

COMMUNICATION AND COMMUNITY: MOVING SCIENTIFIC KNOWLEDGE

IN BRITAIN AND AMERICA, 1732-1782

by

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ABSTRACT

This dissertation explores the dissemination of knowledge, letter-writing, print culture, institutionalization of knowledge, and identity. In this work, the scientific knowledge itself plays a secondary role to *how* that knowledge was communicated within the scientific community and to the general public. While these exchanges have been well-documented, this work delves deeper into the volume and patterns of letter-writing among the participants, examining extant correspondence, as well as known, but missing, letters that communicated ideas across dozens, hundreds, or even thousands of miles without the benefit of modern technology.

The scientific content of many letters was transformed into publications, some of which were intended for the scientific community. However, other works transmitted the accumulated knowledge to a broader audience, both in Britain and America. As literacy increased, access to knowledge followed, but the widespread lack of formal education among the reading population forced works to be written in English rather than Latin. This change was part of a growing movement within the scientific community that had begun in the seventeenth century, but was not completed until the nineteenth. The dissertation investigates this shift during the long eighteenth century from the perspective of the practitioners of science and the *lingua franca* each chose to accept or reject.

The process of institutionalizing scientific knowledge in the American colonies met with a mixture of success and failure during the period. Allegiance to established institutions like The Royal Society has explanatory power, but, as I will argue, the epistolary web was an institution itself. It prevented more widespread formal institutional formation at the time, and, in some cases, it was more effective than traditional institutions in producing knowledge.

This study also examines the persistent *British* identity of the scientific community in America during the mid-eighteenth century. Although events leading to the American Revolution marked a shift in political identity for some, many members of the scientific community continued to see themselves as British. Moreover, this study stresses the influence of politics, both situational and institutional, on the practice of science and the ability to communicate the results of those practices.

CHAPTER ONE

INTRODUCTION

On November 7, 1732, a new subscription library in Philadelphia sent a letter of thanks to a London merchant for his assistance “in the Choice and Purchase” of books for the library’s collection, as well as the “valuable Present” of two additional volumes. One of the gift books reflected the merchant’s own interest in botany. The other, a more learned volume, concerned itself with physics. The appreciative letter’s author noted that “An Undertaking like ours, was as necessary here, as we hope it will be useful; there being no Manner of Provision made by the Government for publick Education, either in this or the neighbouring Provinces, nor so much as a good Booksellers Shop nearer than Boston.”¹ This is but one example of the movement of knowledge (scientific and otherwise) from Britain to its American colonies, which had been, up to that point, mostly haphazard and regional. However, the library’s benefactor had chosen his gifts wisely: the two books provided geographic and temporal continuity in the acquisition of scientific knowledge.

The letter and its surrounding context illustrate many of the themes this dissertation explores: the dissemination of information, the nature of letter-writing and print culture, the self-defined identity of participants in the scientific endeavor, and the institutionalization of knowledge. The two volumes presented to the Philadelphia library,

¹ Library Company to Peter Collinson, November 7, 1732. British Library, Collinson (Peter). F.R.S. Letters addressed to 1725-1790. Add. 28726 f. 3.

both in English, were *A View of Sir Isaac Newton's Philosophy* (1728) and *The Gardeners Dictionary* (1731). They provided potential library patrons the opportunity to explore physical science and the productions of the natural world without the necessity of a university education. The books illuminate how knowledge was produced and circulated in the British Atlantic World. These were the works of British authors, both reflecting and solidifying the connection between the metropole of Britain and the periphery of its North American Colonies.²

The authors of these books also illustrate the rich networks and dense connections among natural philosophers on both sides of the Atlantic. Henry Pemberton (1694-1771), a London physician and mathematician, popularized the theories of Isaac Newton (1642-1727) in *A View*. Head gardener at London's Chelsea Physic Garden (founded as the Apothecaries' Garden in 1673 to cultivate medicinal plants), Philip Miller personally directed his immense *Gardeners Dictionary* through eight editions during the next four decades. Pemberton oversaw the publication of the third edition of Newton's *Principia* the year before Newton's death in 1727. The Chelsea Physic Garden, in turn, sat on land owned by physician, botanist, and plant collector Sir Hans Sloane and leased to the Worshipful Society of Apothecaries. Newton had served as president of The Royal Society of London, while Sloane was the Society's current president. Pemberton and Miller were both Fellows, as was Peter Collinson, to whom the letter of gratitude from

² The classic work on metropole and periphery, which has undergone numerous challenges and modifications during the past four decades, is, of course, Immanuel Wallerstein, *The Modern World System: Capitalist Agriculture and the Origins of the European World Economy in the Sixteenth Century* (New York: Academic Press, 1974).

the nascent Library Company of Philadelphia was addressed. The author of the letter, Benjamin Franklin, would also be elected to Society membership.³

This dissertation analyzes the development and deepens our understanding of what I term an *epistolary web*, a network that facilitated the movement of scientific knowledge throughout the mid-eighteenth century Atlantic World, but with a special focus on Britain and its North American colonies. In this work, the study of scientific knowledge itself plays a secondary role. Instead, I analyze to precisely *how* that knowledge was communicated, both within the scientific community and to the general public at large. Members of the scientific community in America engaged in natural history, botany, and medicine. Their epistolary exchanges with their counterparts in Britain and Europe (and amongst themselves) dominate this study, but not completely to the exclusion of those engaged in the physical sciences. While scholars have studied these exchanges previously, they failed to appreciate both the volume and the patterns of letter-writing among the participants. This thesis examines those issues. It considers the extant correspondence considered by other historians, but it also attempts to explore the number and value of the missing letters that communicated ideas across dozens, hundreds, or even thousands of miles without the benefit of modern technology.

This dissertation also investigates the formation of what I term the *scientific public sphere*. While similar to the “*bourgeois public sphere*” defined by philosopher

³ Although the letter was signed by Joseph Bretnall, the Library Company’s Secretary, it was composed by Franklin. See Leonard Labaree, *et al, eds., The Papers of Benjamin Franklin*, 39 volumes (New Haven and London: Yale University Press, 1959-) 1:248n3. Hereafter cited as *PBF*.

Jürgen Habermas, the scientific public sphere also contained distinct differences. Like the Habermasian model, the scientific public sphere had, at its center, the free exchange of ideas. Ideally, according to Habermas, this sphere that developed during the eighteenth century provided wider access to a great many more literate white men, regardless of societal rank or education level, than had previously been the case. Of course, Habermas's theories have their constraints. The reality, as found in this dissertation, for example, is that participation in the scientific public sphere was considerably more limited than Habermas might argue. Race, class, gender, leisure time, and literacy all defined many people as being "outside" the public sphere. The sphere defined by Habermas truly was a *bourgeois* space at best.⁴

For Habermas, the public sphere relied heavily on face-to-face interaction in coffeehouses, taverns, and other spaces where the public gathered. I have found that another sphere, the epistolary web, developed in the eighteenth century that was independent of face-to-face contact. The scientific public sphere developed as an early virtual community, whose existence was predicated on the remarkable efficiency of the epistolary web, allowing its members to transcend international geographic boundaries. Detailed scientific descriptions made the letter a shared space for eighteenth-century scientific practitioners. It was here that members of the community proposed new

⁴ Jürgen Habermas, *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*, translated by Thomas Burger (Cambridge Massachusetts: The MIT Press, 1989; orig. 1962). An excellent introduction to Habermas's concepts of the public sphere, which have been widely used by scholars studying the past, can be found in Craig Calhoun, ed., *Habermas and the Public Sphere* (Cambridge, Massachusetts and London: The MIT Press, 1992).

knowledge and accepted or rejected critiques of their contributions. Moreover, the conversational nature of the scientific public sphere made this open laboratory possible.⁵

Habermas's original theories notwithstanding, all of the men of science (like many other men of the time) existed in multiple public spheres. That is, their "public" lives were not confined to scientific practice. All of them had what we would now call "day jobs." Their engagement with science, while intellectually rewarding, did not provide for their livelihood. While they often possessed a "professional" attitude toward their scientific pursuits, the professionalization of science was a nineteenth-century phenomenon. Furthermore, many of these men were connected to politics, sometimes as government officials. Thus, their contact with wider society was often more far-reaching and had nothing to do with science.

Eighteenth-century scientific practitioners had no single definition of "science." For the scientific community, defining science was an ongoing process. If a field belonged to "natural philosophy" (today's "hard sciences") or "natural history" (today's "soft sciences"), it was considered science. Physics, astronomy, mathematics, botany, and zoology all fit those categories. But clear definitions ended there. In fact, determining what science *was* often involved explaining what it *was not*. During that era, science included medical practice (with the exception of surgery) and technology, but not the propagation of plants. However, the use of those very same plants to derive medicines constituted scientific practice. The changing nature of the definition of science was part

⁵ It is important to note, however, that this is not a study of Habermas or the public sphere. I am using these ideas as frameworks to understand and explain my broader points about communicating knowledge.

of the process of communicating knowledge. It has been argued that for colonial science to flourish, formal “scientific organizations should be founded which are specifically dedicated to the promotion of science.” Furthermore, scientific communication is best “accomplished by founding appropriate scientific journals and then gaining their widespread recognition.”⁶ However, for eighteenth-century British practitioners of science neither officially-sanctioned societies nor universally-accepted publications were necessary. Scientific practitioners on both sides of the Atlantic created the means necessary to promote scientific endeavors without adhering to strict institutional rules or supposed norms of communication.

Membership in formal scientific societies was not needed to accumulate and disseminate scientific knowledge. Honors conferred by such membership enhanced the status of an individual, but engagement with the broader community, either through the epistolary web or the scientific public sphere, was paramount. The community itself functioned as a space for acknowledgment, offering “membership” to those who participated, regardless of whether an individual’s contribution was deemed sufficient enough to warrant recognition.

Publication in established journals like the *Philosophical Transactions* or even the popular *Gentleman’s Magazine* indicated personal achievement, but initial communication of ideas often circulated first via the epistolary web. It was a space where critique, refinement of ideas, and, ironically, *published* material could be examined and

⁶ George Basalla, “The Spread of Western Science,” *Science*, New Series, Vol. 156, No. 3775 (May 5, 1967), 618.

corrected for subsequent editions. The blurred line between the formal and informal further indicates that publication alone did not guarantee the communication of scientific knowledge.

Although written communication dominated the scientific public sphere, physical migrations by members of the scientific community also played a significant role. Benjamin Franklin, of course, was the quintessential example of this type of peripatetic man of science. This dissertation focuses on how less well-known natural philosophers contributed to the distribution of knowledge. Both permanent migrants and short-term visitors—neither far from rare—overcame many of the constraints of geography and temporality to add a rich dimension to the complex nature of interactions within the scientific community.

The dissertation investigates this shift during the long eighteenth century from the perspective of the practitioners of science and the *lingua franca* each chose to accept or reject. The scientific content of many letters was transformed into publications, some of which were intended for the scientific community. However, other works translated the accumulated knowledge to a eager and much broader audience, both in Britain and America. As literacy increased, access to knowledge followed correspondingly, but the widespread lack of formal education among the reading population forced works to be written in English rather than Latin. This change was part of a growing movement within the scientific community that had begun in the seventeenth century, but was not completed until the nineteenth.

Allegiance to established institutions like the Royal Society has explanatory power, but, as I will argue, the epistolary web and the scientific public sphere assumed the character of institutions themselves. The letter to Peter Collinson (referenced above) noted the lack of educational opportunities as well as the lack of fewer formal places to acquire knowledge in British North America. The process of institutionalizing scientific knowledge in the American colonies met with a mixture of success and failure during the period. Although these two systems prevented more widespread formal institutional formation at the time, they were, in some cases, more effective than traditional institutions in producing, accumulating, and disseminating knowledge. Many in the scientific community were autodidacts: the availability of books and the exchange of information with others engaged in scientific pursuits substituted for formal education. While the University of Edinburgh historically provided medical training, for example, it was not until the mid-eighteenth century that it rose to prominence. This had a negative effect on enrollment at the first medical school in America, founded in 1766, with American-born students opting for training in Scotland.

This study also examines the persistent *British* identity of the scientific community in America during the mid-eighteenth century. Although events leading to the American Revolution marked a shift in political identity for some colonists, many members of the scientific community continued to see themselves primarily as British. Here my work is reflective of what might be called a “Neo-Imperial School” approach: I

understand the intellectual and cultural (and political) historical narrative to be of a British nature, not an American one.

Recently, scholars engaged in Intellectual and Cultural History and the History of Science have identified an “American-ness” in scientific study well before the American Revolution. This dissertation challenges that interpretation, since the practitioners of science of the mid-eighteenth century America cast their lot with “King and Country” as the political climate shifted. That is not to discount the new approach entirely: the incorporation of the mobility of knowledge, historical geography, and an Atlantic World context are vital components of the present study. In addition, this dissertation stresses the influence of politics, both situational and institutional, on the practice of science and the ability to communicate the results of those practices.

The genesis of this project owes much to Ian K. Steele’s *The English Atlantic: Communication and Community, 1675-1740*. Steele argues that as the time period under examination progressed, communication throughout the British Atlantic world fundamentally changed, bringing people closer together through increased shipping, better land-based postal services, increased British government involvement, and better business acumen. As the world got smaller, the process allowed people to move greater amounts of information, goods, and even themselves much more rapidly. Furthermore, Steele posits that not only did people influence the Atlantic world, but also that the Atlantic world influenced people.⁷ This mutuality allowed for a more vigorous

⁷ Ian K. Steele, *The English Atlantic: Communication and Community, 1675-1740* (New York and Oxford: Oxford University Press, 1986.). Hereafter cited as *English Atlantic*.

transformation of people and place than through the influence of the Atlantic world or its British citizens alone.

This dissertation demonstrates that scientific practitioners in Britain and her colonies affected each other, sometimes disproportionately, but often not. Information from America, often in the form of specimens, directly impacted the lives of both scientific practitioners and the broader public: American plants, shrubs, and trees were planted in British Gardens. Their popularity provided a livelihood for seedsmen and nurserymen, hence an economic influence that practitioners on the periphery had on the metropole. The transformation of communication practice that Steele identifies was nearly complete by the time period investigated by my work. Indeed, had the change not taken place, the success of the historical actors examined in the following pages would have been moderate at best, or more likely so low as to be unmeasurable.

The aforementioned “Neo-Imperial School” approach used in this dissertation, reflects the work of Ned C. Landsman in *From Colonials to Provincials: American Thought and Culture, 1680-1760*. Originally, the early-twentieth century “Imperial School” of history sought to examine the American colonies in general, and the American Revolution in particular, as part-and-parcel of British history.⁸ According to Imperial School historians, one cannot understand the genesis of the United States without understanding it as fundamentally a British story. Furthermore, this approach was among

⁸ Historians Charles McLean Andrews and Lawrence Henry Gipson are perhaps the two most well-known practitioners of Imperial School history in America.

the earliest incarnations of what is now Atlantic World history, placing the British Empire within a larger geographic context than simply Britain and its American colonies.

Like Steele, Landsman identifies a transformation. Landsman argues that throughout the middle- and late-colonial period, the residents of the British colonies in America transformed from “colonists” to “provincial Britons.” Landsman defines “provincial” with its original meaning—belonging to the provinces, rather than in the pejorative sense of “unsophisticated.”⁹ By assigning a British, not colonial, identity, Landsman effectively equalizes the citizenry on both sides of the Atlantic, placing them all under the umbrella of “Britons,” regardless of geographic location. Thus, Landsman continues the story of British history and does not view the period as an inevitable prelude to the American Revolution. Like Landsman, I use the term *American* to describe a geographic, not a national, identity.

The nature of the scientific public sphere made it somewhat less dependent on geography than the epistolary web, but not dramatically so. Members of the scientific public sphere did not necessarily participate directly in the exchange of letters, but their face-to-face communication with letter writers enabled the non-participants to send messages via the letters themselves. Physical proximity was thus crucial for those who did not put pen to paper. Still, geography informed the process for members of the

⁹ Ned C. Landsman, *From Colonials to Provincials: American Thought and Culture, 1680-1760* (Ithaca and London: Cornell University Press, 1997). Hereafter cited as *Colonials to Provincials*.

epistolary web, but the spaces that letters moved through was but one element of consideration.

Letters traversing the Atlantic crossed both space and time. Even when a ship sailed a similar route on every journey, the vagaries of fortune were still at work. The weather, ocean currents, privateers, mutinies, and wars all affected a transatlantic missive's punctuality or even its arrival at its destination. Eighteenth-century letter writers were well aware of such temporal issues regarding their communications. As discussed below, these conditions did much to shape and define how the scientific community communicated during the period.

The concept of "time-geography" enhances our understanding of the development of the epistolary web, much in the same way of the theories of Habermas. Time-geography, sometimes called time-space geography, originated with Swedish geographer Torsten Hägerstrand in the 1960s. The trajectory (or "life-path") of one's daily actions present both spatial and temporal characteristics. In other words, it is not only *where* something happens, but also *when* (or *how long*) it occurs. "Activity bundles" are created when more than one person participates in a given activity in a given space. This space of convergence is known as a "station" or "domain." Furthermore, even natural productions and man-made objects can be subject to these ideas. How a given trajectory will unfold is determined by what Hägerstrand calls "constraint." There are three primary sorts of constraints that time-geography identifies. First, are *capability constraints*, which account for how much time it takes to deal with life's necessities such

as sleeping, eating, and getting to or from work. *Authority constraints* address issues of who is allowed to be in a particular space, and that spaces are only accessible to a certain number of people at any given time. For example, existing legal and economic power structures influence authority constraints. *Coupling constraints* are of particular interest for the present study.¹⁰

Coupling constraints, which “pinpoint where, when, and how long [an] individual must join other individuals (or objects) in order to form production, consumption, social, and miscellaneous activity bundles,” produce both the stability *and* the instability seen in the composition of the epistolary web.¹¹ Members engaged or disengaged not only as it suited them, but also through external factors, such as changing political scenarios. While it may seem that politics is an authority constraint (and in many cases, it is), here the nature of a given political landscape could potentially affect any willing participant of the scientific community, and not just specific members.

Letters, as human-made objects, have a life-path. In fact, a letter’s passage from one reader to another (or, by Hägerstrand’s analysis, its inclusion in an activity bundle)

¹⁰ Allan Pred, “The Choreography of Existence: Comments on Hägerstrand’s Time-Geography and Its Usefulness.” *Economic Geography*, Vol. 53, No. 2, Planning-Related Swedish Geographic Research (April 1977), 208-209. Hereafter cited as “Choreography of Existence.” For critiques of time-geography, see Gillian Rose, *Feminism and Geography: The Limits of Geographical Knowledge* (Minneapolis: University of Minnesota Press, 1993), 17-40. Rose’s work calls for a reevaluation of the discipline of geography itself, not only Hägerstrand’s theory. Throughout, Rose contends, and many times rightly so, that geography, as a discipline, lacks any sort of feminist perspective. However, Rose also describes the potential pitfalls of simply adopting such a perspective as a wholesale replacement of the current model. Also, Nigel Thrift and Allan Pred, “Time-Geography: A New Beginning.” *Progress in Human Geography* (1981), 5:277-286. Here Thrift and Pred respond to a critique by geographer Alan Baker, who posits that Hägerstrand’s approach is severely limited in its applications. The present work is testament to the fact time-geography can be used in a myriad of ways.

¹¹ Pred, “Choreography of Existence,” 208.

were subject to the same time-geographic constraints as the letter's author. The missive, the writer, and the reader(s) were bound together by both the information within the letter, as well as the temporality of the process of writing, sending, and reading.

Members of the scientific community engaged in the letter-writing (and letter-reading) process thus created, in our own terms, a "virtua" station (or domain), since physical distance between members prevented gatherings that would fit Hägerstrand's model. Moreover, the idea of a "locale," defined by Anthony Giddens as the "space used as a *setting* for interaction," certainly does not apply here, at least not in the traditional sense. Furthermore, as Giddens states, the *small community* is one which time and distance are essentially negligible.¹² This idea runs counter to how the epistolary web actually operated. For members of the scientific community, there was an expectation of the successful traverse of space and time. While keenly aware that missives could take weeks or months to reach their destination, writers usually operated under the assumption that their letters *would* arrive and would do so in a timely manner, relatively speaking.

One question that Hägerstrand and others fail address, however, is what happens when the fundamental nature of a space (or station or domain) changes. What if the physical and temporal characteristics (and the variables associated with those characteristics) remain the much same, as do the activities within the space? This is precisely what took place on the Atlantic Ocean during the Seven Years' War. The conflict reconfigured the nature of the space, even as letter-writing continued.

¹² See Anthony Giddens, *Central Problems in Social Theory: Action, Structure, and Contradiction in Social Analysis* (Berkeley: University of California Press, 1979), 206-207.

Paradoxically, the advent of the packet in 1755 *increased* the security of transatlantic mail (or at least it was designed to), perhaps nullifying any changes to the space that the war may have imposed. Simultaneously, the increased cost associated with utilizing the packet also changed the nature of the space.

The link between time-geography and the scientific public sphere allowed members of the British scientific community on both sides of the Atlantic to interact among themselves, each other, and with the larger European scientific community. Physical boundaries did not necessarily dictate the possibilities of relatively constant communication, although time played an important role in the process, of course. Moreover, a practitioner of science did not have to be committed to letter-writing; an association with a member of the epistolary web was sufficient to insure the widening of the scientific public sphere.

The Royal Society of London strongly influenced the practice of science for the next few centuries after its founding in the mid-seventeenth century. Election to membership brought recognition and status, and scholars have long-noted the importance of the “F.R.S.” (Fellow of the Royal Society) appendage among scientific practitioners during the eighteenth century. However, this legitimizing status, is often exaggerated by scholars. Of the mid-eighteenth-century practitioners of science who participated in the transatlantic movement of knowledge and who are most-regularly referred to as members of the Society—Peter Collinson, Benjamin Franklin, John Ellis, Alexander Garden, Georg Dionysius Ehret, John Fothergill, George Edwards, and Linnaeus—only Collinson was

elected before 1752. Thus, while the Royal Society itself may have influenced the accumulation and dissemination of scientific knowledge during the first two decades of the present study, the influence that these men had *because of their status* as Fellows of the Royal Society was minimal before mid-century. This complicates the idea that the scientific community in America was comprised merely of collectors of specimens. Paradoxically, the egalitarian status afforded by *non-membership* promoted communication of knowledge within the broad scientific community. Furthermore, by the time these men were elected to the Society, the regular transmission of information and specimens was the norm, and newly-acquired status mattered little.

The core group of scientific practitioners under consideration in this dissertation were chosen for the volume of letters that each contributed to the discourse, as well as their particular geographic position within the British Atlantic world. In other words, they functioned as primary nodes of accumulation and dissemination of knowledge within the epistolary web. However, even members of the epistolary web whose participation was less prominent still insured a redundancy of scientific knowledge within the greater scientific community. Of course, members of the core group were not necessarily involved in every “conversation,” but their importance to the communication of eighteenth-century scientific knowledge provides an anchor for this study.

Chapter One begins with a brief examination of scientific practice in Britain during the seventeenth and early-eighteenth centuries, and most importantly, how science

moved from the domain of “men of leisure” to a more inclusive system (that is, most practitioners worked for a living) by about 1730. The chapter begins by considering the naturalist and artist Mark Catesby, who visited America and the Caribbean in the second and third decades of the eighteenth century.¹³ Catesby was a transitional figure, and was considerably more complex than scholars usually portray him. He was a lone practitioner who was initially immersed in the patronage-driven world of the late-1600s and early-1700s, but later became part of the larger efforts of the practitioners of natural history as the epistolary web came into existence. Also addressed is the seventeenth-century process of communicating science within a scientific group, as well as to a broader audience in the.¹⁴

The opening chapter continues by describing the early stages of correspondence in the mid-1730s, introducing many of the major contributors to what would become the scientific public sphere. The notable correspondence between London merchant and botanist Peter Collinson and Philadelphia farmer and botanist John Bartram began at this time. Their exchange formed the focal point of exchanges of knowledge during nearly four decades. Other scholars have analyzed their letters, but with less intensity than is Chapter One offers. *America’s Curious Botanist: A Tercentennial Reappraisal of John Bartram 1699-1777* contains both biographical and interpretive essays. Alan W.

Armstrong’s “John Bartram and Peter Collinson: A Correspondence of Science and

¹³ Amy R. W. Meyers and Margaret Beck Pritchard, eds., *Empire’s Nature: Mark Catesby’s New World Vision* (Chapel Hill and London: The University of North Carolina Press, 1998).

¹⁴ Steven Shapin, “Pump and Circumstance: Robert Boyle’s Literary Technology.” *Social Studies of Science*, Vol. 14, No. 4 (November, 1984), 481-520.

Friendship” and Stephanie Volmer’s “‘Taste,’ ‘Curiosity,’ and the Letters of John Bartram and Peter Collinson” shed light on the thirty-five-year correspondence between the two men from the perspectives of their scientific relationship and the literary nature of their exchange.¹⁵

Cadwallader Colden is, after Benjamin Franklin, perhaps the most recognizable name in this study, in part because of his Loyalist stance as New York’s acting governor during the Stamp Act Crisis in 1765. Colden was, however, also the most gifted botanist in America from the 1730s through the 1740s, and the first to translate the Linnaean classification system into English. Alfred R. Hoermann places Colden’s science in the larger historical context in *Cadwallader Colden: A Figure of the American Enlightenment*. Hoermann deftly explains the ideas behind Colden’s natural philosophy, a field to which Colden turned after failing eyesight forced him to give up botany. Hoermann also explores the ensuing “discussions” between Colden, Franklin, and natural philosophers in Europe. The effort Colden put into his communications concerning his unsubstantiated theories equaled those he put forth when discussing botany, medicine, or science education years earlier. Colden’s disciplinary shift essentially removed him from the scientific public sphere, although within the “political public sphere” he remained very active indeed. In fact, after Colden gave up science almost entirely, he maintained a transatlantic political correspondence with Collinson. Such political activities account for

¹⁵ Alan W. Armstrong’s “John Bartram and Peter Collinson: A Correspondence of Science and Friendship” and Stephanie Volmer’s “‘Taste,’ ‘Curiosity,’ and the ‘Letters of John Bartram and Peter Collinson’” in Nancy E. Hoffmann and John C. Van Horne, eds., *America’s Curious Botanist: A Tercentennial Reappraisal of John Bartram, 1699-1777* (Philadelphia: American Philosophical Society, 2004).

large gaps in Colden's correspondence with Collinson, Bartram, and Franklin, illustrating how daily responsibilities interfered with scientific practice.¹⁶

In this dissertation, the content of Benjamin Franklin's science is considered primarily when it had an impact on patterns of correspondence or print culture. It is Franklin the facilitator of the accumulation and dissemination of knowledge that is of fundamental concern. Franklin's direct correspondence with Collinson did not start until 1747, when Franklin began his electrical experiments. His appointment as postmaster in Philadelphia in 1737, then Deputy Postmaster General for North America in 1753 were crucial to the spread of scientific knowledge.¹⁷

Chapter Two explores the institutionalization of scientific knowledge, both literally and figuratively. First, the chapter discusses the importance of The Royal Society of London for science in America. This is the central theme of Raymond Phineas Stearns's *Science in the British Colonies of America*.¹⁸ Unlike Stearns however, I argue that the Society was not the be-all-and-end-all. However, because its *Transactions* were

¹⁶ Alfred R. Hoermann, *Cadwallader Colden: A Figure of the American Enlightenment* (Westport, Connecticut and London: Greenwood Press, 2002). By this time, the term "natural philosophy" was commonly used to describe the "hard sciences" like physics, although it had previously encompassed natural history as well.

¹⁷ David Waldstreicher writes extensively on Franklin's activities as postmaster in *Runaway America: Benjamin Franklin, Slavery, and the American Revolution* (New York: Hill and Wang, 2004). Waldstreicher argues that Franklin accumulated wealth, in part, through his newspapers' runaway slave advertisements. He also earned money as postmaster since he could ship his newspapers for free, thus markedly lowering distribution expenses.

¹⁸ Raymond Phineas Stearns, *Science in the British Colonies of America* (Urbana: University of Illinois Press, 1970). Stearns's work, along with Brooke Hindle's *The Pursuit of Science in Revolutionary America*, though somewhat dated, are still considered the starting points for studies in the History of Science in America before the Early Republic. Hindle, *The Pursuit of Science in Revolutionary America, 1735-1789* (Chapel Hill: The University of North Carolina Press, 1956). I have taken Hindle's "epistolary circle" and re-classified it as the "epistolary web." See below.

published in English, The Royal Society spurred a broader movement in the communication of science.

Second, the chapter analyzes the founding of the first incarnation of the American Philosophical Society in 1743, and then its quick, spectacular failure. Historians have offered a host of reasons for the failure of the Society. However, they have ignored the significant impact of the epistolary web, as discussed in this chapter. The voluminous and rapid circulation of scientific knowledge from America by way of letters insured that all new discoveries were in the hands of many and unlikely to be lost. This diminished the need to archive such knowledge in America, at least in the short term.¹⁹

A consideration of formal and informal spaces of scientific education, including a discussion of gender and language, constitutes the third part of Chapter 3. While the American Philosophical Society was not initially to be counted among Benjamin Franklin's successes, The University of Pennsylvania is a testament to his plan for establishing an academy and college in Philadelphia in the 1740s. (The college's medical school, founded in 1766, will be discussed in Chapter Five). Cadwallader Colden had a deep interest in education. He corresponded frequently with Franklin on the plan for the academy and college, but was also interested in more private forms of learning. As mentioned earlier, Colden was the first to translate the Linnaean system into English. Fluent in written Latin, he did not translate it for himself, but for his daughter, Jane Colden (1724-1766).

¹⁹ Among the many, many studies of Franklin and the American Philosophical Society, see Page Talbott, ed., *Benjamin Franklin: In Search of a Better World* (New Haven: Yale University Press, 2005); and Edmund S. Morgan, *Benjamin Franklin* (New Haven: Yale University Press, 2002).

