in 1723 asking him to treat a boy at 'Somerset House' who had contracted smallpox and whom Woodward could not treat himself, while material from Woodward remained in Sloane's natural history collections.[37]

In contrast to this, a number of botanical contributors to Sloane's collection established long-lasting written correspondence with him which often only came to an end because of death. Charles Preston in Edinburgh was one such contact, with his letters (like the letters of others) being published in *Philosophical Transactions.*[38] The direct and lengthy communication that took place between Sloane and someone like Richard Middleton Massey, for example, also reflects the development of a close friendship. In total, Massey contributed at least sixty-three samples to Sloane's 'Vegetable Substances' and Massey can be found frequently referring to Sloane as his 'friend' in his letters. In 1709, Massey even refers to Sloane as 'My Best Friend' when he says:

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[35] The account of this quarrel was apparently found in an anonymous letter addressed to Sir Isaac Newton, and dated March 28, 1710, see D. Brewster, *Memoirs of the life, writings, and discoveries of Sir Isaac Newton, volume two*, Edinburgh, 1855, 244-247. Also, see B.M. Benedict for her argument about Sloane's changing reputation as a collector and someone who amassed everything for the sake of it – something that Woodward was known to be scathing of, in Collecting trouble: Sir Hans Sloane's literary reputation in eighteenth-century Britain, *Eighteenth-Century Life* 36:2 (2012) 111-142.

[36] Sloane would also go on to 'bicker' with Newton, forcing Sloane to resign as secretary in 1713 by which point Woodward supported Sloane rather than Newton. See J. Hawkes, A most dangerous rivalry, *The Sloane Letters Project Blog*, Jan 22 2015, http://sloaneletters.com/a-most-dangerous-rivalry/ last accessed 10 Dec 2016.

[37] John Woodward to Hans Sloane, Jan 6 1722/3 (BL Sloane MS 4046), f. 327.

[38] See A. Guerrini, Preston, Charles (1660–1711), *ODNB*, online edition, 2004.

> Tis six weeks or better since I gave you the trouble of a letter, but have never had any acct. whether you recd it or no. till last Monday Stukely in one of his, tells me, you send word you had noe mony of ye Cornuta. My Best Friend, if you have any inclination for it, pray lett me know. & do not Imagine that I shou'd Ever set a peculiar price upon it to you. I am well sensible, of ye obligations you have all along conferd upon me & shou'd think my self guilty of abundance of ingratitude, to stand upon any such triviall affairs. Assure yr self (Good Doctor) you may wholy comand me & mine, & that I shall ever own my self yr most obliged.[39]

It is telling, of course, that this profession of friendship comes in a discussion of whether a natural history object exchanged between them (a Cornuta) should be considered as a gift or something to be paid for, raising the question of what sorts of relationship these practices were part of.

The lengthy and detailed letters that were sent from Richardson to Sloane, with their happy and numerous exchanges, also reflect something of the close friendship that developed over forty years between these two physicians. One such extract includes Sloane telling Richardson that:

> I am very sorry that yor stay in London both times I have seen you here have been so short, that I have not had that opportunity of conversation with you that I could have wish'd for and particularly yor thoughts of many fossils, birds, eggs, plants & other naturall rarities & antiquities which I have gathered together. However I live in hope that some time or other I may be so happy. In the mean time to supply that letters are the best remedies and I should be extreamly glad now and then to hear from you and will promise to return you any accounts I think may be for yor entertainment.[40]

Sloane clearly valued Richardson's opinions on matters of natural history and the tone of their exchanges reveals a friendship and close connection. Over their long correspondence, Sloane and Richardson exchanged botanical news (on new publications, people and their discoveries), news on their health and detailed accounts of various medical cases on which they both offered opinions. Tellingly, this extract

[39] Richard Middleton Massey to Hans Sloane, Wisbech, Oct 18 1709 (BL Sloane MS 4042), f. 51. 'Cornuta' is unlikely to be a plant. It means 'horned' in Latin, and so may relate either to a mammalian horn, or some sort of horned animal (possibly a fossilised one – there is, for example, a group of fossilised sea urchins named Cornutae). William Stukely subsequently (1720) dissected the remains of an elephant in Sloane's garden in Bloomsbury so it may well be an elephant's tusk, see J. Cook, The elephants in the collection: Sloane and the history of the earth, in: A. Walker et al (Eds), *From Books to Bezoars*, 163.

[40] Hans Sloane to Richard Richardson, Sep 27 1720 (MS Radcliffe Trust C.4), f. 21.

also indicates that, in many ways, for these men writing about plants, medicine and natural history was a substitute for meeting and conversing about these matters face-to-face. Letters were, as Sloane, put it the 'best remedies'.

Indeed, the correspondence that took place between Sloane and other contributors to the **'**Vegetable Substances' also suggests that these individuals were not confined to communicating via the medium of writing. In fact, it was not uncommon to find these individuals encountering one another at Royal Society meetings, at coffee houses across London as well as visiting one another and welcoming each other into their homes.[41] With this in mind, it is crucial to remember that it was not just Sloane who was corresponding and collecting. There were, of course, a variety of men around Britain and Europe interacting with each other in a whole range of ways and patterns. It is useful, therefore, to think of the contributors of botanical material to Sloane's collection as also part of other 'networks' than those that are revealed by Sloane's catalogue and his correspondence. It is, indeed, possible to identify other correspondence 'networks' within the 'Vegetable Substances', such as that of Richard Richardson and William Sherard. Exploring the nature of these 'networks', relationships and connections is useful for considering the extent to which Sloane played a central and intentional role in the formation of his own botanical collection.

As has been seen, Richard Richardson contributed material to the 'Vegetable Substances'. The catalogue includes thirteen entries describing samples that are mostly plant fossils which Richardson had marked with numbers. One example, 'A piece of subterraneous tree with some of the barke taken from a root still remaining in its naturall posture believed to be a pine' had supposedly come 'From Mr. Dentons grounds in the parish of Hutherfield ten miles from North Bierly, in Yorkshire' (VS 7,840). In terms of the number of objects involved, compared to other contributors to Sloane's collection – such as the two hundred and fifty samples sent by the naturalist Mark Catesby from the Carolinas or the four hundred or so that came from Mary Somerset – Richardson is not a particularly significant contributor. However, his

[41] See, for example: Stewart, Other centres of calculation; Goldgar, Impolite learning; Cowan, *The social life of coffee*; R. Coulton, "The Darling of the Temple-Coffee-House-Club": science, sociability and satire in early eighteenth-century London, *Journal for eighteenth-century studies* 35 (2012) 43–65; E. Yale, *Sociable knowledge: natural history and the nation in early modern Britain*, Pennsylvania, 2016.

connections and interactions with Sloane can indicate Sloane's wider involvement in the exchange of British and European natural material.

Richardson seemed more than happy to 'hunt for Natural Curiositys for dr Sloane' and, in one instance, Sloane was 'extreamly obliged' to him for his 'letter & present', 'which gave [Sloane] a great deal of pleasure in turning over'.[42] This, however, was not an exclusive relationship or connection. Richardson would also happily hunt and collect natural history for his other correspondents who were equally delighted to receive his specimens of northern plants and the presents of game that he sent to them. Uvedale, for example, received a box containing Richardson's 'kind present of foul mosses [and] seeds all, in good condicon'.[43]

Richardson's correspondence can be found amongst the Radcliffe Trust Manuscripts in the Bodleian Library, Oxford. These twelve chronologically-organised volumes of letters reveal the sorts of people who were playing a prominent role in the exchange of botanical material across Britain and Europe. These men were exchanging all sorts of natural knowledge in the form of botanical news, publications and physical plant samples including seeds and dried specimens. There was also much discussion about gardening practices and the difficulties of cultivating plants in Britain in the early eighteenth century. Significantly, from the perspective of these letters, Sloane is not the only or even the most prominent character in the story of the movement and exchange of vegetable substances and knowledge about them.

Richardson's correspondents in London included Sloane and other men that are familiar to us, including Robert Uvedale, Petiver, the botanist Adam Buddle (1662-1715), and the naturalist brothers William and James Sherard (1666-1738). Richardson also received letters from Philip Miller at the Chelsea Physic Garden and the botanist William Vernon (1666-1711) in Essex (also from Peterhouse College, Cambridge). Outside London, Richardson corresponded with the antiquary Ralph Thoresby (1658-1725), who lived in Leeds, as well as the physician William Chambers (1699-1785) in Hull. Similarly, the botanist in charge of the Physic Garden in Edinburgh, James Sutherland (1638-1719), as well as the curator there, Robert Wood (?-1728), wrote to Richardson from Scotland. The German-born physician and

[42] Ralph Thoresby writes to Richardson commenting 'As you hunt for Natural Curiositys for dr Sloane, you may perhaps find duplicates'. See Ralph Thoresby to Richard Richardson, Leeds, Sep 17 1710 (MS Radcliffe Trust C.2), f. 44; Hans Sloane to Richardson, Mar 9 1720 (MS Radcliffe Trust C.4), f. 5

[43] Robert Uvedale to Richardson, Enfield, Mar 5 1719/20 (MS Radcliffe Trust C.4), f. 3.

botanist Paul Hermann (1646-1695) wrote from Leiden. These individuals were not only corresponding with Richardson but with each other as well.[44]

The letters that these men sent to Richardson and, in turn, his replies, expose different sorts of connections and, perhaps, even priorities in natural history endeavours than appear in Sloane's correspondence. For example, gardening practices and plant cultivation are prominent and consistent topics that appear in letters between Richardson, Uvedale and the Sherard brothers (see Chapter Six). Someone like Uvedale, who was never elected as a Fellow of the Royal Society but had a well-known garden in Enfield, often wrote in detail about the cultivation of plants. He explained to Richardson that it 'being now high time for sowing seeds [and] planting July flowers I have sent by the Carrier this day a Box of such seeds as I gatherd last season [and] some July flowers wch are good in their kinde – and as soon as I can I will send you those plants you have lost &c'.[45] Uvedale could also be found complaining about his own ill health, and in 1701 he wrote that he had 'injoyed so little health this spring' that he had 'been forcd almost wholy to neglect [his] garden'. Having recovered from 'a fever, wch left [him] very uneasy, and weake', Uvedale had apparently 'lost ye sight of some of [his] flowers in their season'. He went on to complain to Richardson that 'my Gardener has not been soe carefull of my plants as I believe I should have been if in a condition to looke after them'.[46]

It was, therefore, not uncommon for those in Richardson's correspondence 'network' to update him (and each other no doubt) on how their gardens were faring and to inquire after his. In 1722, James Sherard thanked Richardson for his 'obliging Letter' but was 'very sorry' to hear that Richardson had 'had so ill success with [his] plants'. Sherard encouraged Richardson to let him know what he had lost so that he could 'endeavour to supply [him] with them again'. Sherard's own garden in Eltham had also suffered 'some loss … this winter, but in general [had] fared pretty well'.[47]

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[44] See Dawson, *Extracts from the literary and scientific correspondence of Richard Richardson*; Edgington, Natural history books in the library of Dr Richard Richardson, 57-75; MS Radcliffe Trust, Special collections, Bodleian Library.
[45] Robert Uvedale to Richardson, Enfield, Mar 24 1719/20 (MS Radcliffe Trust C.4), f. 6.
[46] Robert Uvedale to Richard Richardson, Enfield May 29 1701 (MS Radcliffe Trust C.1), f. 52.
[47] James Sherard to Richard Richardson, Eltham, Mar 19 1722/23 (MS Radcliffe Trust C.5), f. 6.

Identifying exchanges of botanical material in Richardson's correspondence among people who were also linked to Sloane's collection is useful in considering Sloane's role in the movement of natural history knowledge, both through the 'Vegetable Substances' collection and more broadly. There are both similarities and differences across these correspondence 'networks'. Through Richardson's correspondence it is evident that these individuals spoke to each other often, in writing and in person. These frequently feel like informal, but detailed, conversations about a mix of topics, from personal updates on health to the latest botanical news, gardening practices, and the cultivation of plants.

While the nuances of these relationships are hard to judge, Richardson's correspondence is certainly a reminder that many different people were involved in the movement of botanical material across Britain, and many more than are brought to light via the 'Vegetable Substances' catalogue. For example, William Sherard wrote from London about the letters he had received from 'Mayla & Mr Shephen in Cornwall', who promised 'to send [him] speedily an intire collection of all ye submarines…, several of wch. Mr Bobart has nam'd, wch. I have not. Mr Mayla only wants a hard winter or two [to] compleat his collections of ye Birds of Cornwall & Devon'.[48] Charles Preston also made clear his ambition to receive plant specimens from as many of his correspondents as possible. Having been appointed Professor of Botany at the University of Edinburgh, succeeding James Sutherland when he retired, he wrote to Sloane in 1705 saying, 'you'l please to acquaint Mr Doody [the curator of Chelsea Garden] and my other bottanick friends att London yt. if they can spare any seeds or plants yt. are curious especially those of ye dispensatory plants I shall not fail of a suitable return'.[49]

The involvement of multiple people in the movement of natural material is of course not surprising. Material found in the 'Vegetable Substances' that was sent from continental Europe also demonstrates that the intersection of different correspondence 'networks' allowed Sloane to form his botanical collection. Sloane's Swiss contact Jean Rodolfe Lavater (fl.1704-1716) contributed a significant amount of material to the 'Vegetable Substances' and acted as an intermediary for the movement of Swiss natural history and other European samples. This is shown clearly in a letter he wrote

[48] William Sherard to Richard Richardson, London, Jan 30 1719/20 (MS Radcliffe Trust C.4), f. 1.
[49] Charles Preston to Hans Sloane, Edinburgh, Jan 19 1706 (BL Sloane MS 4040), f. 112.

from Zurich in 1707 where he discusses some 'Alpine Plants and other curiosities' that Sloane had desired he collect. In this particular letter Lavater mentions what appears to be a scientific paper by his 'Dear Friend Dr: Langius' which had been 'sent me three days ago from Venise'. Lavater continued, elaborating his 'network' of connections:

> I delivered the letter for Dr: Scheuchzer, he was very much pleased with it, and promised me some new things to carry over with me for you to show you […] Master Stanyan is att Berne where I shall go in three or four days for some business and in the mean time I will deliver your letter with a great deal of pleasure.[50]

The 'Dr. Scheuchzer' whom Lavater mentions is probably Johann Jakob Scheuchzer (1672-1733), a Swiss botanist and physician who was elected a Fellow of the Royal Society in 1703 and published work in *Philosophical Transactions*.[51] 'Master Stanyan' is most likely Abraham Stanyan (1672-1732). Stanyan was a British-born diplomat who was based for some time in Bern, Switzerland during the early eighteenth century.[52] Lavater mentions Scheuchzer again four months later when he writes that 'Dr: Scheuchser gives his respects to you, I must tell you that he hath got hundred Crowns more every year of our Magistral', and again gives the sense that these men were in touch, probably meeting in person. In the same letter, Lavater mentions that he had sent Sloane's 'letters with the presents for France' and that 'in a months time [he] shall be again in Holland' and so if Sloane had 'any thing to command there pray doe it freely'.[53] In this way Sloane's immediate and mediated contacts reached into continental Europe.

Again, this invites a further exploration of the nature of the connections and interactions through which botanical material was exchanged in Britain and Europe. Close examination of Richardson's correspondence reveals a group of naturalists

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[50] Jean Lavater to Hans Sloane, Zurich, Feb 1(?) 1707 (BL Sloane MS 4040), f. 300r-v.

[51] Scheuchzer appears in only one 'Vegetable Substances' catalogue entry: VS 4,273 which appears as '*Fol. Alni, quercus &c. in saxo in Summis Alpibus non procul Tiguri. Dr. Scheuchzer Dr. Woodward. Dr. Brown'. It is not clear however, what Scheuchzer's exact association with this sample is.

[52] See P. Woodfine and C. Gapper, Stanyan, Abraham (1672–1732), *ODNB*, online edition, 2013; C. Storrs, British diplomacy in Switzerland (1689-1789) and eighteenth century diplomatic culture, in: E. Pibiri and G. Poisson (Eds), *Le diplomate en question*, Lausanne, 2010, 181-215.

[53] Jean Lavater to Hans Sloane, Zurich, Jun 1 1707 (BL Sloane MS 4040), f. 364r-v.

across Britain (and Europe) who contributed to the "Vegetable Substances' via relationships that depended upon friendship and its associated practices of sociability. For example, Sherard wrote to Richardson from London in 1703 that he had been 'on munday night wth Mr Vernon, who brag'd of his mighty acquisitions he has recd from you; besides a great number of beautiful mosses'. He went on to say that, 'I saw amongst ye plants you sent to Dr. Sloane & Mr Buddle some I wanted wch makes me take ye liberty of renewing my request to you for some more of yr northern product'.[54] Many years later, in 1720, Sherard continued to paint a picture of multiple face-to-face interactions and friendships among these botanical men. He thanked Richardson for his 'kind letter on Wednesday', and said that he had 'had the opportunity of comunicating it to most of my freinds in ye. Way; Mr Tillaman Bobart was wth me, & presently come Mr. Maning here wth. Mr Rand, & soon after Mr Dubois & my brother'. As he put it, linking natural history and sociability, 'Tis ye first time so many (for there are few more) have met together, since I came into England, & was very glad it was at my Lodgins, where we remembred all [our] Botanick freinds, & you Dear Sr., in particular'.[55] Indeed, only three months later Sherard once again showed the extent to which these individuals travelled across Britain visiting each other. This time he spoke of being with his brother James and visiting 'Dr. Uvedale who looks better, & is really more cheerfull & hearty than [we] have seen him, since I came to England'. Once more sociability among 'Botanick friends' was to the fore as he told Richardson that 'we drank yr health, as I did this day wth. Mr Dubois. I hope on Fryday to see Tillaman Bobart at Cannons, & from thence [go] to Mr Raynardsons at Hilesden, who has many good old [plants] in his garden, especially from Virginia'.[56]

These men, therefore, appear to have met frequently in person. They often took 'pleasure' with 'friends' in 'looking over ye mosses' or whatever other natural history specimen had most recently been received. When they did they took the time to inform other friends, in writing, of their civilities to each other. For example, as Sherard wrote to Richardson, they drank to his 'good health in an evening after

[54] William Sherard to Richard Richardson, Westminster, Mar 25 1703 (MS Radcliffe Trust C.2), f. 2.
[55] William Sherard to Richard Richardson, London, May 10 1720 (MS Radcliffe Trust C.4), f. 9.
[56] William Sherard to Richard Richardson, London, Aug 16 1720 (MS Radcliffe Trust C.4), f. 15. An entry in the 'Vegetable Substances' catalogue also refers to a 'Mr Samuel Reynardson': VS 2,048 'Terebinthi fructus ex Aleppo by Mr. Samuel Reynardson mercht. P. and from Cyprus. | Terebinthus vulgaris. C. B. pin. C'.

feasting on yr kind present'.[57] In turn, this shaped collecting practices. The British and European samples found in the 'Vegetable Substances' collection do indeed sometimes mention or connect more than one contributor. For example, VS 8,862, described as a 'Pila Lacustris', supposedly came 'From Mr. Knoulton & Dr. Richardson from a mear in Yorkshire'. Similarly, 'An old & almost rotten piece of ash which exhibits the annuall circles of that tree & those wider on one side viz. towards the south than on the other viz. the North as it seems they allways are on this side of the tropic' was noted as being sent 'From Mr. Morton. Dr. Woodward' (VS 8,743).

Such instances give a sense that these British and European botanical exchanges were indeed more informal than those which brought material from the East and West. They could, more routinely, be the product of face-to-face encounters as well as written correspondence. They took place in a variety of spaces and between multiple people often connected by common natural history interests and established organisations like the Royal Society. These more informal and, as a result, often unitary moments of knowledge exchange are therefore quite different from the long-distance and large-batch movement of natural material that originated in the Americas and the East Indies, where the contact between contributors, the collection of material and its transportation was more complicated, more mediated and required organization over greater distances.

Somewhere between these two modes of interaction were the connections with continental Europe. For example, Dutch collecting activity was important for Sloane's formation of the 'Vegetable Substances'. In the seventeenth and early eighteenth centuries, the Dutch Republic had become a major centre of commercial and scientific exchange, with Amsterdam existing as a hub for written and oral knowledge, as well as objects that had come from all over the world.[58] Eric Jorink argues that, in his recognition of the importance of Dutch scientific culture, Sloane played 'an active role

[57] William Sherard to Richard Richardson, London, Jan 30 1719/20 (MS Radcliffe Trust C.4), f. 1; 'yr kind present' in this instance refers to some northern game Richardson had sent Sherard. This is also very similar to what S. Scott Parrish describes for American natural history, in: Scott Parrish, *American Curiosity.*

[58] Seven entries in the 'Vegetable Substances' catalogue (between VS 6,621 and VS 6,627) are described as 'from Holland from Surinam'. These peppers, used as pickles, were possibly collected by Maria Sibylla Merian while she was in Surinam between 1699-1701, after which she returned to London. They possibly entered Sloane's collection via William Courten or Petiver. See for example S. Valiant, Maria Sibylla Merian: recovering an eighteenth-century legend, *Eighteenth-Century Studies* 26:3 (1993), 467-479.

in establishing contacts with Dutchmen, in order to expand his network and to obtain books, prints, information and objects'. For Jorink, Dutch individuals who played a key role in Sloane's collecting activities included Nicholaes Witsen, Frederik Ruysch, Levinus Vincent, Albertus Seba, Maria Sibylla Merian and Herman Boerhaave. Collectively these individuals were known for their interests and research into natural history as well as their own collections.[59] Ruysch, Vincent and Seba all had direct correspondence with Sloane as well as Petiver, but it appears as though only Ruysch and Seba directly contributed to the 'Vegetable Substances' collection.

According to Jorink, Sloane took the initiative in beginning direct contact with Ruysch, and was highly interested in the butterflies he had in his collection. Ruysch's involvement in the Republic of Letters is considered implicitly motivated by financial gain and, for Jorink, the Anglo-Dutch intellectual connections during this period were of a mutual and balanced nature. The British, after all, considered the Netherlands as a source for natural history specimens, images and information; while the Dutch viewed British contacts in terms of outreach and prestige.[60]

A significant amount of material was also sent to Sloane from Amsterdam by Albertus Seba. These eighty-seven catalogue entries include descriptions such as 'A [bay]-leave, the lower membrane. From the same. Mark'd no. 6' (VS 8,673) and 'A leaf of an Exotic plant or Tree. From the same. Mark'd no. 8' (VS 8,678). Jorink has argued that Seba's undertakings in natural history collecting and exchange were much more 'business-like' in character compared to that of Ruysch, and he was more explicit about his motives – being engaged in the 'honourable exchange of gifts and information' as well as 'the commercial enterprise of trading medicine and rarities'.[61] In his original letter to Sloane, Seba sent a list of drugs and their sale prices because while Seba would have wanted the scholarly friendship and prestige that a link with Sloane would have ensured, he also would have wanted a trading relationship of sorts. Sloane would later agree to a scholarly friendship but also quickly reverted to a commercial relationship by mentioning an order he wanted to place. After Seba's initial approach (in writing) towards Sloane, the Dutchman seemed to want to counterbalance the emphasis on it being a commercial relationship, sending Sloane

[59] E. Jorink, Sloane and the Dutch connection, in: A Walker et al (Eds), *From Books to Bezoars*, 58-59. Petiver travelled to Amsterdam in 1711 on behalf of Sloane to make purchases from Paul Hermann's herbarium, which was up for auction after his death.
[60] E. Jorink, Sloane and the Dutch connection, 69.
[61] E. Jorink, Sloane and the Dutch connection, 66.

numerous and extravagant gifts. Sloane countered by replying 'I pray you to tell me what they cost you, so that I can reimburse you the price, not wanting to accept them under any other conditions'.[62] Anne Goldgar reminds us of the unwritten and delicate rules in the learned world of collecting where it was important that exchange was non-commercial and to not overstep the mark of gift exchange between scholars. In other words, no one should give too much or too little. It was clear, as it was in Sloane's interactions with Massey and with Bartram, that the nature of the relationship – and the roles of friendship and commerce in the exchange of natural material – needed to be negotiated.

As a result, the interactions between Sloane and the numerous contributors of British and European material reveal a set of varied connections and relationships. They ranged from different sorts of friendships to more formal associations and, in some cases, as with Seba, with Sloane attempting to alter the nature of the interaction if it appeared to be heading in a direction he did not want. For Sloane, then, natural history exchange with this set of people who had much in common could be conducted on a range of bases with the proviso that they complied with the usual 'rules' of sociability. This interpretation, however, generated from the archival record of the 'Vegetable Substances' and Sloane's correspondence, is in danger of overemphasising his centrality. An important characteristic of this set of relationships is that these exchanges of natural material, conversations, letters, collecting trips and meetings did not necessarily involve Sloane. He was not always the central or primary individual in the movement of natural knowledge, whatever form that knowledge might take. In other words, there were lots of relationships being formed and maintained across Britain and Europe which formed the backdrop to Sloane's collecting. The next section examines more closely the content of these interactions. What was being discussed as natural material from Britain and Europe was being exchanged?

[62] Important to remember that apothecaries did not have the status in England that they did on the continent, and this may have provoked uneasiness in his relationship with Sloane. See. A. Goldgar, Albertus Seba, collecting, and the Republic of Letters, unpublished article, 2015.

Content of interactions

When Sloane interacted with contributors of British and European material to his collection, one common topic was medicine (see also Chapter Six). Sloane and Richardson's surviving correspondence, for example, reveals the extent to which they discussed Richardson's patients, with Richardson often seeking Sloane's advice on treatment. On May 4, 1703, for example, Sloane replied to Richardson with a letter that is chiefly concerned with a women whom Richardson had had 'a great desire to help'. Sloane goes into abundant detail, recommending that she should be bled moderately and then made to vomit by the use of 'puking mixtures' followed by 'blisters'. Once Richardson had 'tried any of these med'cines', he was to send Sloane 'word of their succes's' so that Sloane could give his further opinion. Sloane then concluded his letter with a sign of friendship, once again juxtaposed against commodified relationships, by saying 'You needed not to have troubled yr selfe to have sent me a fee for such a small matter which I should have been glad to have done out of friendship to any body you had a value for'.[63]

Massey could also be found writing to Sloane asking for his medical advice alongside matters of natural history. In a letter of thanks regarding copies of *Philosophical Transactions*, dated May 18, 1711, Massey wrote:

> The books & case are safely arrived for wch I thank you heartily. I have a patient here for whom I would begg yr advise. About 7 or 8 years since he had a long intermitting fever wch was attempted to be cured by frequent bleeding & purgeing (a very odd Practice in my mind) & has so weaken'd his constitution.

Massey continues his letter with further detail about his patient's symptoms and the treatment he prescribed, which included gentle purging and pills. Massey's prescription had failed to cure his patient and it is at this point that he requests Sloane's medical advice by saying 'If you please to tell me where I am defficient you will much oblige yr most humble servt'.[64]

[63] Hans Sloane to Richard Richardson, London, May 4 1703 (MS Radcliffe Trust C. 2), f. 4.
[64] Richard Middleton Massey to Hans Sloane, Wisbech, May 18 1711 (BL Sloane MS 4042), f. 286.

Other aspects of medicine, such as remedies and ingredients, are also discussed in Sloane's interactions with contributors to his collection. Massey, for example, inquires about the best method of refining 'spermaceti which was taken out of the whales head wch was thrown on our Coasts'. In this case Massey was particularly keen to turn the 'spermaceti' into a refined, clean and white ingredient that would normally be bought at a druggists.[65] These discussions of medicine have a specificity to them that differs from the way that medicine is discussed in the letters sent from people in the New World and the East. Here, English physicians are exchanging opinions with Sloane on effective treatments and preferred methods. They also required his medical knowledge. Correspondence from the Americas and the East, in contrast, tended to involve the medical characteristics of the material sent. It was, in other words, less an 'exchange' of knowledge than the provision of information which Sloane might incorporate into his catalogue. Letters sent from individuals in Britain that discussed medicine did not necessarily need to correlate with the material enclosed.

These discussions of medicine, in its broadest sense, often overlapped with a variety of other topics. Discussions of collecting, of natural material and other things – plant specimens, fossils, publications and coins – can be found across much of Sloane's written interactions with people who gave British and European samples to his collection. Richard Middleton Massey, for example, was interested in collecting various fossils, curiosities, scientific instruments and publications, while Richard Richardson was particularly keen to add to his library. Ruysch would send Sloane human anatomical specimens, and Preston even 'enclosed a paper showing an advertisment' which he believed 'may occasion some Laughter'.[66]

Many of the natural history specimens discussed in these written interactions were botanical, especially seeds which could easily be sent inside a letter or small package. Various samples of seeds were sent from Swiss contacts such as Lavater who, while in Oxford, 'received lately some [seeds] from my Father in Switserland, wich gave to me opportunity to think that I might satisfie your curiosite in sending some over to you[.] I am very sorry I could not receive them sooner'. Lavater

[65] Richard Middleton Massey to Hans Sloane, Wisbech, April 2 1708 (BL Sloane MS 4041), f. 124.
[66] Charles Preston to Hans Sloane, Edinburgh, Jun 13 1710 (BL Sloane MS 4042), f. 146.

considered these specimens ‘brisk and good’ for being sown.[67] Similarly, Pajot often sealed packets of seeds inside his letters to Sloane from Paris. On one occasion Sloane requested some seeds and, on March 23, 1729, Pajot informed him that enclosed in his letter was a sample that had been collected by his gardener.[68] Later, Pajot would request that Sloane accept a visit from his gardener so that he could view Sloane’s collection.[69] Pajot also mentioned the French naturalist Antoine de Jussieu (1686–1758) in several of his letters, and in one instance forwarded a package from Jussieu. The ‘Vegetable Substances’ contains seven specimens as ‘From Monsr. Jussieu’ including a sample of wood, appearing as VS 10,536: ‘Bois de Simarouba. From Monsr. Jussieu’.[70]

From Massey in Wisbech came a wide range of things for Sloane’s collection. This included multiple examples of stones and fossils which he considered unusual or had not seen in other collections, such as a specimen which he had ‘brought out of Cheshire, twas found in the river Ribble near Preston in Lancashire’.[71] Massey was known locally for his interests in natural curiosities and noted that a ‘Butcher brought me a stone exactly square taken out of ye Gaul of a Bullock. Very smooth and the edges of ye surface somewhat rounded’.[72] Many years later, and after his retirement, Massey continued to write to Sloane. Rather than professional matters, these letters concerned his new interests, including ‘drawing after my fashion the flowers & seeds of plants in water colours upon a fine… paper wch I have gott from Holland’. He noted that ‘I partly copy after Tournefort, laying him before me’. Massey’s passion for drawing and painting took up ‘the best part of [his] leisure hours’ and ‘at other times’ he pleased himself ‘with a small collection of Roman Coins, of wch the greatest part’ he had ‘already scetchd out in a book according to their order’. Massey offered to bring this book to London to show Sloane to ‘see whether [there] are any that are

[67] Jean Rodolfe Lavater to Hans Sloane, Oxon, Jun 18 1705 (BL Sloane MS 4040), f.46r-v.
[68] Louis Leon Pajot to Hans Sloane, Paris, Mar 23 1729 (BL Sloane MS 4050), f. 75.
[69] Louis Leon Pajot to Hans Sloane, Feb 13 1729 (BL Sloane MS 4050), f. 61.
[70] Jussieu studied at the University of Montpellier and travelled with his brother through Spain, Portugal and France. Louis Leon Pajot to Hans Sloane, Paris, Jun 25 1727 (BL Sloane MS 4048), f. 315; Paris, Feb 11 1728 (MS 4049), f. 108.
[71] Massey notes of this particular stone that he had not seen anything like it in Woodward’s or Lhuyd’s collections. Richard Middleton Massey to Hans Sloane, Oct 6 1707 (BL Sloane MS 4041), f. 34.
[72] Richard Middleton Massey to Hans Sloane, Wisbech, Aug 21 1709 (BL Sloane MS 4042), f. 41.

wanting in [his] collections'.[73]

This, however, was not just a one-way exchange. Massey wrote to Sloane to thank him for supplying various books that he had requested and copies of scientific papers.[74] Sloane appears to have sent books and copies of *Philosophical Transactions* to other correspondents as well.[75] While Richardson sent Sloane numerous samples of northern plants and fossils, he was also keen to add to his own library. Sloane obliged, sometimes with duplicate books that were 'good & not very common' explaining that he had 'reserved in a garret some such duplicates & without complement would be' 'glad to have an opportunity to serve' him.[76] Sloane also updated Richardson on natural history papers including that of 'Dr. John Scheuchzer [who] hath wrote & published a book of grasses'. Sloane told Richardson 'if you have it not I will endeavour to gett you one, he hath sent me the specimens of these he mentions'.[77] Here Sloane is probably referring to an account of Swiss grasses, *Agrostographiae Helveticae Prodromus*, published in 1708 by Johann Jakob Scheuchzer (see above).