While gender bias of the time prevented Jane from receiving a formal scientific education, she and many other women of higher rank learned botany. Studies by historians Ann Shteir and Susan Scott Parrish address women and natural history. Shteir's *Cultivating Women, Cultivating Science: Flora's Daughters and Botany in England, 1760-1860* considers the botanical education of women using the Linnaean system and the battles it engendered because some perceived the Linnaean sexually-based scheme as inappropriate for the female sex. Furthermore, Shteir stresses the importance of print culture in disseminating the information. Parrish's *American Curiosity: Cultures of Natural History in the Colonial British Atlantic World* is part of a recent trend in the History of Science not only to emphasize local knowledge production, but also to place it in the larger global context of a given geography, in this case the Atlantic World. However, Parrish's approach is problematic since it ascribes an "American-ness" to the inhabitants of the British colonies, who, by the eighteenth century, still clearly thought of themselves as British. The essays in *Colonial Botany: Science, Commerce, and Politics in the Early Modern World*, edited by Londa Schiebinger and Claudia Swan, employ a similar methodology and come to the conclusion that science is ultimately a local pursuit. This analysis seems to be true the farther away from the metropole and the fewer colonizers enter an area where the scientific practice takes place. Charles Withers's *Placing the Enlightenment* again uses the same approach. But for Withers, it is not just science, but broader knowledge of people and culture, that geographically, in a philosophical sense, linked Europe to the rest of the world. My dissertation is directly

connected to this concept of the mobility of knowledge and its simultaneous existence in many locations.

While autodidacts may not have dominated scientific practice during the period covered by this study, they surely accounted for much of its correspondence. Among Collinson, Bartram, Franklin, and Ellis there are no university degrees, medical or otherwise. Print culture mattered enormously for the autodidact. Books, though expensive, were often presented as gifts by those with either more disposable income or by the authors themselves since, most book publication took place at the author's expense. Thus, as Chapter Two posits, the letter became a relatively inexpensive source of knowledge for the self-taught.

One problem that participants, especially autodidacts, in the epistolary web encountered was that many scientific writings, especially older ones, were often written in Latin. With the founding of the Royal Society of London in 1660, however, the use of English in science became conspicuous. By enlisting the scientifically untrained public's help in collecting scientific knowledge, then publishing it in its *Transactions*, the Society (knowingly or unknowingly) initiated a moment toward making English the universal language of scientific communication.²⁰ The long road to the near universality of English was surely not a smooth one, and the issue remained contested well into the nineteenth century, even in Britain.

²⁰ For more on the early history of the Royal Society's methods of gathering information, see Peter Dear, "Totius in verba: Rhetoric and Authority in the Early Royal Society," *Isis* 76, no. 2 (1985): 151-152. It should be noted that Latin continued to be used for the identification of specimens and there is no evidence that there were challenges to that practice.

Chapter Two further argues that the emergence of the scientific public sphere encouraged the use of English, since it was the first language of most of those involved. For example, the iconic German-born illustrator, painter, and naturalist Georg Dionysius Ehret learned to use written English for the notes for his sketches within a few years of moving to London in the 1730s. He also wrote to Linnaeus in English later in life. (Chapter Five, incidentally, demonstrates a similar transformation of Swedish naturalist Daniel Solander, who, like Ehret, made London his home and mastered both written and spoken English.) Besides private correspondence, publishers, printers, and authors all had to decide which language to employ for their books, articles, and journals. Identifying the audience for such works was part of the process of communicating science.

Chapter Two finally concludes with an interpretation that depicts Linnaeus as an institution as well as an individual. It argues that natural historians tacitly, but mutually, agreed to communicate specimens to the Swede. Furthermore, even those who did not favor his system of classification voluntarily adhered to this silent agreement.

Chapter Three examines the Seven Years' War, which wrought important changes to the communication of knowledge within the scientific community. Previously, merchant ships carried transatlantic mail on a private basis. People who sent cargo packed letters in the barrels or crates to be delivered, then put in the post for final delivery. Carriage by merchant ship entailed considerable risk, however. Foul weather and piracy were common problems, not to mention the on-again-off-again armed

conflicts between Britain and France. Shortly after the Seven Years' War began, the British government instituted the official first transatlantic mail service, known as the *packet* or *packet-boat*.²¹ Designed to keep London informed on the progress of the war in America, the packet was also available to anyone willing to pay for the expensive, slow, but (allegedly) secure, postal service. Peter Collinson, through his dealings as a merchant, had cultivated the most reliable relationships with many reliable ship captains. As hostilities escalated, however, Collinson began to use the packet for mail exclusively; he asked his correspondents to do the same.²²

Chapter Three differs from other chapters by adopting a micro-historical approach. Two transatlantic lines of communication—between John Bartram and Philip Miller, and between John Bartram and Peter Collinson—are examined in some detail during the first five years of the war. Both sets of correspondents negotiated the problems of wartime communication, but Miller and Bartram suffered numerous setbacks due to miscarriages. Collinson and Bartram weathered the difficulties more successfully, encountering only delays during the early part of the conflict. Bartram and Collinson did not fare as well for the remainder of the war, and tensions increased considerably between the two men as the disruptions led to misunderstandings. This chapter also contextualizes these issues within the time-geography framework discussed above.

²¹ Sometimes spelled “pacquet” in the correspondence; This French-derived spelling is ironic given that France was Britain’s primary enemy in the war.

²² The best synthetic work on the Seven Years' War is Fred Anderson, *Crucible of War: The Seven Years' War and the Fate of Empire in British North America, 1754-1766* (New York: Alfred A. Knopf, 2000). Anderson’s compelling thesis is that the war was the first true world war, not simply a conflict between Britain and France in Europe or the colonists fighting the French and Indians in North America.

Chapter Four examines what happened when practitioners were committed to science, but more committed to advancing their own careers. They more frequently used the members of the epistolary web and the scientific public sphere to achieve their personal goals. Although Emanuel Mendes da Costa and Pehr Kalm both immersed themselves in scientific practice, neither man felt obligated to pursue a community-wide dispersal of knowledge. Both da Costa and Kalm recognized the need to engage with the two systems of communication from which they wished to distance themselves. Da Costa produced many volumes of correspondence, but never participated in the “conversations” of the epistolary web. Instead, he maintained individual threads of correspondence, and, in a seeming paradox, many of those threads connected him with members of the epistolary web. Kalm, during his sojourn in America, treated the scientific practitioners in the British colonies with disdain, all the while requesting their assistance. Moreover, Kalm, whose North American journey was underwritten by the Swedish government, derided the private-funding of science utilized by the British. Kalm offered support for the French system, which mirrored that of Sweden, again irritating his British American hosts at a time when tensions between Britain and France were high. Kalm’s ability to infuriate the scientific community on both sides of the Atlantic continued after his return to Sweden. Even Kalm’s teacher, Linnaeus, distanced himself from his former pupil.

Chapter Five explores the emergence of a younger generation of scientific practitioners in the 1750s and 1760s, and their interactions with the older, established members of the scientific community. The successful association, both epistolary and

corporeal, between veteran participants and their nascent counterparts promoted the accumulation and dissemination of knowledge. At the same time, this new group created tenuous epistolary links among themselves. However, these connections were never fully forged, eventually contributing to the collapse of the epistolary web, which will be addressed in Chapter Six.

A notable trait of this new generation was their often unbridled critiques of their scientific elders. Alive or recently deceased, the practices and publications of veteran members of the scientific community were fair game for the critical pens of recent entrants into the scientific public sphere and the epistolary web.

The chapter also compares newcomers Alexander Garden and Daniel Solander, who vigorously engaged with their peers, to Emanuel Mendes da Costa and Pehr Kalm, who surely avoided durable connections to the wider community whenever possible. Despite Garden's geographic isolation in South Carolina, he managed to immerse himself in the epistolary web. Solander followed Garden's example by participating in the correspondence network and took an active role in London's scientific community. Like Georg Dionyus Ehret, the Swedish Solander had migrated to Britain and mastered both written and spoken English, allowing him to fit in seamlessly with his British colleagues.

Chapter Six addresses the persistent British identity of the scientific community not only in Britain, but also in its North American colonies following the Seven Years' War through the American Revolution. Even as tensions increased, practitioners on both

sides of the Atlantic linked themselves with the British king. However, the alliance was short-lived, not due to geopolitical conflict, but because the community itself was aging.

Seventy-four-year-old Peter Collinson, to whom the Library Company of Philadelphia offered thanks some three-and-a-half decades earlier, died in 1768. The deaths of long-time members of the scientific public sphere and the epistolary web were frequent from the time of Collinson's death until 1782. The passing of the majority of these practitioners, along with the younger generation's inability to continue the communication process, effectively ended the accumulation and dissemination of knowledge on a wider scale. While the deaths of members of the scientific community dominated these years, a re-birth also occurred. The American Philosophical Society was reincarnated in late-1768, a generation after its first appearance, and subsequent failure.

The chapter closes with the Conclusion and an Epilogue. The eighteenth-century scientific public sphere and epistolary web ended with a whimper, not the bang that transformed the British colonies into an independent nation. Indeed, the gradual demise presents a less-than-satisfying conclusion to the period. Moreover, scientific pursuits lost the vigor evident over the preceding fifty years. Although the American Philosophical Society was once again a going concern, it stagnated during the years of the Early Republic in the nascent United States. The Epilogue, which takes place a generation after the end of the American Revolution in 1782, underscores the desires of a man who, like his mid-eighteenth-century counterparts, was deeply interested not only in science, but also in its communication among a wide audience.

CHAPTER TWO

FROM THE SEVENTEENTH CENTURY TO THE EPISTOLARY WEB

Scientific practice in seventeenth-century Britain was dominated by of “men of leisure.” Regardless of allegiances to the older scholastic model or the new observation-driven method prescribed by Francis Bacon (1561-1626), only men with money and free time undertook scientific study.²³ However, at mid-century the founding of the Royal Society of London brought a wider, public participation, albeit in service to the men of leisure. The Society enlisted the public to make observations of the world around them, submit those findings, and were then analyzed by Society fellows.²⁴ Thus, the knowable world was only knowable to a few.

German-born Henry Oldenburg (1619-1677), the Royal Society’s first secretary, founded the *Philosophical Transactions* in 1665, as a for-profit venture, but with approval from the Society. The *Transactions* started as a collection of scientific correspondence, much of it from Europe, edited by Oldenburg, and printed along with activities of the Society. Unfortunately for Oldenburg, his extensive Continental

²³ Toward the end of the seventeenth century, what were disagreements between factions loyal to the old method and those committed to the Baconian approach became outright battles, in print. See Joseph M. Levine, *Dr. Woodward’s Shield: History, Science, and Satire in Augustan England* (Ithaca and London: Cornell University Press, 1977). Detractors of the “new science” included satirists Jonathan Swift (1667-1745), Alexander Pope (1688-1744), and Dr. John Arbuthnot (1667-1735). Swift’s *Battle of the Books* encapsulates the “Ancients vs. Moderns” conflict, although Swift never tells the reader who won.

²⁴ For more on the early history of the Royal Society’s methods of gathering information, see Peter Dear, “*Totius in verba*: Rhetoric and Authority in the Early Royal Society,” *Isis* 76, no. 2 (1985): 151-152.

correspondence imprisoned him for two months in the Tower of London for spying in the summer of 1667. The second Anglo-Dutch War—an attempt by England to eliminate Dutch control of the high seas in the mid-1660s—raised the suspicions of the English government concerning Oldenburg’s frequent overseas communications. Oldenburg was cleared of the charges, as shown by his rather quick release. As will be shown in Chapter Two, the material in the *Transactions* was almost exclusively in English, regardless of its origin, and propelled the use of that language for communication in Britain and America. Ironically, Oldenburg’s financial problems forced him “to supplement his income by the translation of books into Latin.”²⁵

Epistolary links between Britain and her American colonies existed in the seventeenth and early-eighteenth centuries, but consisted individual pairs of writers exchanging correspondence, much like Oldenburg’s connections with his European correspondents.²⁶ Although a writer might have participated in several exchanges simultaneously, the threads remained disconnected from one another. Transatlantic shipping was not yet frequent enough to support the multi-participant, conversational style that emerged in the 1730s. Furthermore, letter-writing etiquette dictated that writers refrain from sending another missive until they had received a reply to the current one. Under these circumstances, any letter that miscarried potentially brought a halt to

²⁵ Dorothy Stimson, *Scientists and Amateurs: A History of the Royal Society* (London: Sigma Books, 1949), 69.

²⁶ Examples of these individual links include Virginia landowner William Byrd II (1674-1744) and New England minister Cotton Mather (1663-1728) and their respective communications with the Royal Society.

communication.²⁷ As the eighteenth century progressed, the population in the colonies dramatically increased, and to meet demand for goods and information, transatlantic shipping followed suit.²⁸ The founding of the Library Company of Philadelphia in 1731 brought shipments of books and regular communication.²⁹

Establishment of the Library Company owed much to the increased literacy of the public. Few institutions of higher learning existed in the colonies at the time of the library's founding, but literacy rates in New England and the Middle Colonies were relatively high by the mid-eighteenth century. Literacy in the South lagged considerably, even discounting slaves, who by law, were prohibited from learning to read.³⁰

The Library Company sought financial support from the Pennsylvania proprietors, John Penn (1700-1746), along with brothers Thomas (1702-1775) and Richard

²⁷ For transatlantic shipping in the seventeenth and eighteenth centuries, see Steele, *English Atlantic*, and Konstantin Dierks, *In My Power: Letter Writing and Communications in Early America* (Philadelphia: University of Pennsylvania Press, 2009). Dierks main argument is that increases in letter-writing brought about an expansion of the middle class in the late-colonial and revolutionary periods. Dierks's discussions the process of communication, both domestically in America and transatlantically, as well as the effects on the writers and recipients of letters is more relevant to this dissertation.

²⁸ Here, I mean "information" in the broadest sense: business correspondence, personal letters, and news. In 1695, the Licensing Act expired in England, thus ending total government control of news. The proliferation of newspapers that followed eventually took hold in the colonies as well, but much colonial "news" were reprints of products from the London press.

²⁹ For more on the transatlantic book trade in the eighteenth century, see James Raven, "The Importation of Books in the Eighteenth Century," in Hugh Amory and David D. Hall, eds., *A History of the Book in America, volume I: The Colonial Book in the Atlantic World* (Chapel Hill: University of North Carolina Press, 2007), 183-198.

³⁰ For more on literacy in the American colonies, see David D. Hall, *Worlds of Wonder, Days of Judgment: Popular Religious Belief in Early New England* (Cambridge, Massachusetts: Harvard University Press, 1989), 21-70. Also see Cathy N. Davidson, *Revolution and the Word: The Rise of the Novel in America* [Expanded Edition] (New York and London: Oxford University Press, 2004). Though mostly devoted to the Early Republic, Davidson does address colonial and revolutionary era literacy.

(1706-1771), sons of the colony's founder, William Penn (1644-1718). In 1733, the library's directors sent a missive to Thomas Penn requesting assistance "to propagate Knowledge, and improve the Minds of Men, by rendring useful Science more cheap and easy of Access."³¹ As it was, the Library Company, though public, was a subscription library, thus limiting membership to those with the financial means. Members bought a share and paid annual dues, and were entitled to borrow books. Non-members were welcome into the library, but paid exorbitant fees to borrow. It seems that the intent of the directors to make "useful Science more cheap" was a relative term indeed. As far as "easy of Access," the library was open on Saturday afternoons for four hours, not exactly the best way "propagate Knowledge" to a broader public.

The letter-writing process linking the practitioners of science in the mid-eighteenth century resulted in what has been called an "epistolary circle."³² This concept has explanatory power as it speaks to the egalitarian nature of the scientific community during the period since no one point on a circle is more prominent than another. But, a better description of the links among scientific practitioners I term an "epistolary *web*." A "web" calls to mind a central ring with spokes of varying lengths radiating out from a central hub. The web also contains concentric rings for stability that increase in diameter as the spokes become longer. What emerges is a series of intersections: lines, arcs, and

³¹ Directors of the Library Company to Thomas Penn, May 16, 1733. *PBF*, I:

³² This is the phrase used by Brooke Hindle in *The Pursuit of Science in Revolutionary America*. See above.

circles, with some in parallel, but all connected. Likewise, scientific practitioners utilized available systems of communication to build their own interconnected structure.

Furthermore, an “epistolary web,” accounts for the varied geographic locations of the participants allowing for delays and disruptions in communication without the suggestion that it flowed continuously as it would in an unbroken circle.

Although geographically on the periphery, British provincials engaged in transatlantic communication moved themselves far closer to the core, at least intellectually. As the epistolary web took shape in mid-century, it removed most vestiges of disconnected lines of communication that had existed in the seventeenth and early-eighteenth centuries, enabling the scientific community in America to leave the periphery and merge with the core in Britain and Europe. This is not to say that prejudices against the geographically-separated residents of the American colonies did not exist, but as their contributions to knowledge increased, so did their acceptance.

What follows is a discussion of the construction of the epistolary web, and the institution used for its construction—the postal service, in its diverse eighteenth-century forms. The process of linking four primary members of the epistolary web—Peter Collinson, John Bartram, Benjamin Franklin, and Cadwallader Colden did not happen quickly, but rather took the better part of a decade. London merchant and botanist Peter Collinson (1694-1768) has long been acknowledged as the central figure of scientific communication during the period. His thirty-four-year correspondence with Philadelphia farmer and botanist John Bartram (1699-1777) provided the most durable epistolary link

within the scientific community. As noted in the Introduction, Collinson was connected to Benjamin Franklin (1706-1790) through official correspondence of the Library Company. The library's secretary Joseph Breintnall (d. 1746) signed the Franklin-composed letters, and may have introduced Collinson to Bartram.³³

Bartram was recommended as a collector of plants who knew the native American species well. Although none survive, letters between Collinson and Bartram were exchanged beginning in 1733. The published record begins the following year. By the end of 1736, the two men had exchanged nearly two-dozen letters, and Collinson had secured subscribers for Bartram's plants from America, a business that benefited Bartram financially as well as the scientific and gardening communities in Britain and Europe. Bartram was not only rewarded monetarily, but also received plant specimens from across the Atlantic for his garden.

Although there is evidence that suggests Collinson began communication with New York physician and botanist Cadwallader Colden (1688-1776) in 1728, nothing definitive exists in the historical record before January 1741.³⁴ Colden and Bartram did not begin their correspondence until 1742, although it would likely have begun a year earlier had Colden been at his Hudson Valley residence when Bartram traveled through the area.

³³ The historical record is unclear if Breintnall or Philadelphia physician Samuel Chew (b. 1693) made the Collinson-Bartram introduction. For Breintnall, see *PBF*, 1:114*n*. For Samuel Chew, see Edmund Berkeley and Dorothy Smith Berkeley, eds., *The Correspondence of John Bartram, 1734-1777* (Gainesville: University Press of Florida, 1992), xiii. Hereafter cited as *COJB*.

³⁴ See Colden to Collinson[?], n.d. in Cadwallader Colden, *The Letters and Papers of Cadwallader Colden*, 9 volumes (New York: The New-York Historical Society, 1919-1937), 1:254, 256. Hereafter cited as *LPCC*.

More on Bartram's first journey to upstate New York, the missed meeting, and Collinson's involvement with entire process follows.

Colden and Franklin had an "accidental Meeting on the Road" in May or June of 1743.³⁵ Colden initiated the correspondence that October and Franklin replied the following month. The start of their correspondence was the final link among the four men. Since Franklin lived in Philadelphia and Bartram made frequent trips into the city from his farm, the two men had little reason to correspond. However, during Franklin's two long stays in Britain, from 1757-1762 and 1764-1776, as well as during his time in France during the American Revolution, he and Bartram maintained a somewhat regular correspondence.

Collinson's connections to members of the scientific community in Britain and Europe facilitated the development of disparate transatlantic epistolary links. While Collinson was responsible for many of these introductions, he did not precipitate all of them. In 1738, Dr. John Fothergill (1712-1780), a Quaker physician and botanist in London, learned of Bartram not from Collinson, but from Philadelphia physician Thomas Bond (1712-1784). In an October 1738 letter to fellow Quaker and Philadelphia merchant Israel Pemberton, Jr. (1715-1779), Fothergill, without using Bartram's name, referred to "an extraordinary Genius, and much employed by several virtuosi here." This was undoubtedly a reference to the subscriptions for American plants arranged by Peter Collinson. Fothergill told Pemberton that he hoped "to increase the number of his

³⁵ Colden to Franklin, [October 1743]. *PBF*, 2:385-386, 386*n*.

acquaintance by recommending him to the professor of Botany at Edinburgh,” referring to his former teacher, Dr. Charles Alston (1683-1760).³⁶

The next month Fothergill did indeed write to Alston, telling the professor “that they have in Pennsylvania a very celebrated natural botanist” and should Alston desire “a correspondence with such a person,” Fothergill would “endeavor to find out some means to begin it.”³⁷ The lack of any extant correspondence between Alston and Bartram indicates that Alston was not interested in Fothergill’s offer.

In his letters to Alston and Pemberton, Fothergill intimated that he himself desired to begin a correspondence with Bartram. Fothergill’s wish went unfulfilled until late 1743 (or possibly early 1744) when Bartram initiated communications with a gift of mineral and fossil specimens. Fothergill replied in February 1744, thanking Bartram for the gift, and in a postscript suggested “that a collection of several natural productions of your colony would be a fine addition to your Public Library.” Furthermore, “No one is fitter for the undertaking than J. Bartram, and some means ought to be considered to make it worth his while.”³⁸ Fothergill saw the potential to bring scientific knowledge to a wider audience, but never explained how to raise the money for Bartram “to make it worth his

³⁶ John Fothergill to Israel Pemberton, Jr., October 20, 1738. Betsy C. Corner and Christopher C. Booth, eds., *Chain of Friendship: The Selected Letters of Dr. John Fothergill of London, 1735-1780* (Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 1971), 46. Hereafter cited as *Fothergill Letters*. Collinson and Fothergill, who became lifelong friends, did not meet until the following year. Almost thirty years later, Thomas Bond and his brother Phineas Bond (1717-1773), also a physician, were among the founders of the first medical school in America.

³⁷ Fothergill to Charles Alston, November 11, 1738. *Fothergill Letters*, 49.

³⁸ Fothergill to Bartram, February 22, 1744. *Fothergill Letters*, 85-86.

while.” Evident here is Fothergill’s knowledge of the Library Company (“your Public Library”), and that it was successful enough for him to even contemplate the idea for a natural history collection. Fothergill may have learned of the Library Company from Collinson, who had been the Library Company’s London book agent since 1732, Israel Pemberton, Jr., or Thomas Bond who became subscribers in 1739 and 1742, respectively.³⁹

Dr. John Mitchell (d. 1768), possibly born in America, was educated in Edinburgh, where like Fothergill, he studied botany with Dr. Charles Alston. It is not known where he obtained his medical degree. Mitchell returned to America in the early 1730s, settling in Virginia. In 1746 however, ill health forced him to return to England. On the journey, the French seized Mitchell’s ship, and his journals and large herbarium of Virginia plants were stolen. The herbarium was eventually returned, but had been partially destroyed. Among his other talents, Mitchell was a cartographer and produced a map of North America after his return to England, which was used for decades to settle boundary disputes. Mitchell, recognized by Bartram as “an excellent Phisition & Botanist,” worked in many scientific fields, including taxonomy. Mitchell had established a correspondence with his Philadelphia counterparts, and when the opportunity arose to see them in person, he took full advantage.

Bartram wrote to Colden in November 1744 that Mitchell had visited Philadelphia in September, spending the first night at Bartram’s house. The next day Bartram

³⁹ For Collinson as book agent, see above. For Library Company membership of Pemberton, see *Fothergill Letters*, 47n. For Bond’s membership see “Library Company: Acceptance of the Charter,” May 3, 1742 in *PBF*, 2:347.

continued, “I introduced him into ye company of our friend Benjamin.”⁴⁰ When Colden received this missive, he likely already knew the story, however, since Franklin had written to Colden about Mitchell’s visit soon after Mitchell’s arrival. Moreover, Franklin added that he, Bartram, and Mitchell were “together all Day,” and Mitchell showed Franklin and Bartram an essay on yellow fever he had brought with him.⁴¹

It is unclear whether Bartram or Franklin first mentioned their physician friend Colden to Mitchell, but both men would have seized the opportunity to expand the scientific dialogue. But whatever Bartram and Franklin said about Colden certainly impressed Mitchell. Franklin, writing to Colden a few weeks later about Mitchell’s essay, “he desires your Sentiments of it, and to be favour’d with any other Observations you have made on the same Distemper (the Yellow Fever).”⁴² By this time, Colden had not practiced medicine for at least two decades. Surely Franklin or Bartram would have mentioned this fact to Mitchell, but the historical record is silent. Regardless of their conversation, the outcome was that Colden and Mitchell were now in contact. Colden offered comments on Mitchell’s essay, but initially did not disclose that he had never seen a case of yellow fever himself. To his credit, Colden admitted that he was “not furnished with the requisites to form any Judgmt in this case,” when he wrote to Mitchell in November 1745.⁴³ In a peculiar twist, historians of science have concluded that Mitchell

⁴⁰ Bartram to Colden, November 2, 1744. *COJB*, 248.

⁴¹ Franklin to Colden, September 13, 1744. *PBF*, 2:415.

⁴² Franklin to Colden, October 25, 1744. *PBF*, 2:418.

⁴³ Colden to John Mitchell, November 7, 1745. *LPCC*, VIII:328.

had not seen yellow fever either. His descriptions of the epidemics in Virginia, all of which occurred in the winter, could not have been the dreaded disease, given that the mosquito that carries it is not found in the region during that season.

Like Colden, Mitchell found flaws with the Linnaean sexually-based classification system. After his return to England, Mitchell developed and published a natural system, although it had elements “derived from the sexual theory” of Linnaeus.⁴⁴ Mitchell’s work anticipated that of Antoine-Laurent de Jussieu (1748-1836), whose natural system replaced the Linnaean system late in the eighteenth century. Raymond Phineas Stearns has pointed out that, unlike the Linnaean system, Mitchell’s taxonomic work “discussed both plants and animals, and he made a most logical effort to place taxonomy on a genetic basis.” Although he praises John Mitchell’s work in taxonomy, Stearns downplays Mitchell’s importance in the scientific community because “his utilitarian concern for medicinal botany limited his scientific accomplishment.”⁴⁵

Before failing eyesight forced him to retire from botany, many of Colden’s letters detailed the medicinal uses of plants, even going as far as discussing plants that were “long known & the use but a late Discovery.” This is truly a “utilitarian concern,” yet Stearns does not relegate Colden’s work in medicinal botany as he does Mitchell’s. In a more nuanced view, Mitchell is a specialist, willing to focus his energy toward greater advances in one area of science rather than smaller advances in several areas. After

⁴⁴ Mitchell to Linnaeus, September 20, 1748. Sir James Edward Smith, ed., *A Selection of the Correspondence of Linnaeus and Other Naturalists*, 2 volumes (London: Printed for Longman, Hurst, Rees, Orme, and Brown, Paternoster Row, 1821), II:448. Hereafter cited as *COL*.

⁴⁵ Stearns, *Science in the British Colonies*, 542-543, 554.

returning to England, Mitchell worked closely with John Stuart, later Lord Bute, to establish the Royal Botanical Gardens at Kew. However, Mitchell's continued bouts with poor health forced him to give up both medicine and botany during the decade after his return to England. After leaving science, Mitchell took a strong interest in politics, producing the aforementioned map of North America. John Mitchell occupies a unique place in the British scientific community during this period, as he is the only member of the scientific circle to work extensively on both sides of the Atlantic.

Botanist and planter John Clayton (1694-1773), like Mitchell, resided in Virginia. Clayton was, without question, among the best botanists in America during the period. John Bartram attempted to visit Clayton in 1738 on a trip to Virginia and Maryland, but Bartram "had ye misfortune of a grevous disapointment for Claton was gone toward ye mountains to look after some land."⁴⁶ It does appear that the two men were engaged in a correspondence at the time, judging by the frequent mentions by Bartram and Collinson in their own exchanges, but the historical record is scant prior to 1760. The postal service was not nearly as reliable in the southern colonies as in the north, accounting for the lack of extant correspondence between Clayton and his northern counterparts. Clayton's isolated location in Gloucester County, Virginia may have further complicated matters of communication. Clayton is best known for his *Flora Virginica* published by Dutch physician and botanist Johann Frederick Gronovius (1690-1762). Although published under his own name, Gronovius gave Clayton full credit on the title page. Clayton had

⁴⁶ Journal of a Trip to Maryland and Virginia, [late Fall 1738]. *COJB*, 102.

used Ray's classification system, but Gronovius converted the plant names to the Linnaean System. By the time the second part of *Flora Virginica* was ready in 1743, Clayton had learned the new system and had presented the additional material to Gronovius in that form.⁴⁷ Indeed Collinson confirmed Clayton's mastery of the system in a letter to Linnaeus in January 1744. Unfortunately, Clayton left little correspondence during this period. He was mentioned in the letters of other writers, who wrote of his frequent contributions. However, the absence of Clayton's own words removed him from the epistolary conversations of the scientific community.

Aside from his work with John Clayton, Gronovius also corresponded directly with John Bartram. This direct correspondence spans from 1743-1754 and contains sixteen published letters, a small number when compared with Bartram's correspondence with Collinson, but not insignificant. Correspondence between America and mainland Europe took far longer than sending letters between America and England. To that end, much of the scientific exchange, in the forms of both messages and specimens, between Bartram and Gronovius passed through Collinson first, since transit time to Europe from Britain was more manageable. Bartram's specimens were sent to Gronovius as early as 1736, while Gronovius sent gifts, mostly in the form of books, to Bartram until 1762, the year Gronovius died. The exchanges between Bartram and Gronovius, though not always direct, were continuous. It should be noted that Gronovius was not a subscriber of Bartram's collections. His gifts to Bartram are of a reciprocal nature, not as payment for

⁴⁷ Stearns, *Science in the British Colonies*, 557.

service.⁴⁸ Just as Collinson was the liaison between Gronovius and Bartram, Gronovius likewise served as the occasional intermediary between Collinson and Linnaeus.

Collinson did communicate directly with Linnaeus, but Gronovius did so with much more frequency, and passed messages and specimens from Collinson to the Swedish naturalist. Many of these specimens were, of course, from Bartram.

Only six letters exist between Gronovius and Colden, although evidence within these missives indicate that this was not the total extent of their direct communication. Along with one of his letters to Gronovius, Colden sent a copy of the pamphlet describing the Pennsylvania Fireplace. Colden wrote, the stove would “be particularly usefull to you & Dr Linnaeus, by preserving your health while it keeps you warm at you studies.” Colden continued, “It is the Invention of Mr Benjamin Franklin of Philadelphia,” who printed the enclosed pamphlet, “a very Ingenious man. Experience confirms the benefit of it.”⁴⁹ Gronovius appreciated the design of the stove, the designer, and the man who sent word of it. Upon receiving the pamphlet, Gronovius had it translated and printed in Dutch, sent two copies to John Bartram with instructions to have one of the copies sent to Colden. The second copy of the translated pamphlet likely was for Franklin, not Bartram. However, since Gronovius did not correspond with Franklin directly, he used Bartram as the intermediary.⁵⁰

⁴⁸ The first extant letter from Bartram to Gronovius thanked the Dutch physician for a missive and books, which were sent through Philadelphia physician Phineas Bond. See Bartram to Gronovius, November 30, 1743, *COJB*, 227. Bond was the brother of Thomas Bond, see above.

⁴⁹ Colden to Gronovius, [December, 1741]. *LPCC*, III:91.

⁵⁰ Gronovius to Bartram, June 2, 1746. *COJB*, 278.

Linnaeus, was of course well-published, but the Swedish naturalist was not always the most reliable correspondent. Linnaeus had hundreds of correspondents, but even his most faithful ones decried his lack of regular communication. Collinson, writing to Linnaeus in January 1744, was “almost despaired of a line from your hands, for I have not heard from you since the 3d of August, 1739; but at last I had the pleasure of yours of the 25th July last.”⁵¹ Even with his July 1743 letter, Linnaeus still had not written to Collinson in four years, but to Swede’s credit, corresponded much more faithfully with his London correspondent afterwards. But it was not just the lack of letters that irritated Collinson. In a March 1748 missive, Collinson wondered why Linnaeus had “not sent me the least specimen of either fossil, animal, or vegetable.” Collinson continued, obviously perturbed, “Seeds and specimens I have sent you from year to year, but not the least returns.” Then, on behalf of the scientific community, Collinson wrote, “It is a general complaint that Dr. Linnaeus receives all, and returns nothing.” Collinson then closes the letter, “This I tell you as a friend, and as such I hope you will receive it in great friendship. As I love and admire you, I must tell you honestly what the world says.”⁵²

At first, it appears that Collinson was taking both a professional and personal risk by his honesty, but he was not. Linnaeus relied on others in the international scientific community to supply him with specimens for his classification work. Collinson knew this, thus voiced a *collective* complaint without jeopardizing either his own or the rest of

⁵¹ Collinson to Linnaeus, January 18, 1743-4. *COL*, I:8.

⁵² Collinson to Linnaeus, March 27, 1748. *COL*, I:18. Collinson dated this letter “1747-8.”

the scientific community's relationship with Linnaeus. While not completely egalitarian, the scientific community thrived on *collaboration*.

In the second and third decades of the eighteenth century, British naturalist and artist Mark Catesby (1683-1749) visited North America twice, studying and drawing the flora and fauna. His second trip, sponsored by subscription, enabled him to produce *The Natural History of Carolina, Florida and the Bahama Islands*. The work, which was published in sections initially and not finished until 1748, was the first comprehensive natural history survey of at least one region of the British colonies.⁵³ Now best known for his renderings of North American birds, Catesby was first, and foremost, a botanist.

Catesby was an early recipient of John Bartram's collections. Although Peter Collinson served as an intermediary between Catesby and Bartram much of the time, Bartram corresponded directly with Catesby from 1740-1746. Catesby had initiated the direct communication, and made an offer to Bartram: in exchange for plants, Catesby would send one part of his *Natural History* each year.⁵⁴ Bartram replied he was "exceedingly pleased with thy proposals." Bartram's pleasure with Catesby's "acceptable letter" was palpable. In his response, Bartram was overcome with "Passions of Joy in receiving a letter of friendship & request from one so much esteemed." He also promised to search for "every perticular what thee wishes" during collecting trips "on ye mountains

⁵³ After Catesby's death, a two-volume edition was published. For a comprehensive examination of Catesby, see Amy R.W. Meyers and Margaret Beck Pritchard, eds., *Empire's Nature: Mark Catesby's New World Vision* (Chapel Hill: The University of North Carolina Press, 1998).

⁵⁴ Mark Catesby to Bartram, May 20, 1740. *COJB*, 133.

or in ye valies and ye most desolate craggy dismal places.”⁵⁵ Bartram’s exuberance was clearly excessive, but Catesby was “wonderful pleased” by Bartram’s letter.⁵⁶

In addition to his fawning over Catesby, Bartram noted he was eager to make observations for anyone who “desires to be informed” about “particulars,” according to their own needs for such observations. Furthermore, Bartram used these requests for specific observations to advance his own knowledge of natural history.⁵⁷ Although Bartram was still trying to impress Catesby, Bartram’s own “desires to be informed” were a regular theme in his letters. The promised sections of Catesby’s *Natural History* fulfilled these very “desires.”

Sir Hans Sloane (1660-1753) shared many of Catesby’s traits when it came to a scientific relationship with Bartram: Sloane was an early beneficiary of Bartram’s collections; Peter Collinson was intermediary between Sloane and Bartram for much of the time; and Sloane corresponded directly with Bartram. Flush with success in his communication with Catesby, Bartram initiated the correspondence with Sloane, using a request that Sloane made through Collinson for “some petrified Representations of sea shels” as a basis to open a direct dialogue.⁵⁸

Although Bartram knew that Collinson had been forwarding some specimens to Sloane, Bartram expressed his surprise, “I had ye least hint that thee tooke any notice of

⁵⁵ Bartram to Catesby, [March 1740/41]. *COJB*, 152.

⁵⁶ Collinson to Bartram, June 6, 1741. *COJB*, 156.

⁵⁷ Bartram to Catesby, [March 1740/41]. *COJB*, 152.

⁵⁸ Bartram to Sloane, July 22, 1741. *COJB*, 160.

any thing that I sent” until Sloane’s request for the fossil shells. After expressing this surprise, Bartram hoped the fossils would “meet with thy acceptance so as to introduce a further Correspondence.” Bartram then asked Sloane to send “A Letter Containing instructions what kind of Particular Curiosities will be most agreeable.” Regardless, Bartram planned “to send [Sloane] Another Colection by Captain Whright” which would, Bartram told Sloane, “give thee A further demonstration that I am thy vigilant & industrious friend.”⁵⁹

In *The Correspondence of John Bartram*, editors Edmund and Dorothy Smith Berkeley provide both the version of the letter that Bartram sent to Sloane as well as his draft copy. The draft copy does not contain the sentence, “which was before I had ye least hint that thee tooke any notice of any thing that I sent or wanted any from me.” Nor does it contain, “Pray be so kind to favour me with A Letter Containing instructions what kind of Particular Curiosities will be most agreeable.” The version Bartram sent with these two sentences included stressed that he was honored to have the venerable Sloane acknowledge his work. Moreover, it shows Bartram’s awareness concerning his word choice. By choosing to include the sentence with “Particular Curiosities,” Bartram’s letter to Sloane replicated language used in Bartram’s first letter to Catesby, another respected figure in the British scientific community.

Sloane maintained a modest tone in his reply to Bartram. Sloane first thanked Bartram for the “Natural Curiosities, Shells and Petrifactions,” and then told Bartram, “I

⁵⁹ *Ibid.*, 160.

reckon myself very much obliged to you; especially on account of the remarks that you had sent along with them, in your letter to me.” Sloane’s pleasure in Bartram’s letter and the specimens is evident, and Sloane responded by sending Bartram both volumes of the *Natural History of Jamaica* as well as the *Catalogue*, all authored by Sloane. In return, Sloane simply requested “some seeds, or samples of your plants, for [his] collections of dried herbs, fruits, &c.” Sloane closed his letter to Bartram by saying, “I should be extremely pleased to know wherein I can be useful to you and retaliate the obligations you have laid upon.”⁶⁰ While this last phrase, “retaliate the obligations you have laid upon,” reflects the etiquette indicative of the period, the first exchange between Bartram and Sloane was anything but an exercise in formality.

As promised, both Catesby and Sloane sent their respective books via Collinson, and the shipment reached Philadelphia on July 5, 1742. Bartram anxiously awaited Sloane’s “history & particularly M. Catesbys books to see what birds he hath figured” before a collecting trip along the east coast. However, the ship was “ordered to ride Quarantine” due to a “mortal sickness” that had taken the life of many on board, including Captain Wright, who Bartram intended to use to send specimens to Sloane.⁶¹ It was not until November that Bartram acknowledged receipt of the books, although they were most likely delivered while Bartram was away.

⁶⁰ Sloane to Bartram, January 16, 1742. *COJB*, 178. The full title of Sloane's *Natural History of Jamaica* is *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. Of the last of those ISLANDS*. The first volume was published in 1707 and the second in 1725. The *Catalogue*, published in 1696, is a catalogue of the plants Sloane found in Jamaica, and is entirely in Latin. The *History* is in English.

⁶¹ Bartram to Collinson, July 6, 1742. *COJB*, 199.

Historian Thomas Slaughter denies any kind of true scientific epistolary relationship between Bartram and Sloane. Slaughter is correct that Bartram often bragged about his associations and craved recognition. It is also true that Bartram never met Sloane. According to Slaughter, Bartram turned “tenuous third-party business connections into false claims of friendships with men Bartram never met,” a reference to Peter Collinson’s position as transatlantic intermediary.⁶² If this is indeed the case, then Slaughter needs to level that same criticism against Benjamin Franklin, who benefitted from Collinson’s actions as much as Bartram did, perhaps even more so. It was Collinson, after all, who insured the publication of Franklin’s electrical studies and sparked public interest through his connections with Edward Cave (1691-1754), publisher of the widely-read *Gentlemen’s Magazine*. Collinson also secured the Royal Society’s highest honor, the Copley Medal, for Franklin in 1753. Furthermore, Franklin bragged about his association with Sloane, too. In his autobiography Franklin wrote about his meeting with Sloane in London in the 1720s. Franklin’s recollection of the meeting did not include he essentially forced himself on Sloane. Slaughter is silent on Franklin, never comparing the two contemporaries. Thus, Slaughter portrays Bartram’s behavior as singular and deserving of critique.

Sir Hans Sloane was quite literally the elder statesman of British science during the period. Collinson seemed fascinated by his friend’s longevity and good health.

Collinson’s exchanges with Linnaeus, who had visited Sloane and his collections in

⁶² See Thomas P. Slaughter, *The Natures of John and William Bartram* (New York: Alfred A. Knopf, 1996), 100-101. Hereafter cited as *Natures*.

London, bear this out. In 1745, Collinson described Sloane as “a miracle, and has all his senses and memory entire” and furthermore, “His face has none of the lineaments of a man not far from 90 years old.”⁶³ Later that year Collinson found “the good man cheerful and well, for his great age.”⁶⁴ Between 1746 and 1749, Collinson’s favorite descriptions of Sloane were “hearty,” “in good spirits,” or both.⁶⁵ After a lengthy gap in the correspondence, precipitated once again by Linnaeus, Collinson wrote in May 1753 announcing Sloane had died in January and Parliament purchased, “for the use of the Public,” Sloane’s “great collection of books and curiosities,” the foundation of the British Museum.⁶⁶

Sloane’s death in January 1753 quite possibly played a role in Franklin’s recognition by the Royal Society that same year. Collinson had been a Fellow of the Royal Society since 1728 and was, of course, a longtime friend of Sloane, and the facilitator of Franklin’s work on electricity. From the inception of the Copley Medal prize in 1731, and until 1752, Sloane, then president of the Royal Society, had selected the winner of the prestigious award. After Sloane’s death, the new president of the Society, and now a committee, which included Collinson, oversaw the selection of the winner. Franklin received the medal in 1753 for his “Ingenious and New Discoveries on

⁶³ Collinson to Linnaeus, March 12, 1744/45. *COL*, I:12-13.

⁶⁴ Collinson to Linnaeus, September 1, 1745. *COL*, I:13.

⁶⁵ Collinson to Linnaeus, August 5, 1746; April 16, 1747; October 26, 1747; May 8, 1749. *COL*, I: 16, 18, 21, 24.

⁶⁶ Collinson to Linnaeus, May 8, 1753. *COL*, I:25.

Electricity.”⁶⁷ In his letter of March 7, 1754 that accompanied the Copley Medal, Collinson stressed to Franklin the importance of sending the Royal Society “a Short Letter of Thanks” because Franklin was “the First person *out of the Nation* that has had that Honour confer’d.”⁶⁸

As far as the Copley Medal was concerned, the Royal Society did not “confine this Benefaction within the narrow limits of any particular Country, much less this Society itself.”⁶⁹ In other words, Copley Medal winners did not have to be British or members of the Society. Although Franklin was the former, he was not the latter. Franklin’s “out of nation” status was, in this case, a geographic idea. In no way would any resident in the colonies who hailed from the British Isles consider themselves to be “American,” in the political or national sense of the word, at this time. George Parker, Earl of Macclesfield (1697-1764), Sloane’s successor as president of the Society, acknowledged Franklin’s position as a non-member, but noted Franklin’s national affiliation. In the speech awarding the prize to Franklin, said, “he be not a Fellow of this Society nor an Inhabitant of this Island, is a Subject of the Crown of Great Britain.”⁷⁰

In order for the British scientific community to flourish, regular communication was, as demonstrated above, a necessity. The postal service in the colonies provided for intercolonial communication. However, before 1755 and the advent of the packet boat,

⁶⁷ Collinson to Franklin, January 26, 1754. *PBF*, 5:191-192.

⁶⁸ Collinson to Franklin, March 7, 1754. *PBF*, 5:230.

⁶⁹ Earl of Macclesfield: Speech Awarding the Copley Medal, [November 30, 1753]. *PBF*, 5:129.

⁷⁰ *Ibid.*, 130. Franklin was elected to membership in 1756.

there was no regularly scheduled transatlantic postal service between Britain and the colonies. Merchant vessels carried the mail and packages across the Atlantic. Access to reliable sea captains was necessary to provide any chance of successful delivery of personal mail and specimens, although there was still no guarantee.

Peter Collinson's success as a merchant put him in the perfect position to facilitate communications between Britain and the colonies, Britain and Europe, as well as Europe and the colonies. These vessels, which delivered his goods, also provided transportation for letters, seeds, and specimens. Collinson cultivated relationships with captains of merchant vessels. The names of these captains—Wright, Redman, Savage, and Bell among others—appear regularly throughout the published correspondence. The captains' names most frequently functioned as a rudimentary confirmation system, allowing correspondents to verify by which ship a particular letter or parcel had already been sent. Transatlantic shipping had inherent problems with piracy, theft, and weather, and the follow-up letters provided a modicum of reassurance. The inclusion of the sea captains' names within letters also provided one other form of verification: correspondents could continuously monitor the reliability of any particular captain. With so many captains making repeated appearances within the correspondence, it is evident that many of them were trustworthy.

Collinson also used the mail to introduce those who were on the front lines of collecting scientific information in the colonies to each other. The introduction of Bartram to Colden is one such case. On September 7, 1740, Bartram wrote to Collinson

discussing his collecting trip for the following year. Bartram planned to “go next year up hudson’s river as far as albany” rather than to New England, where, according to Bartram, the people “are A pack of ungratefull clownish Presbyterians.” More importantly, Bartram understood that “ye balm of gilead fir,” a tree whose resin was used medicinally (and wanted by Collinson for the subscribers of Bartram’s collections), grew near the Hudson.⁷¹ Bartram collected the unopened cones to send to Collinson and the other subscribers, including Philip Miller (1691-1771), director of the Chelsea Physic Garden. Begun in 1673 by the Apothecaries Company, the garden is still in existence.

Bartram’s reference to the “pack of ungratefull clownish Presbyterians” was not altogether accurate, but surely fellow Quaker Collinson got the point. Bartram correctly identified the Calvinist New England religious tradition, but the majority would have been Congregationalists (Puritans), not Presbyterians. Regardless of denomination, however, Bartram, as a Quaker, may have harbored resentment against those who, in the past, persecuted his spiritually-likeminded brethren. Historians of the colonial period have long-acknowledged the hypocrisy of the early New England colonists who excluded non-Puritans from Massachusetts after being forced from Old England themselves for their religious convictions.

Collinson’s February 25, 1741 reply to Bartram’s missive had two directives. First, he reminded Bartram to “Look sharp out after the Balm of Gilead Firr” and “Look out Early about the Balm of Gilead Firr.” This was an economic message. As the facilitator of

⁷¹ Bartram to Collinson, [September 7, 1740]. *COJB*, 142.

Bartram's subscriptions, Collinson explicitly communicated the needs of the subscribers. The economic message also had imperial implications: the American colonies were Britain's best source of raw materials. The second, but no less important message was designed to connect Bartram with another member of the scientific community in America. A lengthy postscript informed Bartram that there was, enclosed, a "letter to Doer Colden, surveyor general of New York." Collinson said that Colden "may be of great service to thee to inform thee where is the likeliest place to find the Firs" and that "He is a very Ingenious man." Before closing, Collinson reminded Bartram to "Look out sharp for the Balm of Gilead Firs."⁷²

Two weeks later on March 5, Collinson wrote to Colden, suggesting he may receive a visit from "an Ingenious Man and a great teacher unto Nature Named John Bartram."⁷³ Collinson's maneuver implanted a perception of Bartram into Colden, who, unlike Bartram, had an advanced education. Collinson's words were not an empty compliment: Bartram had long since proved his ability within the scientific community in Britain, and Collinson thought Bartram deserved to be treated with the same respect as those who had received better a education. Bartram made the journey to New York, but did not find Colden at home. The two men began their correspondence the following year after Bartram's next trip to the region. Collinson's efforts to introduce Colden and Bartram emphasized the importance Collinson placed not only on business (in this case, plants for Bartram's subscribers in Britain), but also on the expansion of scientific study

⁷² Collinson to Bartram, February 25, 1741. *COJB*, 149-151.

⁷³ Collinson to Colden, March 5, 1741. *LPCC*, II:208.

in America. It is unknown why Collinson did not encourage Colden and Bartram to correspond by mail. However, a possible motive exists for Collinson's decision. During this period, Colden traveled extensively in his capacity as Surveyor General of New York. Perhaps Collinson understood that because of Colden's long absences from home, correspondence between Colden and Bartram would be sporadic at best, and that an initial face-to-face meeting was a better solution. Although Collinson stressed the economic importance of Bartram's impending journey to Colden's region, Collinson frequently placed the collection and distribution of scientific knowledge above all else, as will be seen. He did not operate exclusively in a business mode.

Until his experiments in electricity began in 1747, Benjamin Franklin, like Collinson, was a conduit for scientific information. Franklin's appointment as Postmaster in Philadelphia in 1737 was a critical moment for the dissemination of scientific knowledge. Although reliable (in the northern colonies), the colonial postal service was expensive.⁷⁴ Historian David Waldstreicher notes that Franklin improved communications as a "servant of the Crown" and made "Britons out of provincial Americans."⁷⁵ Although Waldstreicher seems to define "provincial" differently than Ned Landsman, he does not suggest that "Americans" are anything other than British subjects living on the western side of the Atlantic. Equally important is Waldstreicher's

⁷⁴ Philadelphia Post Office Record Books, 1737-53. *PBF*, 2:178-183.

⁷⁵ David Waldstreicher, *Runaway America: Benjamin Franklin, Slavery, and the American Revolution* (New York: Hill and Wang, 2004), 116. Waldstreicher's political and social history complements Landsman's cultural and intellectual history in *From Colonials to Provincials*, since both works examine the transformation of Colonial America, and its changing position within the Empire. For more on Franklin as postmaster, see *Ibid.*, 115-144.

acknowledgment of Franklin's British-ness, a characteristic that Franklin only reluctantly sheds just before the American Revolution after returning to America in mid-1775.

Franklin's ability to provide free postage for mail sent throughout the colonies by members of the epistolary web was an incentive to those for were engaged in scientific pursuits to exchange acquired knowledge with their colleagues. In 1753, Franklin was appointed as Deputy Postmaster General for North America, fortuitous indeed since local postmasters lost their free postage privileges at this time. Franklin, who had been in Britain since 1764, was dismissed from the post in 1774. Ironically, his superiors in Parliament cited Franklin's absence from the colonies as one of the issues.

What began as a series of individual connections in the 1730s was transformed into a complex web about a decade later. This web fostered collaboration among the scientific community, encouraging the continued accumulation and dissemination of scientific knowledge. While the colonial postal service connected the practitioners of science in America, the primary concern of the British scientific community was the transmission of letters and specimens both east and west across the Atlantic. To that end, the scientific community relied on the captains of merchant vessels, taking control of knowledge out of their own hands, although it would be an overstatement to say the scientific community was risking their scientific communication and cargo no other option for transatlantic transmission existed. Although fears concerning the potential loss of information were often voiced in letters, there is no indication that any member of the scientific community ever withheld data or specimens until the advent of the Seven Years' War.

Chapter Two examines the institutionalization and accumulation of knowledge in repositories as well as through education. In the 1750s, institutions of higher learning were few in the colonies. However, through Franklin's efforts, along with input from men of science on both sides of the Atlantic, scientific knowledge became a key component in the design of a new institution's curriculum. The success of that project stood in stark contrast to another that Franklin and Bartram had attempted a decade earlier. Despite the best efforts of the scientific community in America to create an institution like Britain's Royal Society to house and distribute knowledge, practitioners in the colonies relied on their transatlantic collaborative creation—epistolary web.

CHAPTER THREE

INSTITUTIONS OF KNOWLEDGE, LANGUAGES OF KNOWLEDGE

Chapter Two covers the period before the Seven Years' War and focuses on the institutionalization of scientific knowledge, both literal and figurative, while still emphasizing the continued importance of the epistolary web as a reliable, inexpensive method of moving information. The chapter first discusses the importance of the Royal Society of London for science in America. This is the central theme of Raymond Phineas Stearns's *Science in the British Colonies of America*.⁷⁶ Unlike Stearns however, I argue that the Society was not the be-all-and-end-all, but that because its *Transactions* were published in English, the Royal Society spurred a broader movement in the communication of science.

The chapter analyzes the founding of the first incarnation of the American Philosophical Society in 1743, and then its quick, spectacular failure. Regardless of other plausible reasons for the Society's demise, my interpretation is directly connected to the success of the epistolary web. The voluminous and rapid circulation of scientific knowledge from America by way of letters insured that all new discoveries were in the

⁷⁶ Stearns's work, along with Brooke Hindle's *The Pursuit of Science in Revolutionary America*, though somewhat dated, are still considered the starting points for studies in the History of Science in America before the Early Republic. See Raymond Phineas Stearns, *Science in the British Colonies of America* (Urbana: University of Illinois Press, 1970) and Brooke Hindle, *The Pursuit of Science in Revolutionary America, 1735-1789* (Chapel Hill: The University of North Carolina Press, 1956).

hands of many and unlikely to be lost. This diminished the need to archive such knowledge in America, at least in the short term.

Formal and informal spaces of scientific education fill the remainder of the chapter. While the American Philosophical Society was not initially to be counted among Benjamin Franklin's successes, The University of Pennsylvania is a testament to his plan for establishing an academy and college in Philadelphia in the 1740s. (The college's medical school, founded in 1766, will be discussed in Chapter Five.)

The chapter takes the position that Linnaeus was an institution as well as an individual. Here, I argue that natural historians tacitly, but mutually, agreed to communicate specimens to the Swede. Furthermore, even those who did not favor his system of classification voluntarily adhered to this silent agreement.

Cadwallader Colden clearly had a deep interest in education. He corresponded frequently with Franklin on the plan for the academy and college, but was also interested in more private forms of learning. As mentioned earlier, Colden was the first to translate the Linnaean system into English. Fluent in written Latin, he did not translate it for himself, but for his daughter, Jane Colden (1724-1766). While gender bias of the time prevented Jane from receiving a formal scientific education, she and a few other women of higher rank learned botany.

While autodidacts may not have dominated scientific practice during the period covered by this study, they surely accounted for much of its correspondence. Among Collinson, Bartram, Franklin, and Ellis there are no university degrees, medical or

otherwise. Print culture mattered enormously for the autodidact. Books, though expensive, were often presented as gifts by those with either more disposable income or by the authors themselves since, most book publication took place at the author's expense. Thus, the letter became a relatively inexpensive source of knowledge for the self-taught.

However, older scientific works, as well as newer ones were often written in Latin. With the founding of the Royal Society of London in 1660, the use of English in science became conspicuous. By enlisting the scientifically untrained public's help in collecting scientific knowledge, then publishing it in its *Transactions*, the Society (knowingly or unknowingly) initiated a moment toward making English the universal language of scientific communication.⁷⁷ The long road to the near universality of English was surely not a smooth one, and the issue was still contested well into the nineteenth century, even in Britain. The emergence of the scientific public sphere further encouraged the use of English since it was the first language of most of those involved. The iconic German-born illustrator, painter, and naturalist Georg Dionysius Ehret (1708-1770), though not a regular contributor to the epistolary web, learned to use written English for the notes for his sketches within a few years of moving to London in the 1730s. He even wrote to Linnaeus in English rather than Latin later in life. Besides private correspondence, publishers, printers, and authors also had to decide which language to

⁷⁷ For more on the early history of the Royal Society's methods of gathering information, see Peter Dear, "*Totius in verba*: Rhetoric and Authority in the Early Royal Society," *Isis* 76, no. 2 (1985): 151-152. It should be noted that Latin continued to be used for the identification of specimens and there is no evidence that there were challenges to that practice.

employ for their books, articles, and journals. Identifying the audience for such works was part of the process of communicating science.

Writing from his vantage point in the mid-nineteenth century, Charles Richard Weld, Assistant-Secretary and Librarian of the Royal Society of London, offered a corrective to a problem he observed: there had been three “histories” of the Royal Society, but none of them were indeed civil (administrative) histories. Weld’s solution was to search through the Society’s archives, and other venues that had come into possession of Society documents, and to contact the estates of former Society Secretaries, in order to assemble a true picture of the Royal Society’s progress as an institution.⁷⁸ Weld clearly recognized not only the importance of the Royal Society as a repository of scientific information, but also, and more importantly for Weld, the fact that for such a repository to function, it had to be managed properly.

Institutions are created and driven by rules, or boundaries. Who can join an institution? To what extent can an individual contribute to an institution? What powers does the institution exert over its members? In the case of the epistolary web and the scientific public sphere, can institutions be greater than the sum of their parts?

Members of the scientific community “built” the epistolary web without such boundaries (with the exception of gender and race, for the most part). Practitioners engaged in scientific communication turned the traditional idea of an institution on its

⁷⁸ Charles Richard Weld, *A History of The Royal Society with Memoirs of the Presidents*, 2 volumes (London: John W. Parker, 1848. Reprint: Elibron Classics. www.Elibron.com, 2006.), v-ix.

head. Rather than defining who could join and the extent of any particular individual's contribution, it was contribution itself that defined membership in the epistolary web.

A central repository of scientific knowledge could collect information over a long period, examine its value to the scientific community, have corrections or emendations made, publish the output, and begin the process again. Knowledge would be released to a wider audience on a regular basis, with the repository overseeing the process, freeing those in the scientific community to continue their individual work. This centralization of gathering, storing, and distributing knowledge had found a successful form in the Royal Society of London. In the eighteenth century, no such repository existed in America, but Benjamin Franklin offered a remedy to the situation.

In May of 1743, Franklin published a broadside entitled, "A PROPOSAL for Promoting USEFUL KNOWLEDGE among the British Plantations in America."⁷⁹ Franklin christened the proposed organization the American Philosophical Society. In Franklin's proposal, the new society emulated the Royal Society of London. Unlike the Royal Society, however, Franklin aimed to include not only experiments and observations in natural philosophy, but also advances in utilitarian pursuits. Agriculture, labor-saving machines, mining, surveying, "Improvements of vegetable Juices, as Cyders, Wines, &C," "distillation," and "brewing" are examples from the long list Franklin offered in his proposal. Moreover, Franklin specifically mentions medicine in the form of "New

⁷⁹ Benjamin Franklin, *A Proposal for Promoting Useful Knowledge*, May 14, 1743 in Leonard Labaree *et al*, eds., *The Papers of Benjamin Franklin*, 38 volumes (New Haven: Yale University Press, 1959-), 2:380. Hereafter cited as *PBF*.

Methods of Curing or Preventing Diseases.”⁸⁰ Since its inception, the Royal Society had, for the most part, refrained from publishing material related to medical advances.⁸¹

Although Franklin was the first to publicize an effort to establish a philosophical society, the plan was not originally his own. The formation and function of new repositories of knowledge provided topics of discussion for the members of the epistolary web.

Cadwallader Colden and John Bartram had already expressed an idea similar to the American Philosophical Society before the publication of Franklin’s broadside.

Colden’s proposal for such a society came in a 1728 letter to Boston physician and botanist William Douglass (1691? -1752). In his brief sketch of the plan, Colden was clear that this “Voluntary Society for the advancing of Knowledge” should have its base in Boston since “the greatest number of proper persons are like to be found in your Colony.”⁸² Colden was correct: in the first third of the eighteenth century, knowledge and learning in America were still most closely associated with Harvard, as had been the case in the previous century. As part of the proposal, Colden called for the regular submission of scholarly papers “for ye advancing our knowledge in any of the Arts or Sciences.”

⁸⁰ *Ibid*, 2:381.

⁸¹ Paradoxically, a large number of Royal Society members were physicians, thus it would be expected they would overwhelmingly approve new medical information for publication in the *Philosophical Transactions*. For examples of the types of material excluded from the *Transactions*, see Andrea Rusnock, ed., *The Correspondence of James Jurin (1684-1750)* (Amsterdam and Atlanta, Georgia: Rodopi, 1996), James Jurin to Antoine Deidier, December 30, 1723, 215; Jurin to Edward Bayly, March 11, 1723/24, 235; Jurin to Deidier, April 3, 1725, 293. There were exceptions to the policy, however. John Huxham’s account of a small pox epidemic was approved for publication in the *Transactions*. Jurin wrote of Huxham’s submission, “ye Judicious Remarks you make therein were very well relish’d, particularly by ye Physicians.” See Jurin to John Huxham, March 24, 1725/26, 332.

⁸² Colden to William Douglass, n.d. *The Letters and Papers of Cadwallader Colden*, 9 volumes (New York: The New-York Historical Society, 1918-1923, 1937), 1:272. Hereafter cited as *LPCC*.

After submission, these papers were to be reviewed by other “Members residing in or near Boston” (reinforcing Colden’s position where the Society should be based) before being “published for ye Benefit of the Absent Members & *all others* that shall desire to be inform’d in such matters.” Although Colden sought to have the Society controlled from Boston and its membership “be confin’d to a certain Number in each Province,” he wanted the work of those in the Society available for all who were interested.⁸³ By not placing limits on who could access the material, Colden promoted the dissemination of knowledge to a wide audience.

Douglass responded to Colden’s proposal in 1729. He noted the lack of individuals “qualified for Such a correspondence” in the entirety of New England, but was impressed by Colden’s “inclination of being serviceable to your friends by making and communicating of useful & [torn] Speculations Observations and other improvements.”⁸⁴ Colden did not pursue the idea further with Douglass, but after seven years had elapsed, a letter from from the Boston physician broached the topic once again. “You may remember that some years ago you proposed the forming a sort of Virtuoso Society or rather correspondence: We have lately in Boston form’d a Medical Society.”⁸⁵ Colden’s reaction to this news is unknown, since he did not reply to the Douglass letter.