Similarly, Preston in Edinburgh thanked Sloane in October 1697 'for [the] most Acceptable Letter of the 27 of Sept: with the transaction enclosed'.[78] Preston – who practised medicine in Edinburgh and seemingly did not leave Scotland after 1697 – was keen to engage with Sloane and exchange natural history in a whole range of forms. This is evident both in his letters to Sloane and his contributions to the 'Vegetable Substances'. In 1697, Preston wrote that he had 'collected a few specimens allready and when the season shall permitt I shall continue to collect more. I find severall good plants here which I think are not in England. Mr Sutherland has put the garden into very good order'.[79] In 1705 Preston enclosed a 'list of what is sent

[73] Richard Middleton Massey to Hans Sloane, Wisbech, Aug 22 1721 (BL Sloane MS 4046), f. 122.
[74] Massey thanks Sloane for his 'very acceptable present of the Philosophical Transactions' in Richard Middleton Massey to Hans Sloane, Wisbech, Aug 22 1721 (BL Sloane MS 4046), f. 122.
[75] Cowan comments that there are forty letters in the BL from Preston that span the period 1697-1720, but Charles died in 1711 so Sloane must have continued a correspondence with his brother George (1664/5-1749). J.M. Cowan, The history of the Royal botanic garden, Edinburgh: the Prestons, *Notes of the Royal Botanic Garden, Edinburgh* 29 (1935) 63-131.
[76] Hans Sloane to Richard Richardson, Mar 9 1720 (MS Radcliffe Trust C.4), f. 5.
[77] Hans Sloane to Richard Richardson, Sep 27 1720 (MS Radcliffe Trust C.4), f. 21.
[78] Charles Preston to Hans Sloane, Edinburgh, Mar 17 1698/9 (BL Sloane MS 4037), f. 232.
[79] Charles Preston to Hans Sloane, Edinburgh, Sep 4 1697 (BL Sloane MS 4036), f. 349.

but you'l know better by seeing of them [than] I can inform you'.[80] As a result of these exchanges Sloane's catalogue contains seven samples ranging from 'Spongia', 'Cocoons or Molusce beans', to 'Gray Bonduch' and 'A sort of horse eye bean' all of which are described as having been collected and sent from 'the Orkney Isles from Dr Preston'.[81] The surviving 'Gray Bonduch' (or seed pod) listed as VS 948 is shown in figure 14**.** Sloane was also interested in the other things that Preston could obtain from Edinburgh, especially a catalogue of 'Bottanick Books' which the Scots doctor assured Sloane he would 'endeavour to procure'.[82] Preston also discusses a 'small water-fowl caught on the sea-coast about 4 miles east' that Sutherland had sent, as well as 'books lately printed and printing' and noted that 'Sir Andrew Balfours letters giving an account of his travels are printed here but not as yet published'.[83]

Figure 14: The surviving sample of 'Vegetable Substance' number 948 which has been described in Sloane's manuscript catalogue as a 'Gray Bonduch'. It was sent from the Orkney Islands by Charles Preston and is now held in the Natural History Museum. Photography by Victoria Pickering, © Trustees of the Natural History Museum, London.

[80] Charles Preston to Hans Sloane, Edinburgh, Sep 2 1705 (BL Sloane MS 4040), f. 62.
[81] These are VS 673; 947; 948; 950. These items would have washed up on the coast of the Orkneys and (apart from the coral) were notable in being non-native, indeed tropical, seeds that had floated eastwards across the Atlantic. See H. Sloane, An account of four sorts of strange beans, frequently cast on shoar on the Orkney Isles, with some conjectures about the way of their being brought thither from Jamaica, where three sorts of them Grow. By Hans Sloane, Coll. Med. Lond. & S.R.S., *Philosophical Transactions (1695-1697)* 19 (1985) 298-300.
[82] Charles Preston to Hans Sloane, Edinburgh, Feb 23 1699 (BL Sloane MS 4037), f. 372.
[83] This is probably a reference to Andrew Balfour (1630-1694) and his *Letters written to a Friend by the learned and judicious Sir Andrew Balfour…* Edinburgh, 1700; Charles Preston to Hans Sloane, Edinburgh, Dec 26 1701 (BL Sloane MS 4038), f. 279.

Similarly, all sorts of natural history samples came from Sloane's contacts in the Dutch Republic. From Amsterdam, by way of Seba, was a sample of 'Oleum…Ind' which Sloane listed in his 'Miscellanies' catalogue as number 900, 'From Albertus Seba Chymist in Amsterdam'. This item is most likely some sort of balm or oil and the location code '181' assigned to the entry suggests that it had medicinal value.[84] There is also a monetary amount of thirteen shillings noted, so it is plausible that this was a drug that Sloane ordered from Seba. In the 'Vegetable Substances' catalogue we also find the following description of an elaborately prepared item sent by Seba, which unfortunately no longer survives:

> A Bottle, wherein is contained the Anatomy of the following fruits: four pears, three white, & one brown, which last is prepared after a different manner from the rest: a peach, with the outward coat taken off, on one side of this peach the flesh also hath been stript off, to show how the arteries are interwove with each other and after what manner the sap attracted from the roots must circulate through them, when upon the Tree: another peach almost wholly deprived of its flesh, with the stone in its natural situation, enclosed with a particular sort of arteries or sap vessels which have a communication with those above, the sap circulating through both, till the fruit is ripe: one half of a yellow plumb, prepared after the same manner with the pear: another plumb of a dark colour with the stone in the middle. Sent by Mr. Albertus Seba, from Amsterdam, who prepared them himself, and informs me, that all sorts of roots, and plants, & leaves of Trees, & fruits may be prepared be as it were dissected in like manner. in Sp V.

In return for the items he received from Seba, Sloane sent books and other objects of natural history. While Ruysch sent anatomical drawings and descriptions and plant specimens from Holland, Sloane sent him his own *NHJ* as well as samples of Jamaican plants that Ruysch had requested.[85]

As well as having direct contact with contributors in the Dutch Republic, Sloane was also linked by intermediaries. These interactions also indicate that he was sending natural history material to contacts in Amsterdam. Richard Poley (d. 1770), for example, a graduate of Queen's College, Cambridge and secretary to the British envoy in Sweden from 1725 wrote to Sloane from the Hague in 1726 that:

> The Inclosed is from Mr: Vincent and, I suppose, is to inform you of his Receipt of the two Volumes of your Natural History of Jamaica. Mr: Seba has

[84] See Chapters Two and Seven for further discussion.
[85] Frederick Ruysch to Hans Sloane, Amsterdam, Sep 17 1715 (BL Sloane MS 4044), f. 97; Mar 6 1708, (MS 4041), ff. 112-113; Nov 8 1707 (MS 4041), ff. 58-59.

> likewise received his two Volumes, but I have no letter from him for you; tis likely he sends you his acknowledgements directly from Amsterdam. He has been so kind as to make Mr: Finch a present of some Pomgranates and Water-melons, which appear to be very good and are great Rarities here.[86]

As this letter indicates, Poley had received two sets of Sloane's *NHJ*, probably from Sloane himself. One had been intended for Levinus Vincent – who is not found listed in the 'Vegetable Substances' catalogue, but was nonetheless an important Dutch correspondent of Sloane's – and the other was for Seba. Vincent's books had been taken to his house and Poley had written to Seba in Amsterdam to find out where he would like his delivered.[87] Sloane also sent other books to Seba including one on plants and another on birds. 'Mr Fuller', or Rose Fuller (1708-1777), Sloane's grandson, delivered these items to Amsterdam on behalf of Sloane in 1726.[88] Seba thanked Sloane for these objects and remarked that the birds were 'extraordinary beautiful'.[89] Gerhard Friedrich Muller (FRS) also delivered books to Ruysch and Seba.[90] In 1730, Muller visited both men and later commented to Sloane that he had been received well and that Seba had a very fine collection of animals, bezoars and curious things. He also saw what were probably Ruysch's anatomical 'preparations' but opined that they were not as good as those found in England.[91]

As is evident, then, the range of topics discussed in these interactions and the materials exchanged were evidently very broad and went beyond what we find in the 'Vegetable Substances' collection. It is also the case that these same British and European correspondents were not solely acting as collectors and conduits of British and European natural history materials and knowledge. They were often also playing a part in the more global movement of natural material discussed in the previous two chapters. For example, Massey may have contributed local specimens including 'A fasciated monstrous white lillie sent me from Wisbech' (VS 655), but the 'Vegetable Substances' catalogue reveals that he also sent botanical samples to Sloane that had

[86] Richard Poley to Hans Sloane, Hague, Dec 17 1726 (BL Sloane MS 4048), f. 240.
[87] Richard Poley to Hans Sloane, The Hague, Dec 13 1726 (BL Sloane MS 4048), f. 237.
[88] Albertus Seba to Hans Sloane, Amsterdam, Jun 21 1729 (BL Sloane MS 4050), ff. 138-139.
[89] Albertus Seba to Hans Sloane, Amsterdam, Jul 8 1729 (BL Sloane MS 4050), ff. 149-150.
[90] Gerhard Friedrich Muller to Hans Sloane, Amsterdam, Dec 22 1730 (BL Sloane MS 4051), ff. 148-149.
[91] Rose Fuller to Hans Sloane, Leyden, Jul 30 1729 (BL Sloane MS 4050), ff. 160-161.

been collected in the New World and the East. Descriptions of roots from the East Indies, a 'woody root of a shrub reckoned in Maryland a great counterpoyson' (VS 9,886), pods from Guinea, as well as 'A Parcel of seeds from Philadelphia' (VS 31) are all found in Sloane's catalogue. Similarly, from Ruysch's letters to Sloane we learn that he arranged for a basket of botanical and geological specimens from Africa, as well as insects and butterflies from Amboina (an island in the East Indies), to be delivered to Sloane in 1714. Sloane had also requested a toad from Ruysch that supposedly brought forth its young on its back. Ruysch, however, could not send any such specimens because he needed them for his anatomic cabinet, which he intended to make public. He did, however, tell Sloane that if he had an American specimen to spare he would send it.[92]

John Woodward likewise contributed items from outside Britain and continental Europe. Of the twenty-four items listed in the 'Vegetable Substances' catalogue, only a few originated in Britain, including 'A round woody ball or knott of woody fibres undulated from Fairsfield in Norfolk. Woodwd' (VS 8,756), 'A knott or excrescence from an aple tree from Kilsby in Northamptonshire. Id' (VS 8,762), and '[A cocoon] found on the shores near the Lizzard in Cornwall. Woodward' (VS 8,754). Woodward appears to have been a conduit for European material, including 'The sceleton of a root from the sea shores near the Lago Lucrino in Italy' (VS 8,760) as well as 'An Indian bean found frequently on our coasts' (VS 8759). For this it was noted that 'It differs from all the four kinds wch. Dr. Sloane mentions on the Orkney shore. Wee find two or 3 other sorts on our shores. Dr. Woodwd'. Woodward's interest in collecting natural history (particularly fossils) from all over the world is made clear in Sloane's descriptions in the 'Vegetable Substances' catalogue. Samples from him included items from Guinea, a Tartar lamb from China (VS 8,737), 'The midle bark of the pitch firr used by the Indians for [conescloth] from North Carolina … wt. a piece of the Lagetto' (VS 8,751), the 'stone of a fruit somewhat of the figure of a pear in Madagascar' (VS 8,753), and a cocoon and 'A yellow horse eye bean from Fort St. George' (VS 8,755).[93]

[92] See Frederick Ruysch to Hans Sloane, Sep 10 1714 (BL Sloane MS 4043), f. 294; Aug 26 1706 (MS 4040), f. 209; Feb 8 1708 (MS 4041), ff. 104-105; Mar 29 1714 (MS 4043), f. 244.
[93] The vegetable lamb of tartary is the rhizome of a fern trimmed to resemble a quadruped, see Cannon, Botanical collections, 146-7.

Other ‘Vegetable Substances’ that came from further afield include those that were contributed by the physicians George Cheyne and Thomas Stack (d. 1756). While one item from Cheyne has specifically been listed as originating in Scotland – ‘A seed like sulphur. A seed of a plant in the highlands of Scotland wch. burns like gunpowder’ (VS 4,364) – there are about seventy other samples in the catalogue from ‘Dr Cheyne’, including VS 4,359 ‘A seed from Mr. Ashe … Dr. Cheyne at ye. Turks head coffee house in Bathe’ and specimens of seeds that appear to have come from Jamaica. In turn, Stack seems to have donated seven items to the ‘Vegetable Substances’, and their provenance varies greatly. While three were obtained in Ireland, including a ‘Fossil wood half petrified from the neighbourhood of Lough Neagh’ (VS 12,519), the other entries are more intriguing. VS 12,522 is described as ‘Cortex Brasiliensis’ (its local medicinal qualities will be explored more in Part Three), while VS 12,523 has been listed as ‘Wheat & Beans, found in Herculanum 1749’, the ancient Roman town in the shadow of Mount Vesuvius, Italy, destroyed by a volcanic eruption in 79 AD. Finally, from Cyprus, Stack contributed VS 12,708 an ‘Ægyptian Lettuce seed’ as well as the following:

> 12,507. The fruit of a Tree growing in Aleppo its Turkish name is Tusbiegh Agash, wch. disguises the Bacock Lord Tree: the Arabic name Zinzalactit: the Greeks call it Mauro Mallie. It grows as thick as a man's body, flowers in Spring: the flowers are white wt. a bluish cast, somewhat resembling the tuft of a Peacock. They last abt. three weeks, and are succeeded by a green berry, wch. turns reddish, and is of a mawkish sweet taste. It is not known to grow out of Aleppo on that continent: but there are some few trees of it in Cyprus given me by Dr. Stack.

This more global movement of botanical material can also be traced through Richardson’s correspondence, which gives a sense of how these individuals were dealing with such activities. For example, Richardson received exotic plant material from William Sherard who wrote from London in 1703 that:

> We send a vessel over this week to Calais to exchange some prisonars of war; I have there a large collection of dryd plants & a pacquet of seeds, wch I hope for before ye end of Aprill; such as are perennial I’ll send you as soon as I receive them.[94]

[94] William Sherard to Richard Richardson, Westminster, Mar 25 1703 (MS Radcliffe Trust C.2), f. 2.

Ralph Thoresby also updated Richardson about some Indian material that he had 'lately rec'd'. He described this as 'a valuable collection of Indian curiositys from Ireland & from ye Bp of Man, the Bp of Carlilse (who was with me ye last week) has promis'd me a collection of wt those parts produce'. Robert Wood at Edinburgh's physic garden also had 'a great many rare exotick seeds this Spring from the East and West Indies which are riseing extreamly well in my hot beds'.[95]

Richardson's contacts were evidently keen to receive duplicate or spare specimens that he had in his collection – especially those that had come from the East Indies and could be cultivated with gardening technology such as greenhouses and stoves. James Sutherland wrote from Edinburgh that when Richardson was going to 'send the shrubs in the Spring', he would be much 'obliged to you for a part of your East India seeds if they be fresh and plants may be raised from them for after this I'm in hopes to have a stove and Greenhouse for accommodating such as are tender'.[96] But, as has been shown, sending and receiving botanical material from around the world was no easy task. At times, these naturalists were hindered in their abilities to exchange exotic material. Uvedale wrote that he no longer expected 'seeds from abroad, having stopd my correspondence, it having been soe troublesome & uncertain this wartime'. However, he added that 'if [peace] blesses us I may renew it wth lesse inconvenience; if any thing comes in unexpected you shall share with me in wht my favour furnish'.[97]

Despite war and other difficulties facing the movement of natural history, British and European botanical material was successfully transported across land and sea, and Sloane would add it to his collection. This material however, also came with numerous other things including medical conversation (between medical men) and was part of a much wider culture of collecting activity that included animals, coins, medals, fossils, books and plants in different forms. In addition, items that would eventually be considered as 'Vegetable Substances' also often came alongside material from the East and West. Chapters Three and Four highlighted that a range of British and European collectors acted as important intermediaries in the movement of exotic specimens however, as this chapter has noted, it is important to consider that all

[95] Robert Wood to Richard Richardson, Apr 6 1724 (MS Radcliffe Trust C.5), f. 44.
[96] James Sutherland to Richard Richardson, Edinburgh, Jan 4 1701 (MS Radcliffe Trust C. 1), f. 39.
[97] Robert Uvedale to Richard Richardson, Enfield, date unknown (MS Radcliffe Trust C.2). f. 88.

sorts of exotic material could also be provided, individually, by British and European contacts.

Conclusion

As this chapter has demonstrated, numerous people gave Sloane botanical material that originated from across Britain and Europe. These individuals were often well-educated, published and Fellows of the Royal Society, or at least connected to it in some way. They interacted with Sloane, with each other, and others across the world. Their communication was established and maintained through letter writing, conversations at Royal Society meetings, coffee houses and over informal dinners in each other's homes, as well as during collecting trips across the country. These interactions meant that all sorts of different relationships were formed, some more formal than others, and the content of their discussions was by no means confined to the exchange of plant specimens. It was as a result of these varying interactions and the relationships that were formed across the globe – sometimes including Sloane, and sometimes not, and including both those shown in this chapter and the previous two – that Sloane was able to form the 'Vegetable Substances' collection. Indeed, rather than being directed and managed by Sloane through the orchestration of a coherent 'network', it might be said that the 'Vegetable Substances' collection precipitated out of the combination of these multiple interactions.

Because of the way that the 'Vegetable Substances' was made – as a result of many different sets of interactions – the contents of this collection passed along many different 'routes' which incorporated many different people in all sorts of places. Though these chapters have been split geographically, taken together this part of the thesis has shown that these routes overlapped and were linked in all sorts of ways, across the globe. These movements of natural history cannot always be separated and while this collection is certainly global, it is not systematically so. Instead it was made from a variety of relationships patterned by England's involvement with other parts of the world, and Sloane's involvement with a range of people. The complexities of this are shown more clearly through the example of William Sherard, which will be explored here.

Sherard only contributed a small number of samples from Britain and Europe but he was an important conduit in the movement of natural history for many of the

individuals mentioned in these three chapters. The 'Vegetable Substances' catalogue lists only six items contributed by Sherard. Those that are described, however, hint at the range of his collecting activities beyond Britain. As has already been noted, during the late seventeenth century Sherard acted as tutor to various families as they travelled in Europe and this is reflected in entries in Sloane's catalogue including 'Terra foliata d. S. Boccone. It seems to be the leaves of nymphaea. It was given to me by Dr Sherard who brought it from Italy' (VS 241). The collection also contains two samples of 'Lychnis' from Turkey as well as 'dragons blood', roots and ricinus which was 'Perhaps an American sort a pretty kind' (VS 1,899).[98] These speak to the important role played by Sherard in the global exchange of natural history. Not only did he actively collect natural materials himself, but he continuously maintained, renewed and acquired new botanical relationships, allowing him to connect many different people through his own network.

While in Smyrna as consul for the Levant Company, for example, his contacts – individuals who also corresponded with Sloane, Richardson and Petiver – showed in their letters to each other a great eagerness to receive natural material from Turkey. [99] As Jacob Bobart wrote to Richardson in 1703, 'Alas! Alas! We loose worthy Dr Sherard, but we comfort our selves [with] the thoughts of his yet being serviceable: I suppose you hear that he goes Consull to Smyrna, an Honrable post'.[100] And while he was in Smyrna, Sherard collected all sorts of natural history items. He mentioned to Sloane in 1704 that he would 'send … some plants, in a box directed to Mr. Petiver'.[101] Ralph Thoresby had been particularly happy to receive 'Mr. Consul Sherard's Present of old Greek Coins' via Richardson.[102] Sherard's network clearly went far beyond what we might consider 'Europe' during this period, for he said to Sloane in the same letter that he had 'settled a corrispondence wth Dr. Pickerus at Aleppo, & Dr. Giulio Medici at Cairo, both Physitians of very good repute, in order to

[98] 'Lychnis from Turkey by Dr. Sherard. Gr' (VS 5,755) and 'Clammy Lychnis from Turkey Dr. Sherard. Gr' (VS 5,767).
[99] In 1703, Sherard wrote to the Royal Society about the position he had been offered in the Levant Company that would provide 'a good post for honour and revenue', Sherard to Royal Society, 1703, RS, Sherard MSS, letter 625.
[100] Jacob Bobart to Richard Richardson, Oxon, Aug 5 1703 (MS Radcliffe Trust C.2), f. 15.
[101] William Sherard to Hans Sloane, Smirna, Mar 5 1704/5 (BL Sloane MS 4040), f. 13-14.
[102] Ralph Thoresby to Richard Richardson, Leeds, Mar 10 1724/5 (MS Radcliffe Trust C.5), f. 93.

be inform'd about severall things of ye materia medica, & ye plants of those places mentione'd by Rauvolf & Alpinus'.[103]

Sherard was also involved in the organization of natural history collecting trips, including Mark Catesby's trip to North America. He was an important conduit for ensuring that the material from Carolina reached Sloane and other subscribers to Catesby's work and collecting activities. Sherard also looks to have leaned on Sloane to act as intermediary for his own botanical endeavours. He wrote in 1724 that he had a 'large Gourd wth. seeds for Mr. Rand, wch. please to give him notice of if you see him today, if not, I'le write to him by penny post to morrow morning, having several forrein letters to dispat[ch] to night by ye Holland post'.[104]

Sherard's role in the collecting and exchanging of natural history across Britain, Europe and further afield is apparent in his own correspondence as well as in the archives of Sloane and Richardson. The letters from Sherard to James Petiver are particularly insightful about the variety of people he was in communication with and through whom he exchanged botanical material. In 1700, while he was at Badminton working for Mary Somerset, Sherard remarked that he had written to all of his correspondents and had 'seeds coming from Sicily, Rome, Florence, Nuremberg, Holland & France'.[105] He also congratulated Petiver on his 'large acquisitions & hope you'll remember yr poor freinds. if your seeds are come ashore be pleasd to spare what you can of them & deliver them to my Br[other] who has some things to send me hither'. Sherard then proceeded to tell Petiver about the 'curious parcell of seeds from ye. Cape, sent by Mr. Vanderstell' that he had lately received. This package was, in his own words, 'most new; 223 in all, among ym, 14 sorts of Aloes, as many chamaelas, 32 Ficoides &c of wch I hope ye next year to see some product, we having all ye conveniencies can be imagin'd both for raising & preserving of them'. Indeed, he did not stop there. He noted that he was going to 'write next week to Dr. Nissole &

[103] William Sherard to Hans Sloane, Smyrna, March 5 1704/5 (BL Sloane MS 4040), f. 13-14.
[104] 'Mr Rand' is most likely to be the botanist Isaac Rand (1674-1743). William Sherard to Hans Sloane, Feb 7 1724 (BL Sloane MS 4047), f. 126.
[105] In 1700 Sherard became tutor to the grandson of Mary Somerset, Duchess of Beaufort which allowed him the perfect opportunity to work in her well-known gardens, correspond with people around the world and to gather and cultivate a variety of plants. William Sherard to James Petiver, Badminton, Dec 11 1700 (BL Sloane MS 4063), f. 54.

send him some seeds…. He's as freindly a man as twas & will do you service there, what he sends me now, I suppose is all I want from thence'.[106]

Sherard was, of course, also interested in Petiver's botanical news, noting that he expected another letter from Petiver soon with an account of his 'Indian moscovian & Italian collections'. He also wished to be updated on other naturalists, asking 'Whats become of Mr. Vernon? How goes Mr Budola on in stating ye music? I have sent to them (I mean those we have here) last sumer & mark'd their places & resolve to visit each one'. Finally, he concluded his detailed letter with an update on the gardens at Badminton. He commented that they had 'severall new plants here, wch, you shall have specimens of next summer & [what] comes of this springs sowing'.[107]

These few examples of letters sent between Sherard and his correspondents give a sense of his involvement in the botanical collecting activities of these men in Britain. It is not uncommon to find that in any letter Sherard mentions multiple individuals involved in the gathering and exchange of natural history as well as collections of hundreds of different seeds that he had received or expected to receive from around the world. Sherard's broader aims for his involvement in the movement and exchange of natural material, whether it was through making collections himself or extending his own correspondence network, is made especially clear when he writes to Richardson. He says that 'I cant but think yt if we had 10 or 12 intelligent persons in different counties, but that the catalogue of English plants would amount to severall hundreds more then are yet discover'd'.[108] There is no doubt that many items found in Sloane's 'Vegetable Substances' collection came as a result of Sherard's interactions with individuals discussed across these three chapters. He demonstrates that it is useful in broad terms to distinguish the forms of interaction characteristic of these global regions, since that can highlight the multiplicity of sorts of contributors in the 'West', and the importance of gift exchange and patronage as modes of collecting, compared to the institutional structures – particularly of the EIC- which shaped collecting in the 'East'. This however, can only be a broad, and somewhat aritificial, distinction since many of the contributors to the collection supplied material from both East and West, even if few directly visited both these areas of the world. Once

[106] This is probably Guillaume Nissole (1647-1734).
[107] William Sherard to James Petiver, Badminton, Dec 11 1700 (BL Sloane MS 4063), f. 54.
[108] William Sherard to Richard Richardson, undated (MS Radcliffe Trust C.4), f. 72v-r.

again, Sherard's case is instructive here as he shows very well that the items in the 'Vegetable Substances' collection were part of complex forms of interaction, connection and 'networking' where Sloane was sometimes central and sometimes not. As has been shown, this was not the systematic establishment on a global scale of the sort of collecting 'network' that Sherard imagines here, but something much messier than that: a range of interactions with a great variety of people across the world out of which the 'Vegetable Substances' collection emerged. In his consistent engagement with gardens and gardening, Sherard also usefully highlights one of the key contexts for understanding the potential uses of the 'Vegetable Substances' collection to which we now turn.

Part Three
Uses of a Natural History Collection

Chapter Six

A 'kind present of rare seeds': Gardens and Gardening[1]

Natural objects that were actively labelled and distinguished as the 'Vegetable Substances' came from around the world, from all sorts of different people and as part of varied contexts and relationships. Having established broadly what these objects were, and from where and by whom they travelled, Part Three of this thesis will aim to address why Sloane gathered this material together in order to understand the 'use' of the 'Vegetable Substances' collection. However, establishing the exact use of almost any early modern collection remains a challenging task and Sloane's vast collection is no exception, especially considering its scale, variety and organisation (or lack thereof).[2] The following two chapters will therefore consider 'use' in relation to the 'Vegetable Substances' in a broad sense. It does not aim to establish a final answer to the question 'how was this botanical collection used?' but, instead, to consider different sets of evidence found across the collection, in the manuscript material and in relation to the context of collecting and natural history in the period, to discuss the possible ways that the objects found within the 'Vegetable Substances' may have had 'lives' that went beyond the collection. Although this material was, in a sense, made into a set of uniform and static objects when the various items were boxed, numbered and described in the catalogue, they also, as these chapters will show, had potential uses outside the collection and beyond Sloane. With this in mind, these chapters will consider the extent to which these natural materials were grown and cultivated in gardens, as well as their connections with medicine. They ask, in short, to what extent can we consider the 'Vegetable Substances' as the early modern equivalent of what is now called a 'seed bank' (this chapter) and how far it is a collection of *materia medica* (the next chapter)?

[1] Jacob Bobart to Hans Sloane, Oxon, Jul 8 1713 (BL Sloane MS 4043), f. 161.
[2] See Marples and Pickering, Patron's Review.

Beyond Sloane's Garden

There is only one entry in the 'Vegetable Substances' catalogue that makes reference to Sloane's own garden. VS 31 appears as:

> The fascicled stalk of sparagey from the Isle of Wight given me by Mr Keadgale. It grew in my own garden in London.[3]

Yet this belies the fact that Sloane considered garden spaces and the cultivation of plants as an important aspect of natural history. Part Two highlighted that Sloane actively and directly supported the collection and cultivation of plants from around the world, and his financial sponsorship and development of relationships with collectors in the New World is testament to this. For example, the collecting activities of Mark Catesby, William Houstoun and Robert Millar in the Americas were all linked to the establishment of gardens, including the Georgia Trustees Garden. Also, EIC surgeons Samuel Browne and Edward Bulkley used the Company's garden space at Fort St George to experiment with local plants and to introduce crops from around the world. Their investigations of the origins of plants and the extent to which they could be transplanted was useful to the Company (and those connected to the Company back in Europe) in all sorts of ways including their involvement in the local trade in medicinal drugs.[4]

Broadly then, Sloane could be conceived as a 'facilitator' of plant cultivation and this chapter looks to explore this notion further by examining groups of 'Vegetable Substances' that were connected to different sorts of gardens and gardeners in London and beyond. The chapter is therefore largely concerned with links between the collection of plants and the growing of plants, and forms part of the broader discussion about the 'use' of the 'Vegetable Substances' collection. In order to establish the presence of particular connections between the 'Vegetable Substances' collection and the growing of its contents, the chapter begins with an overview of the gardening practices that existed during the early eighteenth century. This includes a discussion of different sorts of gardens and gardeners, the utility and organization of these spaces, their connections with commerce and taste, as well as garden technologies. This will help to contextualize groups of 'Vegetable Substances' that

[3] This is probably 'Asparagus'; see catalogue description VS 31.
[4] Winterbottom, *Hybrid knowledge in the early East India Company world*, 126-127.

were connected to particular gardens, including samples that came from the Chelsea Physic Garden, as well as from the gardens of Robert Uvedale and Mary Somerset. By exploring these individuals and their gardens, correspondence 'networks' and expertise, this chapter will consider how the relationship between the 'Vegetable Substances' collection and the cultivation of plants worked in the making of natural historical knowledge.