Writing to Peter Collinson in the fall of 1737, John Bartram proposed the formation of a learned society. Although Collinson replied to this specific letter in

⁸³ *Ibid.* My emphasis.

⁸⁴ William Douglass to Colden, March 31, 1729. *LPCC*, 8:190-191.

⁸⁵ William Douglass to Colden, February 17, 1735/36. *LPCC*, 2:146

January of 1738, he did not address Bartram's idea until July of that year.⁸⁶ Collinson wrote, "As to the Society that thee Hints att, Had you a Sett of Learned Well Qualified Member[s] to Sett out with It might Draw your Neighbours to correspond with you."⁸⁷ Collinson thought Philadelphia's Library Company was already a good foundation for such a society. These positive words are followed by Collinson's observation that "to draw Learned strangers to you to teach Sciences requires Salaries & good Encouragement." Furthermore, Collinson continued, there was the need for "publick as well as proprietary assistance – which can't be att present complied with Considering the Infancy of your Colony."⁸⁸ Although Bartram used the word "academy" in his original letter, he mentioned nothing of *teaching* science, only to engage in the "study of natural secrets" and to "Communicate discoveries freely."⁸⁹ Bartram, like Colden, called for a wide distribution of knowledge, but seems to have failed to communicate succinctly his idea to Collinson given Collinson's misunderstanding.

By 1737, Peter Collinson had been the Library Company's book agent for almost five years. His response to Bartram's proposal was surely informed by this relationship, as would future discussions of learned societies. After meeting John Fothergill (probably in 1739), Collinson may have mentioned Bartram's proposal for a learned society, as well

⁸⁶ Bartram to Collinson, [Fall 1737] in Edmund Berkeley and Dorothy Smith Berkeley, eds., *The Correspondence of John Bartram, 1734-1777* (Gainesville: University Press of Florida, 1992), 66, 66n. Hereafter cited as *COJB*.

⁸⁷ Collinson to Bartram, July 10, 1738. *COJB*, 93.

⁸⁸ *Ibid.*

⁸⁹ Bartram to Collinson, [Fall 1737]. *COJB*, 66.

as his own response, which referred explicitly to the Library Company. Fothergill, in a postscript to his February 1744 letter to Bartram, used this information to “hint” to Bartram “to keep a part by thee of everything curious” to display in “your Public Library.”⁹⁰ Fothergill did not know of Benjamin Franklin’s proposal at the time of his letter to Bartram since no reference is made to it; thus, Fothergill assumed that the Library Company was the repository of knowledge in Philadelphia with *public* access.

Franklin’s 1743 proposal evolved from discussions with Bartram and Dr. Thomas Bond (1712-1784) as well. Bond would figure into other Franklin proposals a few years later: the Pennsylvania Hospital for the Sick Poor, which Bond co-founded with Franklin, and the College of Philadelphia (later the University of Pennsylvania). Still, the absence

⁹⁰ John Fothergill to Bartram, February 22, 1743/44. *COJB*, 232.

of documentary evidence means that the discussions about the Society between Bartram and Franklin before the publication of the 1743 proposal remain a mystery.⁹¹

In his 1728 proposal, Cadwallader Colden hoped that “The Govr may find ways to lessen the Charge of Postage.”⁹² Colden was well aware of the potential high cost to the members of disseminating their knowledge, which could in fact deter them from joining the society in the first place. Addressing the same issue in his proposal, Franklin specified that all correspondence, both letters and packages, of the Society would be free of postage provided they were sent through the Society’s Secretary, then passed on to the final recipient. Franklin would “offer himself to serve the Society as their Secretary, ’till they shall be provided with one more capable.”⁹³ As previously noted, Franklin already

⁹¹ The work of Edmund Berkeley and Dorothy Smith Berkeley has resolved the issue of *when* Bartram proposed a learned society. Brooke Hindle, Raymond Phineas Stearns, the editors of *The Papers of Benjamin Franklin*, and others have written that Bartram’s idea was put forth in 1739. William Darlington’s *Memorials of John Bartram and Humphry Marshall* (the first published version of Bartram’s correspondence) does not have Bartram’s original letter, only Collinson’s reply, which is misdated in the *Memorials*. Darlington has Collinson’s second letter dated July of 1739, not 1738. This created the illusion that Bartram’s letter was written in 1739. By examining Bartram’s original letter (as well as a transcript at the American Philosophical Society), the Berkeleys have corrected the historical record dating Bartram’s original letter in the fall of 1737. With Bartram’s letter originating two years earlier than previously ascribed, it adds weight to the evidence that explodes the myth of the founding of the American Philosophical Society: Bartram got the idea from Colden, then passed it on to Franklin. See *PBF*, 2:378-379n. It would have been possible for Benjamin Franklin to have learned of Colden’s proposal directly from William Douglass. The two men knew each other well from Franklin’s time in Boston where he was apprenticed to his brother James. Both Douglass and the young Franklin wrote for the *New England Courant*, James Franklin’s paper. However, there is no evidence to suggest that Douglass forwarded the Colden proposal to Franklin or that the two men ever corresponded after Franklin’s departure from Boston in 1723. There is no record of Bartram and Colden having corresponded before they met in 1742 (although Collinson tried to arrange a meeting the previous year). This alone provides proof that Bartram could not have gotten the idea for a learned society from Colden. It is not improbable that two different people could have proposed the same idea, given their geographic separation, although historians attempt to make the link between Colden, Bartram, and the American Philosophical Society.

⁹² Colden to William Douglass, n.d. *LPCC*, 1:272.

⁹³ Franklin, *A Proposal for Promoting Useful Knowledge*, *PBF*, 2:383.

possessed the ability to provide free postage in his role as Postmaster. Although not engaged in science himself at the time of his proposal (his “Pennsylvania Fireplace” could be considered an exception here),⁹⁴ Franklin had long held an interest in the acquisition and distribution of knowledge. His long-standing involvement with the Library Company speaks to this point. Thus, Franklin’s desire to hold a position within the Society he proposed was not unusual. Furthermore, given Franklin’s personal quest for knowledge, he would have the ability to learn of the latest scientific discoveries as they were reported: as the Secretary, each new piece of information sent to the Society would pass through his hands *first*.

Cadwallader Colden’s first letter to Franklin in October of 1743 made specific reference to Franklin’s “scheme of erecting a society at Philadelphia for promoting of usefull Arts and Sciences in America.”⁹⁵ Franklin had published the proposal for the Society in May, just before the “accidental Meeting” of the two men. It need not have been a long discussion concerning the Society at that meeting, however. When Colden heard Franklin’s idea, he most likely would have immediately told Franklin about his own plan from fifteen years earlier.⁹⁶ For Franklin, this surely confirmed the soundness of his plan. For Colden too, there was validation, given the strong similarities of both proposals.

⁹⁴ In the eighteenth century, science and technology were conflated.

⁹⁵ Colden to Franklin, [October 1743]. *PBF*, 2:387.

⁹⁶ Franklin intended to send Colden a copy of the proposal sometime after November 4, 1743, but it was Bartram who eventually forwarded the piece. See Franklin to Colden, November 4, 1743, *LPCC*, 3:34 and Bartram to Colden, March 27, 1744, *COJB*, 237.

Word of the Society spread to Britain and Europe, but a seemingly superstitious Bartram brushed off Continental enthusiasm for the undertaking. In a letter to Colden, Bartram spoke of not mentioning the project to his correspondents because of “fear it would turn out but poorly; but I find the[e] mentioned to Collinson, hee to Catesby, & hee to Gronovius.”⁹⁷ For his part, Collinson offered nothing but praise for the undertaking. “I can’t enough commend the Authors & promoters of a Society for Improvemt of Natural knowledge Because it will be a Means of uniteing Ingenious Men of all Societies together.”⁹⁸ Whether Collinson understood that his central role in the epistolary exchange had the same effect he described is not clear. However, it is clear from the next passage in Collinson’s letter that he indeed understood that the cooperative efforts of “Ingenious and Good people” would lead to “a Laudable Emulation to Excell in the Several Branches of Science.”⁹⁹ Anticipating that the Society would offer some sort of publication, Collinson said he would “wait with Some Impatience for their Memoirs.”¹⁰⁰ Ultimately, Collinson was concerned primarily with the transmission of knowledge.

⁹⁷ Bartram to Colden, October 4, 1745. *LPCC*, 3:159-160. For Colden’s mention of the American Philosophical Society to Collinson, see Colden to Collinson, [June 1744], *LPCC*, 3:60-61. Though Gronovius inquires as to the Society’s progress, there are no extant letters from Collinson to Bartram mentioning Catesby’s knowledge of the project, nor any to Bartram from Catesby himself concerning the American Philosophical Society. For Gronovius’s inquiry, see Gronovius to Bartram, June 2, 1746, *COJB*, 280.

⁹⁸ Collinson to Colden, August 23, 1744. *LPCC*, 3:69.

⁹⁹ *Ibid.*

¹⁰⁰ *Ibid.* For Colden’s first mention to Franklin of publishing papers from the American Philosophical Society, see Colden to Franklin, [December 1744], *LPCC*, 3:93. For Franklin’s positive response to Colden’s idea, see Franklin to Colden, August 15, 1745, *LPCC*, 3:143. Franklin never did publish any American Philosophical Society papers.

The paucity of correspondence regarding the formation and activities of the American Philosophical Society is not at all surprising. Bartram, Franklin, Bond, and the other founding members all resided in Philadelphia, precluding the need for letters. Bartram, as noted above, was unwilling to discuss the project by mail with his European correspondents, but seemed comfortable writing to Colden about it. In fact, Colden seems to have been the central epistolary link in both the colonial and transatlantic dialogue concerning the American Philosophical Society. In the two-and-a-half-year period of the Society's existence, a little more than a dozen letters were exchanged mentioning the Society, and Colden was the writer or recipient of most of them.

As it turned out, Bartram's fears concerning the fate of the American Philosophical Society were realized. Although initially successful, the American Philosophical Society collapsed quickly. Allegiances already in place to individuals and their connections to learned societies in Britain and Europe trumped Franklin's proposal. Furthermore, a serious commitment to the Society was lacking. Bartram complained to Colden that what was needed was to "exchange ye time that is spent in ye Club, Chess & Coffee House for ye Curious amusements of natural observations."¹⁰¹ The energetic Bartram, whose connection with Collinson linked him to the Royal Society in London, saw no difficulty working towards the success of the American Philosophical Society, while still maintaining ties abroad. And there was another issue. James Logan (1674-1751), possibly the best-educated man in the colonies and surely the possessor of

¹⁰¹ Bartram to Colden, October 4, 1745. *LPCC*, 3:160.

the largest library in America, did not wish to be a part of the Society. Bartram, spinning the news as best he could, wrote, “we would Jog along without him,” but not having Logan’s “name at ye top of our List” was a blow to the American Philosophical Society’s potential stature.¹⁰² Logan, however, did not eschew the Society for its well-established counterpart across the Atlantic; although he was a contributor to its *Transactions*, Logan was not a member of the Royal Society. The existing mechanism for collecting and reporting American scientific knowledge proved, for the time being, sufficient. By explicitly offering free postage for American Philosophical Society correspondence, Franklin acknowledged that much of the Society’s work would take place via mail. Moreover, such an acknowledgement meant the Society was more than a purely Philadelphia endeavor.

The epistolary web’s success transcended that of even venerable institutions like the Royal Society by the (unwritten and unspoken) commitment of its members to move information as quickly and as broadly as possible. By 1743, the exchange of letters insured the circulation of scientific knowledge to a widely-dispersed audience, and the shipment of specimens allowed for study by practitioners far from a specimen’s source. This, of course, held true for American scientific knowledge, and for other geographic areas as well. What Bartram and others who bemoaned the demise of the American Philosophical Society failed to understand, however, was that their own practices of transmitting and accumulating knowledge was at the root of the perceived problem.

¹⁰² Bartram to Colden, April 29, 1744. *COJB*, 238.

Through the process of putting information into the hands of many, members of the scientific community guaranteed not only broad dispersal of knowledge, but also its redundancy, essential to its preservation.

Although James Logan distanced himself from the American Philosophical Society, he was a Trustee for the Academy of Philadelphia, another Benjamin Franklin project.¹⁰³ Published as *Proposals Relating to the Education of Youth in Pensilvania*, Franklin's lengthy pamphlet, laden with copious footnotes, appeared in the fall of 1749. In his opening remarks, Franklin voiced the disappointment that "we have no ACADEMY" that "the Youth of this Province" could attend to "receive the Accomplishments of a regular Education."¹⁰⁴ Franklin sent copies of the *Proposals* to Collinson and Colden. The former wrote to Franklin that the "Scheme of Education" was "much Approved."¹⁰⁵ However, Franklin probably did not show the *Proposals* to Bartram. There are no references to the academy anywhere in Bartram's published correspondence, and if Bartram had seen the pamphlet, surely he would have mentioned the plan to Collinson, Colden, or both. No letters within either the scientific or education community mention concealing the plan from him, and Bartram's interest in the accumulation and dissemination of knowledge made him a likely candidate for inclusion

¹⁰³ Soon after, the Academy and College of Philadelphia, and eventually, the University of Pennsylvania.

¹⁰⁴ *Proposals Relating to the Education of Youth in Pennsylvania*. PBF, 3:397.

¹⁰⁵ Collinson to Franklin, February 5, 1750. PBF, 3:460.

in these discussions. Further inquiry is needed to determine what Bartram knew about the academy, as it is unlikely that such a large undertaking would go completely unnoticed.

Colden, like Collinson, responded positively and in great detail to Franklin's pamphlet in November of 1749. Colden had "no objection to any thing in the proposals" and was "pleased with every part of them."¹⁰⁶ Knowing that Franklin welcomed comments on the *Proposals*, Colden did offer some "hints" that he thought might be "trivial" when compared to how deliberate Franklin's plan was. Colden's comments concerned the planned "College" more than the "Academy," which was specifically for younger children.¹⁰⁷ Colden believed that education is vital to society, and that an isolated location for the academy would better serve the students.

Expressing his view of the necessity of education, Colden drew on Francis Bacon for inspiration: "the Power of a Nation consists in the knowledge & Virtue of its inhabitants," not "riches & Money."¹⁰⁸ Colden recognized that agriculture was "as much a Science as any of those that are not purely Mathematicall" and would "be personally usefull to a greater number then any of the other sciences."¹⁰⁹ For Colden, who spent the latter part of his scientific career working exclusively on theoretical physics, this homage

¹⁰⁶ Colden to Franklin, [November, 1749]. *LPCC*, 4:156.

¹⁰⁷ The first class was admitted to the College in 1755.

¹⁰⁸ Colden to Franklin, [November, 1749]. *LPCC*, 4:158. Francis Bacon (1521-1626) coined the famous phrase, "knowledge is power" in 1597.

¹⁰⁹ *Ibid*, 4:157.

to practical science is rare. It also provided an excuse to locate the proposed academy in the country rather than “in or near the town.”¹¹⁰

Colden’s bias toward country living began in the 1720s when he built his estate Coldenham in the Hudson Valley, and was later reinforced when he built Spring Hill on Long Island. Colden’s disdain for cities prefigured Thomas Jefferson’s similar views by many decades. By locating the academy in the country rather than in Philadelphia, “the Schollars will be freed from many temptations to idleness & some worse vices that they must meet with in the City.”¹¹¹ There was, Colden admitted, at least one problem with a country location for the academy: “the schollars cannot acquire that advantage of behaviour & address which they would acquire by a more general conversation with Gentlemen.”¹¹² But this issue of grace and deportment could “be remedied by obliging them to use the same good manners towards one another with a proper regard to their several ranks as is used among well bred Gentlemen.”¹¹³ Although Colden equated education with refinement, he did not equate refinement with ability. Therein lies the striking feature of Colden’s comment: it is his acceptance of the capacity to absorb knowledge regardless of one’s position within the “several ranks.”

Colden’s hopes for a country location for the proposed academy were dashed when Franklin replied in February 1750. It had been debated, according to Franklin,

¹¹⁰ *Ibid*, 4:158.

¹¹¹ Colden to Franklin, [November, 1749]. *LPCC*, 4:157.

¹¹² *Ibid*.

¹¹³ *Ibid*, 4:157-158.

“whether the Academy would be fix’d in the Town or Country.” But Franklin explained, “a Majority of those from whose generous Subscriptions we expected to be able to carry the Scheme into Execution” insisted on the urban location.¹¹⁴ However, the chosen location was apparently not too urban: the Academy’s “100 foot long and 70 wide” building, “which was erected for itinerant Preaching,” stood on “a large Lot of Ground, capable of additional Buildings” and was “situate in an airy Part of the Town.” Moreover, the building, which Franklin assumed cost “not less than £2000,” was purchased “for less than half the Money” and was “strongly built of Brick.”¹¹⁵ Franklin’s comment on the sturdy construction of the building is intriguing. It captures the notion of permanence, a characteristic lacking in his previous institutional undertaking, the American Philosophical Society.

Although Peter Collinson’s initial reactions to the establishment of an academy were favorable, his letter to Franklin of October 4, 1750 contained an item that Franklin had neglected in the development of the curriculum of the school—the study of natural history. In his February 4, 1751 reply, Franklin wrote, “I shall do my best Endeavour to have [the] Study of Natural History establish’d in the Academy, as what [I] am convinc’d is a Science of more real Worth and Usefulness, [than] several of the others we propose to teach, put together.”¹¹⁶ Because Collinson’s original letter is no longer extant, his tone

¹¹⁴ Franklin to Colden, February 13, 1750. *PBF*, 3:462.

¹¹⁵ *Ibid.* Franklin’s reference to “itinerant Preaching” is to George Whitefield, who first used the building. Ned Landsman discusses Franklin’s symbiotic relationship with Whitefield in *From Colonials to Provincials*, 123-124.

¹¹⁶ Franklin to Collinson, February 4, 1751. *PBF*, 4:113.

cannot be established, but there are two obvious potential reactions. First, given the strong relationship between Collinson and Franklin, it is possible that Collinson realized that the omission of natural history from the academy's curriculum was inadvertent, and his letter would have reflected such. However, if he thought Franklin excluded the subject intentionally (or had been strong-armed to do so by the subscribers), surely Collinson's disapproval would have been evident. But whatever Collinson's original letter said, his support for the dissemination of scientific knowledge was manifest, given Franklin's response.

Although institutional learning was high on Franklin's agenda, it did not answer for all situations. Education inside, and literally, outside the home remained a viable alternative for instruction in natural history, as demonstrated below by both Cadwallader Colden and John Bartram. But this type of learning required the aptitude of the student, and the recognition of that aptitude by the teacher.

Home schooling provided alternatives for situations where formal education was impossible. Gender presented one such impediment for Cadwallader Colden's daughter, Jane Colden (1724-1766). Her father was clearly a willing teacher. Though he had all but stopped the practice of botany by the late 1740s, it was not until 1755 that Colden discussed one of his primary reasons for giving up the science. In a letter to physician and botanist Johann Frederick Gronovius, Colden admitted to failing eyesight, thus the inability to examine the smaller parts of flowers and plants.¹¹⁷ Colden's eye problems did

¹¹⁷ Colden to Gronovius, October 1, 1755. *LPCC*, 5:29.

not keep him from teaching botany, and the Linnaean System, to his daughter. This instruction began long before the letter to Gronovius, evidenced by Jane Colden's *Botanic Manuscript*, which contains descriptions and drawings from as early as 1753. Cadwallader Colden saw in his daughter, "an inclination to reading & a curiosity for natural philosophy or natural History."¹¹⁸ However, Colden was not completely altruistic: he saw botany as an ideal field for women inasmuch as they could use it to occupy their spare time.¹¹⁹ These ideas were not new for Colden. Thirteen years earlier, in a letter to Peter Collinson, Colden made it clear that women "are at least as well fitted for this Study as the men by their natural curiosity" and would provide "more assistance in bringing this knowledge to perfection." As was the case in his letter to Gronovius, Colden remarked on botany's ability to engage women's "many idle hours both usefully & agreeably."¹²⁰ Colden's complaint in both letters concerns a woman's alleged copious free time, not a woman's ability to grasp the intricacies of at least one field of natural history. Colden's belief that the capacity to absorb knowledge was unrelated to rank, was also now extended to gender.

As knowledge moved from the narrower sphere of scientific practitioners to a broader audience, recognition of the intellectual abilities of women surfaced, and commentaries on women's education in science were not restricted to male scientific practitioners. In his *Brief Retrospect of the Eighteenth Century*, Presbyterian minister

¹¹⁸ *Ibid*, 5:30.

¹¹⁹ *Ibid*, 5:29.

¹²⁰ *Ibid*, 2:282.

Samuel Miller also commented on the scholarly activities of women. Published in 1803, much of Miller's two-volume chronicle is, at once, both perceptive and contradictory.

Miller wrote, "It is much less than a hundred years since female education was lamentably, and upon principle, neglected throughout the civilized world."¹²¹

Conceptions of the "civilized world" aside, Miller noted the advancement of education for women, who, in the sixteenth and seventeenth centuries, "still remained unacquainted with letters and science."¹²² He praised the accomplishments of many women, who even studied "some of the practical branches of physical science." Miller then specifically identified women's contributions to writing and publishing, which was, he said, "comparatively rare among all classes," in the previous two centuries. But it was the eighteenth century, Miller wrote, that first saw women of the upper sort become more prominent in the literary field, until a shift occurred in the practice "from females of high rank, to those in the middle walks of life," and then speculated, "perhaps, on the whole, more frequent among the latter than the former."¹²³ Miller, like Colden, clearly understood the capacity of women to accumulate and comprehend various forms of knowledge, but he was not, however, remotely interested in having women and men on equal footing in either learning or the workplace.

¹²¹ Samuel Miller, *A Brief Retrospect of the Eighteenth Century*, 2 volumes (New York: Printed by T. and J. Swords, No. 160 Pearl-Street, 1803), 2:278.

¹²² *Ibid*, 2:279.

¹²³ *Ibid*, 2:281.

According to Miller, if men and women were to have the same educational and employment opportunities, it would lead to “the most *immoral consequences*.”¹²⁴ In other words, unrestrained sexual appetites would dominate the social order. Miller postulated that after attaining the same level of schooling and being posted to the same occupations regardless of gender, “It would convert society into hordes of seducers and prostitutes.” No longer would men and women be able to enjoy “the pure delights of wedded love,” but instead “a system of universal concubinage would prevail.” And it all would start when “Seminaries of learning would be changed into nurseries of licentiousness and disease.” The processes of government would grind to a halt because members “would be perverted or arrested by wiles of amorous intrigue.” Even business would not be immune to the “noisy and restless lewdness” and “would yield to the dominion of brutal appetite.”¹²⁵ Miller’s opinions, both positive and negative, fit well with the discussions concerning women, science, and education taking place during the period. The teaching of the Linnaean system saw both proponents and detractors because of its overt sexuality.¹²⁶

Cadwallader Colden was not alone in furthering scientific education within his own family. Home schooling for John Bartram’s son William Bartram (1739-1823) was an extended practical course in scientific fieldwork. From the beginning, William

¹²⁴ *Ibid*, 2:286-287. Emphasis in original.

¹²⁵ *Ibid*, 2:287.

¹²⁶ This is particularly true after Linnaeus’s death in 1778. For a detailed examination of this debate in Britain, see Ann B. Shteir, *Cultivating Women, Cultivating Science: Flora’s Daughters and Botany in England, 1760-1860* (Baltimore and London: The Johns Hopkins University Press, 1996), especially 11-32.

demonstrated his ability as an artist and naturalist. After receiving some early pieces, Peter Collinson sent John Bartram “a Little token in a Box for Billey,” adding that William’s “pretty performances please Mee Much.”¹²⁷ The younger Bartram accompanied his father on collecting trips from the time he was thirteen and seemed to be at home in the outdoors, fearing nothing in nature. On one of these trips the two encountered a rattlesnake and the elder Bartram “wished [William] had brought his box of paints” so he could “have drawn [the snake] in his greatest beauty.”¹²⁸

Writing to Collinson in November 1754, Bartram touted his son’s talents explaining that he “hath drawn most of our real species of oaks and all our real species of birches,” and William’s descriptions of these trees were done “not according to grammar rules, or science but nature.”¹²⁹ However, Bartram’s letter to Gronovius the following month best juxtaposed William’s two types of education. Describing fifteen-year-old William and his abilities to Gronovius for the first time, Bartram wrote, he “has traveled with me now three years & readily knows most of ye plants that grows in our four governments.”¹³⁰ But William’s outdoor education was impeded by a more traditional indoor education. After noting his son’s drawings of trees, mountains, and rivers, Bartram continued, “[William] hath drawn several birds before when he could find a little time

¹²⁷ Collinson to Bartram, July 19, 1753. *COJB*, 350. John Bartram and his correspondents used “Billey” or “Billy” when referring to William. John Bartram’s father, half-brother, and nephew were also named William.

¹²⁸ Bartram to Collinson, [Fall 1753]. *COJB*, 357.

¹²⁹ Bartram to Collinson, November 3, 1754. *COJB*, 376.

¹³⁰ Bartram to Gronovius, December 16, 1754. *COJB*, 377.

from school where he learns Latin.”¹³¹ Unlike his father, William did indeed attend school, and he likely would have devoted more time to art if this were not in the classroom so much.

The Royal Society, the American Philosophical Society, the Academy and College of Philadelphia, and even the home-school, used by Cadwallader Colden and John Bartram, functioned as places to receive, store, and transmit knowledge.

Similarly, Linnaeus filled these same roles. Discussing the production of scientific knowledge, Lorraine Daston and Peter Galison have noted, “Uniformity in a field was enforced by the authority of a towering practitioner (such as Linnaeus) or an institution (such as the *Académie Royale des Sciences*).”¹³² Clearly, Daston and Galison are not only comparing Linnaeus with the *Académie*, but also equating the function of the Swede’s work with the function of his French counterparts, thereby blurring the line between scientific practitioner and institution. Furthermore, for more than forty years, practitioners of science freely sent the Swedish systematizer specimens, assuming (correctly) that he would classify them, disseminating the collected knowledge in print. Thus, Linnaeus was more than simply a naturalist: he simultaneously functioned as an institution.

¹³¹ *Ibid.*

¹³² See Lorraine Daston and Peter Galison, *Objectivity* (New York: Zone Books, 2007), 327.

Many modern philosophers of science argue that science must be a social activity in order to promote objectivity *and* good science.¹³³ While Linnaeus produced a great many publications, any potential success (or potential failure, for that matter) rested in the hands of those who sent him material. Linnaeus could certainly be considered an early example of an ivory-tower academic. Relative to the breadth of his publications, he did little fieldwork of his own. This should not be taken as a criticism of Linnaeus. In fact, it can be argued that because he did little fieldwork, Linnaeus had the time to produce, and just as importantly revise, many more publications than he would have otherwise. But without the cooperation of others in the scientific community, Linnaeus would not have succeeded in his own time, let alone be remembered centuries later.¹³⁴

A scientific community should have “publicly recognized forums for the criticism of evidence, of methods, and of assumptions and reasoning.”¹³⁵ Linnaeus himself was not

¹³³ For more on this idea see Helen Longino, “Cognitive and Non-cognitive Values in Science: Rethinking the Dichotomy” in *Feminism, Science, and the Philosophy of Science* (Dordrecht: Kluwer Academic Publishers, 1996), 40.

¹³⁴ Daston and Galison assume that “The vast majority of eighteenth-century savants came to their science as autodidacts and practiced it as lone individuals.” While this is true to some extent, it does not account for either the formal training of many practitioners or the cooperative nature of scientific practice during the period. First, in a chapter stressing the importance of botany in eighteenth-century science, Daston and Galison do not acknowledge that all medical school students in the eighteenth-century would have studied botany as a *requirement* of their schooling. Although the number of those attending medical school was not large, it was not insignificant. As these men (no women were admitted to medical school at the time) left school, they took with them botanical knowledge that was passed on to others. For example, John Fothergill, perhaps the most respected physician in Britain during the eighteenth century, had a garden that attracted other physicians and apothecaries to his London home. Fothergill also corresponded with John Bartram, who *was* an autodidact, and furthered Bartram’s knowledge about the natural world. Moreover, the success Linnaeus was able to achieve due to the cooperation of other scientific practitioners who sent him specimens and scientific descriptions contradicts the idea of the “lone individual.” See Daston and Galison, *Objectivity*, 327.

¹³⁵ Longino, “Cognitive and Non-cognitive Values,” 40.

immune to this type of thinking. Alexander Garden idolized Linnaeus and contributed many specimens and observations, but freely disagreed with him on occasion, offering critiques and correctives. An even stronger critique came from Peter Collinson and others in Europe. Concerning the artificial nature of the Linnaean classification system, Collinson wrote, “Botanists are not agreed about [the Linnaean system], very few like it.”¹³⁶ Disagreement with the Linnaean system continued until late in the eighteenth century when a natural system replaced the Linnaean method, although the binomial nomenclature Linnaeus developed continues to the present.¹³⁷ However, these criticisms did not stop practitioners from sending him material.

The blurred line between scientific practitioner and institution presents an interesting phenomenon, both for Linnaeus and his contributors. When the collected information was examined, analyzed, catalogued, synthesized, and eventually published, the final product was more than the sum of its amalgamated parts. It was the output of Linnaeus, the scientific practitioner, as well as Linnaeus, the institution. So who gets credit for the work? In the case of Linnaeus the man of science, he himself did the synthetic work (but always publicly recognizing the contributions of others) and applied his own theories to the material, so the credit belongs to him. But in the case of Linnaeus

¹³⁶ *COJB*, 72.

¹³⁷ Antoine-Laurent de Jussieu is generally credited with the system that replaced the Linnaean system. For more on what is actually a complex story see Peter F. Stevens, *The Development of Biological Systematics: Antoine-Laurent de Jussieu, Nature, and the Natural System* (New York: Columbia University Press, 1994).

the institution, it can be argued that it was a collaborative effort, with Linnaeus contributing specific elements—analysis and synthesis—to the final publication.

If Linnaeus could indeed be considered an institution, was he as important as the other scientific institutions of the period? The answer is not straightforward. The French *Académie Royale des Sciences*, Swedish Royal Academy, and the Royal Society of London were among the premier institutions at the time. Joining these venerable repositories in 1768 was the second incarnation of the American Philosophical Society, which rose to prominence quickly with the observations of the 1769 Transit of Venus by astronomer David Rittenhouse (1732-1796).

Perhaps the institutional Linnaeus belongs with these other organizations. He was, as previously noted, a repository for knowledge and, the scientific community utilized this function regularly. Moreover, the institutional Linnaeus published the work of his contributors, which was (and is) another function of a learned society. As an institution, however, Linnaeus was not responsive to contributors' queries. The Swedish naturalist was notorious for neglecting his correspondence and his correspondents. Peter Collinson wrote to Linnaeus concerning this issue in 1744, noting that the latter had not written the former in four years.¹³⁸ This problem aside, there are strong arguments to be made in favor of an institutional view of Linnaeus.

¹³⁸ Collinson to Linnaeus, January 18, 1744 in Sir James Edward Smith, ed., *A Selection of the Correspondence of Linnaeus and Other Naturalists*, 2 volumes (London: Longman, Hurst, Rees, Orme, and Brown, 1821), 1:8. Hereafter cited as *COL*.

Members of the epistolary web wrote their letters predominantly in English. For scientific practitioners in Britain and America, this provided avenues for contributions by those who did not have the benefit of learning Latin as part of their education. Even practitioners of science on the Continent frequently added to the epistolary discourse in English when their correspondents were in Britain or America. Furthermore, with this move toward the use of English, science could ultimately reach a broader audience on both sides of the Atlantic. However, published scientific works were not always rapidly translated into English.¹³⁹ One of the most important aspects of Cadwallader Colden's role as educator lies in his translation of the Linnaean System from Latin to English for his daughter Jane's instruction and use, as no English version existed at the time. The movement toward English as the *lingua franca* of scientific communication had begun in the mid-seventeenth century. However, even by the beginning of the nineteenth century, English had not supplanted Latin as the international language of choice for communicating scientific knowledge.¹⁴⁰

When the Royal Society began publishing *Philosophical Transactions* in English in 1665, the Society initiated the movement to make English the language of scientific knowledge in the Anglo-American World. The quarrel with Latin had little to do with *identifying* scientific specimens. Latin, of course, is still used for this purpose more than 340 years after the *Philosophical Transactions* first appeared. Instead, these new British

¹³⁹ See Chapter Four for the nearly twenty-year gap between the initial publication of Pehr Kalm's *Travels* and the first English translation.

¹⁴⁰ Indeed, French, not English, was more universally accepted for this purpose internationally.

practitioners of science wanted to communicate information and ideas more effectively to a larger (and growing) community. During the eighteenth century, people interested in science expressed through their words (especially their personal correspondence) and their actions (in publications) that English was the preferred language of science in both Britain and North America. Indeed, expansion of science from London and Edinburgh to the American colonies provided an inclusive atmosphere for scientific practitioners that furthered the use of English on *both* sides of the Atlantic. Moreover, since members of the scientific community in America increasingly saw themselves as provincial Britons during the forty-year period prior to the American Revolution, use of their native language reinforced their identity as British.¹⁴¹

Publishers, printers, and authors also needed to decide which language to employ for their books, articles, and journals, and while the shift to English was palpable in many facets of science, not every scientific field followed this trend. Changes in medical vernacular were much more tentative.¹⁴² Additionally, some practitioners of science from the European mainland who traveled to Britain and America during the eighteenth century adopted English as their working language. This influence of English on mainland Europeans was not always long-lasting, but it supported the efforts of those who wished it to be so.

¹⁴¹ This is the argument put forth in Ned C. Landsman, *From Colonials to Provincials: American Thought and Culture, 1680-1760* (Ithaca and London: Cornell University Press, 1997).

¹⁴² Science and medicine are now considered separate domains, but until near the end of the eighteenth century, all physicians were required to study botany. To that end, medical practice is considered part-and parcel of science in the present study.

In the seventeenth century, scientific letters, even those exchanged amongst native English speakers, were often written in Latin. John Ray¹⁴³ (1627-1705), whose natural classification system was replaced during the much of the eighteenth century (and into the nineteenth) by Linnaeus's sexually-based system, corresponded regularly with physician, naturalist, and fellow Englishman Martin Lister (1639-1712). Their correspondence was necessitated by geography: Ray lived in Essex (about forty miles from London), and Lister resided first in Cambridge (as a student), then in York (after taking his medical degree), and finally in London.

On November 15, 1669, Ray wrote to Lister, "Having now received a *second* letter from you in English, I look upon myself as licensed to answer you in your own language."¹⁴⁴ Ray wrote at least one letter to Lister prior to this in English. It was a response to a letter that Lister had written in Latin. Lister's reply to Ray was also in Latin and made no mention of the latter's use of English.¹⁴⁵ It may be that since Ray's English missive contained *mostly* non-scientific information, he may have assumed that Latin was unnecessary. Lister's Latin reply indicates that if science was to be discussed at all, Latin should be the language of choice.

¹⁴³ He spelled his name "Wray" until 1670. See Robert W.T. Gunther, ed., *Further Correspondence of John Ray* (London: Printed for The Ray Society, 1928), 16n.

¹⁴⁴ My emphasis. John Wray to Martin Lister, November 15, 1669 in Edwin Lankester, ed., *The Correspondence of John Ray: Consisting of Selections from the Philosophical Letters Published by Dr. Derham and Original Letters of John Ray in the Collection of the British Museum* (London: Printed for the Ray Society, 1848), 43. Hereafter cited as *Ray Correspondence*. Ray's choice of words here is rather amusing, since it implies that English was only *Lister's* mother tongue.

¹⁴⁵ See Lister to Wray, April 8, 1667; Wray to Lister, June 18, 1667; Lister to Wray, July 6, 1667, *Ray Correspondence*, 11-13, 13-14, 15.

From that point, Ray, like Lister, wrote in Latin until the exchange that led Ray to point out Lister's use of English. The two men then corresponded predominantly in their mother tongue, although old habits apparently died hard. There are several instances of Latin letters after Ray's of November 15, 1669, but neither writer acknowledged a shift in language. It is unknown why Lister decided to begin writing to Ray in English, but it is possible that once Lister began his medical practice, he was often too busy to take the time to craft letters in Latin. Ray, whose other correspondents primarily utilized English, was likely quite pleased with this turn of events.

Peter Collinson had a working knowledge of Latin, but his preference for correspondence was English, even when writing to Linnaeus, who almost exclusively (but not entirely) corresponded in Latin. However, it seems Collinson was a bit confused about the Swedish naturalist's linguistic capabilities. Along with a March 1747 letter to Linnaeus, Collinson sent "some tracts," which were obviously written in Latin. Collinson wanted to send others, but as he explained to Linnaeus, "if you did but read English, I should send you more."¹⁴⁶ In another letter to Linnaeus in October of the same year, referring to "The treatise on gravitation, by our friend Dr. Colden of New York," Collinson wished that "it had been wrote in Latin, to have been more universally read." However, Collinson noted, since "a great many of your learned men [in Sweden] read English, I hope it will be acceptable to some of them."¹⁴⁷ Perhaps Collinson knew that Linnaeus was fluent enough in written English for correspondence, but at the same time

¹⁴⁶ Collinson to Linnaeus, March 10, 1747. *COL*, 1:17.

¹⁴⁷ Collinson to Linnaeus, October 26, 1747. *COL*, 1:19.

thought that something as detailed as a scientific publication was beyond the Swede's ability for swift comprehension.

Linnaeus wrote his own studies in Latin, but Collinson had “no doubt but they will be translated into English, for we are very fond of all branches of Natural History; they sell the best of any books in England.”¹⁴⁸ On the one hand, Collinson realized that (literate) English people were invested in the study of natural history and English translation of works in that field was commonplace and necessary. On the other hand, Collinson tacitly acknowledged, his was still not a common language in non-English-speaking countries; Latin remained the only viable alternative.

In his first letter to Linnaeus, John Ellis alluded to the intermediary role of Peter Collinson in sending Linnaeus Ellis's “endeavors to investigate the nature of Corallines.”¹⁴⁹ How long Collinson had been serving in this capacity cannot be positively ascertained. The first time Ellis is mentioned in Collinson's extant correspondence with Linnaeus is April 10, 1755, when he sent Ellis's “curious Dissertation on Coralines.”¹⁵⁰ After this date, Ellis's name appears with some regularity in Collinson's missives to Linnaeus. It seems that Collinson suggested to his fellow merchant that he write to Linnaeus directly. Ellis did exactly that. “I wish I had begun a correspondence earlier with you,” and now that it had “begun I hope you will continue it.”¹⁵¹ Ellis learned, likely

¹⁴⁸ Collinson to Linnaeus, April 16, 1747. *COL*, 1:18-19.

¹⁴⁹ Ellis to Linnaeus, n.d.. *COL*, 1:83. Smith dates this letter from either 1756 or 1757.

¹⁵⁰ Collinson to Linnaeus, April 10, 1755. *COL*, 1:33.

¹⁵¹ Ellis to Linnaeus, n.d.. *COL*, 1:83.

through Collinson, that Linnaeus preferred communicating in Latin, but read English well. Collinson, who wrote to Linnaeus in English, probably told Ellis that he could do the same, but should expect the Swede to write in Latin. Armed with this information, Ellis told Linnaeus, “I read latin familiarly, yet I cannot write it to please me.”¹⁵² Here Ellis, who wanted to establish a regular correspondence, needed to be clear about *how* the exchange would have to proceed in order to be successful. Ellis carefully addressed the comfort of both himself and Linnaeus directly, implying that it was his own shortcomings that created the need for the use of two languages. As their long correspondence shows, with each man writing in his mother tongue, this clearly put both men at ease with all future interchanges.

“I am endeavouring as much as in me lies to establish your system [in Britain],” Ellis wrote to Linnaeus, concerning the Swedish naturalist’s classification system. However, it seemed that Ellis’s primary consideration was for “the public to have it in english.” That said, Ellis was ambivalent as to the scope of the proposed translated publication. First, Ellis thought that the best course of action would be to provide enough of Linnaeus’s “botanical system as would tempt young beginners to study this art,” noting that “if there was too much to be learnt, few would attempt it.” On the other hand, it seemed “a compendious description of your method in familiar english should be published, to understand your terms.”¹⁵³ Unfortunately, Ellis’s ambivalence about the project did not extend to the pocketbooks of potential purchasers.

¹⁵² *Ibid.*, I:83.

¹⁵³ *Ibid.*, I:83-84.

Ellis had evidently contacted “some booksellers, who are greedier of money than science,” about his proposal, and at least one of them would “spare no expense in having the plates well engraved.”¹⁵⁴ Of course, the addition of the illustrations would drive up the cost, thereby limiting the available audience for the work. This would be especially true for the “young beginners,” if Ellis followed through with his plan to have a “compendious description” published. Regardless of its final form and ultimate cost, Ellis knew the book would be profitable, since the booksellers had even suggested a translator.¹⁵⁵

While Ellis desired to disseminate the Linnaean System to a broader British readership, he did not seem surprised that an English translation was not yet available. Ellis proposed to have the book be a composite of Linnaeus’s previous works, rather than simply a translation of *Species Plantarum*, the Swede’s latest, and the first complete work of botany utilizing the Linnaean System.¹⁵⁶ Spurred on by the 1753 publication, Ellis saw botanists and gardeners as the target audience for his English-language compilation.

Cadwallader Colden of New York firmly believed in the use of English as the language of science; unlike Collinson, he was unequivocal in his position on the subject. However, Colden’s overt support for English was evident well before translating the Linnaean system. In 1742, observing the need for a botanical text for American plants (and requesting Collinson’s help in the matter), Colden argued that since there was

¹⁵⁴ *Ibid.*, 1:83-84.

¹⁵⁵ *Ibid.*, 1:83.

¹⁵⁶ *Ibid.*, 1:84. Ellis outlined his plan quite specifically.

“nothing in Botany tollerably well don in English,” such a work would be “usefull in America where the learned languages are little understood.”¹⁵⁷ Colden wanted the volume “to be in English” and acknowledged it would be “more difficult to do [in English] than in Latin.”¹⁵⁸ Notable here is Colden’s recognition of the potential problems with an English botanical text, but his insistence that the project should be undertaken regardless of the consequences. He was clearly concerned that the widest audience possible understood the work. The end of the decade saw the possibility of broadening this same audience further.

As previously mentioned, Franklin solicited comments on his *Proposals Relating to the Education of Youth in Pensilvania*, and Cadwallader Colden had voiced his support for the enterprise. In his positive response, Colden’s stance on English as the vernacular of science was fully realized. Colden desired to “have all the Sciences taught in English.” Furthermore, he disapproved of “making the knowledge of [Latin and Greek] or of any foreign language a condition” of admission, concluding that it was a waste of time “to have the learned languages taught to [the students]” because “afterwards in the course of life may never make use of them.” However, Colden realized that the “learned languages” did have a place in “the Learned Proffessions of Divinity Law & Physic,” and

¹⁵⁷ Colden to Collinson, November 13, 1742. *LPCC*, 2:282. The “learned languages” are Latin and Greek, but Colden is specifically referring to Latin in this context. In seeking Collinson’s assistance, Colden referred to his own “superficial knowledge” of botany, but severely underestimated his own talent for the subject. Colden’s botanical prowess would surpass that of many other practitioners, and he emerges as one of the great botanists of the eighteenth century. The first comprehensive American botanical text in English was not produced until sixty years later, when Benjamin Smith Barton published *Elements of Botany* in 1802.

¹⁵⁸ Colden to Collinson, November 13, 1742. *LPCC*, 2:281-282.

therefore they should be part of those curricula. Likewise, “Merchants & others who may have business with other Nations ought to understand the French at least.” This pragmatism was tempered with the reminder that “in all cases our own language ought to be our principal care.”¹⁵⁹

John Bartram, who over the course of his lifetime learned some Latin, was not at all comfortable with the language. Colden was aware of this, when, writing to Collinson in June 1744, he noted, “The want of the latin tongue is a great loss to [Bartram], & yet he can tollerably understand a Botanical Description in latin which surprised me.”¹⁶⁰ Bartram freely admitted his linguistic shortcomings when wrote to Colden in early October of 1745 regarding a letter received from Gronovius, which contained, in Bartram’s words, “curious remarks.” Bartram wrote, “I wish thee could see them...[his letter] is so mixed with Latin I cant read many of his words. altho I understand his English prety well: if I could meet with safe conveyance I should be ready to send thee ye Original.”¹⁶¹ Bartram had no compunction about asking for Colden’s help with translating the Gronovius letter, although he was clearly worried about its “safe conveyance.” Bartram placed more value on letter’s contents than his own ability to comprehend it in its entirety.

¹⁵⁹ Colden to Franklin, [November 1749]. *LPCC*, 4:158. As noted earlier, Colden apparently directed his comments primarily to the College curriculum, not necessarily to that of the Academy.

¹⁶⁰ Colden to Collinson, June 1744, *LPCC*, 3:61. In contrast to Colden’s somewhat admirable surprise, physician Alexander Garden (1730-1791) rebuked Bartram in a letter to London merchant and naturalist John Ellis (1710-1776) more than two decades later. “I find [Bartram] knows nothing of the generic characters of plants, and can neither class them nor describe them.” See Alexander Garden to John Ellis, July 15, 1765, *COL*, 1:537.

¹⁶¹ Bartram to Colden, October 4, 1745. *LPCC*, 3:158.

Gronovius and Linnaeus maintained their extensive correspondence entirely in Latin. However, Gronovius could easily understand written English. Not only did Bartram write to the Dutch physician in English, but Peter Collinson did as well.¹⁶² Bartram seems to have understood that Gronovius used Latin when his English vocabulary failed him.

Jane Colden, who produced her botanical studies exclusively in English, was, by her own remarkable talent, able to enter a world dominated by men. As Collinson wrote to Linnaeus in 1756, “[Cadwallader Colden’s] daughter is perhaps the first lady that has so perfectly studied your system. She deserves to be celebrated.”¹⁶³ In each of the next two years, Collinson continued to acknowledge Colden’s ability and gender in letters to Linnaeus, imploring Linnaeus to “distinguish her merits” by naming a plant after her.¹⁶⁴ Collinson was not alone; his friend and fellow Royal Society member John Ellis also urged Linnaeus to recognize Jane Colden’s efforts.¹⁶⁵ However, neither Collinson’s nor Ellis’s requests for recognition of Jane Colden were heeded by Linnaeus.

¹⁶² In all, Bartram wrote 10 letters directly to Gronovius over an eleven-year period. For Collinson’s letters to Gronovius, see Collinson to Gronovius, March 14, 1755; Collinson to Gronovius, June 5, 1755; Collinson to Gronovius, [before October 18, 1756]; Collinson to Gronovius, [April 1757]. Linnean Society of London correspondence of American scientists, 1738-1865, 2 reels. Mss. H.S. Film 6. Reel 1, No. 4. American Philosophical Society.

¹⁶³ Collinson to Linnaeus, May 12, 1756. *COL*, 1:39. Collinson knew of Jane Colden’s botanical exploits as early as 1753, but if he mentioned them to Linnaeus at that time, no record is extant. See Bartram to Collinson, [Fall 1753]. *COJB*, 360.

¹⁶⁴ See Collinson to Linnaeus, April 1, 1757, *COL*, 1:40 and Collinson to Linnaeus, April 30, 1758, *COL*, 1:45.

¹⁶⁵ Ellis to Linnaeus, April 24, 1758, *COL*, 1:95. Ellis, a London merchant and naturalist, corresponded regularly with Linnaeus.

Because of her gender, Jane Colden would have been completely shut out from the scientific correspondence network if not for her father's ties to the epistolary web.¹⁶⁶ Bartram, Gronovius, and Scots-born South Carolina physician and naturalist Alexander Garden were among her correspondents. The men of the scientific community took Colden's botanical work seriously. More important to the present study, however, is that Colden worked solely in English. Nowhere in the record is there an attempt to discredit her work because it was not in Latin. By acknowledging the quality of her work, members of the scientific community simultaneously (if only tacitly) endorsed the legitimacy of English as the working language of science.

For some, like illustrator, painter, and naturalist Georg Dionysius Ehret, the conversion to English-language scientific communication was a function of geography. Ehret was born and raised in Germany, but from the mid-1730s spent most of his life in London. Ehret's field sketchbooks from 1746, 1747, and 1748 demonstrate that the artist was beginning to incorporate English into his scientific descriptions, although Latin remained his primary choice. While the names and the "characters" of the plants he sketched were notated in Latin, Ehret used English to describe *where* he was sketching

¹⁶⁶ See Susan Scott Parrish, *American Curiosity: Cultures of Natural History in the Colonial British Atlantic World* (Chapel Hill: The University of North Carolina Press, 2006), 196. Parrish points out that Cadwallader Colden's wealth and status permitted daughter Jane to flourish in a situation typically untenable for women during this time period.

(or where the specimen came from) as well as the date.¹⁶⁷ Furthermore, Ehret's descriptions of a specimen's color or other special characteristics were in English. "The fruit is here delineated of their proper Colour, as received by a dry specimen of Mr P. Collinson."¹⁶⁸ Ehret is careful to mention that his drawing was of a dried specimen. In a subsequent note, in English, on the same page, he offers a description, but not a drawing, of the fruit in its fresh form.

Ehret's choice of London as his home would certainly have forced him to communicate in English with members of the London scientific community. His English sketchbook notations further indicate this attempt to assimilate. As mentioned in Chapter Two, Ehret did not put his English skills to use in the wider scientific correspondence network very often: he relied on those in London already engaged in the epistolary exchange to forward his comments to others.

Ehret had illustrated an early work of Linnaeus, *Hortus Cliffortianus*, and maintained a sporadic correspondence with his Swedish collaborator. His eight letters to Linnaeus over a period of thirty-two years are valuable, not only for their content, but

¹⁶⁷ Four sketchbooks are housed in the Botany Library at the Natural History Museum-London. Note the Anglicizing of Ehret's name on the title information of two of the four sketchbooks. See Georg Dionysius Ehret, *Original drawings of rare plants delineated by George Dennis Ehret*, (Banksian MSS no. 106, 1746); Georg Dionysius Ehret, *Original drawings of rare plants delineated by George Dennis Ehret*, (Banksian MSS no. 107, 1747); Georg Dionysius Ehret, *Original drawings of rare plants collected and designed by G. D. Ehret*, (Banksian MSS no. 108, 1748); Georg Dionysius Ehret, *Original drawings of rare plants collected and drawn by G. D. Ehret*, (Banksian MSS no. 109, 1748). While composed of drawings primarily from 1746, 1747, and 1748, the sketchbooks also contain some later material as well. Ehret, keenly aware of the cost of paper, clearly did not want to waste available space. Furthermore, the sketchbooks show that Ehret removed some pages (perhaps for perspective clients) and also pasted loose sheets into the books for safe-keeping.

¹⁶⁸ Georg Dionysius Ehret, *Original drawings of rare plants collected and drawn by G. D. Ehret*, (Natural History Museum-London, Botany Library, Banksian MSS no. 109, 1748).

also for their construction. Ehret's first seven letters, written between 1736 and 1762 are in German. The eighth, written in 1769, is in English, thus raising relevant issues. While Ehret favored Latin for at least a portion of his scientific writing, he was far less comfortable using it in correspondence, unlike Linnaeus, who, as was his custom, replied to all eight letters in Latin.¹⁶⁹ Ehret apparently did not feel comfortable corresponding with Linnaeus in English until nearly the end of his life. Why, after an association with Linnaeus of over three decades, did Ehret's decide to write in English in 1769? It seems that Ehret's assimilation into British culture was so complete by that date, it was simply second nature, although given the paucity of Ehret's correspondence, the question is likely to remain unanswered.

Books, pamphlets, and serializations in magazines werethe three means of publication available in the eighteenth century. Each had its own advantages and shortcomings, but still ultimately communicated knowledge to a wider audience. As previously noted, the publication of scientific knowledge in English began in the seventeenth century with the founding of the Royal Society. Its *Philosophical Transactions* were the primary venue for printed scientific discourse. Although this continued to be the case in the eighteenth century, more choices became available. However, prestige accompanied inclusion in the *Transactions*, and publishing in book form had significant drawbacks. First, the author was responsible for all costs;

¹⁶⁹ See *The Linnaean Correspondence*, an electronic edition prepared by the Swedish Linnaeus Society, Uppsala, and published by the Centre international d'étude du XVIIIe siècle, Ferney-Voltaire. This project will eventually make available, in English, all correspondence to and from Linnaeus, as well as other manuscripts. The website can be found at <http://www.linnaeus.c18.net>.

subscriptions were a necessity for larger, multi-volume works, as well as some single-volume editions. In addition, books were expensive and few could afford them. As a result, many scientific (as well as non-scientific) works were serialized in magazines. For those invested in promoting English as the language of science in Britain and America, serialization encouraged publication of work in English as opposed to Latin, which was far less accessible to the readership of periodicals. In the end, as far as English was concerned, this had the same effect as publication in the *Transactions*.

Another cost-effective method for publishing was the pamphlet. Because it did not possess a hard cover or a true binding, costs were significantly lower. One of the eighteenth-century's most notable scientific works, Franklin's *Experiments and Observations on Electricity*, was published in this fashion. Franklin's electrical experiments, begun in 1747 and continuing through 1750, appeared in a series of letters and papers containing the findings. Collinson forwarded these papers first to London physician and botanist John Fothergill to edit, then on to Edward Cave, publisher of the *Gentleman's Magazine* for printing. Though the final pamphlet was not released until April of 1751, Cave astutely printed one of the experiments in May 1750 in the *Gentleman's Magazine*, announcing the future availability of the entire work.¹⁷⁰ The pamphlet format brought English-language science to the public, cheaply.

¹⁷⁰ *PBF*, 4:126-127. John Fothergill would become Franklin's personal physician on the latter's first of two extended stays in London which began later that decade. During Franklin's second stay, and as tensions mounted between Britain and her American colonies, Franklin and Fothergill, along with David Barclay, Jr. (who, along with his brother, founded Barclay's Bank), worked together to negotiate a settlement that would avoid a war. Needless to say, their efforts were in vain.

While English flourished as the preferred language of scientific communication in letters, the change in publications was more measured. Physician and botanist John Berkenhout (1730? -1791) produced a botanical lexicon in 1764, *Clavis Anglica Linguae Botanicae*. Despite its Latin title, the book aimed to provide English equivalents for Linnaean botanical terms. Berkenhout described a previous English translation of Linnaeus's *Philosophia Botanica* as "a very useless attempt." Similar to Colden's lament two decades earlier concerning the lack of an English-language botanical text of American plants, Berkenhout wrote, "there is hardly a single botanical book, of any repute, in the English language; Latin is the established language of Botany in all nations."¹⁷¹ While Berkenhout's acknowledgement of Latin's continued international dominance is plain, he clearly thought that change was possible, as he surely would not have produced a book in English otherwise.

John Berkenhout never engaged in the exchange of letters with other botanists and naturalists. Moreover, neither he nor his books were ever mentioned by other members of the scientific community. Had his credentials been questionable, his work would have been scrutinized (and demonized, most likely) by the scientific community, but it is clear that Berkenhout was no fraud and was quite learned indeed. He studied at Edinburgh and took his medical degree at Leyden. If his work were exemplary, then the community would surely have taken notice. Understanding Berkenhout's position within the

¹⁷¹ John Berkenhout, *Clavis Anglica Linguae Botanicae* (London: Printed for the Author, Sold by T. Becket, and A De Hondt, in the *Strand*; and Mess. Hawes, Clarke, and Collins, in *Pater-noster-row*. 1764), x. Berkenhout has a somewhat bizarre connection to Linnaeus: although it is often the Swede who gets the credit, it was Berkenhout who identified and named the infamous Norway Rat.

scientific community is made more difficult by the fact that his application for membership in the Royal Society was rejected.¹⁷²

The ability to gather, store, and transmit scientific information during the two decades before the Seven Years' War was not only the task of individuals, but also the domain of institutions. The collection, deposit, and dissemination of knowledge relied on repositories like the Royal Society of London, its European counterparts, as well as educational outlets, both formal and not. The American Philosophical Society would have joined the aforementioned institutions if not for its rapid collapse. Furthermore, the movement of this knowledge increasingly was in English.

The formation and function of institutions provided topics of discussion for the members of the epistolary web. These discussions supplemented, and sometimes supplanted, the scientific knowledge contained in their missives as scientific practitioners negotiated the difficulties tied to the establishment and operation of repositories and educational institutions. It was, however, the letter itself that still provided the basis for knowledge exchange. Moreover, membership in a particular learned society or an

¹⁷² On Berkenhout's Royal Society candidacy and election, see the Society's website: <http://www2.royalsociety.org/Dserve/dserve.exe?dsqIni=Dserve.ini&dsqApp=Archive&dsqDb=Persons&dsqSearch=Code==%27NA7174%27&dsqCmd=Show.tcl>

and

<http://www2.royalsociety.org/Dserve/dserve.exe?dsqIni=Dserve.ini&dsqApp=Archive&dsqDb=Catalog&dsqSearch=RefNo==%27EC%2F1767%2F29%27&dsqCmd=Show.tcl>

advanced education was not a requirement for contributions to such societies, enabling letters of non-members to be read and included in official society records.

Chapter Two has demonstrated that letter-writing reached a frenetic pace in the decades leading up to the Seven Years' War. That pace slowed, but did not stop, during the global conflict. Chapter Three examines the scientific community's ability to keep information moving at a time when transatlantic merchant shipping was a primary target, and, for the collectors of natural history knowledge in America, it was not necessarily safe to go outside.

CHAPTER FOUR

SCIENTIFIC KNOWLEDGE AND THE SEVEN YEARS' WAR

Over two decades, the scientific community refined its methods of disseminating knowledge. Facilitators like Peter Collinson and Benjamin Franklin insured the continuous flow of information, whether transatlantic or intercolonial. However, the advent of the first true world war, known in Europe as the Seven Years' War, had the potential to impede the transmission of knowledge.

Geographic spaces on both sides of the Atlantic were locales of conflict. British and French animosities surfaced regularly in Europe, and not too long after the two powers colonized North America, their problems followed. Of course, Native Americans already resided on lands claimed by Britain and France. In the early colonial period, Indians were able to maintain control of regions contested by the European adversaries, pitting the two sides against one another in their struggle to secure Indian alliances. However, in the middle and later colonial periods, population pressures in the British backcountry border areas eroded the Native American position. In some regions, the scarcity of land available to a population that was doubling every generation in the eighteenth century forced an outmigration from long-established cities and towns into Indian territory. In other areas, most notably the Pennsylvania backcountry, the influx of immigrants—Scots-Irish and German—had the same effect. By the mid-1750s, many

Native Americans cast their lot with the French in order to push back British occupation.¹⁷³

While the terrestrial unrest associated with the Seven Years' War affected the collection of specimens in America, the attendant maritime chaos proved far more detrimental to the transmission of knowledge more generally. This chapter examines not only the difficulties the scientific community faced in their attempts to maintain the continuous flow of letters, printed material, and specimens, but also their efforts to circumvent problems, of both the land and sea varieties, associated with the global conflict.

A new communication option became available in 1755, the packet boat. The packet, as it was usually called, was the first transatlantic postal service offered by the British government. Designed to keep officials in London informed of wartime issues in the American colonies, the service possessed two advantages over the use of merchant ships for carrying mail during the war. First, the packet sailed on a regular schedule. Second, it had a naval escort for safety. However, the service was not without its downsides: it was expensive, and, as it turned out, not always secure.

Unlike previous sections, this chapter uses a microhistorical approach. First, the correspondence of Philip Miller and John Bartram is compared and contrasted to the

¹⁷³ For the Seven Years' War, see Fred Anderson, *Crucible of War: The Seven Years' War and the Fate of Empire in British North America, 1754-1766* (New York: Alfred A. Knopf, 2000). For Native Americans, British, and French in borderland regions, see Alan Taylor, *American Colonies: The Settling of North America* (New York: Penguin, 2002). For the Pennsylvania backcountry, see Jane T. Merritt, *At the Crossroads: Indians and Empires on a Mid-Atlantic Frontier, 1700-1763* (Chapel Hill: The University of North Carolina Press, 2003).

exchange between Bartram and Peter Collinson for the period of April 1755 to November 1759. Following the discontinuation of Miller's and Bartram's direct communication in 1759, the chapter then examines the remainder of the Bartram and Collinson correspondence through to the end of the war. Ultimately, these two lines of communication are reflective of broader patterns seen throughout the conflict. Furthermore, the authority constraints expected to present during a military conflict, had little effect on the scientific community. Rather than being denied access to the space used for transmission, the Atlantic Ocean, the actual system for dissemination of knowledge inhibited the process.