Early eighteenth-century gardening practices

In the preface to the writer and diarist John Evelyn's (1620-1706) translation of Jean De La Quintinie's *The Compleat Gard'ner* (1693) he noted that in early times

> tis probable, that they knew no other Gardens than those of Fruits and Legumes, whereas in our Days there are several other sorts besides them, some being for Parterres and flowers, some for Nurseries, some only plain Gardens for common Use, and others for rare and Medicinal plants, &c.[5]

Just as there were many different types of gardens, so too was there an assortment of gardeners:

> some being simply called gard'ners, others taking the name florists, and others well deserving the Title of Botanists and others being named Market Gard'ners besides those that apply themselves only to the raising and maintaining of Nurseries.[6]

By the early eighteenth century there were, therefore, a variety of garden spaces. For example, small pieces of land had long been cultivated for the nurture of young plants and curative herbs to benefit families and communities, and botanical gardens had emerged in Europe in the fifteenth and sixteenth centuries in medical faculties of universities (the first were in Padua and Pisa in the 1540s). Professors of *materia medica* were appointed to teach and ensure the education of future doctors in the knowledge of plants for drugs.[7] The universities of Padua, Montpellier and Leiden

[5] J. Evelyn, Preface to his translation of Jean De La Quintinie's *The Compleat Gard'ner*, London, 1693; D.C. Chambers, Evelyn, John (1620–1706), *ODNB*, online edition, 2008.
[6] J. Evelyn, Preface to his translation of Jean De La Quintinie's *The Compleat Gard'ner*.
[7] Cook, Medicine, 407-434; Cunningham, The culture of gardens, 47.

became renowned for their emphasis on nature in their teaching of medicine, and in 1621 the University of Oxford established Britain's first botanic garden. Organised as a sort of 'living botanical encyclopaedia', the beds found in these gardens were arranged and ordered to teach and train apprentice physicians and apothecaries.[8] While medicine, or 'physic', may appear to have been the primary reason for the establishment of these particular gardens, these spaces also became centres for collecting, storing and distributing new plants that originated from around the world.[9]

The seventeenth and eighteenth centuries also saw an increase in commercial and private gardening.[10] In London, commercial nursery-keeping flourished with some nurseries such as Brompton Park in Kensington (founded in 1681) stretching over 50 acres of land. By 1705 it was thought to have ten million plants valued at over £40,000 and it sent huge consignments of plants and trees to great estates all over the country.[11] During this time the 'nurseryman' also emerged as a distinct commercial and cultural identity, whose trading activities were often accompanied with the publication of horticultural writings which reflected and publicized his expertise, goods, services and intellectual aspirations.[12] As time went on, some nurserymen came to exclusively grow new and exotic plants that were both expensive and difficult to cultivate.[13]

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[8] Their arrangement included geometric layouts, and in Padua the garden was in the form of a circle with squares inscribed, and circles within the squares, see V. dal Piaz and M. Rippa Bonati, The design and form of the Padua Horto Medicinale, in: A. Minelli (Ed.), *The botanical garden of Padua 1545-1995*, Venice, 1995, 32-54; R. Coulton, Curiosity, commerce and conversation in the writing of London horticulturalists during the early-eighteenth century, unpublished PhD thesis, University of London, 2005, 14; Cunningham, The culture of gardens, 48.

[9] 'Botanist' in the root meaning of the Greek term means plant enthusiasts, see Cunningham, The nature of gardens, 48. EIC gardens are relevant here; see for example V. Damodaran et al (Eds), *The East India Company and the natural world*, Basingstoke, 2015.

[10] Eighteenth century London had two sorts of private gardens, those that were originally royal parks set aside for hunting (Green Park and St. James' Park) and, the pleasure garden which was open to the public for a fee, see S. Ross, *What gardens mean*, Chicago, 2001, 5.

[11] Founded by four distinguished gardeners and concerned with the correct standard naming of fruits, garden design, formation, planting and selling of trees and plants, see J.H. Harvey, The stocks held by early nurseries, *Agricultural History* Review 22: I (1974) 18-19.

[12] The term 'nurseryman' appears first in print in 1670, describing Leonard Gurle, a plantsman trading in Spitalfields, see Coulton, Curiosity, commerce and conversation, 15-16, 47.

[13] Harvey, The stocks held by early nurseries, 23.

Gardens themselves were also changing, particularly because of the increasing rate at which plants from all over the world were being cultivated in Britain. This demand for different sorts of seed can be seen in the success of John Bartram in North America and Peter Collinson who sent seeds all over Britain and Europe.[14] The introduction of new plant species into English gardens was also connected to fashion and novelty and particularly evident in the cultivation of other types of gardens, including private gardens belonging to the nobility and others who could afford it.[15] While William III (1650-1702) had numerous royal gardens remodelled, more semi-public spaces were built across London designed and maintained, as Richard Coulton has argued, for 'upmarket urbanites'. There was also an increase in the number of small garden spaces attached to more modest residences.[16]

Outside London, landscape gardening also flourished during the eighteenth century. This was mostly a matter of wealthy landed patronage and represented 'Classical notions of rural harmony, retreat and beauty, as well as what was understood as nature tamed by taste and reason'.[17] These gardens gave opportunities for ostentation and display, and their designs included water features, geometric layouts, tree-lined avenues, obelisks, canals (long straight edged ponds), as well as the 'ha-ha' or a ditch sunk from view to create invisible boundaries between gardens and parkland.[18] The gathering of exotic material in the New World also had a significant influence on the design of these English pleasure grounds and country estates, as American shrubs became a dominant feature of planting.[19] Beyond matters of fashion

[14] The garden-seed trade developed and seed sellers improved their methods of selling, see M. Thick, Garden seeds in England before the late eighteenth century–II, The trade in seeds to 1740, *Agricultural History Review* 38:II (1990) 105.

[15] In 1717 gardening was described as 'being of late Years become the general delight and Entertainment of the Nobility and Gentry, as well as the Clergy of this Nation' by John Lawrence in his publication *The Clergy-Mans Recreation* (1717), see M. Thick, Garden seeds in England before the late eighteenth century, 111.

[16] Coulton, Curiosity, commerce and conversation, 22. For the development of English landscape gardens in the eighteenth century see for example D. Chambers, *The planters of the English landscape garden: botany, trees, and the 'Georgics'*, New Haven, 1993; M. Laird, *A natural history of gardening 1650-1800*, London, 2015.

[17] J. Black, *Culture in eighteenth century England: a subject for taste*, London, 2005, 58. See also D. Jacques, *Georgian gardens: the reign of nature*, London, 1983; T. Williamson, *Polite Landscapes: Gardens and Society in 18th century England*, Baltimore, 1995.

[18] Black, *Culture in eighteenth century England*, 60.

[19] M. Laird, *The flowering of the landscape garden: English pleasure grounds, 1720-1800*, Philadelphia, 1999; M. Laird, The culture of horticulture: class, consumption,

and cultural capital, plants also offered intellectual capital as horticulture was an innovative and hybrid pursuit that bound together interests in botany, agronomics, natural history and aesthetics.[20]

It is also important to take note of the different ways in which different gardens were organised, especially during this period when the flood of previously unknown plants into Europe created a pressure to classify, order and name them.[21] European botanic gardens, for example, were like living catalogues of plants, and such plants were often being dug up and rearranged to reflect the new philosophical classification of the garden at that time.[22] For example, in the early decades of the Chelsea Physic Garden, under the direction of James Petiver and Samuel Dale, medicinal plants would have followed the order of the standard pharmacopoeia of the time and therefore would have been based on the plants' curative properties. In the 1720s, under the direction of Philip Miller, the beds were changed to reflect Tournefort's system of plant classification.[23] In contrast, in landscape gardens and pleasure grounds the horticultural ordering of shrubbery and flowerbeds often included tiered displays of plants, described as 'theatres', which ensured that rare and beautiful plants could be both artistically and scientifically organised.[24]

While various landowners believed it was good spiritual exercise to use their own hands in their gardens, and passionate horticultural gentleman may also have been keen to complete some gardening themselves, the majority of the back-breaking tasks and continuous upkeep was left to servants.[25] In fact, the planting layout in a garden such as a pleasure ground was often the result of a designer or a succession of gardeners who would interact with nurserymen, land agents, stewards and masters of works in producing the desired effect.[26]

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and gender in the English Landscape Garden, in: M. Conan (Ed.), *Bourgeois and aristocratic cultural encounters in garden art 1550-1850*, Washington, 2002, 226.

[20] See Coulton, Curiosity, commerce and conversation: D. Marsh, The gardens and gardeners of later Stuart London, unpublished PhD thesis, Birkbeck University of London, 2005.

[21] R. Drayton, *Nature's government: science, imperial Britain, and the 'improvement of the world'*, Yale, 2000, 8.

[22] Cunningham, The culture of gardens, 49-51.

[23] D. Frodin, Order of beds in a botanical garden, online edition, ND.

[24] Laird, *The flowering of the landscape garden: English pleasure grounds*, xiv.

[25] Cunningham, The culture of gardens, 54-55.

[26] Laird, The culture of horticulture: class, consumption, and gender in the English landscape garden, 235.

Technology also differed amongst gardens during this period, and played a central role in the successful cultivation of 'exotic' plants in the harsher British climate. Preservation was the key, and 'conservatories', 'orangeries' and 'greenhouses' were constructed to protect plants from frost. Open fires were initially used to heat these structures, then methods of under-floor heating allowed warmth to be more evenly distributed. This was accompanied by the introduction of glass cases which reflected an understanding of the role of light in plant growth.[27] In 1680 the first greenhouse, although probably unheated, was built at the Apothecaries' Physic Garden in Chelsea for £138. Then, in the following year, a stove (heated) house was constructed at the centre of the garden and is thought to have had tiled roofs, large windows on one side, and to have been decorated with ornamental pots, urns and steps. There was much interest in this technology among men who were attracted to the cultivation of exotic plants. According to reports of the garden by Sloane, Ray and Evelyn, all of whom visited it, John Watts's method of heating plants by a stove under this conservatory was 'ingenious'.[28]

These investments in technology were another reason why the successful cultivation of plants in a garden could be an important measure of social standing. It implied the wealth required to purchase the plants, the effort and expense needed for delivery, planting and continued maintenance, as well as the surplus leisure time and wealth necessary to indulge in something purely ornamental.[29] But whatever the garden, there was a constant need to experiment with horticultural techniques, and Evelyn first succeeded in heating a greenhouse with a warm water system in 1675.[30] The seventeenth century also saw the introduction of more sophisticated forms of glass frames and hotbeds, and the eighteenth century saw further important advances

[27] J. Woudstra, "Much better contrived and built than any other in England": stoves and other structures for the cultivation of exotic plants at Hampton Court Palace, 1689-1702, in: M.G. Lee and K.I. Helphand (Eds), *Technology and the garden*, Washington, 2014, 79.
[28] Evelyn wrote about this in his diary on the Aug 6, 1685, see S. Minter, *The Apothecaries' garden: a history of the Chelsea Physic Garden*, Sutton, 2000.
[29] M. Laird,'Perpetual spring' or tempestuous fall: the greenhouse and the great storm of 1703 in the life of John Evelyn and his contemporaries, *Garden History* 34:2 (2006) 158; Woudstra, Much better contrived and built than any other in England, 80; J. Francis, 'A ffitt place for any Gentleman'?: gardens, gardeners and gardening in England and Wales, c.1560-1669, unpublished thesis, University of Birmingham, 2011, 310.
[30] D. Chambers, John Evelyn and the invention of the heated greenhouse, *Garden history* 20 (1992) 201-6.

and refinements, including angled glazing, spirit thermometers and furnace-heated greenhouses.[31]

These gardening technologies were bound up with human relationships and tied to issues of taste and consumption. For example, Mary Somerset requested that John Bale (or Ball), one of her Chelsea servants, report to her on Queen Mary II's (1662-94) new stoves at Hampton Court, which he duly did in September 1692. While Somerset did convert her greenhouse into a tropical hothouse in 1698, she appears to have rejected the technological information provided by Bale. Instead of using the glass construction that was so highly favoured at Hampton Court, she used diverse technologies and 'hands-on care gardeners' ensuring that her results were just as exemplary. [32] Some have suggested that Somerset's husband may have placed constraints on her spending, or perhaps her age (she was in her 70s at this point) was a factor in this technological decision. Maybe Somerset simply knew what she wanted and what she was most comfortable with.[33]

In these ways, garden culture reflected and underpinned many aspects of London life during the seventeenth and eighteenth centuries, reflecting and producing wider social, economic and cultural changes. [34] Those who called themselves gardeners could include the garden designer, the owner, the person who paid for the work to be done, or the skilled gardener; they could be amateurs, professionals or hourly-paid workers. For some, including John Parkinson in his *Paradisi in Sole Paradisus Terrestris* (*Park-in-Sun's Terrestrial Paradise*) of 1629, status and gardens were inextricably linked. The design of a garden and its contents made a clear statement about the owner's standing in society and gardens were a measure of gentility. Such gentlemen could range from the nobility to the lesser or parish gentry. Yet not all gardens were magnificent or dramatic affairs. They could form an

[31] M. Laird, Greenhouse technologies and horticulture: the first Duchess of Beaufort's Badminton Florilegium (1703-5) and J.J. Dillenius's Hortus Elthamensis (1732), in M.G. Lee and K.I. Helphand (Eds), *Technology and the Garden*, Cambridge, MA, 2014, 55. This is especially so in experimenting with the best methods of growing pineapples in England during the eighteenth century. There was a mania for growing this plant in Britain and Tanner's Bark was used as a fuel because it fermented slowly and steadily produced a constant temperature for three or four months. See J. Lausen-Higgins, A taste for the exotic: pineapple cultivation in Britain, online edition 2010.
[32] See Laird,'Perpetual spring' or tempestuous fall, 158-164.
[33] Laird, Greenhouse technologies and horticulture: the First Duchess of Beaufort's Badminton Florilegium, 72.
[34] See Marsh, The gardens and gardeners of later Stuart London.

important part of a household's economy, be places of retreat to consider the beauty of nature, or be places of spiritual and physical refreshment.[35]

While containing many of the same plants and existing at the same time as these gardens, the 'Vegetable Substances' catalogue does not immediately and obviously connect the collection of the primarily plant material it describes with these early eighteenth-century gardens, gardeners and gardening practices. There is, as has been shown, only that one reference to Sloane's own garden. There are no references to dominant commercial nurserymen like Thomas Fairchild (1667-1729), based in Hoxton in East London. Likewise, we find no mention of the large nursery garden of Brompton Park in Kensington. Perhaps this is because the commercial nurseryman was not necessarily 'polite', and while some managed their own commercial businesses, and conversed in coffeehouses, they did not necessarily have the time or wealth to practice and document the scientific studies in which they were immersing themselves fully. As a result, these men did not have the social standing to regularly access the social and scientific circles that included the likes of Sloane and other natural philosophers. A nurseryman such as Fairchild was very much considered a tradesman rather than a gentleman.[36]

However, status cannot be the only explanation. There are also only single contributions from members of the landed gentry and nobility known to have had impressive garden spaces during this time. For example, only one catalogue entry implies that a plant grew at Hampton Court Palace. It reads, 'Large chili strawberrys wch. grew at Hampton Court in Sp.V'.[37] So what types of gardens and gardeners are represented in Sloane's 'Vegetable Substances' and what sort of relationships did Sloane have with them as contributors? The first one to consider is the garden most closely associated with Hans Sloane then and now: the Chelsea Physic Garden.

[35] Francis,'A ffitt place for any Gentleman', 26; 308; 27; 78.
[36] Coulton, Curiosity, commerce and conversation, 50; 78.
[37] VS 10,670. There is much plant material from Hampton Court in the Sloane Herbarium and Petiver wrote about the plants he saw when he toured London and the main gardens. It is surprising therefore, that little of this material is currently found in the 'Vegetable Substances' collection.

Chelsea Physic Garden

The Chelsea Physic Garden, a four-acre site beside the River Thames and originally founded as a physic garden in 1673 by the Society of Apothecaries, was a garden that Sloane had had a connection to from his earliest days in London. In fact, Sloane had studied there and, years later, in 1712, he would purchase the Manor of Chelsea on whose grounds the garden was located. This acquisition meant that Sloane took over the freehold of the garden, and he granted the Society of Apothecaries a lease on the land for a rent of £5 per year in perpetuity, on condition that it was kept as a physic garden.[38] Sloane also introduced the stipulation that every year, pressed specimens of fifty new plants that had been grown in the garden during the previous year had to be presented to the Royal Society. These conditions of the lease could be seen to have encouraged a sense of innovation and improvement in the garden's methods and practices. Sloane continued to display support for the garden in other ways. He commissioned the construction of several cabinets for its library in 1733, to house books and Samuel Dale's herbarium (which also contained Ray's herbarium). He donated many books to the library, as well as insisting that the main building was restored. Sloane's continued support and investment in the garden signals his consideration of it as an important space for natural history and for the future.[39]

A selection of plant samples connected to this garden can also be found in the 'Vegetable Substances' collection. From the catalogue entries we know that Sloane received a number of samples of the Cedar of Lebanon (*Cedrus libani)* from the garden which were described as 'A cone of the cedar of Lebanon grew in Chelsea garden' (VS 8,555) as well as a 'A branch of the cedar of Lebanon wt. 9 cones upon it larger than any I have seen from Turky. from the physick garden at Chelsea where it had been planted abt. 50 years by Mr. Wats' (VS 8,735).[40] 'Mr. Wats' is most likely a reference to John Watts (fl. 1670s-1701), a curator at the garden who had played a

[38] As part of this deed of covenant, which was established in 1722, it was required that fifty plant specimens had to be delivered every year to the Royal Society until two thousand pressed and mounted specimens (of different species) had been received. By 1795 the total had reached 3,700, see A brief history, the Chelsea Physic Garden, online edition, 2016.

[39] D. Kemp, The Chelsea Physic Garden library, unpublished paper given at Apothecaries Hall, Mar 26 2015.

[40] Featured in volume three of the catalogue, these entries can probably be dated to the 1720s or 1730s because of Sloane's reference to John Watts.

vital role in international seed exchange during the 1680s.[41] Indeed, after encouragement from Paul Hermann (1646-1695), the Professor of Botany at Leiden University, Watts visited Holland in 1683 where he obtained four plants of the Cedar of Lebanon. On his return to London he ensured that they were planted in the Chelsea Physic Garden.[42] Sloane appears to have been particularly interested in the cultivation of these cedars in London because he wrote to John Ray about it. In March 1685, he wrote that 'One thing I much wonder to see, that the *Cedrus montus libani*, the inhabitant of a very different climate, should thrive here so well as without pot or greenhouse to be able to propagate itself by layers this spring'.[43] Sloane, like many of his contemporaries, was obviously interested in the extent to which plants could grow, and grow successfully, in different conditions. This prompts the question of whether forming the 'Vegetable Substances' collection was part of this interest, whether actively or as an intellectual reminder.

These particular plants did indeed flourish in London, earning themselves the celebrated title of the 'Chelsea Cedars' and providing more samples for Sloane to seal into his collection. Some years later, Sloane wrote a description for VS 10,559 as 'A piece of the wood of the cedar of Lebanon blown down by the storme of the 8th. of [January]. 1734. in the physick garden at Chelsea given to me by Mr. Millar'. This time Sloane is describing a piece of wood provided by the Chelsea Physic Garden gardener Philip Miller (1691-1771).[44] Described as the 'most distinguished and influential British gardener of the eighteenth century', Miller was actually made gardener there by Sloane in 1722 and he played an important role in ensuring that new plants were continuously introduced and cultivated in the garden thanks to his extensive network of correspondents.[45] In fact, the 'Vegetable Substances' catalogue includes a number of other plant descriptions (14 in total) that were sent by Miller

[41] Watts dispatched James Harlow to Virginia to collect plants, see E.C. Nelson, Sir Arthur Rawdon (1662-1695) of Moira: his life and letters, family and friends, and his Jamaican plants, *Proceedings and reports of the Belfast Natural History and Philosophical Society* 10:2 (1983) 30-52; E.C. Nelson, Moira's Caribbean treasures, *Irish garden* (2009) 56-9.
[42] Hermann visited the CPG in 1682 and it was then that he encouraged Watts to visit Holland. For histories of the CPG see F.D. Drewitt, *The romance of the Apothecaries' Garden at Chelsea*, Cambridge, 1928 and 2010; Minter, *The Apothecaries' garden.*
[43] E. Lankester (Ed.), *Correspondence of John Ray* (1840) 161 referenced in S. Minter, *The Apothecaries garden.*
[44] It is likely that after this branch fell in 1734, it gave occasion for Miller to give Sloane this item.
[45] H. Le Rougetel, Miller, Philip (1691–1771), *ODNB*, online edition, 2004.

while he was at this garden.[46] These include 'Ginger which grew in Chelsea garden' (VS 8,811), 'A ripe head of the xylon herbaceum wt. finer cotton than ordinary & green seeds from Mr. Miller at Chelsea' (VS 10, 195), '[A piece of the] bird cherry' (VS 10, 563) and a 'Rattle weed root from Martinico. Mr. Philip Miller' (VS 12,509).

The 'Vegetable Substances' catalogue also includes references to items that came from the botanist Samuel Doody (1656-1706), who likewise maintained the garden for a number of years from 1692.[47] These entries appear as 'Makow described by Rochefort given by Mr Doody. The prickly palm' (VS 1271) and 'Flos passionus Virginianus. Mr. Doody' (VS 3249). However, while there were other gardeners and curators involved in the development of the Chelsea Physic Garden, Miller and Doody are the only explicit connections to the garden that we find in the 'Vegetable Substances' catalogue.[48]

These samples of plants that were grown in the Chelsea Physic Garden are small in number and their catalogue descriptions give little away about the skill required to cultivate them. It would not be obvious to a reader of the catalogue, therefore, or to visitors to the collection, that these were significant plants about which more was known.[49] How, then, would they access and interpret this information? It is most likely that Sloane did not intend the catalogue, and, indeed, the collection, to be

[46] It is probably a safe assumption that John Watts did not send the Cedar of Lebanon to Sloane either and that in fact, this was contributed by Philip Miller. The reference to Watts seems to be in particular connection with his role in the planting and cultivating of this plant. A 'Joseph Miller' was appointed Demonstrator at the Garden in 1740 succeeding Isaac Rand and of course, the entries in the catalogue could refer to Joseph rather than Philip Miller. This seems unlikely because Sloane often specifies 'Philip Miller'.

[47] B.D. Jackson, Doody, Samuel (1656–1706), rev. Ruth Stungo, *ODNB*, online edition, 2010. Doody was good friends with Petiver and Ray and Henry Compton, Bishop of London. Doody was also part of a circle of botanizing gardeners including who supplied him with plants from New England and he was involved with the garden until his death, see D. Chambers,'Storys of plants': the assembling of Mary Capel Somerset's botanical collections at Badminton, *Journal of the History of Collections* 9:1 (1997) 49-60.

[48] There appear to be no other references to Chelsea gardeners or curators before Miller's appointment in 1722 such as Charles Gardiner (1722). There is also no mention of Isaac Rand (1674-1743) who succeeded Petiver as Demonstrator at the garden between 1722 and 1739 and became Director of the Garden and Lecturer in Botany at the Society of Apothecaries' Physic Garden, Chelsea, in 1724, a post he held until 1743. See P. Hunting, Isaac Rand and the Apothecaries' Physic Garden at Chelsea, *Garden History* 30:1 (2002) 1-23.

[49] Minter, *The Apothecaries' garden*; F.D. Drewitt, *The romance of the Apothecaries' garden at Chelsea*; M. Campbell-Culver, *The origin of plants:the people and plants that have shaped Britain's garden history since the year 1000,* London, 2001.

a practical guide to cultivating plants. Instead, the inclusion of this material reflects Sloane's personal interactions with Philip Miller who was, after all, a Royal Society Fellow (elected in 1730), contributor of several papers to the *Philosophical Transaction*, and produced the widely known publication *The Gardeners Dictionary* (published in numerous editions from 1731 to 1768) which showcased his impressive horticultural expertise.[50] These samples also reflect Sloane's own connection with the Chelsea Physic Garden and what it represented. His influence on the development of this particular garden reveals Sloane's view of it as an important space for Natural History. It was, after all, a garden with fame and reputation, an important meeting place for scholarly gentleman and a valuable source of plants and information for the collections of Sloane and others during this period.[51] Viewing examples of 'Vegetable Substances' in the context of living plants in a 'physic' garden, as well as Sloane's broader interactions with the Chelsea Physic Garden itself, demonstrates that Sloane considered the raising of plants as a significant part of contemporary Natural History as well as its future development.

Yet this was not a relationship that was only formed through this garden. Other types of gardens and gardeners often played a role alongside the Chelsea Physic Garden. For example, Petiver – who had been a Chelsea Physic Garden demonstrator between 1709 and 1718 – gave numerous accounts to the Royal Society of plants growing in different gardens around Britain (and Europe). In his *Account of Divers Rare Plants Observed This Summer, A.D. 1713 in Several Curious Gardens about London* he mentions a number of plants, such as a grass (Gramen typhinum) that had been 'this Summer in Chelsea Garden raised from Seed'. What is especially noteworthy here is that in the same publication Petiver gives the same regard to other

[50] Miller gathered together a herbarium of plants from around the world later sold to Joseph Banks and now housed in the NHM, London. There is also a significant amount of material that did not come via Banks in H.S. 228-230, 244, 293-296. The material in the General Herbarium at NHM includes both that which was explicitly Miller's, as well as Royal Society specimens. See W.T. Stearn, Philip Miller and the plants from the Chelsea Physic Garden presented to the Royal Society of London, 1723-1796, *Transactions of the Botanical Society of Edinburgh* 41:3 (1972) 293-307; Jarvis, *Order out of chaos*, 222. He also produced a practical, cheaper, *Gardeners Kalendar* in fifteen editions (1731–69).

[51] Kemp, The Chelsea Physic Garden library.

gardens including that of the 'Dutchess of Beaufort at Chelsea' and 'Dr. Uvedale at Enfield'.[52]

Here we see the gardening skills and practices of Mary Somerset and Robert Uvedale considered alongside those deployed at the Chelsea Physic Garden, and Sloane also interacted with these people. At the end of the preface to Volume One of his *NHJ*, Sloane notes the importance of gathering plants in the West Indies and the sorts of people across Britain and Europe who were cultivating them in different types of gardens:

> The Plants themselves have been likewise brought over, planted, and throve very well at Moyra, in Ireland, by the Direction of Sir Arthur Rawdon; as also by the Order of the Right Reverend Dr. Henry Compton, Bishop of London, at Fulham; at Chelsea by Mr. Doudy; and Enfield by the Reverend Dr. Robert Uvedale; and in the Botanic Gardens of Amsterdam, Leyden, Leipsick, Upsal, &c. but especially at Badminton in Gloucester-Shire, where they are not only rais'd some few handfuls high, but come to Perfection, flower and produce their ripe Fruits, even to my Admiration; and that, by the Direction of her Grace the Duchess of Beaufort, who at her leisure Hours, from her more serious Affairs, has taken pleasure to command the raising of Plants in her Garden.[53]

Sloane was not only in dialogue with the Chelsea Physic Garden, but all these other types of 'gardener' and 'gardens', from the botanical gardens of Leiden and Uppsala to the horticultural gardens of aristocratic ladies. He regarded their skill and expertise in plant cultivation highly and some of these individuals, such as the horticultural expert Robert Uvedale, made significant contributions to the 'Vegetable Substances' collection (and to Sloane's herbarium), providing another opportunity to consider the contents and 'uses' of the 'Vegetable Substances' in relation to gardens and gardening.

Robert Uvedale

As Part Two illustrated, by the end of the seventeenth century Britain had been exploring lands previously unknown to it and expanding its commercial prospects on

[52] J. Petiver, Botanicum Hortense. III. Giving an Account of Divers Rare Plants, Observed This Summer, A.D. 1713, in Several Curious Gardens about London, and Particularly the Society of Apothecaries Physick Garden at Chelsea. by James Petiver, F.R.S, *Philosophical Transactions (1683-1775)* 28 (1712) 177-221.
[53] See preface in Sloane's, *A voyage to the islands*, London, 1707.

an international scale for some time. In fact, the arrival of plants into English gardens generally reflected this exploration of new places.[54] Fellows of the Royal Society like Mark Catesby had travelled to North America during the 1720s to explore its natural productions and successfully brought back all sorts of new plants.[55] Likewise, the physician Henry Barham in Jamaica, and the farmer and plant collector John Bartram in Philadelphia, had sent plant material to England.[56] What these men had in common was a desire to cultivate and propagate American plants in Britain, and they were encouraged by a number of significant people linked to the Royal Society, the Royal College of Physicians and the trading companies.[57] While these seeds and specimens supplied the increasing demand among gardeners for exotic plants, it was also part of 'satisfying the genteel appetite for the nascent discipline of natural history'.[58] Just as coffee houses and the meeting rooms of the Royal Society had provided the ideal space for both science and sociability, gardens were also disposed to this.[59] After all, gardens were important social locations for both private and public purposes.[60] Per Kalm, a disciple of Linnaeus visited London in 1748 en route to North America, and after visiting Chelsea Physic Gardener Philip Miller, he commented that Miller's publication of *Gardener's Dictionary* (1731) was the result of not just Miller's horticultural genius but a product of sociability. He said Miller was 'careful to inspect all ornamental and kitchen gardens, and to make himself at home and acquainted with all horticulturalists, for he was of the opinion that he could get to learn something useful which he did not know before'.[61]

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[54] See introduction in, Campbell-Culver, *The origin of plants*.
[55] See Meyers and Pritchard (Eds), *Empire's Nature*, chapter three.
[56] Barham sent many plants to Sloane as well as some 'American seeds' to CPG and Hampton Court to be cultivated, see Henry Barham to Hans Sloane, Chelsea London, 29 Apr (or Jul) 1718 (BL Sloane MS 4045), f. 110r-v; A. Wulf, *The brother gardeners: botany, empire and the birth of an obsession*, London, 2008.
[57] Catesby had been sponsored to travel to Carolina by a number of patrons including Sloane, see chapter three.
[58] Coulton, Curiosity, commerce and conversation, 30; A.G. Morton, *History of botanical science: an account of the development of botany from ancient times to the present day*, Ann Arbor, 1981. See chapter three for discussion about the significant contributions made by Barham, Catesby and Bartram to the 'Vegetable Substances'.
[59] Coulton, Curiosity, commerce and conversation, 31.
[60] For discussion on the ways in which gardens can add further and different meaning to social events see Cunningham, The culture of gardens, 53,
[61] P. Kalm, *Kalm's account of his visit to England on his way to America in 1748,* translated by J. Lucas, London, 1892, 109, quoted in Coulton, Curiosity, commerce and conversation, 164-165.

There were many individuals during this period whom we could consider 'polite' and who were involved in different ways in the cultivation of plants. This was seen in a variety of ways throughout Part Two, especially within the correspondence of Richard Richardson. In fact, the Royal Society urged its members to become authors on horticultural and agricultural matters, and fellows such as Evelyn and Petiver were central to an expanding interest in landscapes, topography and gardens.[62] These men appear to have been influential in improving gardening techniques, swapping and importing plants, conducting experiments, expanding classification systems, changing taste and promoting horticulture as both an art form and a science.[63]

Consequently, Sloane's correspondence is littered with references to him sending people samples of seeds. As early as 1691, the alchemist Thomas Henshaw (1618–1700) reminds Sloane that he had promised to send some 'Melon seeds, and some of the seeds of ye great Gourd of Jamaica', and now was the 'season of sowing'. Henshaw told Sloane his 'hot bed [was] ready' and that he 'need onely inclose them in a piece of paper and superscribe it for me at my house neare Kensington, the penny post will bring it as safe as if you delivered it wth yr own hand'.[64] Many of these exchanges involved Robert Uvedale.

Uvedale was never elected as a Fellow of the Royal Society, unlike other British correspondents of Sloane, but as Part Two highlighted he made a substantial botanical contribution to the 'Vegetable Substances' collection including at least 253 specimens and was a significant conduit for exotic natural material that came from the East. Considered to be a 'gentleman gardener', Uvedale had a wide circle of friends and acquaintances who shared similar interests in natural history and horticulture.[65] His correspondence with the physician Richardson shows that he regularly exchanged information, books and plants with Edward Lloyd, Isaac Rand, Jacob Bobart, James Petiver, John Ray, Leonard Plukenet, William Sherard, William Darby, William

[62] Marsh, The gardens and gardeners of later Stuart London, 42 referencing J. Thirsk, *The agrarian history of England and Wales, volume v 1640-1750*, Cambridge, 1985, 562-4.
[63] See Marsh, The gardens and gardeners of later Stuart London.
[64] Thomas Henshaw to Hans Sloane, Feb 22 70 (BL Sloane MS 4038), f. 138; J. Speake, Henshaw, Thomas (1618–1700), *ODNB*, online edition, 2008.
[65] Marsh, The gardens and gardeners of later Stuart London, 62.