As head gardener at the Chelsea Physic Garden, Philip Miller corresponded widely with collectors of plants and seeds who traveled the world, his direct epistolary communication with correspondents in the American colonies was limited. This is hardly surprising since Miller and Peter Collinson were friends, and the latter procured American specimens through John Bartram and others for Miller at Chelsea. Thus, Miller's name appears frequently in the correspondence of other members of the epistolary web. Through Collinson, Miller received at least 150 different American plants and seeds collected by Bartram.¹⁷⁴ Miller and Bartram exchanged, or tried to exchange, at least twenty-eight letters, but only a dozen can be accounted for. Since the two men carried on their correspondence exclusively during the first five years of the Seven Years' War, that conflict is likely the cause of many of the errant missives. Though not the same

¹⁷⁴ See Hazel Le Rougetel, "Philip Miller/John Bartram Botanical Exchange," *Garden History*, Vol. 14, No. 1 (Spring 1986), 32-39. Hereafter cited as "Miller/Bartram Exchange." Le Rougetel suggests this number could be as high as 200.

rate of exchange as Bartram and Collinson, the fact that the two men wrote so regularly during wartime is impressive.¹⁷⁵ Furthermore, unlike Collinson, who specifically mentioned his transition to the packet (and its attendant security) beginning late in the war, it is unknown whether Bartram or Miller utilized the service during their exchange, but given that less than half of the known letters are extant, it appears they did not. Moreover, the epistolary exchange between the two men illustrates the problems of transatlantic communication even with a “postal” system, though not a formally institutionalized one, which was indeed well-entrenched by this time.

Whereas Bartram typically wrote to a new correspondent first, particularly if that person was of higher stature (Miller was a Fellow of the Royal Society), this time it was the other way around. In his reply to Miller’s letter of February 19, 1755, Bartram expressed “much satisfaction,” but at the same time, “some uneasiness that so many years have elapsed wherein we might have reciprocally have communicated our observations to each other.” Keenly aware of the ongoing military conflict, Bartram continued, “I hope we may double our diligence if ye war with France do not obstruct our endeavours.”¹⁷⁶

Although their epistolary exchange had just begun, Bartram clearly desired its continuation, even in the face of worsening global conditions.

¹⁷⁵ While Le Rougetel mentions the miscarriage of several letters, she does not explicitly account for the entire correspondence between Bartram and Miller. Assuming that there were indeed only twenty-eight letters exchanged, that figure is still more than eighty percent higher than Le Rougetel’s. Moreover, the letters are confined within a five-year period, making the *rate* of communication far more significant.

¹⁷⁶ Bartram to Philip Miller, April 20, 1755. *COJB*, 379. Miller’s letter of February 19 is no longer extant.

Bartram, the lover of books, had no difficulty accepting an offer from Miller for printed works, and even alluded to the fact that he owned the first and second editions of Miller's *Gardener's Dictionary*. Not pretending to be of higher financial status than he was, Bartram was quick to mention that the copies of the *Dictionary* were gifts. In the process however, Bartram, consciously (probably) or unconsciously (probably not), elevated his social standing, noting that "one sent me by Ld Petre ye other by Dr Dilenius."¹⁷⁷ Although Miller's original letter is missing, Bartram's reply suggests the genuine nature of Miller's offer, since Miller wrote first. Miller, probably through conversations with Collinson, knew that Bartram was trying to learn "lineus sistem." Bartram was gratified to "take thy ofer very kindly to assist me in understanding" the Linnaean System further. Again, Bartram placed himself in elite company, insofar as natural history is concerned, referring to "Dr gronovious my good friend," and "Mons. dalibard," who both had sent botanical books executed by the Swedish taxonomist.¹⁷⁸ Name-dropping aside, and as always, Bartram was interested not only in books, but also in learning.

Regardless of Bartram's pretensions concerning his own position within the scientific public sphere, he was an excellent record-keeper of both his incoming, and

¹⁷⁷ *Ibid.*, 379. Miller certainly knew Lord Petre, Collinson's close friend, and knew Dillenius, at least by reputation. Neither man was alive at the time of this writing.

¹⁷⁸ *Ibid.*, 380. "Mons. dalibard" is Thomas Francis D'Alibard (1703-1779), the French botanist who produced *Flora Parisiensis*, which Bartram alluded to in his letter. In this case, both men were alive at the time of this writing.

often outgoing, correspondence.¹⁷⁹ However, he apparently either mislaid or misfiled not one, but two consecutive letters from Miller, written in February 1756. It is clear that Bartram received them, as both are among his papers. Furthermore, the second letter provided clarification for material contained in the first.¹⁸⁰ Moreover, two other missives sent by Miller in the summer of 1756 never even reached Bartram.¹⁸¹ Thus, when Bartram again wrote to Miller on November 3, 1756, and having no idea of the content of Miller's four letters, he was at a loss how to continue the correspondence since "ye last letter I received from thee was date February 25, 1755 which I have answered." Bartram had an "oportunity to write but no answer from [Miller]," so he proceeded to "send [him] some of my observations on forrest trees." Clearly not wanting to waste Miller's time, Bartram expressed concern that it was likely others had already done so, but proceeded with his sylvan descriptions.¹⁸² Bartram's approach, in this time of war, was to soldier on, accepting the disruption of the correspondence, but not allowing it to stop altogether.

Miller replied in February 1757, mentioning first "the disagreeable account that neither of my letters wrote last summer have come to your hands." Then Miller addressed the two letters he sent in February 1756, briefly reiterating the content and assuming that Bartram never received them. As discussed above, Bartram misplaced these, which had

¹⁷⁹ Some correspondents kept drafts of the letters they sent, while others did not. Bartram was in the former group, but even those who made a conscious effort to retain copies, were not always able to do so.

¹⁸⁰ Miller to Bartram, February 2, 1756 and February 18, 1756. *COJB*, 396-397 and 399-400.

¹⁸¹ Miller to Bartram, February 15, 1757. *COJB*, 419.

¹⁸² Bartram to Miller, November 3, 1756. *COJB*, 410.

the same effect as not having received them at all. Miller also noted the absence of a box of specimens Bartram had intended to send, surmising correctly that the parcel was lost. Miller enclosed this letter along with the latest edition his *Dictionary*, which was being printed in parts rather than as a complete volume, as well as “a dozen Cones of Cedar,” originally sent with the “missing” February 1756 letters. However, he was unable to send any live plants. The short notice of departure coupled with the unwillingness of “the Captain to take these things on board,” made such a shipment impossible, for the moment.¹⁸³ As has been previously noted, the cultivation of good relationships with ship captains promoted the cultivation of plants.

The two men’s correspondence of the summer and fall of 1757 proved successful when compared to the previous year, but it was not without its problems. Writing on January 12, 1758, Miller acknowledged Bartram’s missives of October 13, and of November 12, where Bartram had apparently “complained of not having received any letter” for quite awhile. Assuring his correspondent that this was not the case, an exasperated Miller could only say, “how this happens I know not.”¹⁸⁴ As it did happen, only one of the three letters Miller mentioned sending had actually arrived.¹⁸⁵ Writing in August 1758, Miller again lamented difficulties encountered by Bartram two months

¹⁸³ Miller to Bartram, February 15, 1757. *COJB*, 419-420. The missing box of specimens from Bartram is not mentioned in the draft version of his November 3, 1756 letter. Obviously, Bartram included this in the version he sent to Miller. Furthermore, Bartram did indeed send the box. See Bartram to Miller, June 20, 1757. *COJB*, 423.

¹⁸⁴ Miller to Bartram, January 12, 1758. *COJB*, 435.

¹⁸⁵ Bartram to Miller, June 16, 1758. *COJB*, 435.

earlier when “part of the numbers of my Figures of plants which I sent you miscarried, which gives me some concern, because they were duly sent as oppertunities offered.”¹⁸⁶

A common thread of both Miller’s and Bartram’s letters of 1758, is the acknowledgment of Collinson’s involvement with the *process* of correspondence, including the shipment of printed matter and specimens. Miller sought guidance from Collinson regarding the best time to ship his “Figures of Plants,” although in many cases Miller undertook the shipment of specimens without such consultation.¹⁸⁷ As illustrated above, Miller would have done well to seek Collinson’s input on specimen shipments each and every time. Bartram expressed his trust in Collinson noting, “I have received every article our worthy friend Peter mentioned in ye letters I received from him.” Furthermore, in the nearly twenty-five years that Bartram and Collinson had been exchanging letters, Bartram thought Collinson the most “faithful careful punctual & true a Correspondent as I believe ever lived.” Bartram marveled that Collinson was able to do this “notwithstanding ye extensive correspondence he carries on to most of ye trading ports,” likely referring to Collinson’s position as a merchant.¹⁸⁸ In short, Collinson excelled in mixing business with pleasure.

The final year of the correspondence between Bartram and Miller, 1759, began with a February missive from Bartram thanking Miller for his letter and parcel of August

¹⁸⁶ Miller to Bartram, August 28, 1758. *COJB*, 438.

¹⁸⁷ Miller to Bartram, January 12, 1758. *COJB*, 434.

¹⁸⁸ Bartram to Miller, June 16, 1758. *COJB*, 435. Bartram may have also been referring to Collinson’s scientific correspondence as well, but the mention of “trading ports” points to Collinson’s business activities.

28, 1758. However, in what was not commonplace for Bartram, he noted the cost of the shipment. In this case, it seems that he was not complaining, since he “was very well pleased with ye letter & its contents,” and “I would not for three times what it cost me have mised it.” Rather, Bartram was irritated that some of the contents of the package, which were enumerated in Miller’s letter, were missing. Bartram listed the material in question, and like Miller in his letter of January 12, 1758, was perplexed, having “ye least hint how thay miscarried.” Addressing the disturbing pattern of the arrival of live specimens in less-than-satisfactory condition, Bartram perhaps got “ye least hint,” writing, “our correspondence is attended with difficulties.” Moreover, Bartram identified the source of the problem, noting, “your vesails waits so long for convoys that ye plants perisheth before we receive them.”¹⁸⁹ Bartram’s analysis of the delays could be applied to the letter that Bartram was then currently responding to, which was sent in August, but did not reach Bartram until February. Five-and-a-half months would have been an unusually long time for a letter (or parcel) to travel from London to Philadelphia. However, the “convoys” were implemented for the safety of merchant vessels for transatlantic crossings during the Seven Years’ War.

In May 1759, Miller reassured Bartram that he would once again send “those numbers of the figures of plants you want,” but expressed surprise that they were never

¹⁸⁹ Bartram to Miller, February 18, 1759. *COJB*, 456. My analysis here differs from Le Rougetel, who does not mention Bartram’s next line about paying three times more for the package given its contents. “It was customary for the recipient to pay postage and the amount given here by Bartram is not plain, but evidently it was weighty enough to cause comment.” See Le Rougetel, “Miller/Bartram Exchange,” 39n35. In *COJB*, Berkeley and Berkeley show that Bartram *did* note the cost as “2 - 10” [2s 10d, or two shillings, ten pence].

“received because I regularly sent them to you as I found oppertunities.”¹⁹⁰ Bartram replied to Miller’s May letter on September 28, and mentioned not having received any others since, although Miller wrote again in July.¹⁹¹ As had been the case for much of their correspondence, Bartram never received that missive.

While it is possible that more correspondence exists between Miller and Bartram, the last letter that can be confirmed is Miller’s of November 10, 1759. It seems that the two men then reverted to their previous practice of using Peter Collinson as an intermediary, as they had done since 1736.¹⁹² Miller is referred to sporadically in the correspondence between Collinson and Bartram until 1766, but after that date, it appears Miller had no more contact with Bartram. However, with Peter Collinson’s death in 1768, it seems strange that Miller and Bartram, who both had such strong ties to Collinson (and of course to each other because of Collinson) would not have written to each other at least one more time, acknowledging the passing of their mutual friend.

Were the problems encountered by Bartram and Miller during their wartime correspondence were symptomatic of a broader disruption of transatlantic communication of scientific knowledge? If so, then these same issues surely would have arisen in the epistolary exchange of Bartram and Collinson at the same time. However, this was only partially the case.

¹⁹⁰ Miller to Bartram, May 30, 1759. *COJB*, 469.

¹⁹¹ Miller to Bartram, November 10, 1759. *COJB*, 476.

¹⁹² Miller was one of Bartram’s original subscribers for American seeds and plants. See Collinson to Bartram, June 1, 1736. *COJB*, 29.

An examination of their correspondence reveals that Bartram and Collinson exchanged over seventy letters from February 1755 through November 1759, a figure two-and-a-half times higher than Bartram and Miller during the same period. As might be expected, some missives and specimens were lost, but delays were the greatest problem that Collinson and Bartram encountered.

In September 1755, Bartram acknowledged Collinson's "kind letters of March 25, April 23d, June ye 17th & July ye 3d sent on by Captain Budden."¹⁹³ Clearly, Budden's ship did not leave London as originally scheduled, but waited for a convoy to assemble before crossing the Atlantic. Collinson may have already begun using the packet since Bartram also noted receipt of a letter via New York, the destination of the service on the American mainland, but this cannot be ascertained.¹⁹⁴ The litany of Collinson's missives reported in Bartram's September letter echoed a similar list from the previous April, where Bartram noted receiving four letters from Collinson. These were more closely spaced in their dates of composition, although there was a gap of nearly a month between the first two of these. It seems they were delivered to Bartram all at once, suggesting at least some delay in their departure from England.¹⁹⁵ But unlike the missives noted in Bartram's September letter, transit time to America was well within the usual parameters, and not extended by weeks or months.

¹⁹³ Bartram to Collinson, September 28, 1755. *COJB*, 387.

¹⁹⁴ *Ibid.*, 387.

¹⁹⁵ "I have received thy kind letters of January ye 5th February ye 1st 12th & 19th." See Bartram to Collinson, April 27, 1755. *COJB*, 381.

The pattern of delay continued as two of Collinson's early-1756 letters, dated January 20 and February 28, carried by the same ship, were not answered by Bartram until May.¹⁹⁶ Similarly, Bartram's letter of February 21 did not reach Collinson until June.¹⁹⁷ Whether these delays can be attributed to the in-port formation of convoys or prevailing geopolitical conditions on the Atlantic is difficult to determine. Actual transatlantic crossing times varied wildly, as in June, Bartram replied to a letter Collinson had written in April.¹⁹⁸ Eight weeks for a letter to travel from Britain to America was common enough, even without a war going on.

Notable here is the absence of the miscarriage of letters, unlike the Miller and Bartram exchange during 1756. The uninterrupted, extensive correspondence between Collinson and Bartram in that year (about a dozen letters) meant that the choice of ship, and captain of course, was paramount. Clearly, Collinson had yet to switch to exclusive use of the packet for letters, so such decisions required careful consideration.

Bartram and Collinson weathered the communication delays of 1756, but the following year proved to be much more of a challenge. In January 1757, Bartram "shipped on ye carolina Cpt Duncan & consigned to [Collinson] 26 boxes."¹⁹⁹ Given the wartime troubles on the Atlantic, Bartram here gambled on the successful delivery of the

¹⁹⁶ Bartram to Collinson, May 30, 1756. *COJB*, 404.

¹⁹⁷ Collinson to Bartram, June 8, 1756. *COJB*, 405.

¹⁹⁸ Bartram to Collinson, June 12, 1756. *COJB*, 407. Delivered along with Collinson's April letter, was one dated February 10.

¹⁹⁹ Bartram to Collinson, January 22, 1757. *COJB*, 413. This letter was evidently sent separately from the "26 boxes" on the *Carolina*.

merchandise. Writing in March, a worried Collinson did not know what to do “in the Event the Ships with the Cargo thou sent are taken,” but suggested to Bartram “that for the future to insure them.” Moreover, Collinson must have been uneasy, as in the same letter he gave Bartram a list of seed orders for nearly a dozen subscribers, providing specific instruction that “every one be packed by its self with the Persons Name upon it.” This was most unusual since it incurred higher costs, but was indeed a form of insurance: if part of the shipment was lost, perhaps any remaining boxes would reach their individual recipients. However, Collinson cautioned that after this shipment, Bartram should “send no more of any Thing curious but keep all until a Peace which I hope cannot be a great way off.” The idea that hostilities would cease was not chimerical for Collinson. He pointed out that “all sides have spent their money” and if the participants “are broke then all Parties must agree.”²⁰⁰ As it turned out, Collinson’s fears concerning Bartram’s shipment of January were unfounded, as he wrote on March 18 to Bartram. However, Collinson’s joy at seeing the “fine Cargo of Seeds &c,” was tempered by the fact the he had no idea “Where she delivered her Letters.”²⁰¹ Of course, mail delivery was crucial not only for Collinson’s scientific pursuits, but also for the operation of his business.

Bartram received Collinson’s letter of June 16 in September, but had to wait until October for those of “February ye 15th & June ye 3d.”²⁰² Bartram made no mention of

²⁰⁰ Collinson to Bartram, March 3, 1757. *COJB*, 421.

²⁰¹ Collinson to Bartram, March 18, 1757. *COJB*, 422.

²⁰² See Bartram to Collinson, September 25, 1757 and October 16, 1757. *COJB*, 426 and 428.

this bizarre, even by wartime standards, time lag. However, in November, Bartram wrote to Collinson, “I have not received any letter from thee since that of June ye 16th which seems A great while since.” Delay, and the possibility of miscarriage, was likely on Bartram’s mind, as the letter he we was now writing accompanied the seed order Collinson had placed in March for the subscribers. In addition to the twelve boxes Collinson ordered, two more were sent for Benjamin Franklin, who had gone to England.²⁰³ Bartram does not mention whether or not he took Collinson’s advice and insured the shipment.

Correspondence during 1758 was somewhat sparse, except for a flurry of letters by Bartram in the late fall. During the first half of the year, the two men wrote three letters between them. In January, Bartram again noted the absence of communications from Collinson, the latter’s last dated August 25, 1757. In addition, Bartram mentioned the “Cargo of forest seeds by Captain snead” the previous November, openly admonishing himself for consigning the entire set of boxes to one ship. Since there was “at that time no other vesail put up for London,” Bartram felt he had no choice. Ever hopeful, Bartram added, “but if he should arive safe to London its well.”²⁰⁴

In June, a ship arrived in Philadelphia with five of Collinson’s “letters unanswered,” dating back to early-October 1757, but none more recent than February 4, 1758. In his reply to these missives, Bartram was quick to note that he had “received all

²⁰³ Bartam to Collinson, November 11, 1757. *COJB*, 430.

²⁰⁴ Bartam to Collinson, January 3, 1758. *COJB*, 432-433.

ye seeds & presents mentioned therein.”²⁰⁵ Cognizant of missing letters, specimens, and printed matter in his exchange with Miller, Bartram’s reassurance that similar items from Collinson had arrived without incident, except for the now-commonplace delay, carried importance not just for Collinson, but for Bartram himself.

Though a precise accounting of Collinson’s letters through the winter and spring of 1758 is not possible, it seems certain that he wrote to Bartram at least twice. Bartram noted on November 13 that he “wrote about two weeks past & acknowledged thy letters received to ye 4 of may.” This implies that Collinson had indeed written multiple times after the February 4 letter noted above. Of greater interest is Bartram’s mention of writing to Miller “from whome I have not received one letter since april but have received A fine parcel” from him.²⁰⁶ Here, Bartram expresses his concern over the lack of epistolary communication, receipt of specimens and printed material notwithstanding. While this mention of delay may seem unusual given the similar situation regarding his own correspondence with Collinson, Bartram was clear about the primary importance of the letter in the process of communicating knowledge.

“Thou art a very lucky Man,” Collinson wrote in mid-January 1759. Bartram had sent shipments of seeds by two different vessels. One had already been unloaded, and Collinson “had advise of the arrival of the other.” Expressing both joy and surprise, Collinson continued, “it is wonderfull they Escaped when so many Virginia ships are taken.” Whether these particular vessels had stopped in Virginia after leaving

²⁰⁵ Bartam to Collinson, June 16, 1758. *COJB*, 436.

²⁰⁶ Bartam to Collinson, November 13, 1758. *COJB*, 439.

Philadelphia (or perhaps the other way around) is unknown. It may be that Collinson was referring to a different trade route more often successfully intercepted by the French. Not resting on the laurels of such good fortune, Collinson was waiting for news of the safe arrival of “Vegetable Cargoes sent by Gordon” to Bartram in Philadelphia.²⁰⁷ In one of his customary long postscripts, Collinson reported, “I had writt the Long Letter by New York Packet which I hear is taken.”²⁰⁸ Not even the most secure method of transatlantic communication was safe one hundred percent of the time.

In March, Collinson sent two letters, once again acknowledging, “the seeds & plants came safe.” In the first, Collinson instructed Bartram to send more, but cautioned, “it is all a Chance & thou must risque It.” Collinson also noted that he had not received any correspondence from Bartram since “thy Two Letters came Mee On New Years Day.”²⁰⁹ In his other letter, Collinson noted “the success that has attended all his Cargo of Seeds during this Warr.”²¹⁰ Benjamin Franklin was also the beneficiary of safe shipments. Collinson knew this firsthand, reporting to Bartram that “our Frd Benjamin had a fine

²⁰⁷ Collinson to Bartram, January 14, 1759. *COJB*, 454. “Gordon” is James Gordon, nurseryman at Mile-End in east London.

²⁰⁸ *Ibid.*, 456.

²⁰⁹ Collinson to Bartram, (March) 1759. *COJB*, 458. Berkeley and Berkeley have supplied March as the likely month of this letter. For Collinson’s acknowledgment of Bartram’s seeds, see also Collinson to Bartram, March 10, 1759. *COJB*, 459.

²¹⁰ Collinson to Bartram, March 10, 1759. *COJB*, 459.

pcell of the apples came over this year in wch I shared.”²¹¹ Here again, it is evident that Collinson knew how to mix business with pleasure.

Although none of his letters are extant, Bartram wrote to Collinson frequently during the winter of 1758-1759. In April, Collinson wrote that he had received six letters dated between December and February. Furthermore, he was going to forward two of them “to Miller for his perusal,” but would “take more notice of them when I have the Leisure.”²¹² Thus, the circulation of knowledge continued even during the period when Bartram and Miller were corresponding directly.

In July, one of the correspondents’ trusted ship captains, a Captain Friend, was sailing from London with a letter and “Little Box” for Bartram, as well as “a pacquet of Magazines &c for the Lib: Com.” It was not unusual for a person known by the sender or recipient to hand-deliver letters or small packages, if that individual was making a transatlantic crossing. What was unusual in this case, however, was that the man making the delivery, Daniel Mildred, was the *owner* of Captain Friend’s vessel. Collinson indicated Mildred was “My Friend,” so it may be that Collinson was predisposed to giving Mildred business.²¹³ Since the correspondents utilized Captain Friend regularly,

²¹¹ *Ibid.*, 460. “Frd” is “friend,” “pcell” is “parcel,” and “wch” is “which.” All three are standard shorthand, some would say abbreviations, for the time. The apples in question are Newtown Pippins. Collinson jealously noted that he would grow them himself, “if our Sun will ripen them to such perfection.”

²¹² Collinson to Bartram, April 6, 1759. *COJB*, 462. The material here was written on April 9.

²¹³ Collinson to Bartram, July 20, 1759. *COJB*, 470. In his letter, Collinson instructed Bartram “to tell Joseph Morris” about the arrival of Mildred and the package for the Library Company. The “pacquet of Magazines &c” would have been of interest to Bartram since he was a regular visitor to the institution.

the ship surely had a record of safe passage across the ocean and successfully completing deliveries, likely reinforcing Collinson's predisposition toward Mildred. Whether this friendship had blossomed because of Collinson's merchant shipments or just through social acquaintance is unknown, though the former seems more probable.

Like those sent over the winter, Bartram's letters of spring and summer are no longer extant. In fact, other than an early-1759 piece entitled "Introduced Plants Troublesome in Pennsylvania Pastures and Fields," and some notes of a trip he took to Virginia in October. On first inspection, it might appear that Bartram did not keep copies of the dozen other letters he sent to Collinson during that year.²¹⁴ However, given Bartram's propensity to save his drafts, it seems quite likely that these were misplaced, especially since the "Introduced Plants" and the trip notes bookended his correspondence to Collinson for the year.

The twenty-one letters exchanged by Bartram and Collinson in 1759 *alone* are significantly more than those successfully sent and received by Bartram and Miller during their entire correspondence. Moreover, Bartram's and Collinson's letters and specimens of 1759 all reached their intended destination, thus further demonstrating the need for judicious choice of ship captains.

While the correspondence of Miller and Bartram shows a preoccupation with the actual loss of material during the exchange, that of Collinson and Bartram is more concerned with delays. The latter pair's emphasis on *time* within the transatlantic Seven

²¹⁴ For "Introduced Plants," see Bartram to Collinson, (Early 1759). *COJB*, 451-454. For Bartram's notes on his October 1759 trip to Virginia, see Bartram to Collinson, October 13-28, 1759. *COJB*, 471-473.

Years' War spatial context reflects their normative position regarding the operation of the correspondence network as it had existed during the preceding two decades. Put simply, long delays were unacceptable, but with the ongoing geopolitical conflict, were to be expected. To be clear, writers were not accusing one another of deliberate epistolary laziness. Rather, they had encountered a situation with which they were completely unfamiliar, and felt compelled to comment on it. Repeatedly.

The relative success of the transmission of letters and specimens which characterized the exchange John Bartram and Peter Collinson during the the first two-thirds of the Seven Years' War did not extend to the remainder of the conflict. In fact, even the attitudes of the correspondents changed. Delays and miscarriages, which before were dealt with as consequences of the current situation, were now marked by frequent complaints by Bartram concerning Collinson's lack of epistolary output. In return, Collinson candidly reminded his long-time correspondent that certain impediments, such as a war, could have a deleterious effect on transatlantic communication.²¹⁵ The correspondence provides little clue as to why Bartram changed his perception, or why this provoked such strong responses from Collinson. Paradoxically, one miscarried letter might have alleviated the some of the tension. What is clear, regardless of either man's position concerning any lost material, the exchange of scientific knowledge continued.

²¹⁵ For a discussion of the strains that were sometimes evident in the two men's relationship, see Alan W. Armstrong, "John Bartram and Peter Collinson: A Correspondence of Science and Friendship," in Nancy E. Hoffman and John C. Van Horne, eds., *America's Curious Botanist: A Tercentennial Reappraisal of John Bartram, 1699-1777* (Philadelphia: American Philosophical Society, 2004), 41.

However, war was not the only potential cause for information not reaching its intended recipient or recipients, especially if the destination was the broader public.

In February 1760, Collinson worried that a letter acknowledging the receipt of “two Large tortoise Shells” had not reached Bartram. Reiterating the content of the “miscarried” letter, Collinson noted that more than the shells themselves, “Thine and Billeys account of the Snaping Turtle with his fine Drawing would make a Curious piece of Natural History.” But Collinson hesitated to offer the description of the turtle and the accompanying sketch to the *Gentlemen’s Magazine*, which had been, since its inception in 1731, a principle outlet for the dissemination of knowledge to a broader audience. Edward Cave, the magazine’s founder, publisher, and frequent contributor (under the pseudonym, “Sylvanus Urban”), died in 1754. Collinson, apparently unhappy regarding the current staff’s handling of scientific contributions, noted, “our Authors of the Magazine are so careless, on these affairs, that I Don’t know how to trust them & yett It is with regret I cannot find a better way to communicate them to the publick.”²¹⁶ While Collinson knew he could have had the material read into the *Philosophical Transactions*, he clearly wanted both the description and the artwork transmitted to a much wider readership than that of the Royal Society publication. Moreover, Collinson’s identified the *Gentlemen’s Magazine* as the only real option for such transmission, reflecting, in his view, the inability of other popular publications to disseminate scientific knowledge effectively.

²¹⁶ Collinson to Bartram, February 1760. *COJB*, 478. As previously noted, “Billey” is Bartram’s son William. Both Bartram and Collinson spell William’s nickname in a variety of ways.

Susan Scott Parrish has posited Collinson's letter as "skepticism about the magazine industry" as a whole. Parrish characterizes "scientific letters" as being "private communication between friends" or a letter "directed to an individual at the Royal Society." Furthermore, all parties knew that material from such missives was "susceptible to publication." Parrish is correct to assert that these "scientific letters" could be "distorted" once in the hands of publishers, "particularly nonacademic presses."²¹⁷ To Parrish's first point concerning Collinson's "skepticism," Collinson was referring to the *Gentlemen's Magazine* here, not "the magazine industry." Despite Collinson's frequent creative spelling and random capitalization, when writing about the *Gentlemen's Magazine*, it always appears in singular and usually capitalized: "the Magazine." Collinson's repeated references to the publication as a source for the dissemination of scientific knowledge throughout his correspondence also makes this clear. On Parrish's other point that defines the source of scientific letters, these letters were never considered "private communication," unless as they were identified as such by their authors. Moreover, in the few instances that privacy was addressed by a writer, it usually referred to a section of a letter, not the entire missive.

As shown above, the loss of letters and specimens dominated the correspondence of Bartram and Philip Miller. Bartram relayed not only these problems, but also one of grave concern, in his February 20 missive. An anxious Bartram, having "not yet received

²¹⁷ See Susan Scott Parrish, *American Curiosity*, 149.

A line from Miller nor seed this winter or last fall,” asked Collinson, “is he dead?”²¹⁸ Collinson’s reaction to Bartram’s query is not known, since it seems that Collinson never received this letter. Bartram’s thoughts of Miller’s death were greatly exaggerated, but Bartram would not know this for sure until the receipt of a Collinson letter dated September 15.

In June, Collinson sent the order of fall seeds for Bartram’s subscribers. While Collinson had “writt Largely by Budden,” a captain whose name appears regularly in the correspondence, he sent this message “per Way of New York,” meaning the packet.²¹⁹ Although transit time was longer and the cost greater, Collinson was protecting Bartram’s financial interest by using the most secure method of transatlantic communication possible.

September brought strong words from Collinson regarding “the Accounts that attends shiping & how precarious is the conveyance of Letters.” Clearly, Bartram’s complaints concerning the slowness or absence of material from Collinson were increasing, although the correspondence Collinson referred to is no longer extant.

Collinson noted, “in the Course of our Correspondence I have Observed that my Letters

²¹⁸ Bartram to Collinson, February 20, 1760. *COJB*, 481. If Collinson had indeed received this letter, he surely would have shown it to Miller. What reaction Bartram’s question would have elicited from the Chelsea gardener, like Collinson’s, is open to speculation. However, Bartram’s query regarding Miller’s death was a legitimate one, as Miller would have been in his seventieth year. Furthermore, given the communication problems evident in Bartram’s exchange with Collinson during the war, it would have been quite possible for any news of Miller’s death to been either delayed or not even received. For Bartram’s confirmation of Miller’s continued existence, see Collinson to Bartram, September 15, 1760. *COJB*, 491.