Vernon and, of course, Hans Sloane.[66] Uvedale's gardening practices and botanical knowledge were considered with high regard by many different people, and both Petiver and Sloane made sure to loan him copies of the *Philosophical Transactions.*[67]

Born in London, Uvedale met important naturalists of this period, such as Leonard Plukenet and William Courten, during his education at Westminster School. He went on to Trinity College, Cambridge in 1659 where he most likely came to know John Ray, a fellow and tutor at the college who probably encouraged his interest in botany.[68] After graduating in 1663, Uvedale was appointed master at the Free School in Enfield in 1664, and from 1676 focused his attention on a nearby school that he had opened called the Palace School.[69] Uvedale, a teacher of great repute, taught sons of noblemen and gentlemen including two of Sloane's nephews.[70]

As we know from Uvedale's correspondence with Richardson and Sloane, school education was not his only connection with practitioners of natural history. His talent for cultivating plants and his garden were widely known at the time. For example, the Scottish botanist James Sutherland in Edinburgh remarked to Richardson in 1702 that he had 'hade the honour of the acquaintance of some of those learned and curious Gentlemen ye met with, as Dr. Uvedale at Enfield, who has given me frequent supplies of rare seeds and plants from his famous and well-stocked garden'.[71] Similarly, the Reverend Doctor Hamilton gave the following description of Uvedale and his garden to the Society of Antiquaries:

> Dr. Uvedale of Enfield is a great lover of plants, and having an extraordinary art in managing them, is become master of the greatest and choicest collection of exotic greens that is perhaps any where in this land. His greens take up six or seven houses or roomsteads. Ye orange trees and largest myrtles of a less size, and these more nice and curious plants, that need closer keeping are in warmer rooms, and some of than stoved when he thinks fit. His flowers are choice, his stock numerous, and his culture of them very methodical and

[66] See overview in Turner, *Extracts from the literary and scientific correspondence of Richard Richardson.*
[67] Robert Uvedale to Hans Sloane, Nov 8 1704 (BL Sloane MS 4039), f. 384.
[68] J.G.L. Burnby and A.E. Robinson,'And they blew exceeding fine': Robert Uvedale, 1642-1722, *Edmonton Hundreds Historical Society* 32 (1976) 3-4.
[69] Uvedale resigned from the Free school in 1676 after his involvement in a lawsuit in Chancery court over the quality of teaching and agreements to board children at the Free School.
[70] Uvedale had sent twenty-six pupils to Trinity College Cambridge by 1721.
[71] Sutherland to Richard Richardson, Edinburgh, Sep 19 1702, letter XXV, in: Turner, *Extracts from the literary and scientific correspondence of Richard Richardson*, 68-71; A. Guerrini, Sutherland, James (*c.*1638–1719), *ODNB*, online edition, 2004.

> curios; but, to speak of the garden in the whole, it does not lie fine to please the eye, his delight and care lying more in the ordering particular plants, than in the pleasing view and form of his garden.[72]

Uvedale was known, therefore, for the size and range of his plant collection, but also for what his garden technologies and skills promised for the development of natural history. He affected the plant world in other ways too. Petiver named a new genus, *Uvedalia*, after him. Miller then retained this in his *Gardeners Dictionary* and it lives on in the Linnaean binomial system as the species epithet in the name of a North American daisy, *Polymnia uvedalia*.[73]

Uvedale was very much entwined within the late seventeenth-century network of natural material exchange that was discussed in the previous chapter. As we have seen, this regular exchange of letters around Britain extended to Europe and further afield and often revolved around the business of botanical exchange, the pleasure and profits of gardens, methods of cultivating different plants, the improvement of garden stocks, as well as natural history more broadly. It was a correspondence sustained through expressions of friendship and affection. By the early decades of the eighteenth century the friendships formed between these men – Richardson, Petiver and Sloane for example – become clear through an increasing use of the designation 'your affectionate friend' to sign off their letters to each other and regular updates on personal news. They appear to have been men, like those Susan Scott Parrish describes, 'who understood their science to be generated from and preserving affective friendship, purified by apolitical pastoral associations and a "seraphic" love of nature and governed by an episteme of socially generous "candor".[74]

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[72] J. Gibson. XVI. A short account of several gardens near London, with remarks on some particulars wherein they excel, or are deficient, upon a view of them in December 1691. Communicated to the Society by the Reverend Dr. Hamilton, Vice President, from an original Manuscript in his possession, *Archaeologia* 12 (1796) 181-92. In 1796 the Society of Antiquaries was read 'an antient manuscript' by its President Rev. Dr James Hamilton. Written in 1691 and ascribed to J. Gibson it was a detailed account of these gardens he considered noteworthy in the London area and were mainly listed in groups according to owner's social rank including Hampton Court, Queen Dowager at Hammersmith, Chelsea Physic Garden, and Brompton Park.

[73] See Uvedale entry, in: Dandy, The Sloane Herbarium, 223-226 which references R. Pulteney, *Historical and biographical sketches of the progress of botany in England: from its origin to the introduction of the Linnµan system, volume two*, London, 1740, 30.

[74] See Scott Parrish, *American curiosity*, 136. As with Somerset, Sloane acted as Uvedale's physician and in the year 1711, he recommended that Uvedale bleed his blood. Uvedale wrote, 'I bled ye quantity you directed on Tuesday morn my blood

From the 1690s, Uvedale was acting as a significant conduit for domestic and exotic plant material. He received samples from correspondents in Britain, such as 'northern plants' from Richardson and seeds from much further afield, and he regularly moved this material onwards to his correspondents. This is seen particularly clearly when he writes to Richardson in 1699 that he had received a 'small parcel sent by Dr. Hotton' – that is, Peter Hotton, curator of the Leyden Botanic Garden – who had himself had 'them by chance from Denmarke, one of their ships last year touching att the Cape [of Good Hope]'. As well as this material 'from abroad of Affricans', Uvedale had been sent some seeds from William Sherard 'from Rome, but a small quantity of each, for the conveniency of postage: there are some very good plants among them' as well as 'A few I have received from the Oxford garden, and a pretty numerous parcel from a Scotch gentlemen'.[75] In 1701, William Sherard wrote to Petiver from Badminton explaining that both he and his brother had 'sent severall seeds this year to Dr. Uvedale where you may be furnish'd wth some thing new'.[76] Uvedale was evidently both receiving seeds to cultivate in his garden at Enfield from well-known naturalists of the period including Richardson, Petiver and the Sherard brothers, and acting as a conduit supplying seeds to others. In this vein, Uvedale's letters to Sloane reveal the nature of the exchange of natural history material between them. Uvedale, for example, received a variety of natural history items from Sloane including a copy of Sloane's *NHJ*, on which occasion Uvedale thanked him for such a 'generous present'.[77] For the purpose of this chapter, however, it is most significant that these letters show that Uvedale received seeds from Sloane.

In some instances, Uvedale directly appealed to Sloane, as a friend, for seeds. In 1698, for example, various problems had caused Uvedale to be without plants

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was very good & strong & had noe symptoms of a disease the past affected', in: Robert Uvedale to Hans Sloane, Enfield, Jul 7 1711 (BL MS 4042), f. 313.

[75] Robert Uvedale to Richard Richardson, February 13 1699, letter VIII, in: Turner, *Extracts from the literary and scientific correspondence of Richard Richardson*, 24-25

[76] William Sherard to James Petiver, Badminton, Apr 28 1701 (BL Sloane MS 4063), f. 83. He also thanks Petiver for seeds and writes 'I thanke you for your kind present of sending to Dr Nicole for seeds […] The enclosed alsoe I shall be beholding to you if you can send forward tho I hope my former was sent away in wch I writ more att large', in: Robert Uvedale to James Petiver, Oct 29 1700 (BL Sloane MS 4063), f. 50.

[77] Robert Uvedale to Hans Sloane, April 11 1707 (BL Sloane MS 4040), f. 345. Uvedale was one of forty learned men invited to translate part of Plutarch's *Lives* from the original Greek and he translated the *Life of Dion*, which was published in 1684. Uvedale's correspondence 'network' and reputation among naturalists does not appear to have been affected by not being elected FRS. See Burnby and Robinson,'And they blew exceeding fine'.

including one collector named as 'Dr Carr' dying in Lyon, France, while a ship from Carolina had been 'wrect on [the] Isle of Wight'. This meant that Uvedale required his 'Friends', and especially Sloane's, help in procuring seeds. He reminded Sloane that any intentions of getting seeds from other gardens, such as the 'King's Garden', 'must now be speedily performd the season coming on apace'.[78] In other instances it is clear that Sloane sent seeds to Uvedale on an ongoing basis, and for the entirety of their written communication. In 1708 Uvedale wrote to Sloane that 'Tho I have almost left of[f] all my correspondence, I content myselfe with the ordinary culture of my Garden. The seeds sent I will take all the care I can of'.[79] And in 1716 Uvedale informed Sloane that 'I shall take all the care I can to cultivate what you have sent me', and he told Sloane that when he next met William Sherard he would show 'him something of the product of your kindnesse'. That is, if he had had any 'tolerable sucesse [with] the seeds sent'.[80] In return, Uvedale sent Sloane plant material and 'entreated the favour' to 'Mr Vernon' (William Vernon) 'to convey to [Sloane] a few mock Plants, if [he] may call them so' with the intention of furnishing him 'with more variety' if Sloane deemed them 'acceptable'.[81] As chapter seven will discuss, Uvedale also conveyed an important collection of exotic *materia medica* to Sloane which ended up in the 'Vegetable Substances'.

By 1720, however, Uvedale's health had become a hindrance to his successful cultivation of plants. As he wrote to Richardson, 'You may believe my garden suffers as well as I. Tho' I have hands enough, yett not one that understand any thing of the matter; and I can seldome goe to give them directions and they are not often taken'. As a result he said he would turn his attention to his herbarium, and to taking 'a little pleasure in turning over my Hortus Siccus'.[82] After Uvedale's death in 1722, people still thought about him in relation to the value of his plant collection and his garden. William Sherard wrote to Richardson that he would visit 'Mrs. Uvedale, in order to think of disposing of the [plants]. Mr Wasbourn has planted the tulips which will be

[78] Robert Uvedale to Hans Sloane, Enfield, Jan 11 1698 (BL Sloane MS 4037), f. 181.
[79] Robert Uvedale to Hans Sloane, Mar 19 1708 (BL Sloane MS 4041), f. 120.
[80] Robert Uvedale to Hans Sloane, Enfield, Aug 20 1716 (BL Sloane MS 4044), f. 207.
[81] Robert Uvedale to Hans Sloane, Jan 13 (BL Sloane MS 4061), f. 221.
[82] Uvedale to Richardson, Enfield, Feb 23 1721-2, letter LXX, in: Turner, *Extracts from the literary and scientific correspondence of Richard Richardson,* 177.

sold in block; and, I believe the best way with the stove plants will be to sell them in pairs, or so many in a lott together'.[83]

Today, Uvedale's herbarium forms part of the Sloane Herbarium housed in the NHM in London, and it was probably acquired by Sloane after the death of Uvedale's widow in 1740.[84] It is likely that some of the plant specimens found within these volumes would have passed through Sloane's hands twice: once when he received seeds and sent them to Uvedale to cultivate; and again when he absorbed these herbarium specimens into his own collection. This way, Sloane was able to gather this plant material in its different states. When the context of the significant amount of material found in the 'Vegetable Substances' collection that was contributed by Uvedale is examined, it shows that not only was Uvedale an important node in the exchange of plant material, but also that he received many seed samples from Sloane. These interactions and movements of material reveal that, once again, Sloane acted as a facilitator in the cultivation of plants. Evidently, in the years prior to financially supporting the Chelsea Physic Garden, Sloane was, through his relationships with men like Uvedale, actively and directly participating in the movement of seeds so that they could be grown in different gardens around London.

Uvedale's garden in Enfield was indeed a well-known space in botanic circles and regularly appeared in the pages of the *Philosophical Transactions*. It was a social space as a well as a scientific one, and it formed a role in his connections with English gentleman who corresponded regularly and exchanged botanical and scholarly materials. Uvedale contributed a significant amount of exotic natural material to Sloane's botanic collection and corresponded regularly with him. These letters highlight that they exchanged natural history and that Sloane played a central role in sending seeds specifically for cultivation in Uvedale's garden. There is, however, no direct evidence that these seeds were being systematically supplied from or to the 'Vegetable Substances' collection. While Sloane may have been sending seeds to Uvedale (and others) to grow, this was not, it seems, the purpose of this collection, and information about plant cultivation was neither systematically nor regularly relayed or recorded in the 'Vegetable Substances' catalogue, or even associated with the samples in the boxes.

[83] William Sherard to Richardson, London, Oct 13 1722, letter LXXIV, in: Turner, *Extracts from the literary and scientific correspondence of Richard Richardson*, 186.
[84] See H.S. 302-315: Dandy, *The Sloane Herbarium*, 224.

Uvedale wrote to Sloane in 1698 that 'I remember ye last time I had ye happinese to see you, you had some thoughts of sending, for a collection of seeds of herbaceous plants from the King's Gardens, to Monsr Tournfort'.[85] Once again, Sloane appears to be in dialogue with different sorts of gardens and gardeners. Where Sloane interacted with these different people and spaces a direct connection between his botanic collections and a range of gardens may have been possible, and even present, and might have enabled knowledge of cultivated plants to be relayed into the collection of closed boxes in some form. Where something like this can be found is in Sloane's relationship with Mary Somerset, a woman who was well-known for her impressive gardens, interacted with Sloane in different ways, and had notable wealth and social standing. As we will see in the next section she contributed numerous specimens to the 'Vegetable Substances' and, importantly, cultivated some of these plants in her gardens.

Mary Somerset

Mary Capel Somerset, duchess of Beaufort (1630-1715), was the eldest daughter of Arthur Capel, first Baron Capel of Hadham (1604-1649) who had died for his royalist sympathies. She married Henry Somerset (1629-1700) in 1657 after her first husband, Henry Seymour, Lord Beauchamp (1626-1654) had died under similar circumstances to her father.[86] Henry Somerset was made the duke of Beaufort in 1682, and in 1684 they inherited the Badminton Estate from his cousin.[87] At this estate, as well as at Beaufort House in Chelsea (a subsequent purchase), Somerset made impressive investments in the gardens. A woman of wealth and position amongst the aristocracy, she was considered highly for her horticultural expertise, and seen as 'a Patroness, who dayly makes appeare the transcendent wealth of the Vegetable Kingdome'.[88] In 1695, for example, Jacob Bobart (1641-1719), who had been in charge of the Physic Garden at Oxford, praised the duchess for the 'success and prosperitie of [her]

[85] Robert Uvedale to Hans Sloane, Enfield, Jan 11 1698 (BL Sloane MS 4037), f. 181.
[86] P.E. Kell, Somerset, Mary, duchess of Beaufort (*bap.*1630, *d.*1715), *ODNB*, online edition, 2004.
[87] Previous studies of Somerset have explored the Beauforts' position in the emergence of a powerful ruling class in the eighteenth century and their fascination with reason and scientific method, see M. McClain, *Beaufort: the Duke and his Duchess 1657-1715*, London, 2001, xvi.
[88] Jacob Bobart to Mary Somerset, Oxon, Mar 28 1694 (BL Sloane MS 3343), f. 37.

glorious Gardens'.[89] These were spaces in which she could expend both money and time to create well-known plant collections, and through which she could develop relationships with men such as Hans Sloane.[90]

Today, some of the letters sent between Sloane and Somerset are held at the Badminton estate and at the British Library, and the NHM houses twelve beautiful herbarium volumes that were created by Somerset and either given to Sloane (Dandy notes two volumes in that category) or bequeathed to him when she died in 1715.[91] Sloane incorporated them all into his own collection, much as he did with those of other collectors.[92] In addition, the 'Vegetable Substances' catalogue lists at least 394 botanical items from Somerset, making her the most significant female contributor to this collection.

Previous studies of Somerset have explored her practices of plant collecting and cultivating and have illustrated the wide geographical reach of the plants in her garden and herbarium, as well as the ways in which her work with plants seemed to blur the lines between gardening, horticulture and botany. [93] The surviving correspondence and careful record-keeping used in these explorations of her work with plants can also give insight into her contribution to the 'Vegetable Substances' and her interactions with Sloane. Together they highlight her involvement with various contacts, the investments she made in horticultural activities, and her role in the movement and exchange of botanical knowledge including via Sloane's collection.

Though, as a woman, she could not be elected to the fellowship of the Royal Society, this did not hinder Somerset's strong connections to leading natural historians, philosophers, botanists, horticulturalists and Royal Society Fellows during the late seventeenth and early eighteenth centuries. Hers were both domestic and global interactions, the notes and letters from her that survive within Sloane's manuscripts show her regular engagement in the exchange of ideas and plants with

[89] Jacob Bobart to Mary Somerset, Oxon, May 20 1695 (BL Sloane MS 3343), f.146.
[90] See Scott Parrish, *American curiosity*.
[91] Dandy, *The Sloane Herbarium*, 209.
[92] See J. Delbourgo for this argument about collecting collectors, Collecting Hans Sloane, in A. Walker et al (Eds), *From Books to Bezoars*, 9-23.
[93] See for example, McClain, *Beaufort: The Duke and His Duchess*, 215; D. Chambers,'Storys of plants', 49-60; J. Munroe,'My innocent diversion of gardening': Mary Somerset's plants, *Renaissance Studies* 25:1 (2011) 111-123; M. Laird's second chapter, Nursing pretty monsters–the Duchess of Beaufort's Florilegium and herbarium and the art of Kickius, in: M. Laird, *A natural history of gardening 1650-1800*, London, 2015, 62-123.

Sloane, Petiver, Sherard, Southwell, Doody and Bobart.[94] In 1694, for example, Bobart informed Somerset that 'I send now a packet of such seeds as to me seem hopefull, partly East Indians, partly West Indians, and perhaps some out of our Garden'.[95] The nurseryman George London (1640–1714), who had been William III's gardener at Hampton court and was involved with the large Brompton nursery, had also supplied Somerset with exotic plant specimens. These had been sourced in New England and Virginia as well as in the West Indies.[96]

The contributions made by Somerset to the 'Vegetable Substances' collection paint a similar picture of her role in the movement of plant material. For example, Richard Bradley (1688-1732) sent Somerset material from the Cape of Good Hope while he was in Holland. Listed in Sloane's catalogue are 57 entries that have been described as 'From Her Grace the Dutchesse of Beaufort who had it of Mr. Bradley to whom they were brought from the cape of good hope' (VS 6,932).[97] Descriptions include 'L'arbre d'or' (VS 6,889) and 'A beautiful vine. A trumpet flower?' (VS 6,945), and they are dated 1714 which would correlate these samples with Bradley's travels to the Low Countries in May of that year.[98]

Bradley was, of course, only one of many individuals sending Somerset exotic plant material. The 'Vegetable Substances' catalogue indicates that she received a 'mallow from Gresham College' (VS 6946); 'A woolly plant […] Silk Cotton', which had been sent by 'Mr. Doily' (VS 7,605); and at least fifteen 'Vegetables' from Petiver, including samples of 'Guajacum', 'Sinapistrum' and 'Grasse' (VS 6,956; 6,957; 6,952).[99] There are also a number of references to the role of merchants. For

[94] McClain, *Beaufort: The Duke and his Duchess*, 215; Somerset lists 'Roots and Plants sent by Mr Doody April 1691', the botanist and Fellow of the Royal Society mentioned previously in connection with CPG who had been a London neighbour to Somerset (obviously supplying her with an important source of seeds), see BL Sloane MS 3343, f. 10.
[95] Jacob Bobart to Mary Somerset, Oxon, Mar 28 1694 (BL Sloane MS 3343), f. 37.
[96] Chambers,'Storys of plants', 52.
[97] Coulton discussed this in: Curiosity, commerce and conversation: nursery gardens in eighteenth century London, unpublished paper given at the Garden History Seminar, IHR London, Oct 2 2014; and in Coulton, Curiosity, commerce and conversation, unpublished PhD thesis.
[98] F.N. Egerton, Bradley, Richard (1688?–1732), *ODNB*, online edition, 2005. It is possible however, that this is a coincidence because much of the Somerset material is dated 1714, the year of her death.
[99] These entries have also been dated 1713 and 1714 but it is difficult to determine whether this is the date that Somerset received these plants or the date that Sloane received them from Somerset. Gresham College was founded in the sixteenth century

example, one item has been catalogued by Sloane as being 'From the Spainish merchants Sept. 1714. From Her Grace the Dutchesse of Beaufort' (VS 6,806), while another appears as an 'Indian cane sent by a merchant in Genoa. 1714' (VS 6,821). The 'Vegetable Substances' catalogue also demonstrates that Somerset sent Sloane 'Seeds taken out of a ship from the East Indies' (VS 7,056), 'Sugar beans' (VS 7,591) and 'Sea side beans from Carolina' (VS 6,811), as well as 'Ustee Couree. From Fort St. George. 1714' (VS 6,836).

The contents of the 'Vegetable Substances', therefore, provides evidence of the way in which a variety of contacts allowed Somerset to increase and improve the scope of her gardens, and also to add to Sloane's collection. Like Sloane and many others during this period, she was interested in plant material from around the world and her contributions reveal a link between the gardens she kept at Badminton and Chelsea and Sloane's botanical collection, as well as a shared practice of collecting plants of different sorts. Broadly, their mutual collecting endeavours saw them engaging with particular botanical items in different ways. As will become clear, certain plants found in both collections show an unexpected movement of natural knowledge between Somerset and Sloane.

Like Sloane's support of the Chelsea Physic Garden and his contributions of seeds to Uvedale's garden in Enfield, 'Vegetable Substances' sent from Somerset illustrate that Sloane was involved in botanical collecting enterprises that went beyond simply sealing plant material into boxes.[100] They further support the notion that Sloane engaged with botanical material received through his global networks in other ways. It seems certain that upon receiving seeds Sloane would keep some in his collection and send the rest on to other people with well-known gardens. He appears to have considered both Uvedale and Somerset as expert cultivators, and he sent seeds to them with this in mind, perhaps hoping that they would make considerable effort to grow them into plants.

Sloane certainly thought extremely highly of Somerset's horticultural abilities. He professed to this in the preface to his *NHJ* in 1707, and the extent of her contributions to his botanical collection as well as the development of their close

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to give free public lectures in the City of London. It saw the early formation and development of the Royal Society, see R. Chartres and D. Vermont, *A brief history of Gresham College 1597-1997*, London, 1998.

[100] Following Caygill's research on the location codes found in Sloane's various manuscript catalogues see Caygill, Sloane's catalogues and the arrangement of his collection.

relationship also attest to his view of her botanical knowledge and expertise.[101] In fact, the context of Somerset's contributions to the 'Vegetable Substances' is, again, one of a close friendship. It is clear from the numerous letters written by Somerset to Sloane that they grew to be great friends, and that this, in part, sustained the correspondence between them. Somerset regularly signed her letters to Sloane as 'Yr affect friend', and no doubt they would have often seen each other when they were both residing in London, Sloane in Bloomsbury Place and Somerset in Chelsea. Indeed, in one undated letter to Sloane, Somerset was very insistent that she see him and wrote 'If bussines does not earnestly require yr being in towne all day, I should go my journie much more quietly, if I could speake [with] you once more before I go, wee shall be at home al day'.[102]

Their communications, in writing, illustrate that natural history was embedded in their social relationship, allowing botanical exchange to be facilitated by the trust, reciprocity and gifting that was often part of such associations. Sloane advised Somerset on personal and family matters and acted as her and her family's physician. A letter from Somerset to Sloane, sent in the late 1690s, demonstrates the extent of the confidence she invested in his guidance. She wrote, 'Tho I have this day taken phisick, I have something to aske yr assistance in, that I am not willing to employ any body else to do'.[103] She goes on to request that Sloane help her in obtaining the services of William Sherard to 'bee wth him [her grandson] as a companion'.[104] Indeed, this appeal was successful because only three months later she wrote to Sloane saying 'I thanke you for the assistance you gave mee in procuring Dr Sherwards being with my Grandsonne. I am very much satisfied wth him, & that which is much better, the young Lord is so too'.[105]

Many of Somerset's letters to Sloane involve her and her family's health. She would often begin her letters with such details. From Badminton she wrote that

[101] Sloane wrote,'but especially at Badminton in Gloucester-Shire, where they are not only rais'd some few handfuls high, but come to Perfection, flower and produce their ripe Fruits, even to my Admiration; and that, by the Direction of her Grace the Duchess of Beaufort, who at her leisure Hours, from her more serious Affairs, has taken pleasure to command the raising of Plants in her Garden'.
[102] Mary Somerset to Hans Sloane, Chelsea, undated (BL Sloane MS 4061), f. 7.
[103] Mary Somerset to Hans Sloane, April 29, Badminton (BL Sloane MS 4061), f. 5.
[104] Mary Somerset to Hans Sloane, June 19 (BL Sloane MS 4061), f. 13-14.
[105] Mary Somerset to Hans Sloane, August 31 (BL Sloane MS 4061), f. 11. See discussion on Sloane's guidance to people regarding medical matters and more in, L. Wynne Smith, Sloane as a friend and physician of the family, in: A. Walker et al (Eds), *From Books to Bezoars*, 48-56.

‘Before any thing else I must give you an account of my Lord’s health, not only because my thoughts are scarce upon anything else, but you being allwaies so kind as to make that yr constant inquire, & are best able to assist us to the procuring it’.[106] Somerset trusted Sloane as her physician very much. She even told him in writing, ‘but not att all to flatter you I must tell you the same I do to every body else, that I have so much confidence in yr care of [my daughter], (besides yr skill) that I thinke her as safe as if I were there myselfe to take care of her’.[107] In fact, this example of Somerset shows more explicity how the various interactions and relationships Sloane had with his medical patrons and the medical advice and treatment these comprised, were important more broadly for the formation of Sloane’s botanical collection, and specifically, its material composition.

Intermixed with these discussions about health and family are references to gardening, scholarly works, as well as to the collecting, cataloguing, painting and raising of plants. Writing in the 1690s, Somerset described a small box with some fruits that had ripened in the warm places at Badminton which she had intended to send Sloane.[108] She also informed him that she had sent ‘a small parcel of Badminton plants (all except a very few) of my owne raising, I am sorry I did not make the booke bigger, having neer as many more as well dry’d, some flowers’.[109] Somerset regularly discussed her success or lack of success in growing plants from seeds and wrote from Badminton about the thriving ‘silke cotton’ and a ‘Gourd’, along with the plants she raised from the ‘Shaddock’ thanks to the hot summers that ‘brings [her] plants to such a height’.[110] Somerset and Sloane also discussed the exchange of scholarly and scientific works and Somerset sent Sloane ‘many thanks’ for ‘the trouble of getting mee a booke bound for my Parchments’ which she would go on to use to catalogue the plants she had raised.[111]

Sloane did not only send Somerset books. He also sent her plant specimens, and one of the first instances where we see this is from an entry in the catalogue numbered 7,615 which is described in Sloane’s hand as ‘Little berries. From Dr. Sloane July 16. 1714’.[112] Figure 15 shows this catalogue page and it is important to

[106] Mary Somerset to Hans Sloane, May, Badminton (BL Sloane MS 4078), f. 385.
[107] Mary Somerset to Hans Sloane, July 10, Badminton (BL Sloane MS 4061), f. 25.
[108] Mary Somerset to Hans Sloane, Dec 13 (BL MS 4061), f. 21.
[109] Mary Somerset to Hans Sloane, Dec 17, Badminton (BL MS 4061), f. 19.
[110] Mary Somerset to Hans Sloane, Jul 10, Badminton (BL MS 4061), f. 25.
[111] Mary Somerset to Hans Sloane, Sep 23 (BL MS 4061), f. 17.
[112] VS 7,615.

note the surrounding entries and their styles of description. Although written by Sloane, this entry looks to have been copied directly from the information supplied with the sample. This was likely to have been given by Somerset, or one of her assistants. The mention of his own name is unlike the previous entry (VS 7,614), at the top of the page, which describes the item as coming 'From Her Grace the Dutchess of Beaufort'. These 'Little berries', therefore, were most likely given to Somerset by Sloane, who then perhaps cultivated them in her garden, and returned a sample back to Sloane.

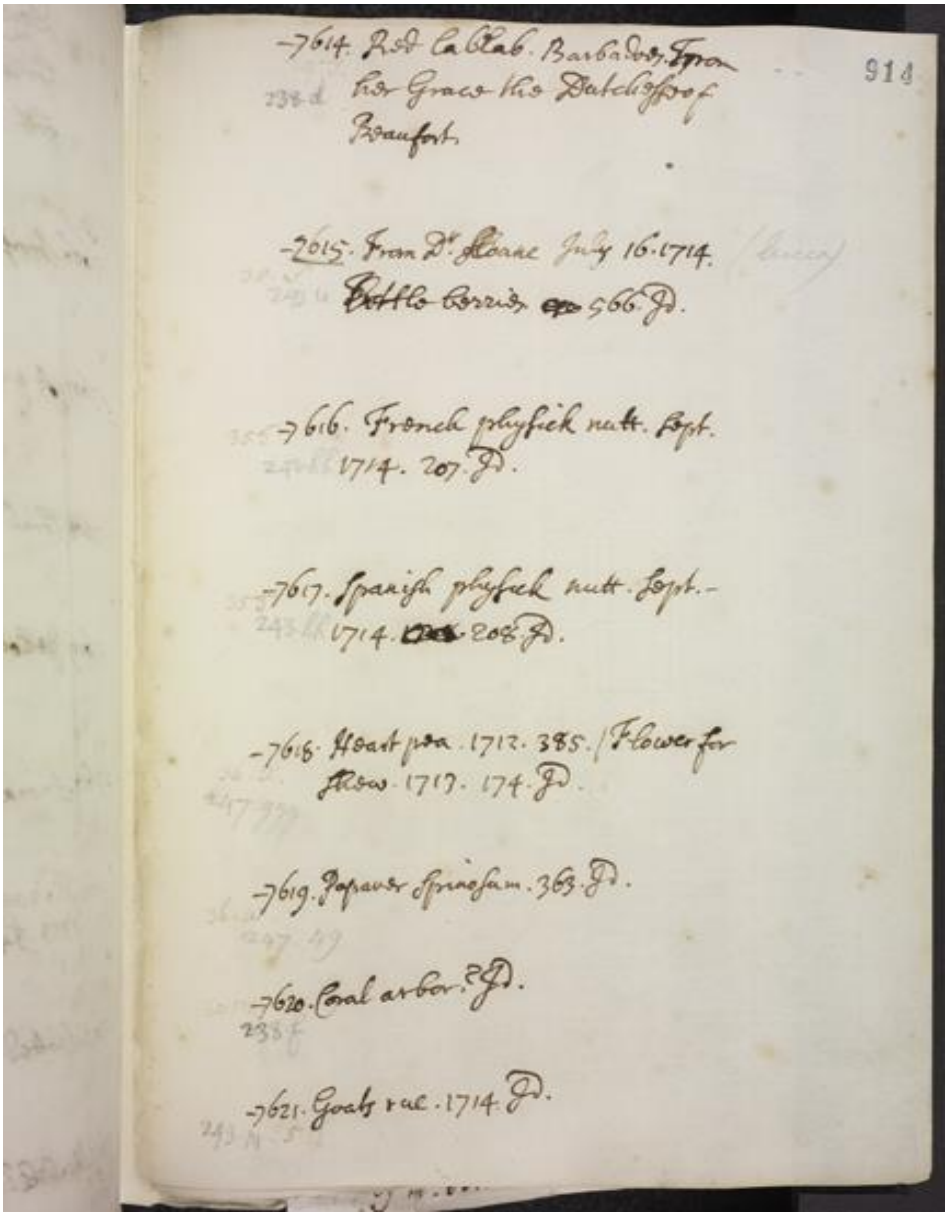

Figure 15: A page from Sloane's 'Vegetable Substances' catalogue, volume three and numbered as 914. It contains the entry for number 7,615 which appears as 'From Dr. Sloane July 16. 1714. Bottle-berries 566. Id.' © Trustees of the Natural History Museum, London.

Sloane also sent more substantial numbers of seeds to Somerset, and thereby not only sealed samples into his 'Vegetable Substances' boxes but also ensured that these plants were cultivated in a garden. This is seen through a group of 45 items that have been listed in the catalogue by Sloane. He accessioned them together and described them as:

> seeds which were brought from China entitled Graines des diverses leagumes from No. 1. to 10 by Mr Douglasse who gave them to Mr. Annesley from whom I had them.[113]

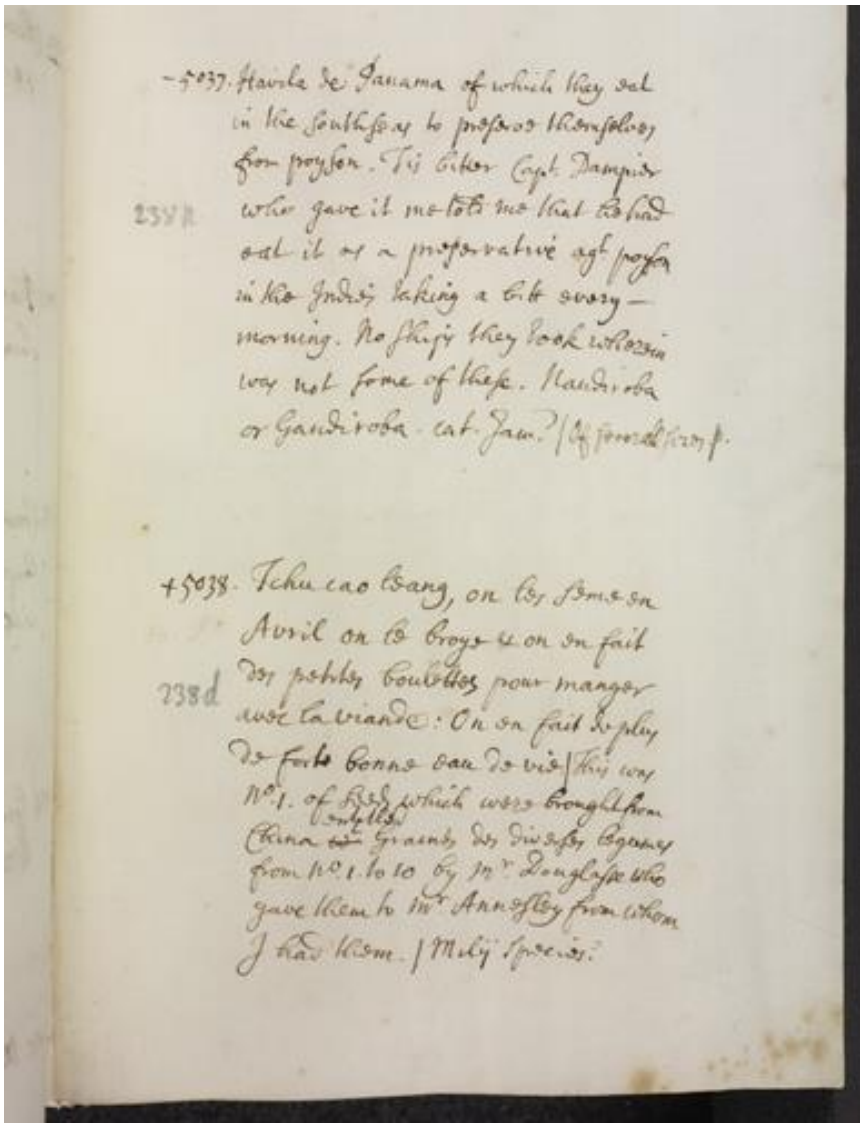

Figure 16: An image of a page from volume two of Sloane's 'Vegetable Substances' catalogue numbered as 576. © Trustees of the Natural History Museum, London.

[113] Catalogue entry for VS 5,038.

In the catalogue (see figure 16) these specimens have been listed with their names in what looks to be Chinese phonetics followed by a description of their use in French. The following example describes mustard seeds that were good for soup, and especially for salting, and were sown at the autumn equinox:

> Kiai tsai tse, Graine de Moutarde Elles sont bonnes pour le potage & principalement pour etre salees on les seme a l'equinoxe de l'automne on les sale comme le sue li vong mais en y meslant plus de sel voyez la maniere de la faire sur le sue li vong voyez no. 4. | This was no. 2 of the same seeds. | This was Sinap. species. Brown or yellow. (VS 5,039)

These samples can be directly connected to plant specimens found across three volumes of Somerset's hortus siccus (Sloane H.S.131, 133 and 134) in the NHM. Attached to twenty-three different plant specimens in these volumes are references to the names and catalogue numbers of these 'Vegetable Substances'. This direct relationship between Somerset's herbarium and the contents of the 'Vegetable Substances' demonstrates something of the networks through which these botanical objects moved in order to form different sorts of plant collections. As we have seen these particular seeds are described in the 'Vegetable Substances' catalogue as having been given to 'Mr Douglasse who gave them to Mr. Annesley from whom I had them' (VS 5,038), and we know from chapter four that these were individuals involved in natural history exchange in the East. So, upon receiving these samples from the East, Sloane appears to have boxed a portion of them as well as sending some to Somerset who went on to successfully cultivate them as well as preserve dried specimens of these plants.

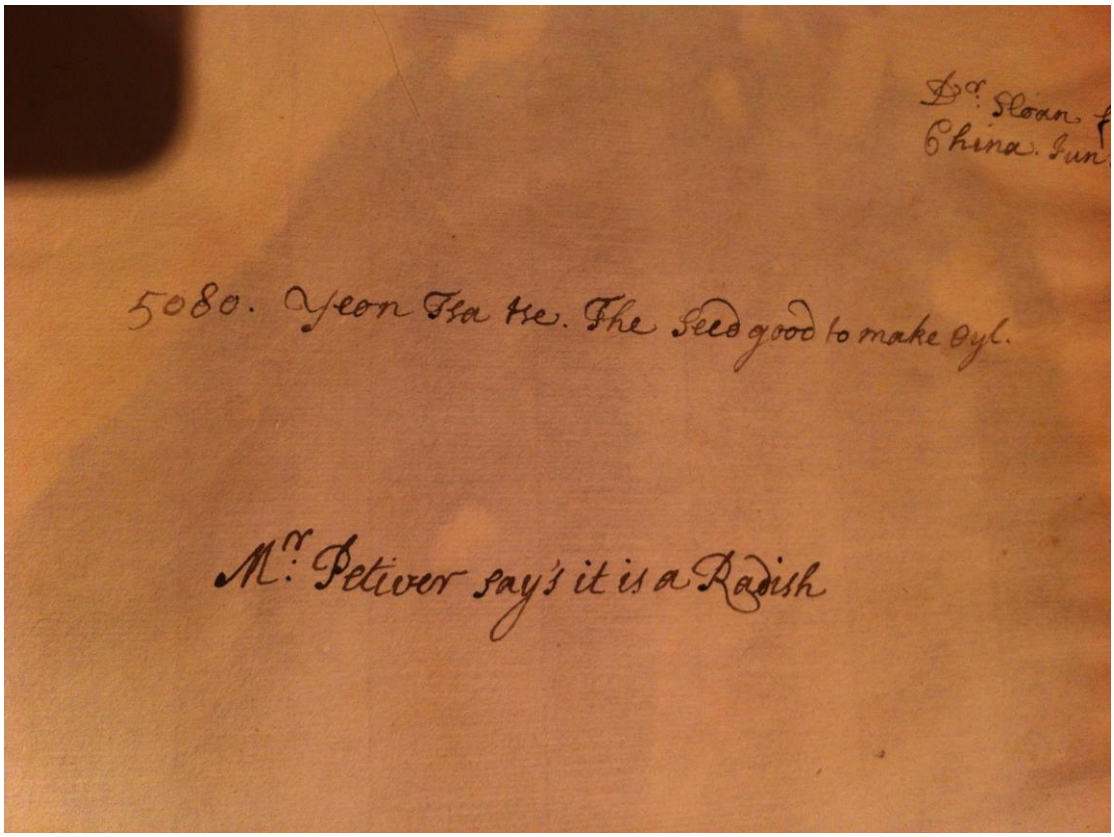

Figure 17: A specimen found in a volume of Mary Somerset's herbarium (now within the Sloane Herbarium, Natural History Museum) and labelled with the VS number 5,080 (H.S. 134. f. 30, NHM). It contains the annotation '1713. Dr Sloan: from China Jun. 9th. 5080. Yeon Tsa tse. The seed good to make Oyl. Mr: Petiver say's it is a Radish'. Photography by Victoria Pickering, © Trustees of the Natural History Museum, London.

Somerset's herbarium specimens of these plants (see figure 17) include descriptions that are similar to the entries in the 'Vegetable Substances' catalogue, including the Chinese pinyin names. However, they also contain additional information abstracted from the French descriptions. Examples, written in the hand of Somerset or an assistant, from the herbarium include:

1714
Dr Sloane from China ye 9th 1713
Kiai tsai tse
5039. Mustard. They are good in Potage and for salting. They salt them like the suelivong, but use more salt about them.
To be sown at the Autumn Aquinox.[114]

Dr Sloane from China June: ye 9th 1713
Petsai
5047: Eats like Cabbage when boil'd but much more tender.
To be sown at the Autumn Aquinox.[115]

1714
Dr Sloane from China June ye 9th
5055. Tchi ma. It maketh very good oyl wch: they call Mayeou. They also put some of it upon little cakes, and it gives them a grateful Taste. They sow them in May.[116]

Whether 'June: ye 9th 1713' in the above example was the date on which Sloane received these plants or the one on which Somerset did, it is likely that this package of plants arrived in England during the early summer of 1713. A number of these labels also include the phrase 'Chelsea 1714' which suggests that Somerset grew these plants at her Beaufort House garden in Chelsea which bordered the Chelsea Physic Garden, rather than at Badminton in Gloucestershire. At this time, Sloane was still living in Bloomsbury Place and would not retire to Chelsea Manor House (moving his collections there as well) until the early 1740s.[117] Rather than a note to Sloane's new home, 'Chelsea 1714' is more likely to reflect Somerset's cultivation, in one growing season, of these plants in her garden at Chelsea.[118]

Other individuals were also involved in these exchanges and horticultural experiments. While Petiver's name does not appear alongside these entries in the 'Vegetable Substances' catalogue, he is mentioned in the labelling of the herbarium specimens as offering an opinion on the plant's taxonomic identity. For example:

[114] Somerset herbarium: H.S.131. f. 17. NHM.
[115] Somerset herbarium: H.S.131. f. 17. NHM.
[116] Somerset herbarium: H.S.131. f. 16. NHM.
[117] Discussion on the properties in Bloomsbury Place that Sloane leased during this time in Caygill, Sloane's Catalogues and the arrangement of his collections, 276-277.
[118] Sloane would then have absorbed Somerset's hortus siccus into his own collection after her death on Jan 7, 1715 at Beaufort House in Chelsea. She was buried in St Michael and All Angels' Church. See Kell, Somerset, Mary, duchess of Beaufort (*bap.* 1630, *d.* 1715), *ODNB.*

> 1714.
> Dr Sloane from China ye 9th 1713
> Seedling
> 5080. Yeon tsa tse. The seed good to make oyl.
> Mr Petiver says it is a Radish. they are sown after the autumnal aquinox.
> The leaves when young and tender are good to boyl. The flowers are yellow and produce a great deal of Grain wch they grind and of wch they make oyl.[119]

Sloane, however, does not annotate his 'Vegetable Substances' catalogue entries with this information from Petiver and instead appears to construct the entries directly from the descriptions accompanying the samples from Douglasse and Annesley. He also does not amend the catalogue entries with further detail about sending them to Somerset or her successful cultivation of these plants.

In the herbarium descriptions of these plants there is also additional detail about their use, appearance and important cultivation information. For example, for VS 5080, 'Yeon tsa tse', we learn that the plant was used for making oil. Another item is described as 'Petsai. 5047: Eats like Cabbage when boil'd but much more tender. To be sown at the Autumn Aquinox'.[120] It would seem as though some of this material was gathered for its culinary value and these examples of cabbages point to histories of cabbage domestication in China. Cultivating these sorts of plants in gardens in Britain would have been a way of understanding and familiarising oneself with such novel natural productions.[121]

These Chinese plants found in both Somerset's herbarium and Sloane's 'Vegetable Substances' show that Sloane actively encouraged others to cultivate the seeds he received. They are a clear example of the complex relationships and forms of connection that allowed the 'Vegetable Substances' to be formed, as well as the local movement of plants within London and how Sloane placed himself within this as a conduit for botanical material. Comparing the two distinct parts of Sloane's botanical collection – his herbarium and the 'Vegetable Substances' – in this way has highlighted that specific exotic plants were 'collected' in different ways. They were both boxed and preserved and grown in garden spaces. In turn, this also shows unexpected interactions between plants and people on both global and local scales.[122]

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[119] Somerset herbarium: H.S.131. f. 18. NHM.
[120] Somerset herbarium: H.S.131. f. 17. NHM.
[121] F.J. Simoons, *Food in China: A Cultural and Historical Inquiry*, London, 1991, 133-136.
[122] Another example of the relationship that exists between the herbarium and the 'Vegetable Substances' is that of the scarlet dye derived from the seeds of *Gardenia*

Somerset's gardening practices, her expertise in cultivating all sorts of plants and her wider connections with the Royal Society and people around the world are well-known. Her contributions to the 'Vegetable Substances' also demonstrate the considerable results that she achieved with her plants as well as the high esteem in which people like Sloane held her. However, her contributions, as well as her correspondence with Sloane, also reveal something of Sloane's own engagement with the botanical material he received. He was not only sealing this material into boxes but also actively sending specific material to Somerset to cultivate. Indeed, it is likely that Sloane sent Somerset many more of the seeds he received than those that are recorded. Living not too far from each other in London, they no doubt had numerous meetings, conversations and exchanges that involved plant material and botanical discussions that are not documented anywhere. Viewing this group of 'Vegetable Substances' in the botanical context of a well-known and aristocratic garden, and understanding how this movement of natural material was facilitated, suggests that the creation of natural history in this form was not just the result of Sloane's ability to correspond with numerous correspondents on local or global levels. It was also bound up with particular sorts of social relationships that went beyond expected or linear exchanges of botanical objects.

Conclusion

The fashion and taste for foreign and exotic seeds extended to all sorts of gardens and gardeners across Britain and Europe in the seventeenth and eighteenth centuries. For example, the boxes of seeds that were sent from John Bartram in North America via Peter Collinson to gardeners across Europe were planted in various gardens and, where possible, encouraged to grow using an increasingly sophisticated range of gardening technologies. Having brought such plants to fruition, some people would then painstakingly create beautiful dried and pressed specimens of this natural material, labelling them and organizing them into a collection. Although Sloane had done similar botanical work in Jamaica, and would also build a significant herbarium collection himself by the time he died, the majority of it was put together by other

collected by James Cuninghame in China (Amoy). Cuninghame sent the raw materials to Sloane and four of the primary ingredients can be found numbered 1,965-1,968 in the catalogue. See Jarvis and Oswald, The collecting activities of James Cunninghame.

collectors and naturalists and then bought by Sloane. As we know, Sloane was preserving plant material in a different and unique way. Rather than cultivating plants or making herbaria himself, Sloane continued add to his herbarium (material acquired by others) and sealed the seeds and other material he received into the small glass and wood boxes of the 'Vegetable Substances' collection. This does not, however, mean that Sloane was creating a type of 'seed bank' that would be systematically used for cultivation, and the results recorded.

Providing the right conditions for different plants to successfully grow in England was no easy task, and cultivation techniques and garden technologies were a continuous topic of conversation in the letters exchanged between all sorts of people during this period. The correspondence and interactions discussed in Part Two as well as in this chapter highlight the priority given by many to successfully growing plants, particularly exotic ones. Across the Chelsea Physic Garden, Uvedale's garden and Somerset's gardens, the class of the garden owner, the practices employed, the technologies used, the money invested and the 'use' intended for the garden all varied. However, a certain amount of expertise was required at each of these gardens. Both Uvedale and Somerset had the wealth and time necessary to ensure that their gardens were well-kept and well-known in London, and their contributions to the 'Vegetable Substances' collection were underpinned by interactions with Sloane that included the regular exchange of letters, books and botanical material, as well as the development of friendships.

The contents of the 'Vegetable Substances' shows that Sloane's botanical collection and the knowledge contained within it were bound up with other spaces in which plants were collected and contemplated. The examples explored in this chapter have revealed that there were connections between the 'Vegetable Substances' and different garden spaces. While gardens provided individuals with another means of interacting with Sloane, assisting people like Uvedale and Somerset in adding to Sloane's botanical collection, they also permitted Sloane access to natural history in terms of objects, skills and knowledge. Both Uvedale and Somerset were conduits for exotic and new plants, material that Sloane would have 'collected' with enthusiasm. This outlook on plants is also seen in Sloane's 1722 stipulation that saw the Chelsea Physic Garden presenting 50 new plants to the Royal Society every year. Sloane's continued support of the Chelsea Physic Garden is viewed here as an active encouragement in plant cultivation much like his distribution of seeds to Uvedale and

Somerset while simultaneously preserving them in his ‘Vegetable Substances’ collection. Therefore, the gardening context of the ‘Vegetable Substances’ exposes Sloane’s interest in early eighteenth-century gardening practices and reveals the role of Sloane as a facilitator in plant cultivation in London that went beyond his own botanical collecting practices. While the specimens in the ‘Vegetable Substances’ collection were not systematically available for use as part of horticultural schemes, and the descriptions in the catalogue were not routinely concerned with how they might grow, the collection was part of a broader engagement with plants that happened in the garden as much as in the rooms where these thousands of boxes were stored.

Chapter Seven

‘Tablets for a sore throat from the East Indies’: medical uses of the ‘Vegetable Substances’

The title of this chapter is taken from the catalogue entry for VS 593. It is a striking description because rather than describing part of a plant, such as a leaf, a bean or a seed, this sample already appears to be a prepared product, and one prepared for medical use. The chapter asks, therefore, whether Sloane, as both a physician and a collector, was building the ‘Vegetable Substances’ collection with the intention of using it medicinally, perhaps even on his own patients? Like much of the material found within the collection, and described in earlier chapters, this particular ‘Vegetable Substance’ appears to have been sent from the ‘East Indies’ and there are significant groups of samples described in the catalogue that are both ‘exotic’ and have therapeutic properties. In Petiver’s ‘Account of Part of a Collection of Curios Plants and Drugs, Lately Given to the Royal Society by the East India Company’ (1700), plants gathered by the EIC surgeon Samuel Browne in Hinguer Pollum, about 200 miles from Fort St. George, were documented. Moreover, as in the previous chapter, numerous samples of these seeds were distributed and raised in ‘the most Curios Gardens in England’, including ‘her Grace the Dutchess of Beaufort’s at Badminton’ and ‘Dr Robert [Uvedale’s] at Enfield’.[1] Petiver regularly referred to Uvedale’s garden during his descriptions of medical material to the Royal Society, and Uvedale appears to have played an important role in the global exchange of *materia medica*. For example, he contributed at least 253 specimens that have been listed as ‘Siam druggs’ in the ‘Vegetable Substances’ catalogue as well as 102 plant samples from Fort St George which were probably collected, or sent, by Browne. As we have seen, Sloane was always keen to receive these sorts of new and unknown plants, both from the East and from elsewhere around the world. His interactions with people like Uvedale have also shown that Sloane played a role in the movement and cultivation of these sorts of plants in Britain. This chapter will further these discussions about natural history collecting by exploring Sloane’s engagement with

[1] ‘Mr Jacob Bobart’s in Oxford, Mr Du-Bois’s at Mitcham, and Mr Sam. Doody’s at the Apothecaries Garden in Chelsey’, in: S. Brown and J. Petiver, An Account of Part of a Collection of Curios Plants and Drugs, Lately Given to the Royal Society by the East India Company, *Philosophical Transactions* 22 (1700) 579.

these plants as objects of *materia medica*, and thereby consider the 'Vegetable Substances' as a collection intended, by Sloane and others, for medical use.

Sloane's personal and professional interests in the medicinal uses of plants are evident in his own collecting activities prior to establishing his botanical collection in London. Sloane gathered plants 'in the fields and gardens about London about the year 1682' and also while he was in the Caribbean between 1687 and 1689.[2] He collected plants and made observations on the island of Jamaica that he would later recount in his richly illustrated *Natural History of Jamaica* along with descriptions of the medical treatment of local people.[3] For Sloane, going to Jamaica was something of a pilgrimage: a physician's journey to the source of the elements of his medical practice, and he travelled in the hope of expanding the botanical studies he had begun in Europe.[4] As he put it himself, it was a

> Voyage [that] seem'd likewise to promise to be useful to me, as a Physician; many of the Ancient and best Physicians having travelled to the Places whence their Drugs were brought, to inform themselves concerning them.[5]

Early modern physicians believed that the ancients had possessed excellent remedies but that knowledge of them had been lost or corrupted over the centuries. Therefore, they wished to return to the original sources of these medicines, reexamining classical prescriptions and correctly identifying simples discussed by the ancients – a process that involved the ability to scour markets, gardens and fields for possible ingredients, combining knowledge of botany, zoology and mineralogy.[6] So when he returned to London, Sloane brought back over 800 different plant specimens collected in the Caribbean from which he created an eight-volume herbarium. Chakrabarti even argues that Sloane wanted to introduce Jamaican plants into Europe as medicines.[7]

There was certainly precedent for doing so. During the seventeenth century Britain imported an increasing amount of medical drugs and this continued into and throughout the eighteenth century.[8] The historiography of this medical marketplace

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[2] Quoted in Jarvis et al, Sloane's plant specimens at the Natural History Museum, 138.
[3] Jarvis et al, Sloane's plant specimens at the Natural History Museum, 138.
[4] P. Chakrabarti, Sloane's travels: a colonial history of gentlemanly science, in: A. Walker et al, (Eds), *From books to bezoars*, 72.
[5] H. Sloane, *A voyage to the islands*, London, 1707, first page of preface.
[6] Cook, Physicians and natural history, 92-93.
[7] Chakrabarti, Sloane's travels: a colonial history of gentlemanly science, 77.
[8] Wallis, Exotic drugs and English medicine, 20.

was explored in the introduction to this thesis and presents a context in which medicine, science, trade and curiosity collided. This chapter, however, will begin with a closer inspection of early modern medicines to understand what sorts of materials were being exchanged across the globe and how Europeans engaged with various forms of knowledge about them. Understanding what was meant by the term *materia medica*, and how such items were collected, provides a useful context for discussing the extent to which Sloane was creating a specific collection of medical things when he made the 'Vegetable Substances'. Just as chapter six considered the cultivation of plants as a 'use' of the 'Vegetable Substances', and thereby explored the life of these samples beyond the collection, this chapter considers the medical 'use' of Sloane's botanical collection, exploring another context beyond the boxes themselves. To do so, this chapter will first detail the ways that Sloane described the 'Vegetable Substances' in his catalogue. It will then question whether Sloane attempted to order the 'Vegetable Substances' medically, and in relation to the rest of his collection, and, finally, the chapter will explore what evidence there is of medical experimentation with samples from this collection, by Sloane and others.

Early modern medicine and trade

One way that we might consider objects of *materia medica* is through understanding the relationship between early modern trade and drugs.[9] Take, for example, 'spice', a term used in the late medieval and early modern period to denote aromatic substances that could be added to foods as well as animal and mineral items that had medicinal virtues. This means that early modern words such as 'spice' and 'drug' were interchangeable.[10] The spice trade played a particularly central role in European trade in the East (and across the globe) and the materials used as medicine (as well as dyes) were an important part of this spice trade.[11]

In fact, a number of new plants and remedies became prominent in European markets including tobacco, chocolate, sarsaparilla, sassafras and chinchona bark from

[9] H.J. Cook and T.D. Walker, Circulation of medicine in the early modern Atlantic world, *Social history of medicine special edition* 26:3 (2013) 337-351.
[10] Cook and Walker, Circulation of medicine in the early modern Atlantic, 338.
[11] Cook and Walker, Circulation of medicine in the early modern Atlantic, 339.

the New World.[12] This meant that the commerce in exotic medicinal substances in the early modern period formed an important part of the contents of European pharmacopoeias. 'Grocers', 'spicers' and 'apothecaries', and the merchants who imported these materials during the seventeenth century in particular, required all sorts of natural knowledge in order to correctly identify these different materials and their properties. And while some patients may have wanted these latest medicines prescribed to them, physicians were less inclined and often reluctant to do so.[13]

This availability of new drugs in European markets and the emergence of apothecaries as new agents of medicine were part of an emerging hybrid medical culture, and a result of the interactions taking place between Europeans, Asians, Africans and Amerindians.[14] Drawing on long-standing theories about the body, Europeans were particularly interested in finding plant and mineral substances that could help to regulate the balance of the four bodily humours. But medical ideas were changing and there was a notable shift from general remedies (panaceas) to more specific ones. Cinchona bark, for example, is often regarded as a new remedy that was introduced as a 'specific' which implied that diseases had some essential qualities in their own right and could be identified according to fixed symptoms and cured with particular remedies.[15]

Pursuing these ideas and practices, the constantly expanding imperial and commercial enterprises of the early modern period, and the global connections that

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[12] See S. Boumediene, The appropriation of Mexican remedies by Europeans: economic and cultural transfers (16th- 17th centuries), in M. Guiraud and N. Fourtané (Eds.), *Borrowing and cultural transfers from Mexico: dreams and reality*, Nancy, 2011, 249-274; T. Huguet- Termes, New World materia medica in Spanish renaissance medicine: from scholarly reception to practical impact, *Medical History*, 45:3 (2001) 359-376; A. Winterbottom, Of the China root: a case study of the early modern circulation of materia medica, *Social History of Medicine* 28:1 (2015) 22-44.

[13] Wallis argues that, from the 1720s, the Americas had become an important source of materials for the English drug trade. The most popular included guaiacum, sarsaparilla and Jesuits' Bark from Spanish colonies in Central and South America, while the Virginia snakeroot originated from English colonies. 'Grocer' referred to dealing with quantities by gross, 'spicers' came from the common name given to their goods, and 'apothecaries' came from Greek word for storehouse. See Wallis, Exotic drugs and English medicine, 32-33; 340; Cook, Medicine, 421.

[14] Chakrabarti, *Medicine and empire*, 2.

[15] Cook and Walker argue that the acceptance of such new specifics helped to change European medicine, see Circulation of medicine in the early modern Atlantic, 341; S.R. Meshnick and M.J. Dobson, The history of antimalarial drugs, in: P.J. Rosenthal (Ed.), *Antimalarial chemotherapy: mechanisms of action, resistance, and new directions in drug discovery*, Totowa, 2001, 16-18.

they created, included a range of new forms of medical knowledge, and the discovery of these effective healing techniques and remedies would always be crucial to the success of European power around the world. In general, Europeans learned about the medical efficacy of natural productions from people in other places who had used them the most and for the longest. This 'bioprospecting' required the knowledge of local experts – especially for details about quantity, preparation and application. The main methods of obtaining such information were through conversation whether it was by friendship, payment, mutual trust, favour, inquiries at local markets, or by go-betweens.[16] However, Londa Schiebinger argues that Europeans were never really able to discover the true extent of local medicinal and botanical knowledge because so few Europeans understood local languages, and because medicines were kept secret for a variety of reasons.[17]

The Americas, and especially the plantation colonies, provided a nuanced context for the exploration of local knowledge of medicinal plants. While the New World had become an important source of materials for the English (and European) drug trade, the trans-Atlantic slave trade also had a role to play. As millions of Africans were shipped to the Americas, and in the unimaginable conditions that they were made to live and work, slaves and runaways are thought to have 'rapidly reinvented their domestic and ritual pharmacopeia'.[18] Tinde van Andel has recently explored the household medicines used by enslaved Africans in Suriname and shown that slaves were able to distinguish useful plants from dangerous ones – a technique that would have been crucial for survival. While slaves may have outnumbered Europeans and Amerindians in the colonies, allowing the collective knowledge of African medicine to be reinforced in the New World, Europeans generally had a low regard for slave medicine. Even if it was the Europeans that recorded local herbal remedies, their publications often contained complicated views on the plant knowledge held by slaves.[19]

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[16] Cook and Walker, Circulation of medicine in the early modern Atlantic, 337-344.
[17] Schiebinger, Agnotology and exotic abortifacients, 316-343; L. Schiebinger, Prospecting for drugs: European naturalists in the West Indies, in: L. Schiebinger and C. Swan (Eds), *Colonial botany: science, commerce, and politics in the early modern world*, Pennsylvania, 2005, 119-133.
[18] T.V. Andel, The reinvention of household medicine by enslaved Africans in Surinam, *Social history of medicine* 29:4 (2016) 676-694, 628.
[19] Sloane's *NHJ* is an example of such complexities, revealing his discouragement of remedies used by slaves, praise of local remedies, and his use of them. See J. Delbourgo, Slavery in the cabinet of curiosities; C.P. Iannini, *Fatal revolutions:*

According to Ken Arnold, the end of the seventeenth century also saw the emergence of specialist collections devoted to such medical material, which drew upon and developed early artisanal practices. Described as cabinets that were primarily intended for 'didactic research purposes', examples include the Cambridge professor of chemistry, John Francis Vigani, who, from 1704, had an oak cabinet of twenty-six drawers from which he taught classes on *materia medica.* Likewise, 'Dr. Attenbrook' had kept a similar collection in St. Catherine's College, and, in 1730, another professor, Richard Bentley, published his *Course of Lectures upon Materia Medica…read in the Physics School at Cambridge upon the Collections of Dr Attinbrooke and Signor Vigani*. In the mid eighteenth century, Dr. William Heberden at St. John's College also gave a course of lectures on *materia medica* and an examination of these has shown a largely utilitarian approach to the virtues of natural materials. As Arnold notes, such items were largely collected by those described as the 'middling sort', including ship's captains, merchants, apothecaries and other medical practitioners. Such interests in *materia medica* are described as the intellectual practice of 'cautious tradesmen sticking to the evidence of their wares – exhaustively based on direct perceptible results'. In other words, the virtue of a specimen was defined by evidence of its medicinal effect. Up until the seventeenth and eighteenth centuries, museum-based interests in *materia medica* had principally revolved around 'mystical phenomena', but as medical practitioners increasingly favoured new herbal and mineral remedies (from across the world), museums provided ideal spaces for storing, organising, displaying and investigating the virtues of these materials. If collections of *materia medica* were therefore ultimately based on functionality and aimed at understanding the medicinal effectiveness of extant remedies and yielding new ones, can we consider the 'Vegetable Substances' as one such collection?[20]

Describing Medicinal 'Vegetables'

One way that the 'Vegetable Substances' can be considered as a collection intended for medical use is through the descriptions of these objects within Sloane's catalogue. We already know that the catalogue entries for this collection vary in terms of the

natural history, West Indian slavery, and the routes of American literature, Chapel Hill, 2012; K. Murphy, Translating the vernacular.

[20] K. Arnold, *Cabinets for the curious,* 151-165.

detail provided about what these objects are, where they came from, and who collected and sent them. This is also the case when we consider the information provided about their potential uses, including their medical efficacy. Examples of medical descriptions range from short explanations of how plants were used in treatments for balancing humours via evacuative treatments including purging, vomiting and bleeding; in remedies for certain parts of the body such as the head, stomach or blood; as well as particular things that people, primarily medical practitioners, were interested in, such as cures for snakebite and different sorts of tea. Some entries provide further detail about the different quantities of ingredients required to create effective remedies. Other 'Vegetable' descriptions do not reference any sort of medical use at all. However, Sloane's correspondence can, at times, reveal detailed therapeutic information and knowledge about these samples, particularly those sent from Henry Barham in Jamaica. This section will explore this apparent variety of medical descriptions offered by Sloane's catalogue of 'Vegetable Substances' through a lens of the early modern context of disease and illness.