²¹⁹ Collinson to Bartram, June 6, 1760. *COJB*, 485. This letter was finished on June 10. Collinson mistakenly refers to this missive as “Two Letters of July 10 for seeds” in his of October 2. See Collinson to Bartram, October 2, 1760. *COJB*, 496.

have miscarried or I concluded so because no answers has come to Them.” Furthermore, “great allowance is to be made on both sides for such accidents.” Instructing Bartram to take the approach both men had used earlier in the war, Collinson reminded Bartram to make “modest Queries” rather than “accusations that doth not Sett well on Either side.”²²⁰

In a similar vein, Collinson began his October 2 missive by referring to recent letters he had sent, including the order for fall seeds sent by the packet, and the same time, rebuking Bartram for “makeing no allowance for miscariages.” Continuing his diatribe, Collinson noted his response to another Bartram letter, writing that “if all my Correspondents was of thy Restless turn of Mind – I would never sett Pen to paper.”²²¹ Collinson’s responses to Bartram’s shift in attitude concerning delays and losses, might have been tempered had Collinson received Bartram’s letter of July 20. However, all indications are that this letter never reached Collinson. “I have wrote several letter to thee which I hope is come to hand altho I cant yet expect an answer to them,” Bartram began this missive. He was “realy very uneasy” concerning the a shipment he had sent by the normally reliable Captain Friend, but that Collinson “never mentioned ye receiving altho we have had four ships arived from london without bringing me any letter from thee.”²²² Whatever good feelings Bartram may have restored, he quickly obliterated. Although Collinson never received this letter, he surely would not have appreciated Bartram’s remark.

²²⁰ Collinson to Bartram, September 15, 1760. *COJB*, 492-493.

²²¹ Collinson to Bartram, October 2, 1760. *COJB*, 496.

²²² Bartram to Collinson, July 20, 1760. *COJB*, 488.

Continuing his October 2 missive, and ever-cognizant of the ongoing military conflict, Collinson referenced “the Library Companys Box May 28 Capt Budden,” which Bartram had not yet acknowledged. This seemed to instill some uneasiness on Collinson’s part, as he hoped that the ship “may keep Clear of the French.” Collinson devoted the reverse side of his letter to the “success I have had with the Last Cargo,” adding, that he had “mention’d before but as Letters May be Lost I mention again.” The box for the Library Company also included a gift “of Edwards book to Billy & Magazine for year 1759.”²²³ The present for William Bartram was the latest volume from George Edwards, the first part of *Gleanings of Natural History*, published in 1758. Collinson referred to this book in his March 1757 missive to Bartram, “My Frd Edwards has a fifth book published – When complete & Delivered, I think he intends to send it to Billy.”²²⁴ Edwards evidently followed through with his promise. The “Magazine” was a bound set of the 1759 issues of the *Gentlemen’s Magazine*. Even in the middle of a war, the dissemination of knowledge via print culture continued, both within the epistolary web, with the bound edition of the *Gentlemen’s Magazine* for John Bartram, and beyond it, with *Gleanings of Natural History* for his son.

Letters written by Bartram and Collinson in November and December of 1760 are no longer extant. Writing in May 1761, Collinson thought the “pacquet was taken,” which

²²³ Collinson to Bartram, October 2, 1760. *COJB*, 496. For Collinson’s “success with the Last Cargo” see *Ibid.*, 497.

²²⁴ Collinson to Bartram, March 18, 1757. *COJB*, 422. Although the Edwards volume is not mentioned by name, the fact that it was his “fifth book published” identifies it as the first of the three-part *Gleanings*, which was released after the fourth volume of *A Natural History of Uncommon Birds* (1751).

had his December 6 letter on board.²²⁵ He very well could have been right, since Bartram never mentioned receiving it. However, Bartram's missives of November 8 and December 6 eventually reached Collinson, after more than six month's delay.²²⁶

Collinson spent a significant amount of space in his May 1761 letter complaining about *Bartram's* lack of communication. Although it is not possible to know Collinson's exact intent, he seems to have been doing this to make a point. In previous letters, Collinson had confined his comments about Bartram's complaints to a sentence or two. However, throughout this letter Collinson alternated botanic and natural history information with off-handed remarks. Collinson had not received any letters or specimens from Bartram, "Since those with Seeds which came to my Hands in Last January," but observed "a Wood Larks nest with Two Eggs" on his property. Collinson's report of the condition of his garden was followed by, "It is a long while since I heard from my Good friend John Bartram." Reminiscent of Bartram's query concerning the possible death of Philip Miller, Collinson continued, "I hope no illness has prevented him giving Mee that pleasure."²²⁷

Later in the missive, in what seems allegorical, Collinson wrote that his son asked,
 " 'Father, what is the Matter friend John has quite forgot you who take so much pains to

²²⁵ Collinson to Bartram, May 7, 1761. *COJB*, 512.

²²⁶ Collinson to Bartram, June 12, 1761. *COJB*, 520.

²²⁷ Collinson to Bartram, May 7, 1761. *COJB*, 512. For Bartram's question about Miller see above.

Dispose of his seeds &c.’” Furthermore Collinson’s “son” wondered why no live plants were sent along with the seeds Bartram shipped on two different occasions. There is, however, an air of believability to Collinson’s story. He wrote, “Indeed friend John I leave thee to settle this account with my son who is an Enthusiast after Orchis, Lady’s Slippers, Hellebores, Lilies & all new things.” According to his father, the younger Collinson was not the only third party interested in hearing from Bartram. So too was nurseryman James Gordon. Apparently both Gordon and Collinson wanted to know if Gordon’s “2 Vegetable cargos came to hand.”²²⁸ After this last jab, the tone of the letter changes dramatically, with the remainder devoted to encouraging Bartram to find and ship “Some Fine Azaleas & Calmia.”²²⁹ Besides, Collinson had ulterior motives.

James Alexander (d.1778), gardener for Pennsylvania proprietor Thomas Penn (1702-1775), had shipped “the largest finest Mountain Laurells or Rhododendrons & Calmias” to Collinson’s neighbor. These, along with “Many other rare plants came in excellent order,” which led to Collinson’s “mortification.” Collinson warned Bartram, “don’t be out done by this Fellow.”²³⁰ Alexander was in competition with Bartram for subscribers for American specimens, and clearly, Collinson hoped Alexander would fail,

²²⁸ *Ibid.*, 512-513. What is certainly true here is that Collinson *did* have a son.

²²⁹ *Ibid.*, 512.

²³⁰ *Ibid.*, 513. Not to be confused with the more famous James Alexander (1691-1756), lawyer and political appointee in New Jersey and New York, and founding member of the American Philosophical Society. Thomas Penn, along with his brothers John (1700-1746) and Richard (1706-1771), inherited the proprietorship of Pennsylvania from their father, William Penn (1644-1718). Thomas and John actively supported the Library Company, but in the 1750s Thomas clashed with its founder, Benjamin Franklin, after the formation of the anti-proprietary party. Franklin and the party sought to have the Penns’ charter revoked and replaced with a royal one. Quite possibly, Collinson’s friendship with Franklin added further weight to Collinson’s hopes that Alexander would fail.

probably because of information Bartram related some five years earlier. Alexander had cultivated some botanical spies at “ye market,” and thus acquired “any intelligence of where any trees grow that he wants.” Furthermore, Alexander paid his informants to collect the seeds of those trees “if thay will bring them to town.” Moreover, Bartram’s seed collecting trips were frustrated by local residents, obviously working for Alexander, who told him they would “gather them all to send to London.”²³¹

Alexander had set up his own network, eliminating some of the time-consuming seed collection. Using what was, in essence, tax-payer money, he had the ability to pay others for labor and delivery, precluding the chances of injury that Bartram faced on every trip. This should have made Alexander’s venture profitable, but his shipments did not always reach their destination in acceptable condition, thereby requiring replacement and increased cost.²³² Oddly enough, Alexander and Bartram were not enemies at all, but “always speak friendly together & visit one another but do not communicate ye affairs of our correspondents.”²³³ Surely, this last detail pleased Bartram. While Alexander had some well-to-do subscribers, he was not connected to the epistolary web, nor to the scientific public sphere. Alexander’s network was purely an economic one.

“Billy received ye fine present of Edwards,” Bartram wrote Collinson on May 22, 1761, referring to the first part of *Gleanings of Natural History* Collinson had shipped the

²³¹ Bartram to Collinson, June 12, 1756. *COJB*, 407.

²³² For Alexander’s unsatisfactory shipments see Collinson to Bartram, May 7, 1761; June 12, 1761; August 1, 1761; October 5, 1762. *COJB*, 513, 521, 530, 572. Even with his spotty record, Collinson noted that when Alexander “sends plants for size & Vigor they Excell all I ever Saw.” See Collinson to Bartram, June 12, 1761. *COJB*, 521.

²³³ *Ibid.*, 407.

previous May. However, it appears that it was not in transit for an entire year. Bartram noted disapprovingly that his son “promised me to send A letter of thanks or else I should have done it.”²³⁴ While the “polite letter” was not the traditional means of exchange within the scientific community during the eighteenth century, certain courtesies were obviously expected to be maintained, in this case, the “letter of thanks.” In this missive, Bartram was able to report what arrived safely and what would not. Moreover, the miscarriage of specimens literally added insult to injury.

While collecting “A fine parcel of holley berries” for James Gordon, Bartram fell out of a tree. Judging from Bartram’s comments, he seems to have badly sprained, or possibly broken, his arm. Moreover, the ship, which not only carried the berries for Gordon, but also specimens and seeds for Collinson and two subscribers, was taken. Bartram, however, would not be deterred from future collecting trips, as he had “a great mind to go next fall to Pittsburgh in hope to fine some curious plants there.”²³⁵ A trip through the Pennsylvania backcountry surely would have been inadvisable during the war, although Bartram seems to have momentarily forgotten all about the man-made dangers, let alone the natural ones.

Picking up where he had left off in his May 7 missive, Collinson noted on June 12 that he had not received any “Letters from my Dear frd John since Decemr 6 & Novemr 8.” He thought that Bartram was “often apt to Imagine” that “if no Letter comes,” Collinson had forgotten to write. Collinson reiterated that he would “always make

²³⁴ Bartram to Collinson, May 22, 1761. *COJB*, 516.

²³⁵ *Ibid.*, 517.

Allowance for accidents – of Ships being taken or Castaway,” implying that Bartram should do the same. To prevent such mishaps, Collinson was writing via “the New York packet,” as it was “safe & Convenient.” Moreover, Cadwallader Colden’s son Alexander was the postmaster and Collinson’s “particular friend.”²³⁶ As postmaster, the younger Colden had franking privileges, of course, thus reducing costs the recipients of Collinson’s letters. After Collinson’s much briefer chiding, he once again shifted to matters of natural history and Bartram’s ongoing competition with James Alexander.

As in his May missive, Collinson worried about Alexander’s plant shipments, which continued to be of excellent quality. “I cannot Bear that my Indefatigable Frd Bartram should be outdone by Him,” and Bartram should “find out his haunts where He gott such good & perfect things.” But an obviously gleeful Collinson noted Alexander’s most recent seed shipment “was in bad condition.”²³⁷ However, regardless of *who* was shipping letters or specimens, the war was, according to Collinson, still a major concern. Even though “There has been much talk of a peace,” as well as a French emissary in London, Collinson thought a halt to the hostilities was “a great way off.”²³⁸

Bartram, who had traveled to North Carolina in June 1760, sent a copy of his journal from that trip to Collinson in July 1761. The journal, along with “some specimens,” would be delivered to Collinson by Dr. William Chancellor (d. 1763). It is

²³⁶ Collinson to Bartram, June 12, 1761. *COJB*, 520. Since Collinson could send a group of letters in one envelope addressed to Colden, the parcel was likely considered government business and not subjected to postage.

²³⁷ *Ibid.*, 521.

²³⁸ *Ibid.*, 521.

unknown why Chancellor was traveling to London in the middle of a war, but he successfully returned to Philadelphia during the conflict as well.²³⁹ Perhaps Bartram thought a personal courier would be the best insurance against any potential loss of information. In this case, he was more likely worried about the copy of his North Carolina journal than the specimens.

August brought more strong words from Collinson concerning correspondence and its inherent wartime difficulties. He characterized Bartram as “grumbling & Complaining,” and making “no allowance for Accidents” even after being “admonish’d so to do.” Collinson noted that Bartram’s “frequent censorious Temper is not becoming our Friendship.” Using his favorite comparison, Collinson equated Bartram’s complaints about not having received any remarks concerning some “Tortoise Shells” with his own of not getting acknowledgement of a box of plants and accompanying list that James Gordon had sent. Clearly tired of this ongoing conversation, Collinson no longer wanted to bring up the Gordon affair specifically, or the miscarriage of letters and specimens in general.²⁴⁰ Frustration had overwhelmed both parties, and neither Collinson nor Bartram had, up to this point, offered to cease epistolary hostilities. Owing to their successful transmissions during the first few years of the war, both men were blindsided by the fact

²³⁹ Bartram to Collinson, July 19, 1761. *COJB*, 529. Chancellor is perhaps best known for his diary of his service on a slave ship. See Darold D. Wax, “A Philadelphia Surgeon on a Slaving Voyage to Africa, 1749-1751,” in *The Pennsylvania Magazine of History and Biography*, Vol. 92, No. 4. (Oct. 1968) 465-493. John Bartram owned at least one slave and helped William acquire several. See Thomas P. Slaughter, *The Natures of John and William Bartram* (New York: Alfred A. Knopf, 1996), 42, 44. For Bartram’s un-Quakerlike views on Africans and African-Americans, see Bartram to Collinson, July 22, 1741. *COJB*, 162.

²⁴⁰ Collinson to Bartram, August 1, 1761. *COJB*, 529-530.

that it simply did not continue. Collinson, for all his sharp words, wanted to insure that information that was sent reached its intended destination.

Although he did not know that Bartram had already sent his North Carolina journal, Collinson warned, “As times are so Perilous pray don’t send thy Journal untill a Peace which Wee are in hopes of.” Collinson feared miscarriage, of course, but he reflected happily on the great number of Bartram’s shipments that “Escaped this War.”²⁴¹ The nature of the space, the Atlantic Ocean, had changed dramatically since 1754, and though Collinson saw a resolution to the conflict in the not-too-distant future, he still identified that space not as a body of water, but as a potential impediment to the dissemination of knowledge.

In his August 14 letter, Bartram reported that he “wrote largely this spring by Captain Robinson who I hear is taken.” While Collinson frequently mentioned the loss of specific ships, this was somewhat unusual for Bartram. Perhaps the recent exchanges prompted him to do so: Bartram wanted Collinson to be aware that Bartram himself understood the situation. Moreover, Bartram mentioned sending letters “by ye way of liverpool,” which was certainly not a standard route for London correspondence.²⁴² Quite possibly, Bartram chose the ship bound for Liverpool simply because it was available and soon to leave port.

Bartram noted he had hurt his hip while “lifting ye Large boxes,” not fully recovering from the injury until spring. After repeating the news of his sprained (or

²⁴¹ *Ibid.*, 530.

²⁴² Bartram to Collinson, August 14, 1761. *COJB*, 533.

broken) arm, Bartram swore that “climbing trees is over with me in this world,” but “in ye next I rather chuse to fly like an angel to search for vegetables in realms unknown to mortals.”²⁴³ This not only would have improved the acquisition and distribution of specimens, but also would have given Bartram the decided advantage over Alexander.

In November, Bartram informed Collinson, “my correspondents near London writes to me as freely for ye Carolina plants as if thay thought I could get them as easy as thay do ye plants in ye European gardens.” But Bartram’s tirade was not centered on the making the journey from Philadelphia to Carolina. Rather, he was concerned with the actual physical collection of specimens. He supposed that collectors on the other side of the Atlantic only had “to walk at their leisure along ye alleys & dig what thay please out of ye beds, without ye danger of life of limb.”²⁴⁴ Clearly, Bartram had his recent spate of injuries in mind. Just who were these “correspondents near London”? It seems this letter miscarried, as Collinson never mentioned receiving it and surely would have replied to the comment, since he likely knew the people to whom Bartram referred.

Bartram’s identification of the risk involved with gathering “ye Carolina plants,” as opposed to the distance necessary to travel for such an undertaking is telling. His conception of time was formed by the expectation that he would have to wait weeks or months for replies to letters (although the Seven Years’ War had clearly pushed his limits in this regard), *not* the 3000 miles of space those letters had to cross. This allowed Bartram to focus on the constraints imposed by an aging body.

²⁴³ *Ibid.*, 533-534.

²⁴⁴ Bartram to Collinson, November 8, 1761. *COJB*, 538.

Writing in February 1762, Collinson acknowledged a shipment of specimens sent by Bartram. The problem this time was not delay, but “the Teeth of Ratts,” which had chewed into the parcel, damaging some plants and destroying others. The box Bartram packed “was a Warm Nest of Straw,” supplemented by “the Leaves & Stalks of the Shrubs.”²⁴⁵ Striking in their absence, given Collinson’s recent letters, are the harsh words about Bartram’s complaints. In fact, Collinson began the section of letter that dealt with the rodent damage with a proverb, setting a light tone throughout the remainder of the missive.²⁴⁶ However, light tone or not, the “Ratts” and their activities clearly distressed Collinson.

While he apparently never received Bartram’s November 8, 1761 letter, one of November 12 reached Collinson in April. Unlike the continuing military action, it appeared that all epistolary hostilities had finally ceased. Collinson kidded Bartram for sending seven unnamed “hard stony seeds, something shaped like an Acorn to puzzle Us.” Searching his “vast Collection,” Collinson reported finding no match. James Gordon thought “them to be a species of Hickery,” which apparently brought laughter from Collinson. Circumspect, Collinson continued, “Phaps I may be Laughed at in my Turn, for I think they may be *what I wish*, seeds of the Bonduc Tree.” Only three of these trees existed in “English Gardens,” and Collinson would have had the fourth “if the Warr had not broke out.” Collinson learned in “a Letter from Paris” that two trees were being held

²⁴⁵ Collinson to Bartram, February 3, 1743/4 [1762]. *COJB*, 545-546. Collinson obviously misdated this letter. See *COJB*, 547n1.

²⁴⁶ *Ibid.*, 545.

for him until such a time “when it shall please God to send a Peace.”²⁴⁷ Throughout the many military conflicts between England and France, the Seven Years’ War being the most recent, the scientific communities of both nations always returned to each other any specimens or letters that were not thrown overboard from ships that were taken.

Collinson continued his letter with equal parts levity and seriousness, engaging in some natural history warfare. Though he acknowledged that the Bonduc was “the only fine tree in which the French Rival us,” the playing field would soon be leveled because, “now Wee have got possession Wee shall rival them.”²⁴⁸

The positive tone of the missive continued. Bartram had, apparently, seen fit to mend his ways where “grumbling and Complaining” were concerned. Collinson remarked that Bartram himself had noted the “Delays and Difficulty that attends sending any growing plants” from Britain. Collinson was not sending any live plants this time, but told Bartram to expect a parcel containing “the Magazine & Two Books.” The package would be delivered by Benjamin Franklin, who was leaving England. Not knowing that Franklin would soon return, Collinson was unhappy that “The Dearest of Friends must part,” and that the loss was not just his, but England’s, as the country was losing “so Valuable a Member of Society.” Collinson thought, and rightly so, that the publications he was sending to Bartram “will give Entertainment to thy Speculative Genius.”²⁴⁹

²⁴⁷ Collinson to Bartram, April 1, 1762. *COJB*, 552-553.

²⁴⁸ *Ibid.*, 553.

²⁴⁹ *Ibid.*, 553-554. Collinson jealously noted, “the Sea is against you but always for Us – for how quick the plants come from you.” As previously mentioned, “the Magazine” was the *Gentlemen’s Magazine*. Franklin returned to London just two years later, and remained until 1775.

Reassuring his long-time correspondent that all was well once again between them, Collinson wrote, “Thou must take this Letter as an Instance of great Friendship.” Because he was “so Hurried in business,” Collinson could only “write a bitt & a scrap now and then,” but that Bartram had Collinson’s “Esteem.”²⁵⁰

In an atypically short postscript, Collinson again reminded Bartram to send his correspondence via Alexander Colden Esq Post master at New York,” because “then it costs Mee Nothing.”²⁵¹ Because Collinson no longer wanted to use merchant vessels for transatlantic mail, Colden’s franking privilege saved the fees associated with using the packet, on both sides of the ocean. Members of the epistolary web had grown used to at least *some* free postage for the journeys of their letters: either by the use of merchant ships, through Benjamin Franklin’s two decades as postmaster, or both. Given the overall tone of this missive, Collinson’s second reminder to Bartram in less than a year simply reflected an ongoing expectation, rather than a complaint.

On May 10, Bartram acknowledged Collinson’s letter of December 31, 1761 which noted the receipt of Bartram’s North Carolina journal. While Bartram wanted to continue to send the observations collected during his travels, he currently did not have time to copy his “roughly wrote Journal to Pittsburg.” Furthermore, Bartram was concerned with “how to send it safe.”²⁵² In this same vein, shipping delays put Bartram squarely in agreement with Collinson as to the shipment of live plants. Since “ye pasage

²⁵⁰ *Ibid.*, 554.

²⁵¹ *Ibid.*, 554.

²⁵² Bartram to Collinson, May 10, 1762. *COJB*, 557-558.

is so long & waiting for A convoy,” Bartram wrote, “it will not do to send living shrubs,” although seeds were still a viable option.²⁵³

Shipping delays and expenses clearly aggravated Collinson in his missive of May 22. Bartram surely must have understood this when he read that “*at Last* the Box Bulbs are come to thy hand *at Last*,” and “in better Condition they could not be expected as they had been *so long*.”²⁵⁴ Collinson’s concern over mailing and shipping costs was not helped by his neighbors “for whose Letters & Bills of Loading” Collinson “paid so much postage.” Nor did they “offer to pay even part,” Collinson angrily added.²⁵⁵ However, it was a shipment of Bartram’s that presented a different cause for concern.

Nurseryman John Bush (c.1730-1795), one of Bartram’s more recent subscribers, had apparently not picked up “2 Boxes of Seeds” from Collinson. Having not seen Bush at all during the spring, Collinson wrote to him, but seems not to have gotten a reply. Collinson speculated, “He may be dead for ought I know,” and added that Bartram should “send no Boxes of seeds or Woods for him.” Less than a month later, Collinson changed his instructions after having seen the German-born gardener. “I heard nothing from Bush & thought him Dead,” Collinson reiterated, “but now he has been with Mee & has paid Mee for one Box – & now He Desires another.”²⁵⁶ Bush must have elicited quite the reaction when he called on Collinson, although that is only speculation, of course.

²⁵³ *Ibid.*, 559.

²⁵⁴ Collinson to Bartram, May 22, 1762. *COJB*, 560. My emphasis.

²⁵⁵ *Ibid.*, 560-561.

²⁵⁶ Collinson to Bartram, June 11, 1762. *COJB*, 563.

Bartram, writing sometime in the summer of 1762, once again stressed the difficulty of sending “any growing plants.” This time he pointed to his own financial considerations. Bartram could sell them at a better profit in Philadelphia, and would get his “mony directly without any risk or ensurance.” Collinson also learned that the “hard stony seeds” that puzzled both himself and James Gordon were described to Bartram as “hictory nuts.”²⁵⁷ Surely Collinson passed this information along to Gordon, with perhaps an apology for laughing at the Mile-End gardener’s initial suggestion that the seeds in question were “a species of Hickery.”²⁵⁸

As of July 25, Benjamin Franklin had still not left London, so Collinson took the opportunity to write—and use Franklin as a personal courier. Collinson mentioned writing “July 9th by pacquet,” and noted he had received Bartram’s letter of May 10. As was now customary, given the delays and miscarriages, Collinson repeated some information of his July 9 missive. It was, as it turned out, a good idea on Collinson’s part: Bartram never received the July 9 letter. The packet clearly was not as well protected as it should have been, since Collinson noted in his June 11 missive that “The last pacquet from New York, was taken,” and it seems likely the packet with the July 9 letter met the same fate. Still, Collinson insisted that Bartram use the service also, but not for security, but rather, as Collinson now noted with regularity, “I have thy Letter with out Charge.” Of course, Bartram was to enclose any letter to Collinson in one to Alexander Colden. The cost

²⁵⁷ Bartram to Collinson, n.d.. *COJB*, 565. Berkeley and Berkeley have supplied “late summer of 1762” as the likely date of this letter. See *ibid.*, 565n1.

²⁵⁸ See above.

savings were clearly important to Collinson, but he may have also favored the packet because of its regular departure schedule. Although he had to continue to use merchant vessels for cargo, Collinson was obviously trying to reinstitute the regular exchange of letters that existed before the war. Like Collinson, Bartram took full advantage of personal couriers, if one was making the transatlantic crossing. Writing on August 15, Bartram told Collinson, "I sent my Journal to Pittsburg having a fine opportunity by my friend Taylor who promised to deliver them to thee with his own hands." Bartram's guarantee of delivery, assuming the vessel carrying Taylor arrived in London safely, probably served as reassurance for both the writer and the recipient. Furthermore, Bartram had heeded Collinson's request: the letter was sent "by ye packet."²⁵⁹

Bartram's Pittsburgh journal "was carefully deliver'd by Mr. Taylor in a very obliging manner" to Collinson in October. Collinson noted he would comment on the journal's "everlasting fund of Entertainment & Information" in a future letter.²⁶⁰ However, Collinson thought Bartram deserved some enjoyment and intelligence concerning his seed-selling rival James Alexander. Somehow, Collinson had acquired one of Alexander's invoices, and told Bartram, "He makes but a poor figure when Compared with thine & there is great Complaint of his package." Clearly not wanting Bartram to

²⁵⁹ Bartram to Collinson, August 15, 1762. *COJB*, 567. Bartram used this same sheet for at least part of a 1763 draft letter. His mention of "[George] Edwards 7th volume" and other materials, provides the clue. The "7th volume" must be the third and final volume of *Gleanings of Natural History*, officially published in 1764. However, copies were obviously available in 1763. See Collinson to Franklin, June 8, 1763. *PBF*, 10:274.

²⁶⁰ Collinson to Bartram, October 5, 1762. *COJB*, 570-571.

take his word for it, Collinson enclosed the invoice for Bartram's "Amusement."²⁶¹ The continued emphasis on the rivalry may have been a reminder to Bartram that he not only surpassed the proprietor's gardener in business, but also that his success was part of something much larger than simply collecting and selling. In Collinson's view, Bartram's contributions to the dissemination of knowledge were far more than Alexander could ever hope to achieve.

In December, Bartram acknowledged Collinson's letter of May 22.²⁶² This time, the six-month delay had nothing to do with the war. William Shippen, Jr. (1736-1808) carried Collinson's letter on his return journey to Philadelphia after attending medical school in Edinburgh. However, Shippen had kept the missive "Two or Three months by him" instead of delivering it to Bartram after arriving back in America. Learning of the delay, Collinson thought Shippen "unpolite," and called this treatment of Bartram "not Gentlemen Like."²⁶³ Although Collinson and Bartram had experienced successes and failures with deliveries during the war, every missive or parcel that was given to an individual making the Atlantic crossing had, up to this point, been conveyed to the recipient soon after the vessel reached its destination. Shippen, who had just finished accumulating knowledge, did a poor job of disseminating it.

²⁶¹ *Ibid.*, 572. Just how Collinson managed to get a hold of Alexander's invoice is not known, but is likely an interesting story.

²⁶² Bartram to Collinson, December 3, 1762. *COJB*, 578.

²⁶³ Collinson to Bartram, February 23, 1763. *COJB*, 586. There were no medical schools in America as of yet. Many would-be physicians from America went to Edinburgh to study (some went to Leyden), then often to London for extra practical training. Even after the Academy and College of Philadelphia added a medical school in 1766, most still went abroad for their education.

Also writing in December, Collinson suggested a plan that would finally use the war to the scientific community's advantage, rather than to its detriment. Although a preliminary peace treaty had been worked out, the war was still not officially over, and military occupations would continue for the foreseeable future, especially in strategic areas.²⁶⁴ Colonel Henry Bouquet (1719-1765), the commanding officer at Fort Pitt, seemed to have an interest in natural history. It was Bouquet who had given Bartram the mysterious "hickory nuts" during Bartram's travels to Pittsburgh.²⁶⁵ Collinson thought, "It is very probable that Colo Bouquet may have under Him Junior officers, espetially in the Artillery, that can design & draw animals." Apparently, "all the officers of that department" were taught "to take all manner of Designs." To that end, Collinson thought that since Bouquet was "a Gentleman of Curiosity," the colonel might want to "take a Survey of these Amazing Subjects," because "there will be Leisure & nothing to fear" from the Indians and their French allies, who "are striped of all that Fruitfull Country."²⁶⁶ Why Collinson would even consider this to be a good idea seems difficult to comprehend. However, the war had caused so much disruption to the normal flow of information, that with the prospects of peace now codified, Collinson recognized the

²⁶⁴ For the story of how the treaty was formulated, and a summary of the preliminary peace deal signed November 3, 1762, see Fred Anderson, *Crucible of War: The Seven Years' War and the Fate of Empire in British North America, 1754-1766* (New York: Alfred A. Knopf, 2000), 503-505.

²⁶⁵ For the "hickory nuts," see above. Fort Pitt (formerly Fort Duquesne) was situated at Pittsburgh.

²⁶⁶ Collinson to Bartram, December 10, 1762. *COJB*, 581. The peace treaty forced France to cede all of its North American land, either to Britain, east of the Mississippi River, or to Spain, west of the river. France would regain title to the territory west of the Mississippi in 1800, eventually selling it to the United States through the Louisiana Purchase. Of course, throughout all these transactions, Native Americans were left to cope with the consequences.

impending resumption of the scientific community's activities on a regular schedule. Moreover, he saw the potential to expand those activities in a space that was free from foreign interference, whether from Britain's European neighbor or from the indigenous local population.

In January 1763, Bartram wrote, "I am glad ye sent me James list," referring to James Alexander's invoice Collinson had included with his October missive.²⁶⁷ However, Bartram did not ask Collinson how it came into his possession. Perhaps the public nature of correspondence played a role here: if anyone else had seen either Collinson's letter or Bartram's reply, an open discussion of the acquisition of Alexander's invoice might have raised a few eyebrows. Bartram did not spend very much time delighting in Alexander's misfortune, but instead devoted space to the circulation of knowledge, or in one case, his inability to do so.

"I sent by Captain friend all my fall cargo," Bartram wrote. This time the "cargo" contained live plants for both Collinson and James Gordon. Clearly a departure from recent practice, Bartram evidently felt that his shipment would cross the Atlantic in a timely fashion. He also sent "A fine parcel of Carolina specimens & seeds," although that one was carried by a personal courier.²⁶⁸ Bartram seemed to have no doubt that both packages would reach London without incident. Of course, Bartram would have had the news of the preliminary peace, which surely would have bolstered his faith in both the timeliness and the safety of the shipments.

²⁶⁷ Bartram to Collinson, January 6, 1763. *COJB*, 582.