In early modern England the majority of deaths were caused by acute and gastro-enteric infections including dysentery, typhoid, salmonella and 'fluxes' or 'undifferentiated diarrhoeas'. Respiratory infections such as whooping cough, diphtheria, scarlet fever, influenza, smallpox and typhus were all prevalent during this time as well.[21] While there were exceptions, medical practitioners tended to be generalists rather than specialists and remedies in use during the early modern period tended to be either herbal remedies promoted by Galenists or chemical medicines favoured by Paracelsians.[22] However, while the new philosophy in science meant that change was taking place throughout medicine, medical practice between the second half of the seventeenth and beginning of the eighteenth century was not necessarily experiencing such significant change. Objectivity, as well as chemical, experimental and mathematical developments in science, provided a new theoretical basis for medicine and yet the eighteenth century saw the rise and fall of various systems and descriptions of diseases based on symptoms rather than causes. The six non-naturals that had been at the core of preserving health before the seventeenth century did not disappear completely in the eighteenth century. In fact, different groups of medical practitioners, humoralists and mechanists, still saw health in terms of food, drink,

[21] But no precise data differentiates the morbidity levels between the rich and the poor, see Wear, *Knowledge and practice in English medicine,* 14-15.
[22] Wear, *Knowledge and practice in English medicine,* 18.

exercise and the passions.[23] In humoral medicine it was believed that the most effective method of life preservation was moderation in all areas of life, including the air, sleeping (or waking), food (and drink), rest (and exercise), excretion (or retention) and the passions. A healthy way of life, or *regimen*, depended on a person not over-doing anything in particular.[24]

While the body was understood as porous and interconnected with its environment, early modern medicine also included principles of opposition, such as symptoms of hot and cold, which could explain the occurrence of a disease and point to particular means of alleviation. Other characteristics included the use of yellow herbs (such as saffron and radish) and diuretics for curing jaundice, while red plants and roots (bloodroot) were believed to deal with bloody discharges. Shapes and textures were also thought to be an indication of medical applications, for example, the use of lungwort for lung ailments and spotted and scaly plants for skin eruptions. By the early eighteenth century a new environmentalism had emerged and the effects of the climate and environmental conditions became understood as important for human health and illness. Humours were not forgotten or downplayed but were considered in this context of environment and *miasmas*, or bad air.[25]

These illnesses and their treatments were described in a variety of ways which made the vocabulary of early modern medicine particularly striking. Descriptions ranged from conditions like bruises, aches and pains in the joints to named diseases such as the plague or smallpox, as well as conditions that were caused by humoral imbalances or by malign or noxious airs.[26] As we will see this style of language and description, and the ideas it was based on, is a prevailing characteristic of Sloane's 'Vegetable Substances' catalogue.

Examples of natural material that could purge, bleed and vomit appear again and again in Sloane's catalogue. A simple search for 'purge' or 'purging' returns sixty-four samples spread throughout the collection which were sent from all over the world. Early examples include the 'Bellyach root of Virginia' (VS 650), which was thought to purge gently. Another is a seed from 'Dr Picinini' which was used in Turkey as a purge once made into an emulsion (VS 935). Generally though, plants

[23] A.Wear, Medical practice in late seventeenth- and early eighteenth-century England: continuity and union, in: R.K. French and A. Wear (Ed.), *The medical revolution of the seventeenth century*, Cambridge, 1989, 295-303.
[24] Lindemann, *Medicine and society in early modern Europe*, 14.
[25] Lindemann, *Medicine and society in early modern Europe*, 26-29.
[26] Lindemann, *Medicine and society in early modern Europe*, 105.

used in effective purging treatments against headaches, fevers and other ailments appear in the form of roots in the 'Vegetable Substances' catalogue. Some came by way of Henry Barham, such as 'The root Mechoacan from Jamaica from the same. IB. Purges gently' (VS 7,660).[27] Others came from the East via Robert Uvedale, particularly in the *materia medica* that was sent from Siam. Twenty-two of these items were considered effective in purging the body, such as VS 4,434, which is described as 'A root like that of madder purgeth putrefied blood'.

There are other, more detailed descriptions of purging in the catalogue that make reference to the substances local uses. The politician James Brydges, first duke of Chandos (1674-1744), contributed twenty-one samples to the 'Vegetable Substances' collection which are described as 'From the Duke of Chandois who had it from Guinea' (VS 8,119). One particular item, VS 8,136, is listed in the catalogue as 'a shrub called Haa-hah' that grew 'at Mumford inland abt. Accrone'.[28] According to its rather long description, not only were the branches and root of this plant 'large', but it was also 'made use of by the natives in a fever or the dry gripes as a purge, which it performs both ways that is vomiting as well as by stool'. There is also more detail in this catalogue entry about the necessary quantity of this plant for this treatment. It goes on to say that 'when pulverized five drams is found to be a sufficient dose for a strong constitution'.[29]

Plants used in other evacuative treatments appear in the catalogue. Twenty entries describe material thought to be used as emetics in vomiting treatments, such as a Chinese drug given to Sloane by Petiver and described as 'No. 1. of Chinese druggs called Tan Som good in vomiting blood. It is very like the roots of rubia tinctorum' (VS 3,862). Some of these entries also describe material that was used against vomiting, rather than to encourage it. Uvedale gave Sloane 'Seeds like dutroa seeds'

[27] Henry Barham to Hans Sloane, London, Oct 21 1717 (BL Sloane MS 4045), ff. 55r-v.

[28] This could be Acron situated on the Gold Coast of Guinea 'very conveniently situated for Trade', see W. Bosman, *A new and accurate description of the Coast of Guinea, divided into the gold, the slave, and the ivory coasts map of Guinea*, London, 1705, 61.

[29] Brydges obtained an earldom, of Carnarvon, for his father, who died on Oct 16, 1714. In 1719 he was promoted as duke of Chandos in recognition of his services to the state. There are no references in Sloane's catalogue to Brydges, only 'Chandois', which means that these items can probably be dated post-1719. See J. Johnson, Brydges, James, first duke of Chandos (1674–1744), *ODNB*, online edition, 2010.

from Siam to 'prevent vomiting' (VS 4,625), while 'Dr Waldo' gave Sloane a 'sort of excrescence out of a tree' which 'cures all fluxes & vomitings & fevers' (VS 6,722).

According to Vivian Nutton, blood was an 'extremely ambiguous humour' because although it was the most important fluid in the body for life, it could also be both the symptom, and, for some, the cause of illness. Haemorrhoids, nosebleeds and menstruation were all indicators of the harmful excesses of blood in the body, and it was thought that the changing seasons could also bring about such harmful blood. Ultimately, and not surprisingly, bleeding was believed to be the main method of providing relief for these medical problems.[30] A simple search for 'blood' in Sloane's 'Vegetable Substances' catalogue returns fifty-five entries. While some are described as stopping blood, such as 'A styptick from the Philippines said to stop blood in wounds in an extraordinary manner' (VS 10,826), others are related to blood in further ways. For example, we find dried flowers that were used for bloodshot eyes (VS 149); roots that were considered effective in purging blood; as well as a number of samples of 'Sanguis draconis', or 'dragon's blood' (often from China), which could be used to both invigorate the blood and stop bleeding.[31] Petiver also provided Sloane with a Chinese drug which, like the previous example of 'Tan Som' (p. 247), was of interest in the management of balancing humours. In this case the drug stopped inward bleeding and appears in the catalogue as:

> 3,901 Migiha por fi na parkagda, Nomi pægeit No. 43. of the Chinese druggs called pægeit, its tea stops inward bleedings forwards the healing of an obstinate sort. No. 44 of Mr. Petiver pageat is a bitterish root whose top is composed of several circles, & generally terminates in 2 or 3 fangs. They give a tea of it to stop inward bleedings. ib.

In the early modern period, bodily fluids such as phlegm and bile were also thought to be major causes, or indicators, of disease. Phlegm, a white or clear humour was associated with water and some believed that phlegm blocked the flow of air to and

[30] V. Nutton, Humoralism, in: W.F. Bynum and R. Porter (Eds), *Companion encyclopedia of the history of medicine, volume one*, London, 1993, 284.
[31] Dragon's blood is a dried resin derived from the sap of the dragon tree and there are several species in the genus *Dracaena*. Historically, dragon's blood came from *Dracaena cinnabari*, which is endemic to the Socotra archipelago in the Arabian Sea but other species are found in the Canary Islands and Madagascar. See P. Mason, A dragon tree in the Garden of Eden - a case study of the mobility of objects and their images in early modern Europe, *Journal for the History of Collecting* 18:2 (2006) 169-185. 2006.

from the brain and could cause epilepsy-like convulsions. An overabundance of bile on the other hand was associated with fire and thought to heat and dry the brain, which could cause madness.[32] While yellow bile was believed to be produced in the liver and stored in the gall bladder, black bile was linked to the spleen.[33] There are twenty-four records in the 'Vegetable Substances' catalogue that reflect a concern with 'flegm' and all of them are connected to the *materia medica* samples that Sloane received from Uvedale from the East Indies. One such example includes 'A piece of whitish wood with a smooth bark mark'd no. 3 of the same & said in Siam to be good for a cough & flegm' (VS 3,814). Another eighteen entries (some of which overlap with those relating to phlegm) describe plant material used in remedies for coughs, and again the majority of these came from the East Indies. Sloane received from Petiver a great deal of Chinese *materia medica* and one example of tea was said to be 'with honey […] good for coughs & physic. No. 21 of Mr. Petiver called Gan honga root whose fibres are long […]& brittle' (VS 3,897). Medicinal teas are also described in the 'Vegetable Substances' as being used for coughs in China, such as one from 'Mr Bell' who had had it from 'Father Fontaney'.[34]

Other groups of 'Vegetable Substances' reflect a concern with specific parts of the body such as the stomach or 'belly'. A number of plants were given to Sloane that were used for curing pains in the stomach, such as a 'redish root […] said to be good for the bellyake' (VS 3,825) and a 'fern root' for any poisonous distemper in the belly' (VS 4,476). Both of these examples had come from the East Indies via Uvedale. The Duke of Chandos also supplied Sloane with a local remedy used in Guinea to relieve stomach pains. VS 8,125 is called the 'Aprofah root' which was 'a vine to be had common abt. Cape Coast, it hath a bitter tast'. It also had a 'root [that] is made use of by the Blacks when troubled wt. the dry bellyach or dry gripes'. In order to use this root in a treatment, the root had to be rubbed or knocked 'upon a stone' so that it was made 'as fine as possible' and could be 'then made into a paste'. This would allow 'two spoonfulls' to be mixed 'with Malaguetta [pepper] in water & squeeze in a lime'. This preparation could then be taken 'twice in a day & is found to give present ease to all gripes or pains in the belly & maybe continued to be taken without any danger so long as you perceive any malignity remain'.

[32] Nutton, Humoralism, 284.
[33] Lindemann, *Medicine and society in early modern Europe*, 19.
[34] VS 9,212: 'A sort of medicinall tea used for coughs used in China. Mr. Bell vid antea from Father Fontaney the same?'.

As well as descriptions that focus on parts of the body or afflictions, there are numerous entries in the catalogue that can be grouped according to the preparation of the sample. For example, various samples of 'tea' are described throughout Sloane's catalogue and 181 entries relate to tea in some form or another. Both the tea plant (*Camellia sinensis*) and the tradition of tea drinking originated in China and tea leaves are thought to have been gathered and used as infusions by the mid-first millennium BC and the leaf of the plant was probably chewed long before. While central to Chinese society and culture, tea arrived in Europe by boat after the opening of the ocean route to Asia via the Cape of Good Hope in the late fifteenth century.[35] Sent from around the world – including from China, Jamaica, India, Turkey and the Americas – descriptions of tea in Sloane's catalogue often include references to the medical efficacy of consuming these samples. In fact, as part of the group of sixty-four items that are listed as 'Chinese druggs' from 'Mr. Petiver' (and described in the previous chapter as being grown by Mary Somerset in her garden) are eighteen samples of tea. These entries involve plant names that appear to have been written in the phonetic rendering of Chinese (Pinyin) and also include English descriptions that reflect a prominent use of medicinal tea in China.[36] They show that these Chinese plants were made into decoctions that could be drunk as tea and served to treat all sorts of medical problems, including inflammation, vomiting, gout, rheumatism, dropsy and stomach conditions. They could also be used to help a person eat, as shown by number nine of these 'Chinese druggs' which is called 'Hiset' and 'its tea is excellent to strengthen the stomach & provoke an appetit. It seems to be the roots of a cyperus sliced' (VS 3,870). Other sorts of tea were used as hangover cures, such 'No. 32. of the Chinese druggs called, Qua hoa, its tea very good after hard drinking [...] is a papylionaceous flower, made into tea is very good after hard drinking' (VS 3,890).

The teas that Sloane collected and described were not only from China. While one entry simply describes the dried flowers of sassafras that were used for making medicinal tea (VS 6,719), other entries show that Sloane received from Thailand, by

[35] H. Bynum and W. Bynum, *Remarkable plants that shape our world*, London, 2014, 134-135.

[36] This information is difficult to decipher because although phonetically written, their names were not part of a standard method such as Pinyin (which would later give consistency to phonetic spellings). During the early eighteenth century there would have been little consistency in this phonetic rendering of Chinese. These names may have been derived from regional pronunciation systems but are little help in identifying what these plants are.

way of Uvedale, 'An herb like tea' that was used 'for the itch' (VS 4,545) as well as a plant sample from John Bartram in Pennsylvania that has been labelled as 'lately come in request by the English & is used by some as an effectuall remedy agt. feavours made into a tea & some suppose it as good to make tea of as any forreign tea & is used for that purpose. It bears pretty yellow flowers in the Spring. I could find no seed in its perfection this year. an Lysimach?' (VS 10,549).

Indeed, some plants were of particular interest because of their medicinal value as teas. The Royal Society, for example, was especially interested in ginseng and there are several examples of this plant in the 'Vegetable Substances' collection.[37] These items were largely sent from China, such as 'Radix Ginseng or zinzin from China, a great restorative' (VS 532). Other samples came from Japan from Engelbert Kaempfer, such as VS 8,198, which simply appears as 'Ginseng. Id' while a sample of 'Roots & seeds of Gin-seng' seem to have come 'from Canada. From Mr. Juissieu' (VS 7,825). Another sample of ginseng (VS 12,140) is listed in the catalogue as 'Ginseng root given me by Lord Pembroke'. Sloane's written exchanges with William Byrd in Virginia, however, not only reflect this medicinal interest in tea and ginseng but make specific reference to Pembroke's sample. In 1737 Byrd wrote to Sloane that:

> I fancy you have been nibbling of Ginseng ever since you receiv'd that Box from my good Lord Pembroke, by the Vertue of which you have mended all the Flaws which Jamaica had made in your constitution. I believe ever since the Tree of Life has been so strongly guarded the Earth has never produced any vegetable so friendly to man as Ginseng. Nor do I say this as Random, or by the Strength of my Faith, but by my own Experience. I have found it very cordial and reviving after a great Fatigue.[38]

Tea, formed from different plants, sent from around the world, and used for different illnesses, is found listed throughout the 'Vegetable Substances' and plants like ginseng were of particular interest and value to Europeans. Byrd's comments about ginseng, and particularly his 'own Experience' of using it, begin to suggest practices of self-medication and experimentation with these exotic materials. While this is not information that is relayed in Sloane's catalogue, it does hint that experimentation

[37] J.H. Appelby, Ginseng and the Royal Society, *Notes and records of the Royal Society of London* 37:2 (1983) 121-145.
[38] William Byrd II to Hans Sloane, Virginia, Aug 20 1737 (BL Sloane MS 4055), f. 367.

(taken broadly) may have been part of the process of gathering, ordering and 'using' this botanical material.

Overall, then, a significant number of the entries in the 'Vegetable Substances' catalogue describe the medical use of samples in this collection. These descriptions reveal that many of the plants in the boxes were identified as used for evacuative treatments, including purging, vomiting and bleeding, which were common medical practices during the early modern period. In this way, these descriptions suggest that the 'Vegetable Substances' collection conveys an active interest in the variety of plants that were available and used all over the world during this time in such treatments. There are also concerns with coughs, phlegm and bile, particularly shown among the plants sent from the East Indies. So, where there were medical descriptions they were part of broad ways of understanding health and illness that could draw in material from around the world. Moreover, this was not simply about plants. It was also a matter of preparations such as 'Tablets for a sore throat from the East Indies', and, in particular, teas.

The details provided in the 'Vegetable Substances' catalogue about local remedies and the specification of quantities to use and instructions for the application of these medicines might imply that these were samples being collected, stored and catalogued in order to be used. Another way that we might consider whether this was a collection intended for medical use is through the way in which it was ordered. A common thread between many of these catalogue descriptions is not only the inclusion of details pertaining to their therapeutic value, but also the addition of location codes. These codes (outlined in Part One of this thesis) have been inserted alongside the majority of the samples with medical descriptions. As the next section will show, they can tell us something about the 'ordering' of this collection as a medical collection.

Ordering Medicinal 'Vegetables'

Today, the samples collectively described as the 'Vegetable Substances' are housed together in drawers and grouped according to their assigned numbers (for example, a drawer may contain all of the boxes numbered between 1,000 and 2,000) (see figure 3). There are also a number of drawers that contain apothecary trays which house a variety of plant samples. However, recent research has argued that Sloane may have

organised his wider collection thematically across types of material rather than by type of material. Recurring pencil annotations appear in the margins of many of his catalogues, and it has been suggested that these are location codes for the items listed. Research into Sloane's "Miscellaneous" catalogue by Marjorie Caygill develops the idea that items were grouped together and labeled under these codes, and that a cabinet and drawer numbering system (keyed by the pencil annotations) was in use in Sloane's Bloomsbury house in 1738.[39] The 'Miscellanies' catalogue includes fifty different location codes. Significantly, sixty percent of the 'Vegetables Substances' catalogue entries have a pencil annotation or location code assigned to them.

One of the key codes is '181'. This is mentioned in the Insects catalogue as 'Cabinet no. 181. Insects used in the Materia Medica'. And Sloane's house in Bloomsbury Square supposedly contained a 'cupboard full of *materia medica*' which Caygill argues may relate to code 181. Specimens listed in the 'Vegetable Substances' catalogue with code 181 do seem to be *materia medica*.[40] For example, the very first catalogue entry – 'Opobalsamum or balm of Gilead from Mecca by the way of Surrate' (VS 1) – has been assigned this code and Balm of Gilead has a long history of being used medicinally for coughs, colds and sore throats as well as for arthritis and rheumatism.[41] Other examples include 'A piece of very fine lignum aloes given me by Sr Thomas Rolt. A few chips of it is used to be kindled & the smoke takes of[f] any evill scent' (VS 249) as well as a 'fungus' described as 'a specific in the dysentery given me by Mr Bennis' (VS 707). In fact, a simple search for '181' returns over 1,286 items which would suggest that at least ten percent of the 'Vegetable Substances' collection was understood to be *materia medica*.

Some parts of this are particularly significant. In 1697 or 1698, Robert Uvedale notified Sloane that he should expect a package, remarking at the end of his undated letter that he was going 'very speedily to send you part of all ye Druggs &c. I

[39] Sloane lived in Bloomsbury Square and later moved to Chelsea Manor, London. See Caygill, Sloane's catalogues and the arrangement of his collection, 120-136.
[40] Caygill, Sloane's catalogues and the arrangement of his collection, 125.
[41] The Balsam of Mecca-bearing plants grow in Saudi Arabia, Oman, Yemen and Somalia. Balm of Gilead, mentioned in the Bible and named so because of where it was produced, was a rare perfume used medicinally. The expression stems from William Tyndale's language in the King James Bible of 1611, and has 'come to signify a universal cure in figurative speech'. The tree or shrub producing the balm is commonly identified as *Commiphora gileadensis*. Some argue that the actual source was a Terebinth tree in the genus *Pistacia*. See for example N. Groom, *Frankincense and myrrh: a study of the Arabian incense trade*, London, 1981.

had from Siam'.[42] Then, at the end of January 1698, Uvedale appears to actually send Sloane the anticipated items. In his detailed letter to Sloane, Uvedale wrote that 'I have att last tho long first sent you a share of all ye drugs wch I receivd from Siam I suppose it an entire materia medica of the Country'. [43] Altogether there were one hundred and eight specimens of root, thirty-five pieces of wood, twenty-five fragments of bark, nineteen seeds and six types of gum. In his letter, Uvedale said that he wanted the labels of these items translated so that they could be classified, 'but guesse they contain little more then wht is exprised in ye English titles wch are putt up wth them. & writ by some one present not over skilfull in such matters however they tell us wht distempers are reigning among them for wch I suppose some of ye drugs &c may be [used]?'.[44]

Uvedale gives his opinion on the information that came with these plant specimens, judging that the person who had described them in English was 'not over skilfull in such matters'. However, Sloane's thoughts about these items are more difficult to determine because we do not have evidence of his response to Uvedale. Nevertheless, Sloane's inclusion of such a large number of items in the catalogue reflects some assessment of the value of this material and he was no doubt eager to receive these samples of East Indies *materia medica*. Just as Uvedale had commented on how this material provided useful information about the prevalent diseases in Siam, Sloane also appears to consider this information important as he included it in his catalogue entries. Sloane accessioned this group of plants together, keeping the numbering system that accompanied them, and the style of the descriptions he gave suggests that he copied them directly from the information supplied with the plants, including their local uses for curing all sorts of medical complaints. Together, this *materia medica* was thought useful against all types of distempers, venereal diseases, aches and pains in the body, ulcers, boils and even 'madness'. Much of the material from Siam, including brown roots, reddish dark coloured gums and grey powders of flowers, was thought to be effective for purging.

There are other significant groups of samples with the code '181' that include information about their medical properties, such as the sixty-four items from Petiver

[42] Robert Uvedale to Hans Sloane, Jan 13 (BL MS 4061), f. 221. This letter does not include information about the year in which it was sent but because he sent this *materia medica* in 1698, it is likely that he notified Sloane in the previous year.
[43] Robert Uvedale to Hans Sloane, Jan 28 1698 (BL Sloane MS 4037), f. 193.
[44] Robert Uvedale to Hans Sloane, Jan 28 1698 (BL Sloane MS 4037), f. 193.

which were described as ‘Chinese druggs’ and the seventeen samples from Guinea from the Duke of Chandos (see figure 18). Others comprise those that came from the East by Engelbert Kaempfer, including ‘The fruit of the palm or cane from wch. comes the best sanguis draconis’ (VS 8,183).

Figure 18: A sample of Chinese *materia medica* from the ‘Vegetable Substances’ collection, now in the Natural History Museum. This specimen was given to Sloane by James Petiver. It has been listed as VS 3,925 and described in Sloane’s manuscript catalogue as ‘very cooling & excellent in fevers & pains in the bones’. It is listed in the catalogue with the code 181. © Trustees of the Natural History Museum, London.

A number of other items collected and sent by Kaempfer include this code as well, but no reference is given to their therapeutic values. This is a common feature of the majority of entries listed with ‘181’. In fact about 1,059 entries with this code do not list a medical description, or any other kind of use for that matter. These items, however, could be assumed to be *materia medica* given their context. Material sent from Patrick Adair and an ‘Indian druggist’ for example, as well as twenty-one items that came from Alexander Brown from the East Indies, thirty-three samples from Nathaniel Maidstone, and a large group of Chinese plants that came via Petiver, are all more than likely to be medical. Therefore, this code can be used to identify plants that might otherwise be dismissed as non-medicinal because their entries do not describe therapeutic properties.

There are also a number of descriptions assigned with this code that would broaden the definition of 'medical use' in the 'Vegetable Substances'.[45] Samples include 'A piece of twig turn'd like a snake into a tobacco stopper' (VS 590), 'A sort of powder of an herb with which ye Turks colour their nailes & hair red' (545), 'Oyl of Organ nut used instead of butter, it never corrupts, the more tis boyled the less bitter it is. From Santa Cruz in Barbary' (VS 567), 'A piece of vine twigg dip't in sang draconis dissolved for cleaning the teeth from the Madera Island' (VS 964), 'Brown powder for the purifying of water from Persia' (VS 1,183) and 'An excrescence of a tree resembling a moles foot' (VS 5,151). The variety of these samples and their possible utility that range from teeth cleaning and hair colouring to water purifying, suggest that these plants had a range of domestic uses, and even that there is, perhaps, more of a general notion of 'usefulness' connected to this collection and indicated by code 181.

There are also other codes found throughout the 'Vegetable Substances' catalogue that can be connected to how this material was used medically. These include '242', '243', '246', and '183'. Code '242' appears alongside at least 764 catalogue entries. These samples orginated from around the world and were sent by a variety of people. Examples include 'A sort of nutt or bean said to be good for sore eyes from Fort St. George by Dr. Waldo' (VS 6, 729), 'The fruit of a small triangular coco-nut esteemed in the East Indies a great antidote' from Engelbert Kaempfer (VS 8,184), and 'An unknown bark from the East Indies of medicinall use brought over by Dr. Lewis' (VS 8,207). A number of other samples from Kaempfer and Lewis are listed with this code. '242' appears to not only link items of *materia medica* but those that could be used more broadly, or for domestic purposes as well. For example, a 'Simnell seed, (a gourd) planted in the beginning of April I think exceeds our English Colliflower, stew it in milk & season it with salt & fresh butter' that had come 'From the Dutchesse of Beauforts at Chelsea' (VS 6,767), as well as a 'A root used in Guinea for food. Tis mixd with water boild & eat. From Mr. Staphorst. From Guinea' (VS 7,640).

Eight hundred and sixty records are labelled as '243' and include 'seeds of phellandrim said. to cure intermittent fevers' (VS 12,353), 'A pice. of the root wch. cures the bite of the ratle snake' (VS 12,247) which was sent from North Carolina by

[45] See for example, S. Cavallo and T. Storey, *Healthy living in late Renaissance Italy*, Oxford, 2013.

John Brickell (and ‘mentioned by him in his naturall history of N. Carolina’ p. 143), as well as the wool and seed of ‘snakeweed’, from New England. It was there that ‘The Indians cure the bite of the ratle snakes with the roots & stop bleeding wt. the wool’ (VS 10,517). Similarly, at least 477 samples are described with the code ‘246’, and, again, these include a number of medical references. Significant groups of samples from Robert Uvedale (from the East Indies) as well as those that are part of ‘Dr. Rugelys druggs from the East Indies’ (VS 4, 626) and ‘used in the East Indies at Fort St. George’, as described in Part Two. Also, a further twenty-two records listed with code ‘183’, include a variety of plants ‘from China as a sample of druggs used there brought by Mr. Talbot & given to me by Mr. Barrow’ (VS 9,602).

In addition, 126 samples described in the ‘Vegetable Substances’ catalogue and assigned these ‘medical’ codes, can be found within Sloane’s apothecary trays. These catalogue explanations, the use of specific codes, and their combination with the physical location of these samples in apothecary trays, suggests that there are firm connections between the ‘Vegetable Substances’ and their medical use. The very notion of apothecary drawers and collections in general denote an active medical use of the material found within the ‘Vegetable Substances’.

The five different location codes discussed here alone amount to at least 3,409 entries in the ‘Vegetable Substances’ catalogue and, as has been shown, this medicinal material came from all over the world. While Sloane would have been constantly adapting and developing his organizational methods, these location codes (particularly 181) confirm just how important items of *materia medica* were to his collecting practices and how his medical interests in natural history were woven through his catalogues. This is also seen through the placement of samples into apothecary trays. However, it must be noted that these trays do not definitively confirm a systematic method of organizing the ‘Vegetable Substances’ medically and, therefore, a medical use of this collection. While there are numbers in these trays that relate specific samples to catalogue descriptions this does not necessarily mean that these samples were ‘used’ in any form. Also, there does not appear to be a pattern across the samples have been both described in the ‘Vegetable Substances’ catalogue and placed within the apothecary trays, other than they are just broadly medicinal. There does not seem to be anything specifically noted about these particular ‘Vegetable Substances’. It must also be admitted that the coding and labeling of these specimens cannot tell us very much about the actual use of the materials in the collection, or their life beyond

the collection, as it groups together very different sorts of material and uses. Getting at that can only be done by using the catalogue in conjunction with Sloane's correspondence to examine whether this plant material was actively experimented with in terms of cures, remedies and regimens.

Experimenting with Bodies and 'Vegetables'

Although chemical remedies increasingly came to the fore in seventeenth-century medicine, much remained unchanged, and therapeutic procedures such as bleeding, cupping, purging and vomiting, as well as an emphasis on diet and regimen, remained widespread.[46] As with previous centuries, in the eighteenth century, 'putrid, corrupt or burnt humours' were considered to be the major causes of disease and practical evacuative procedures were attempts to recreate balance in the body or to get rid of excess humours. As such, they featured prominently in English and European medical practices, as well as in the descriptions of the 'Vegetable Substances'.[47] Sloane's extensive scientific and medical correspondence depicts him as a diligent, cautious, charitable, successful and well-liked physician who often prescribed such evacuative treatments and remedies to his patients.[48] For example, alongside their discussions of plants and gardens we find Sloane recommending that friends and contributors to his collection, such as Mary Somerset and Robert Uvedale, bleed themselves for their better health. Indeed, previous studies of Sloane and his collections have argued that his collecting activities were specially influenced by his medical interests.[49] Does this mean, therefore, that there is a direct connection between the medicinal nature of the 'Vegetable Substances' collection, and indeed his broader collection, and his own medical and professional interests in the uses of plants? This section will consider whether the plants contained within the 'Vegetable Substances' were collected in order to be part of medical experimentation.

In 1709 Sloane wrote from London to Byrd in Virginia about the use of new and unknown substances in medical practice. He emphasized the importance of experimenting with them as much as possible before using them within treatment

[46] Wear, *Medicine in society*, 120-121.
[47] See Wear, *Knowledge and practice in English medicine*, 39; Nutton, Humoralism; Lindemann, *Medicine and society in early modern Europe*, 281;14.
[48] Wynne Smith, Sloane as a friend and physician of the family, 48.
[49] See for example, MacGregor (Ed.), *Sir Hans Sloane*.

regimes.[50] He advised Byrd 'to what I practice my self[,] never to take Physick when I am well & not to make use of any Medicines but such as are very well tried when I am ill[,] observation and experience being the best way to find out the virtues of plants'.[51] Here Sloane appears cautious and certainly unlikely to have experimented with new and 'exotic' plant materials on either himself or his patients. He did, after all, have numerous wealthy, eminent and important patients, and therefore, both a lucrative medical practice and a reputation to keep.

This does not mean that Sloane was not a medical innovator. He published medical works such as *An Account of a Most Efficacious Medicine for Soreness, Weakness, and Several Other Distempers of the Eyes* (1745), in which he gave a secret formulation which included zinc oxide and ferric oxide to cure the eye of 'corneal opacities, pain and fatigue'.[52] He also played a central role in the introduction of smallpox inoculation into England during the first half of the eighteenth century. Throughout the seventeenth century smallpox had been a deadly and disfiguring disease that had affected both the rich and the poor.[53] In the early 1700s, reports of substantial success in inoculating by way of skin incisions with 'pustular material' reached the Royal Society. While many English physicians were wary of this treatment, various eminent members of London society wanted their children inoculated. As increasing numbers of successful trials were relayed, more and more medical practitioners offered this treatment in England. However, it remained a topic that divided medical opinion.[54] The Princess of Wales had asked for Sloane's opinion on the smallpox inoculation and he responded that while he did not advise that those deemed important to the public undergo treatment, 'it seemed to be a method to secure people from the great dangers attending that distemper in the natural way. That the

[50] William Byrd II had inherited a great fortune, social position and political prestige from his father William Byrd (1652-1704), a colonial officer in Virginia. Byrd II kept many diaries which reveal 'extraordinary' details about his personal affairs. See Nelson, Byrd, William (1674–1744), *ODNB*.
[51] Hans Sloane to William Byrd II, London, Dec 7 1709 (BL Sloane MS 4068), f. 54.
[52] H. Sloane, *An Account of a Most Efficacious Medicine for Soreness*…London, 1745; J.G. Ravin, Sir Hans Sloane's contributions to ocular therapy, scientific journalism, and the creation of the British Museum, *Archives of ophthalmology* 118:11 (2000) 156-157.
[53] A.A. Rusnock, *Vital accounts: quantifying health and population in eighteenth-century England and France*, Cambridge, 2002, 11.
[54] E. Huth, Quantitive evidence for judgments on the efficacy of inoculation for the prevention of smallpox: England and New England in the 1700s, *Journal of the Royal Society of Medicine* 99:5 (2006) 262-266.

preparations by diet, and necessary precautions taken, made that practice very desirable'.[55] There was, then, both a caution and a desire to find new treatments that suggested the need for experiment.

Sloane's concerns about the effects of unknown substances were not uncommon in early modern medical practice. While the natural world offered a vast 'repository of remedies' using plants, animals and minerals, and one which was often eagerly sought after, there was much deliberation about the most effective and appropriate medicines, particularly if the items in question originated from foreign and exotic lands.[56] Indeed, some of the catalogue descriptions of the 'Vegetable Substances' reflect this characteristic of unknown medical plant specimens, particularly the fine line that existed between what was curative and what was harmful. For example, Byrd sent Sloane samples of the 'Jamestown weed seed', and described its supposed medicinal virtues and effectiveness in a corresponding letter.[57] Sloane lists the 'Jamestown weed seed' in his catalogue and then adds the information provided by Byrd, cross-referencing it to his own publication:

> 2,665 James town weed seed. Stramonium from Mr. Bird. Seed, root & leaves when come to maturity poisonous. p. 159. Jam. hist. Cat. p. 59. Leaves or root make a good poultesse that immediately cures a burn.

Furthermore, in replying to Byrd, Sloane mentions that he came across this plant when he was in Jamaica and that he agreed that it 'is without question a great poison', but that John Gerard (1545-1612) also wrote of it as a cure for burns in his *Herball, or Generall Historie of Plantes* (first published in 1597).[58]

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[55] H. Sloane and T. Birch, An account of inoculation by Sir Hans Sloane, Bart. Given to Mr. Ranby, to be Published, Anno 1736. Communicated by Thomas Birch, D.D. Secret. R.S, *Philosophical Transactions* 49 (1755) 516-520.

[56] Wear, *Knowledge and practice in English medicine, 1550-1680,* 46.

[57] 'Jamestown weed seed' is *Datura stramonium*, also known as Jimson weed, or thorn apple. It is highly poisonous on account of the powerful alkaloids it contains, factors shown in Byrd's description: 'a dangerous seed of a Plant which we here Jamestown Weed, both the seed and the root are rank poison and so are the leaves when they are grown to their full bigness, but these are only poison if taken inwardly for both the Root and the leaves make a Poultis that cures a burn immediately. In another paper is a seed of the Jerusalem oak as we call it, which kills worms better than any wormseed I ever heard of. The way of takeing it, is to mix a spoonful of the seed with honey, which must be eat 3 mornings together'. William Byrd II to Hans Sloane, Virginia, Sep 10 1709 (BL Sloane MS 4041), f. 202.

[58] Hans Sloane to William Byrd II, London, Dec 7 1709 (BL Sloane MS 4068), f. 54. Gerard's *Herball* was perhaps one of the most widely circulated botany book in

The previous chapter has shown that Sloane was keen to find out about new plants, encouraging correspondents to 'send their leaves and flowers dryed between papers and their seeds that they may be known and raised here'.[59] And if Sloane's botanical collection is another example of Ken Arnold's argument that collections of *materia medica* were about functionality, then to what extent did Sloane use his collection to undertake medical experiments with new and unknown plants?

First, rather than thinking about experiment as a physical process the collection might have provided the location for intellectual experiments to determine the nature of 'Vegetable Substances'. Some descriptions in the catalogue are notable not only for the level of detail they give but also a sense of 'comparison', and a notion of 'evaluating' the plant material and its use as a remedy. For example, VS 12,522 is listed as **'**Cortex Brasiliensis (an excellent astringent) call'd by the Natives Barba timao, which as Dr. Sarayra from Rio de Janeyro informs me, grows only in the situation of the Gold Mines, and there in great plenty'. The description goes on to state that 'It has been used wt. good success internally in powder form zss to zj and in Decoctions, as you will see in our small Pharmacopoeia'. Then offers some comparisons and evaluations: 'One Ounce in powder to zwiy of Sp. of Wine, or Cold water, gives an elegant Tincture; makes an excellent Extract, and yields more than double the quantity of Extract in water, than the Cortex Peruvianus. Dr. De Castro. given me by Dr. Stack'.[60] These notes on the specimen however, do not appear in Sloane's hand, are not therefore, his own, but they find a way into his catalogue.

There are other examples that suggest this notion of comparison, in particular because of the language and vocabulary that has been used. The 'Balsam or blood of the red cedar trees' (VS 10,496) for example, has been described as 'superior in medicine to the balm of Gilead' while 'A sort of Bals. Tolu. Sent from Carthagena by Dr. Burnet' (VS 8,109) is 'thought to be better than the ordinary sort' (also coded 242). Similarly, 'Chittera mullu no. 12. A root of numeresse vertues' (VS 8,571), 'which is beaten to powder & made into pills with pepper, cures the boss or swelling of the spleen' and 'Beaten & moistned with water & applied to bruises immediately

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English in the seventeenth century. It is richly illustrated. See for example, L. Knight, *Of books and botany in early modern England: sixteenth-century plants and print culture*, Burlington, 2009.

[59] Hans Sloane to William Byrd II, London, Dec 7 1709 (BL Sloane MS 4068), f. 54.

[60] These notations are not entirely clear but they appear to represent quantity.

discusses [dispels] coagulated blood'. Significantly, the description notes that it 'raises a blister better & more safe then canthander'.

There are also instances where items appear to have been 'tried'. For example, 'The root of thymelaea from Montpelier!' (VS 2,167) which is described as being 'used for curing bloodshed or weak eyes by putting into the lobe of the ear a small piece of it' which 'Mr. Meaux gave it me [and] who has tried it severall times'. Likewise, 'A piece of the branch of a tree or root wt. a gray bark taken in a ship from Cayenn' (VS 6,718) which 'is porous' and when 'poudered cure[s] a flux' came from 'Mr. Strother who had it from a Padre' who, it seems, 'tryed [it] wt. successe on a porter'.

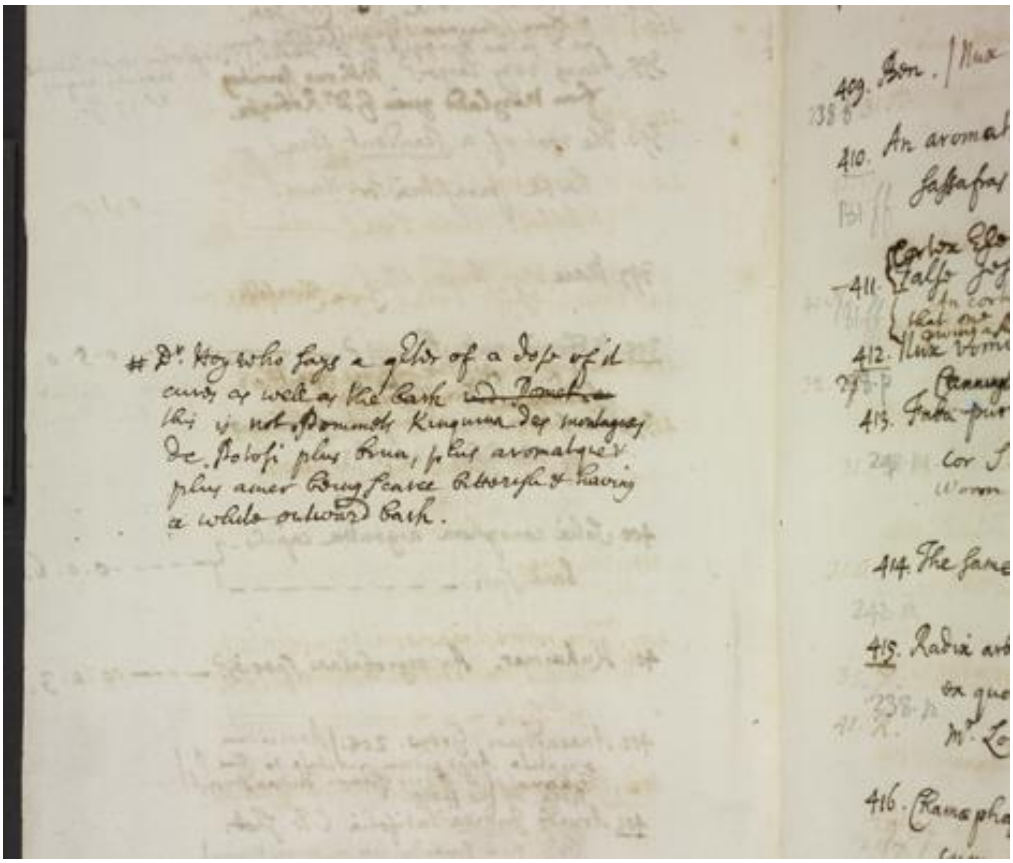

Figure 19: The verso of a page from the 'Vegetable Substances' catalogue which contains a note relating to VS 411. It appears to have been inserted subsequent to the original catalogue entry being written and is linked to the description by the use of a symbol. © Trustees of the Natural History Museum, London.

This method of comparison can also be identified in samples that have been described as 'the same' as something else, such as 'Asarabacca Virginiansis almost the same as in England' (VS 648, and with code 181), while other things are described

as false. For example, 'A twigg of a tree pretended to be a cinamon tree from Jamaica' (VS 6,709) and, from 'Dr. Hoy', 'False Jesuits bark. China China falsa' (VS 411). Indeed, a comment has been added to this entry on the reverse of the preceeding page (see figure 19) which notes: '# Dr Hoy who says a quarter of a dose of it cures as well as the bark. this is not Pommets Kinquina des montagnes de Potosi plus brun, plus aromatique & plus amer being scarce bitterish & having a white outward bark'.[61] Again, the idea of something being compared or evaluated, whether by Sloane or someone else, is apparent in the descriptions of the 'Vegetable Substances'.

This is also evident to some degree where there are many different remedies for a set of medical problems. For example, a prominent medical concern of this period, and one connected to England's increasingly global set of connections, was how to deal with venomous bites and with poisons. The contents of the 'Vegetable Substances' certainly reflects this. Seventeen examples of 'snakeroot', considered effective treatments against the bites of venomous creatures, are listed in the catalogue. Sloane's correspondence, as well as papers published in the *Philosophical Transactions,* also demonstrate this considerable medical interest in snakes, their poisonous venom and the roots used to cure their bites. For example, in 1722, the politician Paul Dudley (1675-1751) wrote from Roxbury in New England about 'An Account of the Rattlesnake' describing various reports of its behaviours and effects, and that 'Our People have several Remedies for the Sting of the Rattlesnake; among others, that which is much made use of, is a Root they call Blood-root'.[62] In fact, we find a 'Bloody root' listed in Sloane's catalogue as sent by 'Mr. Winthorp from New England'. Listed as VS 10,488, 'The juice is like blood' and 'The Indians use it in consumptious fevers & to cure the bite of the rattle snake, bloody fluxes'. Another sample sent from New England by this correspondent is a sort of 'snakeweed'. It is given a particularly detailed catalogue description which explains that the box contains the 'The wool and seed of one sort of snakeweed, which grows almost every where in [New England]'. The entry then continues with information about the plant itself – 'it bears a purple red flower like columbines, after the leaves of the flowers fall off it shoots out into long buttons at the top wch. in autumn open & contain this

[61] This is a reference to Pierre Pomet's *Histoire générale des drogues* (General history of drugs) which was published in 1694 and translated into English in 1712.
[62] W. Pencak, Dudley, Paul (1675–1751), *ODNB*, online edition, 2004; P. Dudley, An Account of the Rattlesnake. By the Honourable Paul Dudley, Esq; F.R.S, *Philosophical Transactions* 32 (1722-1723) 295.

wooll'. It concludes with how this material was used locally: 'The Indians cure the bite of the ratle snakes with the roots & stop bleeding wt. the wool' (VS 10,517).

However, it is in Sloane's correspondence with Byrd that there is most emphasis on the natural history interest in curing the bite of snakes. In 1706 Byrd wrote from Virginia about 'a small box of the Root, with which the Indians us'd to cure the bite of a Rattle-Snake' that he had sent to Sloane. He explained that 'all the Traders which we send several hundreds of miles to traffick with the Indians, find it constantly to cure their horses, when they happen to be bit. I my Self have Servants that have try'd it often, and never knew it miss'. Byrd remarked to Sloane that 'Certainly a Plant that has virtue enough to cure so venomous a bite, as that of the Rattle-snake, must be of infinite use in other diseases. I beg the Society would please to make some experiments with it, because I'm confident it will do great Service in many cases'.[63]

It is not clear whether Sloane acted on this particular request, but some years later he did get reports on a rattle-snake root made, and they were published in 1727 in the *Philosophical Transactions*.[64] In 1733 Sloane also gave a fuller account of some matters relating to this in a paper entitled 'Conjectures on the Charming or Fascinating Power attributed to the Rattle-Snake; grounded on credible Accounts, Experiments and Observations'. He explained that he had received a live specimen of the rattlesnake from Virginia by way of an 'eminent Merchant' named 'Mr Read', who had himself received the snake in a box with some gravel. The surgeon John Ranby (1703-1773) had then taken care of the snake, which was eventually experimented upon by Captain Hall, 'a very understanding and observant Person, who had lived many Years in that Country in great Repute'.[65] Sloane, according to his own writing, had 'desired an Experiment should be tried before several Physicians; which was accordingly done in the Garden belonging to their College in London'. Apparently

[63] William Byrd II to Hans Sloane, Virginia, Apr 20 1706 (BL Sloane MS 4040), f. 151.

[64] These reports included: J. Ranby, The Anatomy of the Poisonous Apparatus of a Rattle-Snake, made by the Direction of Sir Hans Sloane, Bart, Praef. Soc. Reg. & Coll. Med. Together with an Account of the quick Effects of its Poison; by John Ranby, Esq; Surgeon to his Majesty's Household, and F.R.S, *Philosophical Transactions* 35 (1727-1728) 377; Hall, An Account of Some Experiments on the Effects of the Poison of the Rattle-Snake. By Captain Hall. Communicated by Sir Hans Sloane, Bar. Med Reg &c, *Philosophical Transactions* 35 (1727-1728) 309.

[65] H. Sloane, Conjectures on the Charming or Fascinating Power attributed to the Rattle-Snake; grounded on credible Accounts, Experiments and Observations, *Philosophical Transactions* (1733) 322.

this particular snake was placed 'upon the grass-plat' and 'then a dog 'being made to tread upon' was bitten by the snake. The dog quickly died, and this experiment, for Sloane at least, portrayed something of the 'fascinating power attributed to the rattle-snake'.[66]

Others were also experimenting elsewhere. Byrd continued to discuss the medicinal virtues of the snakeroot found in Virginia and, in 1737, he informed Sloane of the trials relating to the rattlesnake root undertaken by his friend 'Mr Tennent'[67]:

> The Gentleman who waits upon You with my Complements, Mr. Tennent, has made many successful Tryals of One Species of our Rattlesnake Root. He has found it almost a Specifick in Pleurisys, which are the most fatal of all Diseases in this Clymate amongst the Negroes & Poor Peoples…. My Friend carrys over a large Quantity of this Root, that so various Experiments may be made of it. He judges very right Sr, that nobody is capable of searching deeper into its Vertues than Your Self.[68]

It is clear from this that whether Sloane was active in experimenting with medicinal plant materials like snakeroot, others thought that he should be, and gave him ample opportunity to do so. Indeed, amongst the examples of snakeroot found described in Sloane's 'Vegetable Substances' catalogue is VS 11,111 'Ratle Snake root. From Virginia by Dr. Tenent. Said to cure pleurosies, & to be a panacea. polygala?'[69] Moreover, a further entry shows that Sloane was, at least, once again engaged in the process of comparison through his collection. Thus, VS 11,001 from 'Mr Clayton' in North Carolina, is described as 'in great esteem here for its virtues in curing the bite of the Rattle Snake and is frequently administer'd in Fevers, when it has ye. same effect as Contrayerva. I procured it from North Carolina (tho' it grows in the Southern parts of Virginia:) where it is called the Rattle Snake Root'. This time, in a note added to the catalogue, Sloane explained that, 'as I judge by Dr Tennent's Description of his Rattle Snake-Root', this was a very different plant from that which was sent by

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[66] Sloane, Conjectures on the Charming or Fascinating Power, 322.
[67] This is Dr. John Tennent (c. 1700-1748) of Virginia. See R.P. Stearns, *Science in the British colonies of America*, 289.
[68] William Byrd II to Hans Sloane, Virginia, May 31 1737 (BL Sloane MS 4055), f. 112.
[69] *Every Man his own Doctor: or, the Poor Planter's Physician,* is attributed to Tennant and was first published in Virginia and then reprinted throughout the colonies. The fourth edition was published in 1734 by Ben Franklin in Philadelphia and contains an entry for 'pleurisy'.

Tennent to Mead in London.[70] Sloane was, at least in this example, able to use his collection to compare the samples of snakeroot that he received to judge if they were the same if not whether they worked.

It is clear from what has been said that these forms of comparison and evaluation were based not on physical experiments conducted by Sloane himself, but on information that was received from others that had been generated in a variety of ways (including observations of the effects on enslaved Africans). This information also needed to be evaluated. As we have seen, Sloane sealed into the 'Vegetable Substances' boxes, and listed in his catalogue, effective purging material from all over the world. Many examples were sent by Byrd from Virginia, and in September 1709 he wrote to Sloane saying,

> By this fleet I send you a box with some more roots and seeds, that the Society may try if there be any virtue in them. Amongst the rest, there is a Paper of a Root which I think very like Jalap, we call the plant here Poke, it bears a purple berry which would dye an admirable colour if we understood the right way of fixing it. For the good of my Country therefore I beg of you to send me the best ways to fix dyes, of which we are very ignorant.[71]

Whether any trials were conducted or not, we find Byrd's 'Poke root' listed in the 'Vegetable Substances' catalogue as the 'Poke root from Virginia from Mr. Bird' (VS 2,664). Sloane provides further detail in this catalogue entry including that it is the 'Roots of the Solanum racemosum Americanum' to which he adds 'Ray. hist' and 'cat. Jam. p. 94' and thereby cross-references the 'Poke root' to Ray's *Historia Plantarum* and his own catalogue of Jamaican plants. Sloane then evaluates the knowledge surrounding the use of this plant and does so in both his catalogue and in writing to Byrd. While Byrd suggested that this 'Poke root' was 'very like Jalap' Sloane wrote in the 'Vegetable Substances' catalogue that this 'root is not like Jalap'.[72] This catalogue entry also includes the detail, 'when green a spoonful or 2 of

[70] Byrd also continues to write to Sloane about the Rattlesnake root and in 1737, he says, 'Then as for the Rattlesnake Root the Reputation of it increased every day…. It has been tried in Intermitting Fevers with Success, and I am not without hopes, that it will disgrace the Peruvian bark, and put the Jesuit quite out of countenance', William Byrd II to Hans Sloane, Virginia, Aug 20 1737 (BL Sloane MS 4055), f. 367.

[71] William Byrd II to Hans Sloane, Virginia, Sep 10 1709 (BL Sloane MS 4041), f. 202.

[72] And in his letter to Byrd, Sloane wrote 'The root you call Poke is not Jalap but the root of the Solanum racemosum American of Mr. Ray in his history of plants'. Hans Sloane to William Byrd II, London, Dec 7 1709 (BL Sloane MS 4068), f. 54.

the juice purges but when dryed it has not that effect as Parkinson says. vid. Jam. hist. p. 200'. In his subsequent reply to Byrd's letter, Sloane similarly provides this information about the medical use of the 'Poke root' and writes that 'A spoonful or two of Juice of the root when green will purge but when dryed the root has not that effect'. Sloane goes on to explain that he had met this plant while 'in the Caribe Islands & Jamaica and [had] given some acct of it in [his] History of that Island'.[73]

Sloane's response to Byrd about this particular sample tells us more about Sloane's process of natural history collecting, identification and organisation, and how he might have used the 'Vegetable Substances'. This exchange of knowledge between Byrd and Sloane gives evidence that Sloane's process of cataloguing and description was in fact more complex than simple replication. Sloane does not appear to rely on the botanical information supplied by Byrd.[74] Instead, Sloane replies to Byrd with his own knowledge of the 'Poke root' and, in turn, creates a catalogue entry that combines information from different sources that, on various grounds, including trusted authors and his own experience, he judges to be true. While this may not be an experiment in the strict sense, it is a careful process of comparison and evaluation in which the 'Vegetable Substances' plays a part, alongside Sloane's memory, his library (including his own previous publications) and his herbarium.

This means that in this process of description, comparison and evaluation the catalogue and the collection always need to be understood in relation to other information that Sloane had to hand rather than as self-contained. For example, Sloane lists the 'Blood flower seed' (VS 7,722) (*Pentalinon luteum*) in the 'Vegetable Substances' catalogue. Apparently, this sample consists of 'The seeds of a tree yt. grows near ye. Ferry' and was sent (along with many other seeds) from Jamaica by Henry Barham.[75] Significantly, this catalogue entry alone does not allude to any medical use for this plant, but in 1712, in a letter to Sloane, Barham had highlighted the 'Blood Flower' as 'a lately found' plant in Jamaica with great medicinal virtues. Barham described that when 'the Leafe' of this plant is 'outwardly Applied [it] gives Immediate relief in the Gout drawing Violently a Water out of the part. The flowers Stopp Bleeding att the Nose Altho butt Smelt too. & a Decoction of whole Herb Cures fluxes, & [Gonorrhoea] as a Patient of myne lately experienced'. 'This Herb',

[73] Hans Sloane to William Byrd II, London, Dec 7 1709 (BL Sloane MS 4068), f. 54.
[74] William Byrd II to Hans Sloane, Virginia, Sep 10 1709 (BL Sloane MS 4041), f. 202.
[75] Henry Barham to Hans Sloane, Apr 30 1724 (BL Sloane MS 4046), ff. 165.

according to Barham, 'Cured [his patient] in 2 or 3 times takeing[,] it was Discovered by a Negro'.[76] Twelve years later, in 1724, Barham was still discussing the medical efficacy of the 'Blood Flower' in his letters to Sloane. This time he tells of his prescription of the dried flower to a Jamaican patient of his, a man of sixty years who had suffered from 'Old Gleets' for a long time without any relief. Barham 'Advised Him to take the Flowers of this Plant & Dry them very Well & make a Tea of them to Drink Morning & Night w^{ch} He did & in about a Months Time made a Perfect Cure[.]'[77]

One year later, in 1725, Barham wrote to Sloane again about the 'Blood Flower' and his recurring success in using this plant against 'Gleets' along with more information about its medical value. The 'Blood Flower' was also apparently being increasingly used by people in Jamaica. Barham explained that it was a plant 'Now Much in use hear & the Planters will not be persuaded that it is not the True Ipecuana. They Now Frequently give the Juice of the Stalk & Leaves even to Children for Worms w^{ch} they affirm it Never Fails to bring them away'. Barham, for his part, said he would 'never Dare be so Bold as to Administer it' in such cases, but he continued to use the leaves of the plant in a 'week decoction' of tea to cure 'old Gleets'.[78]

The 'Blood Flower' is an interesting example of a medicinal 'Vegetable Substance' for a number of reasons. It shows something of the development and increased popularity of a plant being used in Jamaica to cure different medical problems, and therefore something more of the contexts out of which material in the 'Vegetable Substances' collection came, and came to Sloane. Not only does Barham speak of the medical practice of enslaved Africans, but he also provides further evidence of the 'Blood Flower's' utility and effect by referring to his own experiments with the plant as well as those of mutual acquaintances such as 'Col. Howard w^{ho} Frequents Old Nan's Coffy House at Charing Cross [who] can give you a Particular account of a great Cure performed by it upon Himself'.[79]

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[76] Henry Barham to Hans Sloane, St Jago de la Vega, May 10 1712 (BL Sloane MS 4043), f. 45r.
[77] Henry Barham to Hans Sloane, Apr 30 1724 (BL Sloane MS 4047), ff. 165r-166v.
[78] Henry Barham to Hans Sloane, Jamaica, Jul 3 1725 (BL Sloane MS 4048), f. 15. *Carapichea ipecacuanha* is a species of flowering plant in the Rubiaceae family. It has a long history of use as an emetic, for emptying the stomach in cases of poisoning and has been used as a nauseant, expectorant, and diaphoretic.
[79] Henry Barham to Hans Sloane, Apr 30 1724 (BL Sloane MS 4047), ff. 165r-166v.

Sloane took seriously what Barham told him. In volume one of his *NHJ* he had described the 'Blood Flower' as the 'Savanna Flower', but after corresponding with Barham about his book (see chapter three), Sloane amended the entry in his second volume and he wrote in the preface that 'The same Gentleman', Barham, 'takes notice of the next which he says is commonly call'd in Jamaica Blood Flower, &c. from its stopping Blood, when other Medicines fail'd. The Juice injected by a Syringe stops the Bleeding of the Piles […] the Flowers dry'd, drank as other Tea, cure Gleets. He says also, that it is likely to be good for the Fluor Albus'.[80] Here Sloane makes reference to medicinal virtues not found in Barham's letters, or even in the 'Vegetable Substances' catalogue, such as the use of the syringe and the 'Blood Flower' as a cure for 'Fluor Albus'.[81] Instead, this additional medical information is found in Barham's own then unpublished work, the *Hortus Americanus*, which he had sent to Sloane (see chapter three).

[80] Sloane, *A voyage to the islands*, London, 1725, Introduction, x. Sloane mentions the original entry in his catalogue of Jamaican plants (p. 89) and describes it in his *NHJ*, volume one, 206-7, t. 129, f. 4, 5. The plant in question is *Asclepias curassavica*. Sloane reproduces the information supplied by Barham in his letter dated Apr 30, 1724.

[81] The Latin term used in early modern discussions of reproductive medicine for abnormal vaginal discharge. From the late seventeenth century scholars would begin to use Greek terms and replace *fluor albus* with *Leucorrhoea*. See J. Evans, *Aphrodisiacs, fertility and medicine in early modern England*, Suffolk, 2014, 3; W. Churchill, *Female patients in early modern Britain: gender, diagnosis, and treatments*, Abingdon, 2012, 41.

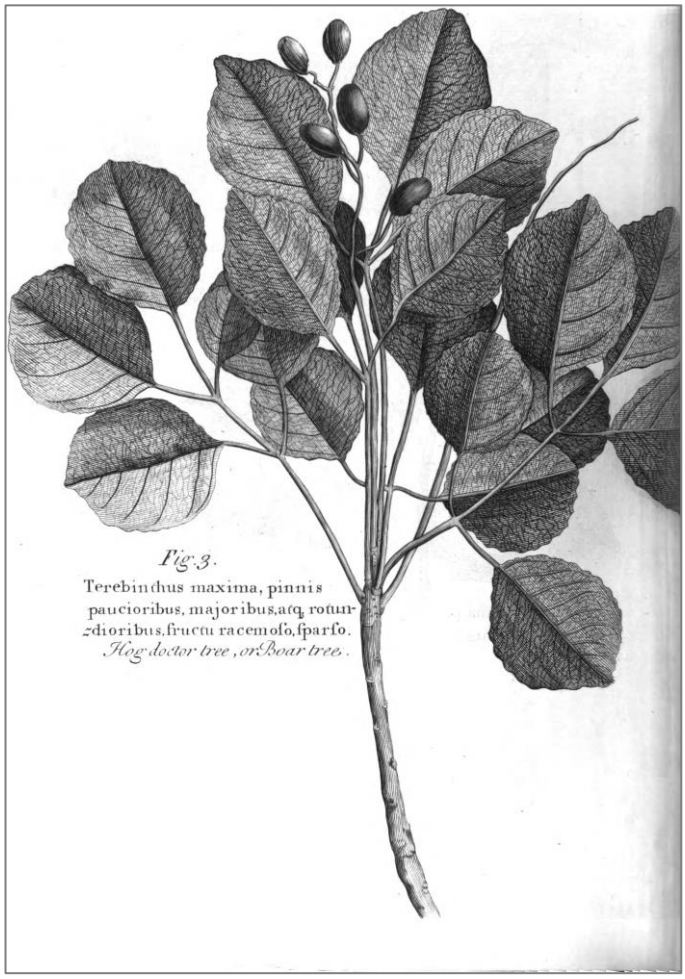

Figure 20: The 'Hog doctor tree, or Boar tree' (tab. 199, fig. 3) from volume one of Sloane's first volume of Voyage to Jamaica which was published in 1707, now held in the Natural History Museum. © Trustees of the Natural History Museum, London.

Barham also provided Sloane with medicinal information about other Jamaican samples we find described in the 'Vegetable Substances' catalogue. There are several examples of 'Hogg gum', including 'Hogg tree gum from Jamaica' (VS 1,662), 'Hogg gum from Jamaica from the terebinthus called Hogg. Dr. Tree' (VS 1743), and 'Hog gum from the Bahama Islands by Mr. Clarke' (VS 9,909). Once again, these descriptions provide very little in the way of understanding what this plant material may have been used for. However, when Barham wrote to Sloane in 1712, he described 'The Hogg Gum as its Called' and wrote of its increasing use and being 'taken while fresh & New from the Spurrs of the Tree with a little Sugar & Water passes Through in the most Violent Bellyach it alsoe hath great effect Dissolved in a Emollient Clyster and farr exceeds the belle ach wood'. Indeed, according to Barham's local knowledge, the 'Hog gum' had more than one medical use and he said that when the sample is old it becomes very hard and so this is the most effective time to 'Melt it with a little Hoggs fatt Bees wax & a little birthwort

Root in Powder', which would have the effect of making 'a Balsam that will Cleanse the most foulest Ulcer'.[82]

Although there is no further correspondence on the matter, Sloane subsequently included an entry for the 'Hog Doctor-Tree, or, Boar-Tree' in Volume Two of his *NHJ* as well as an engraving of it (see figure 20). There he describes the virtues of the balsam of this tree in curing wounded wild hogs but also, and significantly, explains the medical uses of 'Hog-gum' for human diseases. He writes that 'The common Practice of those who have try'd the liquid Balsam of this Tree call'd Hoggum, with good Success, is to give a quarter of an Ounce to a Man in Strength, in all Cases where Vomiting and Purging is necessary, this is by them said to be most excellent and effectual, especially in Colic, Jaundice, Rheumatism, and all Chronical Diseases […] it's reckon'd a Secret in all Venereal Cases and all Diseases of the Urethra, as Gravel, Stone or other Stoppages in the Bladder or Kidneys'.[83] Once again, this is based on Barham's description of the 'Hog-Gum' in his *Hortus Americanus*.[84]

The examples of the 'Blood Flower' and 'Hogg gum' imply that the 'Vegetable Substances' collection is more medically orientated than its catalogue would suggest. They also indicate that the collection and the catalogue have to be seen within the context of other collections, and sources of information, that Sloane had to hand: particularly, his library (both printed books and manuscripts) and his letters. Barham undoubtedly sent such samples to Sloane because they were plants with therapeutic properties which he detailed for an interested Sloane in his letters, along

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[82] Henry Barham to Hans Sloane, St Jago de la Vega, May 10 1712 (BL Sloane MS 4043), ff45r-46v.

[83] H. Sloane, *voyage to the islands*, London, 1725, 90-91.

[84] H. Barham, *Hortus Americanus*, 74; Sloane makes the amendment: 'P. 197. After I. 35 add, A dram given in Powder, every three or four Hours, till the Symptoms abate, cures the Belly-ach. The Syrup, or Decoction in Clysters is also good. Mr. Barham in his Observations, who also says, that with a Plaister of Hog Gum, and Frictions, it is us'd to restore the use of the Limbs'. Years later, the Irish physician Patrick Browne (1720-1790) would publish *The Civil and Natural History of Jamaica in Three Parts* (1756) and include an entry and copper plate illustration (drawn by Georg Ehret) of *Metopium* or the 'Hog-gum tree. A medicinal gum when dissolved in water is an easy purgative'. This description also references Sloane 'See Sloane' appears at the end of the description of 'The Hog-gum Tree', in: P. Browne, *The Civil and Natural History of Jamaica… illustrated with forty-nine copper plates … by George Dionysius Ehret*, London, 1756, 178. This book was also exhibited in 2013 at the Royal College of Physicians of Edinburgh, see J. Hutcheon, Patrick Browne's *History of Jamaica*, *The journal of the Royal College of Physicians of Edinburgh* 43 (2013) 377-8.

with accounts of how to use them in treatment regimes, and thereby build the sort of relationship with Sloane discussed in chapter three. Yet Sloane's catalogue makes no reference to this medical information in either the sample's description or code annotation (they are not 181, 242, 243 or 246).

Conclusion

The examples explored in this chapter imply that the 'Vegetable Substances' catalogue was not, nor intended, simply as a guide to *materia medica*, and if based on an argument about functionality, then this collection was probably not a medical collection. It is however a collection of plants with uses, many of which were therapeutic and which have been identified here through a number of means. The first is through reading the catalogue descriptions themselves. Those that contain information pertaining to the medical uses of plants vary enormously in detail. They do however reflect medical practices of the early modern period with a particular emphasis on evacuative treatments and typical regimes that Sloane would have prescribed to his patients. The second way that we can identify the medical use of the 'Vegetable Substances' is through its ordering, in particular, the use of location codes. 181, 242, 243, 246 and 183 are five examples of many potential codes that denote a broadly defined medical utility of this material. Thirdly, Sloane may have used the 'Vegetable Substances' to experiment with plants from around the world. This broad notion of experimentation involved the evaluation and comparison of this plant material, and is most evident from the language used in Sloane's catalogue, which was in his hand but not necessarily in his own 'voice' as he copied, compiled and edited descriptions.

The descriptions and organisation of the 'Vegetable Substances' collection discussed in this chapter comprehend medical use broadly, and understand comparison and evaluation to be a key component of how these plant materials were being dealt with. However, overall it has to be concluded that such medically orientated uses of the collection are not the central organising principle of the 'Vegetable Substances'. While prescriptions have been recorded in the catalogue, they were not necessarily being used. Similarly, using these plant samples in this way – to compare, to evaluate and, sometimes, to experiment with – could not be undertaken separately or in isolation from the rest of Sloane's collection, or other sources of

information for that matter. It might best be said that there are pockets of *materia medica* within the 'Vegetable Substances' collection. These include groups of samples sent to Sloane as job lots (such as Uvedale's Siamese drugs), those labelled with the same location code, those effectively used as purges, and those found in apothecary trays. Taken together, these are a collection of *materia medica* but not one which defines the whole collection. They are a collection of medical plants within a plant collection if you will.

Conclusion

Hans Sloane's 'Vegetable Substances' collection puts nature in a box, but not just one box, or even identical boxes. There are many, many boxes, and in them nature appears in the form of seeds and beans of different sizes as well as pieces of wood, bark, leaves, gums and oils. Some of these specimens of nature are found in ceramic pots, while other samples are devoid of containers completely. Overall, there are more than eight thousand surviving examples of these objects and what makes them 'Vegetable Substances' is how they have been made into specimens, and assembled into a collection. As was shown in Chapter Two, each sample – most often botanical – is usually contained in its own wooden box, with glass top and bottom, and the joints sealed by gluing decorative papers over them. While the size and shape of these boxes are different they are all generally small and at the same handy scale. This process of making a 'Vegetable Substance' was particular and purposeful, and it ensured that a certain collective aesthetic was produced when forming this collection, one that emphasises sameness and uniformity, and that opens the specimen to the eye while closing it off from easy access and from the other senses.

As has also been shown, each 'Vegetable Substances' object, whether in a box or not, has been labelled with a number which keys it back into Sloane's manuscript catalogue. It is in this catalogue that we find handwritten descriptions of these items. Again, this would appear to add another level of uniformity to the collection because not only do all of these objects look similar but they also have numbers correlating them to specific information. This list is fundamental to our understanding of what is in this collection. It is the space in which Sloane described what these 'Vegetable Substances' are, where they came from, who collected and sent them, and what they were and could be used for. Together, this data reveals that this mass of natural material is made up of seeds, beans, oddly shaped pieces of bark, skeletonised leaves, oils, balms, and gums. It also reveals that at least 320 people contributed to this collection and that this material came from across the world including various locations within the New World, the East Indies as well as throughout Europe and the British Isles. The catalogue also reveals something of Sloane's collecting practices. The inclusion of various abbreviations, notes, location codes and cross-references to

natural history publications indicate that Sloane was attempting to order and manage this natural history collection.

Together these catalogue entries allow us to recognise broad characteristics in the collection and, despite the appearance of uniformity given by the boxes, a significant part of this is its variety. While half of the collection may be made up of seeds, there are also numerous examples of more unusual items like 'A snake stick being a branch of an oak tree so involuted as to imitate the coiling of a snake the ends of which are shapd to resemble the head & tail' (VS 11,802). Indeed, a close reading of the catalogue soon reveals that there is a great deal of variation in the 'Vegetable Substances', both in the extent to which the items have been described, how they are described, and what the material is. While there is, therefore, an imperative to describe, the terms of that description are very varied.

This thesis has demonstrated that Sloane's catalogue, as an information system, offers a huge amount of potential for establishing what these 'Vegetable Substances' are, where they came from and what they could be used for. For Sloane, it would have provided the dominant paper tool for managing this natural history collection, guaranteeing some degree of certainty against the dangers of confusion among the multiplicity of material that was always arriving at his Bloomsbury townhouse. The catalogue also demonstrates that this was an on-going, potentially universal, collection for which Sloane may never have conceived an end point. However, this thesis also shows that this does not appear to have been a paper technology that Sloane was using systematically to order, arrange or manage this natural history collection. While items have been fixed in their boxes, and the catalogue offers the promise of identifying what everything is and where it came from, entries can be so short as to be virtually meaningless or they can be highly speculative. There is neither consistency between them nor a clear notion of developing processes across the volumes of this catalogue. There are certainly many abbreviated references to all sorts of useful publications and to the collections of other collectors; there are also keys which seem to identify where the object may have been stored, but the use of these references is not rigorous. There is also no key to aid a reader or user in 'using' this catalogue, and while it is chiefly written in Sloane's hand, it is not necessarily in his own 'voice'. Descriptions are most often copied directly from the information that accompanied the material as it arrived with him. Although, once again, this is not consistently so.

It is, however, the case that the catalogue can tell us that at over three hundred people contributed to this collection: an important starting point for establishing where this huge amount of material came from, as analysed in chapters three, four and five. What has been shown here is that the range of people in this list also varies greatly, as do the sorts of connections, links and relationships they had with Sloane.

As Part Two demonstrates, in order to form the 'Vegetable Substances' collection, Sloane actively and directly gathered together specimens from around the world. In 1742, at the age of eighty-two, Sloane wrote from London to John Bartram in Philadelphia requesting 'some seeds, or samples of your plants, for my collections of dried herbs, fruits, &c'.[1] This, as the most direct reference to the 'Vegetable Substances' collection that exists in the manuscript record, shows Sloane as central and directly involved in the forming of his collection. And Bartram was not the only 'resident collector' in the New World with whom Sloane corresponded; others included Henry Barham in Jamaica and, on a lesser scale, Alexander Scott. These on-going interactions were beneficial to everyone involved. Sloane could add to his collection and, in the case of Barham, amend his own publication of *NHJ*, while men like Barham and Bartram benefitted socially and professionally. Moreover, Sloane played an even more influential role in receiving material from the Americas, albeit financially. His direct sponsorship of collecting trips by individuals such as Mark Catesby, William Houstoun and Robert Millar greatly added to his collection. However, to suggest that Sloane actively and directly collected all of the seeds, samples of plants and everything else listed in his catalogue would be misleading. It would undermine the complexities and multiplicity involved in forming a collection like the 'Vegetable Substances'. This is demonstrated in Part Two in the comparison between West and East.

Of course there were also resident collectors in the East. Samuel Browne and Edward Bulkley in Madras were crucial in the movement of natural history from the East and they utilised their employment as surgeons in the EIC company at Fort St George to do so. Browne, Bulkley and others such as the EIC clergyman George Lewis, like Barham and Bartram, had access to local natural history which later came into Sloane's hands. The crucial difference here though was that Sloane did not directly engage with Browne and Bulkley. Of course, there were some in the East with

[1] Hans Sloane to John Bartram, Jan 16 1742, in: W. Darlington, *Memorials of John Bartram and Humphrey Marshall,* 303.

whom Sloane directly communicated, such as ship's surgeons Alexander Browne and James Cuninghame as well as the French Jesuit Jean de Fontaney. However, central to much of the material collected in the East were the collecting practices of James Petiver. His global connections and his own natural history pursuits meant that natural history specimens from around the world ended up in London, and in Sloane's collection. So while the West allowed for a variety of people to be collectors, the collecting landscape in the East was fundamentally shaped not by settlement but by established trading companies like the VOC and the EIC. Factories, voyages, diplomacy and private trade, and their connections with the EIC all influenced how natural history was collected in the East and thereby affected the degree of control that Sloane had over what entered his collection. In the West, Sloane was directly involved in natural history collecting in ways that made him part of 'exchanging' natural history. In the East, however, Sloane utilised institutional 'networks' that were already in place. This meant that he was sometimes involved with people directly, but more often than not he was on the periphery of natural history collecting, waiting in line to benefit from the pursuits of others, knowingly or not. This variety, and Sloane's collection of collections, means that the recovery of what might be called "Sloane's network" from the record of the 'Vegetable Substances' is no straightforward task. The 'Vegetable Substances' collection was neither the product of a fixed singular network of contacts, nor did it produce one. Indeed, the broader implication, beyond the case of the 'Vegetable Substances', or even Sloane's collection as a whole, is that we need to be more careful in how we use and apply the term 'network' when we consider the exchange of natural knowledge.

The term 'network' is currently being used widely across fields of academic research well beyond that of natural knowledge exchange in the early modern world. Perhaps this is because a general understanding of what a 'network' is and means has become assumed in an information society in the age of the internet and social media. Yet the danger is that this makes the use of the idea of a 'network' into a conceptual framework that becomes both self-evident and unproblematic. In this context the specificity of Latour's definition and notion of a network needs to be re-emphasised: it is, in fact, something that is not static, but hybrid; less a homogenous structure on a map and more like the interlaced roots of a plant.[2] Latour views a 'network' as not

[2] See B. Latour, On actor-network theory: a few clarifications, *Soziale Welt*, 47:4 (1996) 369-381.

simply social, but as a set of associations between human and non-human actors.[3] We can of course view the relationship between Sloane and the samples, between samples, and between contributors found in the 'Vegetable Substances' as associations. We could even call them 'Vegetable Substances' associations. However, it is still not accurate to suggest that every node in this collection constitutes a 'Vegetable Substances' association. This would hide the complexity and range of relationships involved, especially in terms of the multiple people across the world that Sloane did and did not interact with, and the variety of things that ended up in the collection. Part of the point of actor-network theory is, after all, to show how entities become related to one another and how this can establish extended network. Yet this cannot be ascribed to a collection in which the contents do not always relate to each other, or even the collector. If we consider the 'Vegetable Substances' as the outcome of many partial, sometimes haphazard connections that Sloane had – some directly and sometimes much less directly – with the people from whom they originated, then together these relationships form a complex lattice rather than a simple network.

The samples in the 'Vegetable Substances' collection are, for example, unlike letters in Sloane's manuscript archive: they cannot be used to generate the sorts of maps that are associated with models of early modern correspondence networks, and which are dependent on the materiality of paper communication. Notions of networks in the context of the geography of knowledge have developed in recent years towards greater appreciation of their multi-layered character over space and time.[4] This thesis has been concerned with a natural history collection in which there are notable

[3] Latour, On actor-network theory: a few clarifications.

[4] For example, see Latour's idea of networks as both global in extent but 'local at every point', in B. Latour, *We have never been modern,* Hemel Hempstead, 1993, 117, as well as Latour, *Science in Action*; Latour, *Reassembling the Social*. For developments in the use of GIS and other digital technologies see I. Gregory and P. Ell, *Historical GIS: technologies, methodologies and scholarship.* Cambridge. 2007. For the nature of spaces and the placing of scientific knowledge production as points in networks see, S. Shapin, The house of experiment in seventeenth-century England, *Isis* 79 (1988) 373-404; S. Naylor, Historical geography: knowledge in place and on the move, *Progress in Human Geography* 29:5 (2005) 626-634; the example of Streynsham Master and EIC factory organization, in: Ogborn, *Indian Ink,* 69, and Ogborn, Streynsham Master's office: accounting for collectivity, order and authority in seventeenth-century India, *Cultural Geographies* 13 (2006) 127-155. Also see the example of Samuel Pepys's library as a social space that animated a network of connections, in: K. Loveman, Books and sociability: the case of Samuel Pepys's library, *Review of English Studies* 61 (2010) 214-33.

absences in information about crucial links, nodes and connections through which it took shape. In the case of the 'Vegetable Substances' collection, at least, there is no singular defining network, no one-dimensional pattern to map. This means that we need to describe this natural history collection, and others, in a different way than correspondence networks. In particular we need to acknowledge the wider range of different sorts of relationships or connections through which the collection was made and the patterns that they formed. Some of these connections might, to some extent, be seen as forming networks For example, those connections and exchanges that were underlined by Sloane's medical interest in plants and in cultivating gardens and, thereby, included other men like Sloane who were Fellows of the Royal Society. Other connections were reliant on networks formed in other ways, such as those connections made by and through the EIC which brought materials into Sloane's collection. More generally, there may well be something 'network'-like – and which can be described in terms of neat lines, nodes and structures – visible in Sloane's correspondence, an emergent 'Sloane correspondence network'. Nonetheless, the term requires careful usage in the context of natural history collections. Moving away from a more general use of 'networks', or at least being more careful in the application of the term, is also useful for thinking about networks of trust and may help in considering the not so trustworthy knowledge found in material collections.

The huge variety of contributors and contributions to the 'Vegetable Substances' also begs the question of how central Sloane was to forming his own collection. To what extent is Sloane's 'Vegetable Substances' collection even his? Here it is helpful to consider the correspondence of other people in thinking about the role of Sloane in his own collecting activities. Richard Richardson, William Sherard, Robert Uvedale and many other individuals who lived in Britain were also avidly collecting natural history from around the world, corresponding with various people and acting as conduits for domestic and exotic plant material, many samples of which would end up in Sloane's botanical collection. Men and women with similar professional, natural history and collecting interests to Sloane were corresponding with one another and playing important roles in the movement and exchange of this natural history. Again, across these examples, the contributors of material to the 'Vegetable Substances' were not part of something we might regard as a 'network' that belonged strictly to Sloane. The connections were much more complex than that. Many of these contributors, like Alexander Stuart and William Sherard, were sending

material of this sort to multiple other people in London and across Britain and Europe. They, and other contributors, were also collecting and sending material from the West and the East, and they had natural history interests that went far beyond Sloane's botanical collection, for instance, interests in the cultivation of plants.

Indeed, plant cultivation was a prominent topic of conversation and correspondence amongst these individuals. As Chapter Six has shown, although Sloane does not appear to have actively grown plants in his own garden, he was important in facilitating these activities in different ways and the 'Vegetable Substances' collection played a part in this. Indeed, gardens and gardening were not only an important context for Sloane's 'Vegetable Substances' but they reveal something of the life of these items beyond the collection.

Use will always be difficult to define when it comes to Sloane's collection, let alone just his botanical collection and the 'Vegetable Substances' in particular. One way towards understanding it is to consider the scale and materiality of the boxes themselves as suggesting and facilitating certain forms of use. As noted above, a huge variety of specimens are brought to a specific scale to be part of this collection. Nature is cut to fit, which means that plants are disconnected and separated from their ecologies: other plants, animals and growing conditions. They are made to appear the same, giving a homogeneity to the collection and disguising the apparent variety in the contents of the 'Vegetable Substances'. Taking away their particular contexts in this way was a central part of Sloane's process of managing knowledge about new plants. It would suggest a focus on comparability based on the visual – putting boxes out on the tabletop or held up to the light – a three-dimensional equivalent of botanical illustration for the three-dimensional parts of plants that could be preserved dried.

Yet, beyond this speculation there is little evidence that this is how the collection was used. Unlike the way that pictorial representations of nature have been put forward as important in making nature visible, knowable and therefore governable, there is no evidence that the 'Vegetable Substances' boxes were made to convey specimens to others. While the 'Vegetable Substances' collection does make nature visible in its own way – and perhaps these objects were used alongside publications, images and other objects in Sloane's collection – there is no evidence to confirm this. There are no clearly definable contributions to knowledge that were made through the collection as a whole, as opposed to indications of specific work with particular plants undertaken by Sloane and his correspondents.

This means that 'use' needs to be considered more broadly, and outside of the vegetable box. Part Three has considered these specimens in different contexts – in garden spaces and as items of *materia medica*. In doing so it becomes clear that not only was Sloane facilitating the cultivation of plants found stored and sealed in his collection (and dried in his herbarium), but also that many of these materials had medicinal properties which were recorded in the catalogue. It is here that we might consider the 'Vegetable Substances' as what Bruno Latour has called a 'centre of calculation', particularly where we see examples of experimentation with these samples via comparison, and the care taken to form better descriptions. It is, however, the case that it cannot be said that this was systematically pursued or the function of the collection as a whole. Its calculative worth as a centre seems somewhat haphazard.

The act of 'collecting' would suggest an active engagement with the material in question, but in various instances Sloane does not appear to actively collect. Indeed, we might ask whether the 'Vegetable Substances' collection represents a 'collection' in this sense. Its uniform appearance and its catalogue would suggest that it is a collection: that these things are connected to each other in various ways. But is it helpful to label this group of objects a collection when there is no real order, systematic methodology of collecting, organising or use. Or, at least, not to the extent that one might presume from first appearances. For instance, why list an item in the 'Vegetable Substances' catalogue rather than the 'Miscellanies' catalogue, or vice versa, when there appears no discernible difference in the use or materiality of the object. Yet, there is a middle way. It is better to understand the 'Vegetable Substances' as a collection consisting of many sub-collections, groups of samples that have their own individual order and reveal examples of active engagement with different collecting practices and ways of exchanging and moving natural history. For example, there are groups of samples that were part of other collections: those from Nehemiah Grew; those that are connected to other parts of Sloane's collection such as plants grown by Mary Somerset in her garden, and now found preserved in both the 'Vegetable Substances' and the herbarium; or those sent and listed with their independent numbering system like the material from Petiver labelled as 'Chinese druggs' and the two hundred or so specimens from Siam via Uvedale. There are also samples that can be grouped according to where they originated and Sloane's relationship with their collector: the hundreds of things collected and sent by Mark Catesby in South Carolina; or those that have the code '181' assigned to them; or

those groups of plants which were used as purges, vomits and for curing a hangover. In this respect, it is perhaps best to see the 'Vegetable Substances', and perhaps Sloane's collection as a whole, as part of a broader shift from the cabinet of curiosities to the universal collection, but not as shaped by the forms of order that would define later Enlightenment collections.[5]

It was the different and varied encounters with a world beyond London that ultimately shaped the formation of the 'Vegetable Substances'. Some of these encounters involved Sloane and some of them did not. In some instances, Sloane was on the periphery, waiting in the wings to receive interesting and novel objects when they came to London, sometimes to Petiver, maybe to the Royal Society, or perhaps to a coffee house. In other instances, Sloane may have played no role at all, instead making the most of collections that were made independently in far off places, such as by Kaempfer in Japan.

This means that the 'Vegetable Substances' is multiple and partial in its formation, its shape, its contents and, as a result, its role in natural knowledge. It is methodologically interesting to the history of collecting that focusing on one collector, and on a seemingly well-defined part of his collection, has in the end decentred both Sloane and the 'Vegetable Substances'.

As this thesis has shown, the 'Vegetable Substances' is not a global collection, but it is a collection of global objects and connections; it is not a medical collection, but it is a collection of medical objects; it is not a seed bank, but it is a collection of seeds along with many other things. While appearing uniform and universal it is actually partial and multiple. Its content shows this through its variety as does its formation by multiple contributors with different relationships with Sloane and its many possible, but partial, uses. It is a single collection that contains many different pockets of order. It is also important to remember that it cannot and must not be considered completely in isolation. It is perhaps, best thought of as a partial and multiple pocket of order within Sloane's collection as a whole.

[5] See J. Delbourgo, *Collecting the world.*

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Appendix 1

A description of the 'Vegetable Substances' database

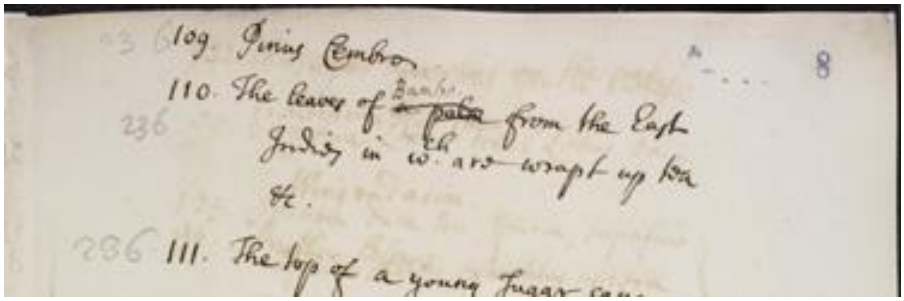
The Bento database that has been created to store the descriptions listed in Sloane's 'Vegetable Substances' manuscript catalogue consists of fifteen fields. The following list includes the name of the field and a brief description of its meaning and use:

Date created: An automated field that contains the date and time of when the database entry was created.

Saved file: holds the file name of the jpeg image of the catalogue page that that particular description can be found upon. For example, SloaneVegSubstCat_v1_f1[1_16] which denotes that this is a jpeg of Sloane's Vegetable Substances' catalogue, volume one, folio 1, entries 1 to 16. The 'Vegetable Substances' catalogue was photographed by the NHM. This file name means that it is possible to check the transcription of the catalogue quickly and easily with an image of the catalogue page.

Volume number: refers to the volume of the manuscript that this entry lies within. There are three volumes. Volume one contains entries 1- 3000, volume two contains entries 3001-6000, and volume three contains entries 6001-12,523. This means that this field contains a number reference to one of these volumes (1, 2, or 3).

Page/folio number: the number that has been assigned to the page of the catalogue subsequent to Sloane forming the manuscript catalogue. This number has been printed on the top right hand of the page:



Entry/catalogue number: the number assigned to the object and description of the object by Sloane. The first number to appear is 1 and follows on sequentially (albeit with duplications as discussed) until 12, 523.

Entry (verbatim): a word for word transcription of the description found in the catalogue with line breaks included.

Date: where a date has been assigned to a description, whether in the entry itself or as an annotation in the margin, this has been entered into the 'date' field. In instances where a date has been found in other sources such as correspondence, this has been added into the 'date' field.

Classification: an initial attempt to categorise the object being described including seed, bean, leaf and so on.

Place: where a place-name has been noted in the description of the entry, or perhaps discovered in other contemporaneous sources, this has been extracted and placed in this field.

People: as with the place-name, where a person/name has been stated or confirmed in another source, this has been written in the people field.
Use: where a use of the object being described has been noted, again, this has been extracted and placed in the use field.

Margin – left: any form of abbreviation, notation, marking or comment found in the left-hand margin of the entry has been placed in this field. This often includes pencil and ink notations pertaining to be location codes.

Margin – right: any form of abbreviation, notation, marking or comment found in the right-hand margin of the entry has been placed in this field.

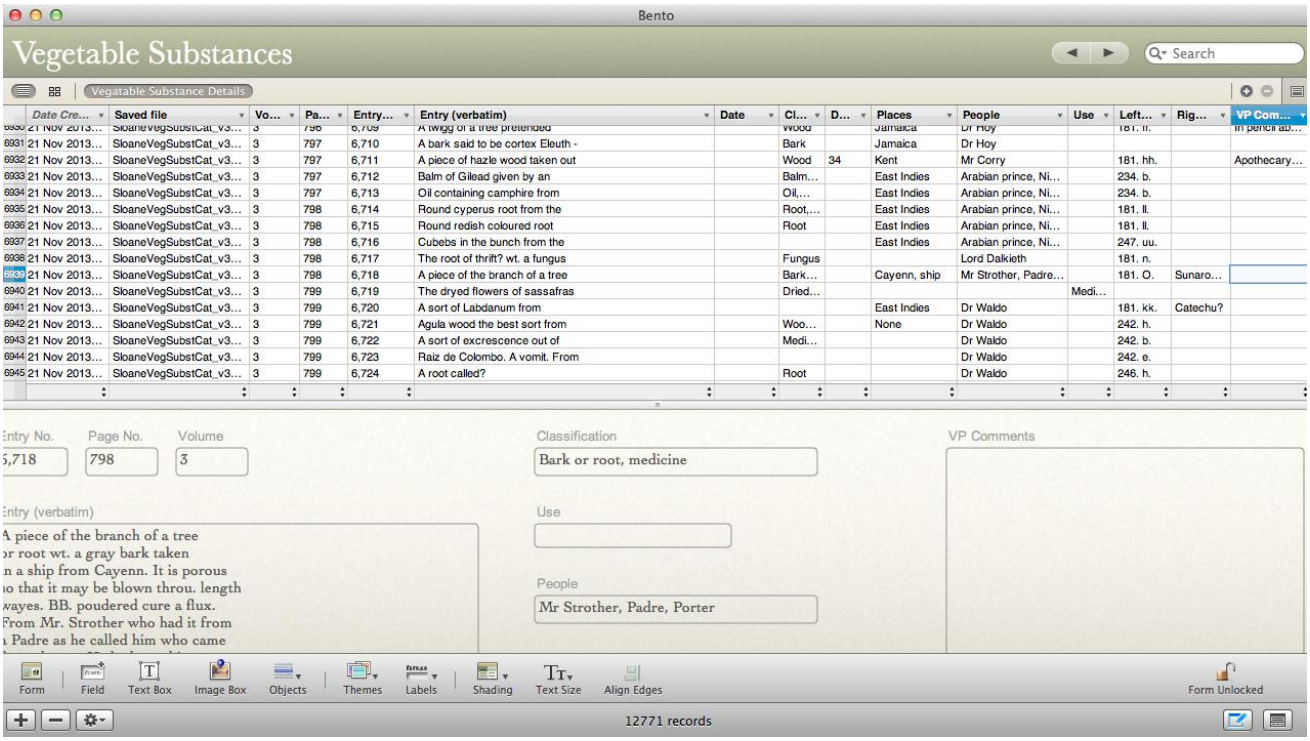
Drawer number: this field has been used to place the drawer number of where the surviving VS sample is. This information comes from surveying the surviving 'Vegetable Substances' collection in the NHM Historical Collections Room, in its entirety.

VP notes: a field used to make any other comments or notes related to the description or object. Most often this is related to botanical information about the plant being described, information about the place or people, or perhaps a reference to literature or correspondence.

The fields listed above were generated while initially exploring the VS catalogue and from a consideration of what information and elements of the manuscript needed to be captured in order to understand what is in this collection, where it came from, and who sent this material to Sloane. The volume number, page number, catalogue number, entry description (verbatim) and margin note fields were completed with information directly copied from what could be seen in the manuscript catalogue. The people, places, use and classification fields were a means of extracting particular sorts of data from the individual entries. These could then be used later to search, sort and sift. This process was however, done at the same time, beginning from the first entry and ending with 12, 523 in volume three.

Overall, this database is in the form of list, allowing the entire catalogue to be transcribed into one resource. As the image below shows, when each database entry is selected, the information can be viewed in a different format. I designed this according to what I wanted to be able to see and what seemed to be most useful.

Currently this database is stored privately but with the aim to be made publically available via the Natural History Museum (or other channels) at a later date.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6931 21 Nov 2013... SloaneVegSubstCat_v3... 3 797 6,710 A bark said to be cortex Eleuth - Bark Jamaica Dr Hoy
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6933 21 Nov 2013... SloaneVegSubstCat_v3... 3 797 6,712 Balm of Gilead given by an Balm... East Indies Arabian prince, Ni... 234. b.
6934 21 Nov 2013... SloaneVegSubstCat_v3... 3 797 6,713 Oil containing camphire from Oil,... East Indies Arabian prince, Ni... 234. b.
6935 21 Nov 2013... SloaneVegSubstCat_v3... 3 798 6,714 Round cyperus root from the Root,... East Indies Arabian prince, Ni... 181. ll.
6936 21 Nov 2013... SloaneVegSubstCat_v3... 3 798 6,715 Round redish coloured root Root East Indies Arabian prince, Ni... 181. ll.
6937 21 Nov 2013... SloaneVegSubstCat_v3... 3 798 6,716 Cubebs in the bunch from the East Indies Arabian prince, Ni... 247. uu.
6938 21 Nov 2013... SloaneVegSubstCat_v3... 3 798 6,717 The root of thrift? wt. a fungus Fungus Lord Dalkieth 181. n.
6939 21 Nov 2013... SloaneVegSubstCat_v3... 3 798 6,718 A piece of the branch of a tree Bark... Cayenn, ship Mr Strother, Padre... 181. O. Sunaro...
6940 21 Nov 2013... SloaneVegSubstCat_v3... 3 799 6,719 The dryed flowers of sassafras Dried... Medi...
6941 21 Nov 2013... SloaneVegSubstCat_v3... 3 799 6,720 A sort of Labdanum from East Indies Dr Waldo 181. kk. Catechu?
6942 21 Nov 2013... SloaneVegSubstCat_v3... 3 799 6,721 Agula wood the best sort from Woo... None Dr Waldo 242. h.
6943 21 Nov 2013... SloaneVegSubstCat_v3... 3 799 6,722 A sort of excrescence out of Medi... Dr Waldo 242. b.
6944 21 Nov 2013... SloaneVegSubstCat_v3... 3 799 6,723 Raiz de Colombo. A vomit. From Dr Waldo 242. e.
6945 21 Nov 2013... SloaneVegSubstCat_v3... 3 799 6,724 A root called? Root Dr Waldo 246. h.
Entry No.
6,718
Page No.
798
Volume
3
Classification
Bark or root, medicine
VP Comments
Entry (verbatim)
A piece of the branch of a tree
or root wt. a gray bark taken
in a ship from Cayenn. It is porous
so that it may be blown throu. length
wayes. BB. poudered cure a flux.
From Mr. Strother who had it from
a Padre as he called him who came
Use
People
Mr Strother, Padre, Porter
Form
Field
Text Box
Image Box
Objects
Themes
Labels
Shading
Text Size
Align Edges
Form Unlocked
12771 records


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6931 21 Nov 2013... SloaneVegSubstCat_v3... 3 797 6,710 A bark said to be cortex Eleuth -
6932 21 Nov 2013... SloaneVegSubstCat_v3... 3 797 6,711 A piece of hazle wood taken out
6933 21 Nov 2013... SloaneVegSubstCat_v3... 3 797 6,712 Balm of Gilead given by an
6934 21 Nov 2013... SloaneVegSubstCat_v3... 3 797 6,713 Oil containing camphire from
6935 21 Nov 2013... SloaneVegSubstCat_v3... 3 798 6,714 Round cyperus root from the
6936 21 Nov 2013... SloaneVegSubstCat_v3... 3 798 6,715 Round redish coloured root
Entry No.
6,718
Page No.
798
Volume
3
Classification
Bark or root, medici
Entry (verbatim)
A piece of the branch of a tree
or root wt. a gray bark taken
in a ship from Cayenn. It is porous
so that it may be blown throu. length
wayes. BB. poudered cure a flux.
From Mr. Strother who had it from
a Padre as he called him who came
from thence. He had tryed it wt.
successe on a porter.
Use
People
Mr Strother, Padre,
Places
Cayenn, ship
Date
Form
Field
Text Box
Image Box
Objects
Themes
Labels
Shading
Text Size
Align Edges
12771 records