²⁶⁸ *Ibid.*, 583.

Bartram had intended to send Collinson “Another Box of plants this winter,” but a change in the ship’s itinerary caused Bartram to “question whether any vesail will sail before it is too late in the spring,” thus killing any live plants already packed for shipment. So apparently Bartram changed his plan, and decided that *if* he shipped the specimens, he would use Captain Friend’s vessel once again once the captain returned to Philadelphia. Friend clearly instilled confidence in both Bartram and Collinson as his name appears repeatedly in the correspondence throughout the war years. However, it seems that at some point not long before Bartram wrote this current missive, Friend had his ship captured. In spite of the misfortune, Bartram brushed off any possibility of trouble. Captain Friend would not be, according to Bartram, “in danger of being taken this time.”²⁶⁹ Like his epistolary counterpart, Bartram recognized that the dissemination of knowledge on a regular basis was now possible with the cessation of hostilities. But he also knew that shipments of live plants, as opposed to just letters or seeds, still required timely delivery.

As it turned out, the transmission of knowledge to a broader public could have consequences for the narrower audience of the scientific community. As previously mentioned, the primary outlet for this dissemination was the *Gentlemen’s Magazine*. “I cant find thy amphibious creature that thee published in ye Magazine,” Bartram told Collinson in reference to the latter’s June 11, 1762 letter. However, Bartram thought he knew why he could not locate the article in question. Apparently, William Bartram had

²⁶⁹ *Ibid.*, 583.

plundered his father's library and "stole two" of the bound yearly volumes to show to his uncle in North Carolina. Bartram postulated, "perhaps it was in one of them."²⁷⁰

William's desire to share knowledge placed him squarely within the scientific public sphere, albeit at his father's expense.

Collinson's letter of February 23, 1763 made multiple references to a missive written by Bartram the previous October 31, which is no longer extant. Collinson noted that Bartram had mentioned a shipment of seeds in that letter. Indeed, it is the same "fall cargo" that Bartram had written about in his of January 6. However, the ship had *still* not arrived in London. Collinson wrote, "Wee now begin to grow Impatient for to hear of the Ship that brings the Seeds for us."²⁷¹ In March, Collinson informed Bartram about the fate of the "fall cargo," and Bartram also learned that his prediction concerning Captain Friend's safety was wrong. Captain Friend, who had escaped privation until the very end of the long military conflict had been "Taken by the Spaniards," about "11 or 12 days *after* the Treaty was signed." Irritated, worried about Friend, but relieved, Collinson heard the ship had been transferred back to Britain and would arrive the day the current missive was being written. All correspondence was "thrown over board," but Collinson

²⁷⁰ *Ibid.*, 583. The "amphibious creature" was one that Collinson reported as being "peculiar to the R Ohio." Collinson "printed an Accot of It, & the figure the best I could procure in the Gent Mag abt 2 or 3 years Ago." See Collinson to Bartram, June 11, 1762. *COJB*, 563. Bartram valued his copies of the *Gentlemen's Magazine*, and William's actions likely irritated him, but Bartram's use of "stole" should probably not be seen as accusatory, but rather in lieu of the word "took," especially since the material in question was at least two years old. Bartram would have surely been more upset had his son absconded with the most recent bound volume, which the elder Bartram may or may not have had a chance to read in its entirety. However, it is also possible that William had indeed asked his father's permission and Bartram was making a joke when he used the word "stole." Furthermore, John Bartram was close with his brother, William's uncle, also named William, so permission may have been forthcoming regardless.

²⁷¹ Collinson to Bartram, February 23, 1763. *COJB*, 586.

seemed certain that “all our seed boxes are on board.” Collinson recognized that since any accompanying mail was now lost, Bartram would need to resend any information immediately, such as plant lists or invoices, that was shipped with the “seed boxes.” And of course, Bartram should write via “Al Colden Postmaster at New York.” However, this time Collinson made no mention of cost savings, but did note the regularity of the packet, “which sails every Month.”²⁷² Once again, Collinson exhibited a need for the process of communication to return to its prewar condition. Collinson clearly thought that with a peace treaty signed, the movement of letters and specimens would no longer be obstructed. However, ships on the high seas would not likely have received such news until they had reached a port. Collinson’s expectations were not unreasonable, just somewhat misplaced given the circumstances.

On April 7, Collinson again wrote to Bartram about the much-delayed shipment. Collinson finally received the seeds the previous day and noted, “though late, it’s better than never.”²⁷³ While Collinson often mentioned ships that had been taken, his frequent updates concerning Captain Friend’s vessel were unusual. However, since Collinson knew the exact fate of the ship, unlike other cases, he perhaps felt compelled to alert Bartram.

Bartram’s letter of May 1 acknowledged “with great Joy” the receipt of Collinson’s missives of December 10 and February 23. “I was realy afraid my dear friend was dead,” Bartram wrote, taking up a recurring theme of the past several years.

²⁷² Collinson to Bartram, March 11, 1763. *COJB*, 587. My emphasis.

²⁷³ Collinson to Bartram, April 7, 1763. *COJB*, 588.

Reassuring himself and Collinson, Bartram continued, “but I next thought surely his son would have let me know before now.”²⁷⁴ As was the case with Philip Miller some years earlier, Bartram’s fears about Collinson’s possible death would not have been unfounded, as Collinson was approaching his seventieth year.

After thanking Bartram for his letters of December 3 and January 6, Collinson wrote on May 10, “my last to thee was Aprill 7th by Pacquet giveing an account of the Arrival of the Seeds after a Vissit to Spain.” But the humorous allusion to the formerly stress-inducing situation was tempered by an accusation that Bartram had abandoned his “Usuall Care & Exactness” in packing one of the boxes of seeds from that shipment. It seems that one box contained only eight varieties instead of more than one hundred.²⁷⁵ It seems clear that the parcel had been opened, plundered, and carefully resealed at some point during its long journey, but Collinson did not see it that way. When Bartram received this letter in August, he shot back at Collinson with a detailed description of his packing and labeling methods. Moreover, Bartram noted that he always participated in the actual loading of his cargo onto a vessel, and made sure the ship actually left Philadelphia. He could not, as he told Collinson, “watch them all along after until they come to your hands.” Furthermore, Bartram could not “keep them from being rifeled neither on board ye ship nor after they are landed.”²⁷⁶ Collinson’s accusation went far beyond his comments concerning Bartram’s “grumbling and Complaining” about not

²⁷⁴ Bartram to Collinson, May 1, 1763. *COJB*, 590.

²⁷⁵ Collinson to Bartram, May 10, 1763. *COJB*, 591.

²⁷⁶ Bartram to Collinson, August 8, 1763. *COJB*, 603-604.

having received any letters. Indeed, while Bartram was often less-than-patient for the arrival of correspondence during the war, in this case he rightly defended himself against Collinson's charges of negligence. As with delays and miscarriages, theft was also beyond the control of those who disseminated knowledge.

The correspondence between John Bartram and Peter Collinson, as well as the five-year direct exchange between Bartram and Philip Miller, during the Seven Years' War illustrate changes in the fundamental nature of a particular space—the Atlantic Ocean. Authority constraints, while seemingly at work during the war, ultimately had little to do with the problems Bartram, Miller, and Collinson encountered. At no time was the ocean off limits: the French, British, or Spanish navies could not control such a vast space. Thus, even after the British navy dominated the high seas, British merchant ships and even the heavily guarded packets were still taken.

Correspondents did not view the Atlantic as a distance to cross, but rather as time that must pass. Delays and miscarriages, infrequent during the pre-war period, became commonplace, thus impinging on the regular shipments of letters and specimens. However, the well-established strategy for the dissemination of knowledge that the scientific community had developed in the twenty years prior to the military conflict assured at least some semblance of continuity. Some like Miller, who had not, up to the start of the war, participated directly in the exchange between America and Britain, learned with difficulty that only time-tested methods provided any certainty of success. For Bartram and Collinson, expectations of such favorable outcomes superseded realities

later in the war. Adjusting to the changing conditions was challenging, but not impossible.

Why Miller chose this particular moment to begin a direct correspondence with Bartram is unknown. Likewise, Bartram did not express surprise or concern that Miller had decided to initiate the process. Nor did Collinson indicate that there would be any difficulty with such an undertaking between the other two, even as he continued in his role of intermediary. The desire to circulate knowledge trumped any anxiety over geopolitical hostilities.

From April 1755 to May 1763, John Bartram exchanged over seventy letters with people other than Philip Miller or Peter Collinson. That number includes correspondents on both sides of the Atlantic, but is also only reflective of extant correspondence. It also must be remembered that the enormous volume of letters in the Bartram and Collinson correspondence is not reflective of any other two individuals, not just during the Seven Years' War, but also throughout the thirty-five year period the pair wrote to each other. In another transatlantic exchange, that of Alexander Garden and John Ellis, there are thirty-three extant letters for the period under consideration. There are actually many more letters from Ellis to Garden, but the latter's correspondence was destroyed during the Continental Army's occupation of Charleston during the American War of Independence, when Garden and his fellow loyalists were asked to leave the city. Thus, any information, including when how many letters Ellis sent, is only available through Garden's replies to Ellis. Although not a transatlantic correspondence, Ellis exchanged twenty-nine missives

with Linnaeus in Sweden during the war. Again, these are only the extant letters. Finally, Benjamin Franklin spent much of the war in England, exchanging letters with Collinson while there. However, the two wrote fifteen other missives between them when Franklin was in the colonies. In sum, the study of the correspondence between Bartram and Miller, as well as that of Bartram and Collinson accurately reflects the ability more generally to maintain communication during a time of geopolitical upheaval.

While disruptive, the Seven Years' War did not halt communication among members of the epistolary web. In fact, the advent of the packet in 1755 provided an option for regular transatlantic postal service for the first time, albeit a costly one. Unlike the use of merchant vessels for carrying mail, scientific practitioners had to find ways to circumvent the extra charges associated with the packet. Furthermore, though the service was designed for security, use of the packet surely did not guarantee it, as evidenced by the number of boats that were taken. Moreover, merchant vessels were still needed for parcels, and the delays they suffered while waiting for convoys to assemble hampered shipments of living specimens. Negotiating the variables associated with transatlantic communication during wartime proved difficult, but not insurmountable.

CHAPTER FIVE

TANGLING THE WEB, DENTING THE SPHERE

If the epistolary web was an institution, and the scientific public sphere transcended institutions, was it possible to exist outside of *both* formations while still making valid and valuable contributions to science in the mid-eighteenth century? Two scientific practitioners, Emanuel Mendes da Costa (1717-1791) and Pehr (Peter) Kalm (1716-1779), were inexorably bound to, tried to exert control over, and yet remained essentially free from, both systems. Circumstances presented themselves that allowed them to flourish, albeit with limitations. In other words, each man had to make a concerted effort to *prevent* becoming a part of the broader scientific community, while at the same time serving it.

This chapter examines the opening conundrum and the methods undertaken by da Costa and Kalm to circumvent wider participation. It explores how both men recognized the necessity to utilize specific concepts inherent in the very systems they were trying to avoid. This chapter further analyzes the reactions of scientific practitioners to the situations, as well as how the actions of da Costa and Kalm, ironically, actually strengthened both the scientific public sphere and the epistolary web.

This chapter also explores perceptions of the scientific community through the words and actions of da Costa and Kalm. For his part, da Costa gradually gained an understanding of how the epistolary web functioned, but never completely mastered his

participation within that forum. Initially, da Costa centered his communication and interactions around his own needs and expectations. Eventually, da Costa learned not to expect positive responses to his requests, working within the parameters of communication laid down by the scientific community, rather than trying to establish a new model himself.

Kalm, on the other hand, would have had knowledge of the scientific public sphere and the epistolary web through his interactions with his teacher, Linnaeus. However, Kalm's decision to ignore the ongoing practices of those two systems placed him in a precarious position within the scientific community. Kalm's government-funded journey to North America caused him to question the financial commitment to science of the British government for their operatives in the colonies when compared to their French Canadian counterparts, who had the full support of the French king. Furthermore, Kalm perceived the British scientific community in America as a group of under-educated colonials, and he treated them as such. Thus, the effects of his actions (or inactions, as the case may be) lasted for decades. In fact, as will be shown in Chapter Five, Linnaeus seems to have distanced himself from his former pupil.

This chapter also explores the continuing theme of English as the preferred language for the communication of science in Britain and America. On both sides of the Atlantic, questions concerning English-language publication persisted during the twenty-year period following Kalm's departure from America and the first publication of his journals in English. Furthermore, multiple languages placed barriers that impeded the

transmission of knowledge, and since dissemination of information was a primary goal of the scientific community, negotiating those difficulties was an absolute necessity.

Members of the epistolary web were part-and-parcel of the scientific public sphere, but the reverse was not always true. While he wrote hundreds of letters, Emanuel Mendes da Costa managed to be an active member of the scientific public sphere without truly engaging in the epistolary web. Thus, da Costa held an unusual position within the scientific community. Da Costa was, by most accounts, among the most dedicated scientific practitioners both in his native England and in Europe. Peter Collinson, having received a letter from da Costa “from the bottom of a Coal pit,”²⁷⁷ replied, “I believe you are the Only Man Living that can work in hapines from the Bottom of a Cole pitt.”²⁷⁸ Da Costa was searching for fossils at the mine.

While da Costa wrote and received enough letters to fill eleven volumes at the British Library, his engagement with the scientific community was, in many ways, peripheral to his life and career. Like Benjamin Franklin, da Costa was a relentless self-promoter, as evident in his letters. However, unlike Franklin, da Costa’s contact with other practitioners primarily served his own ends: da Costa advanced scientific

²⁷⁷ Emanuel Mendes da Costa to Collinson, July 17, 1747. Collinson, Peter, *Commonplace Book*, Ms. 323b, f. 308, Linnean Society of London. Hereafter cited as *Collinson Commonplace Book*. This is the version sent to Collinson. Da Costa’s draft is in the British Library. Da Costa to Collinson, July 17, 1747. *Collinson (Peter)*. Correspondence with E. M. da Costa 1747-1766, ALS: British Library, Add. 28536 f. 57. Hereafter cited as *Collinson/da Costa Correspondence*.

²⁷⁸ Collinson to da Costa, July 23, 1747. *Collinson Commonplace Book*, f. 310. A rare Collinson draft. The version Collinson sent to da Costa is in the British Library. Collinson to da Costa, July 23, 1747. *Collinson/da Costa Correspondence*, f. 59.

knowledge without furthering the connections, writ large, of the scientific community. Perhaps because of his rigorous scientific practice, not to mention his desire to disseminate knowledge to a broader public, members of the scientific community were willing to forgive da Costa's frequently obsequious behavior. Indeed, da Costa's dedication to science brought him recognition, while his dedication to currying favor with his colleagues eventually brought him a job. Da Costa was elected to Royal Society membership in 1747. He resigned his membership as a requirement to his becoming the Society's Clerk and Librarian in 1763. Never financially secure, the post at the Society theoretically enabled da Costa to pursue science and still make a living.²⁷⁹

Da Costa's correspondence indicates his strong desire to engage directly with individual correspondents for his own benefit rather than involve himself in the ongoing "conversations" of the epistolary web. In May 1748, da Costa wrote to an aging Mark Catesby, "The esteem & sincere Friendship I always profess'd to you and which no opportunity shall fail to demonstrate, makes me address to you as one of My friendly correspondents to let you know what passes here worthy your notice, but the principle

²⁷⁹ For da Costa's election to the Royal Society, see The Royal Society, *Certificates of Election and Candidature*, EC/1747/11. For da Costa to assume the position of Clerk, he had to resign his Society membership. Da Costa wrote to Society president Lord Macclesfield, "The Statutes of the Royal Society ordains the Clerk to be disqualified from being a Member thereof. As I had the honour to be elected into the said place at the last meeting, I hereby, in consequence of the said Statute, beg your Lordship's and the Society's leave to withdraw myself from being a Fellow of the said Society." See da Costa to the Earl of Macclesfield, February 10, 1763 in John Nichols, *Illustrations of the Literary History of the Eighteenth Century*, 8 vols. (London: John Nichols and Son, 1822), IV: 751. Da Costa's tenure as Royal Society Clerk was fraught with financial problems, many of his own doing, but others which were out of his control. See Geoffrey Cantor, "The Rise and Fall of Emanuel Mendes da Costa: A Severe Case of the 'Philosophical Dropsy'?", *The English Historical Review*, Vol. 116, No. 467 (Jun., 2001), 584-603. Hereafter cited as "Rise and Fall of da Costa." Cantor also details the successes that da Costa had within the scientific community, both in his practice of science, and as a supporter of others engaged in the field.

object is to draw you on to pleasure me with your Letters.” Da Costa understood Catesby’s place within London’s natural history community. He knew that Catesby frequently saw Collinson and John Fothergill, and asked Catesby to “tell them I shall take the liberty to write to them when I find anything worthy their notice.” Furthermore, Catesby should “Tell Dr. Mitchell I shall write him very soon.” Da Costa also saw fit to associate himself with the wider European scientific community, noting, “The Dormouse you sent last year to Dr. Gronovius died last march, after a few days illness, greatly lamented.” Finally, in a seemingly calculated postscript, da Costa told Catesby, “pray when you see Sr Hans Sloane make my services acceptable to him.”²⁸⁰

Da Costa apparently knew little about the man with whom he wished to correspond on a regular basis. Mark Catesby did not participate in epistolary exchanges with any regularity. Like many others, he relied on Collinson to relay information. Since da Costa was personally acquainted with Catesby, it is surprising that he did not understand this. Furthermore, asking Catesby to pass messages was not in good taste. While the scientific community was far more egalitarian in the eighteenth century than in the seventeenth, a certain amount of deference was required to be acknowledged to long-established practitioners like Catesby.

Like John Bartram, da Costa sought recognition from the elder statesmen of the scientific community. However, while Bartram did his best to ingratiate himself to the well-established practitioners of science (and their patrons), he was not only seeking

²⁸⁰ Da Costa to Catesby, May 15, 1748. *Mendes da Costa (Emanuel). Correspondence 1737 - 1787*, ALS: British Library, Add. 28536 ff. 35-36.

validation, but also genuinely wanted to contribute to the accumulation and dissemination of knowledge as broadly as possible. Bartram eagerly corresponded with *anyone*, not just elite members of the scientific community, about scientific matters. Bartram's correspondents included gardeners, nurserymen, and military officers, among others. While some of these correspondents were elite by economic standards, they were not necessarily engaged in either the scientific public sphere or epistolary web on a regular basis. Da Costa, by contrast, only sought out those who could further his career—those well-established within the scientific community.

A year before his letter to Catesby, da Costa asked artist-naturalist Georg Dionysius Ehret to contact his “Philosophical friends” in Nuremberg, including Johann Ambrose Beurer (1716-1754). According to a note da Costa wrote on his draft, Ehret complied, translating da Costa's request into German, then “sent it to Mr. Joh. Ambrose Beuer [*sic*] of Nuremberg who readily embraced it” and replied quickly.²⁸¹ However, da Costa became quite irritated with Beurer because in a May 1748 missive to Ehret, da Costa complained, “I have recd no answer from Mr. Beuer.” It seems that da Costa had written more than once since the initial exchange of the previous year and had gotten no replies. Clearly angry, da Costa instructed Ehret to “keep by you the curiosities I gave you to present him from me, and not send them to him as yet.” Instead da Costa said that Ehret should “write him a letter, in wch ask him if he designs to correspond with me or

²⁸¹ Da Costa to Ehret, June 4, 1747. *Ehret (Georg Dionysius). Correspondence with E. M. da Costa 1747-1757*, ALS: British Library, Add. 28536 ff. 262-263. Hereafter cited as *Ehret/da Costa 28536*. Johann Ambrose Beurer was a botanist and apothecary in Nuremberg. Both da Costa and Ehret consistently misspelled his last name, leaving out the middle “r.”

not.” Beurer should be aware, noted da Costa, “that I take it ill I have no answer from him.” Da Costa continued to issue orders to Ehret. “You may tell him as from yourself I think I am worthy of his correspondence, and that the R. Soc. has made me a Member of it.” Da Costa concluded his diatribe with an ultimatum: “if the Gentr does not give an immediate answer, and send me a Letter, I will never correspond with him, no shall he have any presents from me.”²⁸² This epistolary temper tantrum did not sit well with Ehret.

Ehret replied to da Costa three weeks later, apparently sending words of reassurance concerning Beurer, which clearly had an effect on da Costa. In his next letter to Ehret, Da Costa noted that Beurer was “an exceedingly great correspondent,” and that Beurer had made some inquiries about natural history, which da Costa “answered as well as I could, and I hope to his liking.” Moreover, da Costa was going to “send him some fine presents (which he deserves,)” after he returned to England.²⁸³ Replying to da Costa, Ehret revealed he did not follow through with da Costa’s initial request of May. “I have wrote nothing to Mr. Beuer of what you have ordered me in your former Letter, for he would have ben angry with you.” Furthermore, Ehret continued, “I received several Letters of Mr. Beuer, he Says he hopes you will sent him good specimens, and perform you promiss of what you have wrote him.”²⁸⁴ As his parenthetical comment concerning

²⁸² Da Costa to Ehret, May 4, 1748. *Ehret (Georg Dionysius). Correspondence with E. M. da Costa*, ALS: British, Library Add. 35230 f. 9. Hereafter cited as Ehret/da Costa 35230.

²⁸³ Da Costa to Ehret, July 21, 1748. *Ehret/da Costa 35230*, f. 10.

²⁸⁴ Ehret to da Costa, August 9, 1748. *Ehret/da Costa 28536*, f. 264.

the “fine presents” shows, da Costa clearly did not know when to lift the pen from the paper. Ehret demonstrated remarkable patience.

Ehret understood that da Costa’s impertinence toward Beurer was unjustified. Moreover, Ehret knew that his relationship with Beurer would suffer had he done what da Costa had asked. Although not an active member of the epistolary web, Ehret was deeply entrenched in the scientific public sphere through his artistic contributions. In Ehret’s view, da Costa, the relative newcomer to the scientific community, could not offer anything that would warrant the risk of jeopardizing Ehret’s association with Beurer. Thus, Ehret had no trouble not honoring da Costa’s epistolary orders.

In a missive to John Fothergill sent from the Netherlands in September 1748, da Costa seems to have changed his letter-writing tactics. First, he apologized to Fothergill for not having been a more faithful correspondent. However, da Costa’s explanation for his lack of output, the “Want of subject & Time,” further points to his disregard for a fuller engagement with the scientific community. Moreover, da Costa used the same excuse for not writing to Collinson, asking Fothergill to “Acquaint him of the reasons, for fear he should reproach me for neglect of friendship.”²⁸⁵ Six months earlier, da Costa had requested that Catesby tell Collinson and Fothergill essentially the same thing. Even when members of the epistolary web had little to report in the way of science, their commitment to regular correspondence insured that the process of transmitting information was part-and-parcel of participation in the community.

²⁸⁵ Da Costa to Fothergill, September 30, 1748. *Fothergill (John). Correspondence with E. M. da Costa 1746-1779*, ALS: British Library, Add. 28537 ff.123-124. Hereafter cited as *Fothergill/da Costa Correspondence*.

After da Costa finished his “apology,” he continued by discussing fossils and plants, then offering to procure specimens for Fothergill “or any of Our Naturalist friends” at a “sale of a most Curious Collection of fossils the 28th of next month at the Hague.” As always, however, da Costa put his own interests first, noting that he would fill orders “provided you do not want any specimens I design to buy.” Da Costa mentioned a forthcoming trip to Hamburg and continued to pander, telling Fothergill, “let me know what Commands you may have, for with pleasure I will execute them.”²⁸⁶ While it may seem that da Costa’s willingness to accommodate was a pretense, his offers were genuine. Rather, it was the style of presentation of such offers that evokes skepticism, mostly because of da Costa’s transparent self-interest.

In his letter to Fothergill, da Costa managed as best he could to keep the focus on issues other than asking for favors. However, the actual reason for this missive quickly became apparent. Da Costa wanted “some Letters of Recommendation” from Fothergill and Collinson, “especially for the Hamburg Naturalists as Anderson Van Sprieklsen or others you may have Correspondence with.” Da Costa would “be greatly obliged to you and Mr Collinson, & shall esteem it as a friendship done me.”²⁸⁷ Da Costa seemingly thought that the scientific community operated on a *quid pro quo* system, and wanted Fothergill to “ask Mr Collinson what command he may also have in my journey before my return to England.” Da Costa reiterated that Fothergill should tell Collinson, and also

²⁸⁶ *Ibid.*

²⁸⁷ *Ibid.* Anderson is unknown, but “Van Sprieklsen” is likely Johann Heinrich von Spreckelsen (1691–1764), botanist.

John Mitchell, “the reason of not writing to each in particular, is want of time.” In an attempt to deflect his lack of communication, da Costa acknowledged that he filled a request by Collinson and Mitchell for “seeds of those 2 Switzerland Pines.”²⁸⁸

At the end of the missive, da Costa told Fothergill where to send his “answer wth the Letter of Recommendation you also pleasure me with wch I with Impatience expect.” Da Costa was nothing, if not forward. His repetition of the request for the recommendation would not necessarily have been a problem, but da Costa’s expectation of fulfillment, not to mention his “Impatience,” may have been disagreeable to Fothergill. Of course, this is only speculation, but da Costa, who frequently annotated his draft copies with the date of the correspondent’s reply, wrote on this particular letter, “he did not answer it.”²⁸⁹

While the absence of a response from Fothergill suggests that da Costa may have worn out his welcome within the London scientific community, this was far from the case. Ehret continued as a correspondent, and in future years Fothergill supported da Costa financially.²⁹⁰ In fact, da Costa made great strides in his epistolary demeanor.

Writing to Johann Frederick Gronovius in July 1751, da Costa saw fit to report that there was “no other Literary news to inform you off than that there is just published a

²⁸⁸ *Ibid.*

²⁸⁹ *Ibid.*

²⁹⁰ For Fothergill’s financial support see “Rise and Fall of da Costa,” 589.

folio Nat. Hist. of Plants by Dr Hill after the Linnean System.”²⁹¹ This stands in contrast to da Costa’s former “Want of subject” excuse for not corresponding with members of the scientific community. Da Costa seems to have come to an understanding that regular communication itself mattered, not the amount of information contained in any single letter contained.

Da Costa also learned not to expect affirmative responses to his requests. In this fashion, he worked within the established norms of communication for the scientific community, rather than trying to set new standards himself. In 1752, da Costa was hard at work on his *A Natural History of Fossils* and enclosed copies of proposals for the work in a letter to Gronovius. Da Costa wrote, “I should be greatly obliged to you to recommend my said work as much as lies in your power.” Furthermore, da Costa asked “as a particular favour you will be so good to forward two of my said proposals to the Celebrated Linnaeus at Upsal in Sweden with whom you correspond.”²⁹² Notable here is da Costa’s shift in tone: he asked for what he wanted, but without imposing his will on the correspondent. Furthermore, da Costa identified a “particular favour” as such, as opposed to assuming that others would simply assent to his requests.

Da Costa also recognized the epistolary connection between the Dutch physician and the Swedish naturalist. Since he did not yet correspond with Linnaeus directly, da

²⁹¹ Da Costa to Gronovius, July 1, 1751. *Gronovius (Johann Frederick). Correspondence with E. M. da Costa*. ALS: British Library, Add. 28537 f. 383. Hereafter cited as *Gronovius/da Costa Correspondence*. “Dr Hill” is John Hill (1716-1775), English physician. The book is *A History of Plants*.

²⁹² Da Costa to Gronovius, May 18, 1752. *Gronovius/da Costa Correspondence*, f. 384. *A Natural History of Fossils* was published in 1757.

Costa relied on an established line of communication.²⁹³ Whether he finally understood the workings of the epistolary web is unclear, but da Costa's approach in this case was surely more effective than his earlier attempt to engage Catesby in a sustained correspondence.

Unfortunately, da Costa's good intentions went unrewarded. A note on the draft copy reads, "I do not find he ever answered it," echoing a similar outcome from four years earlier in his missive to Fothergill. Possibly, as discussed in Chapter Three, ongoing difficulties during the Seven Years' War prevented the letter from ever reaching Gronovius. However, there are no other extant letters between the two men after this one, which points to potential discontent on one side or the other.

Ehret too was the beneficiary of da Costa's modified letter-writing strategy. In October 1751, Da Costa wrote to Ehret about the acquisition of some botanical paintings from Japan that had been deposited in Oxford, where the artist was staying at the time. Again, da Costa recognized the importance of regular communication regardless of content. Concerning the Japanese artwork, da Costa wrote, "I suppose this piece of news had Been Communicated to you before by Mr. Collinson."²⁹⁴ Whether Collinson actually had informed Ehret of the existence of the botanicals is unknown, but da Costa's willingness to acknowledge other members of the scientific community without any reference to personal gain demonstrated a maturity lacking in earlier letters. On this

²⁹³ Da Costa and Linnaeus had a brief correspondence between 1757 and 1759. See *COL*, II: 488-495.

²⁹⁴ Da Costa to Ehret, October 15, 1751. *Ehret/da Costa 28536*, f. 266.

occasion, da Costa's engagement indeed reflected an understanding of both the scientific public sphere and the epistolary web.

Ehret's relationship with da Costa remained strong over the years, as evidenced by an August 10, 1757 missive. Ehret sent an invitation to da Costa to visit him at Shirburn Castle in Oxfordshire. Ehret also "wrote at the same time to Mr. Collinson and Mr. Ellis, pray contrived so to come altogether." Most notable here is the ultimate source of the invitation: the Royal Society president and astronomer Lord Macclesfield, who owned the castle and built an observatory there.²⁹⁵ Da Costa, however, was unable to attend the gathering because of time constraints.²⁹⁶ He gave no other reason for his absence, although his attendance would surely have furthered his position within the scientific public sphere. Ultimately, declining the invitation had no effect on da Costa's standing.

By this time, da Costa had been a member of the Royal Society for nearly a decade, so the offer to visit Macclesfield's estate would not have been unusual. Ehret did not mention extending the invitation to da Costa in his letter to Collinson. However, Ehret's invitation clearly illustrates the good relationship between himself and da Costa, as well as da Costa's cordial relations with Collinson and Ellis.

²⁹⁵ Ehret to da Costa, August 10, 1757. *Ehret/da Costa 28536*, f. 275. "Mr. Ellis" is John Ellis. In this letter, the German-born Ehret utilized two different spellings of "Shirburn," neither of which were correct. For the invitation to Collinson and Ellis, see Ehret to Collinson in *Collinson (Peter), Letters to Peter Collinson, 1725-1790*, Vol II., ALS: British Library, Add. 28727 f. 52.

²⁹⁶ Da Costa to Ehret, August 16, 1757. *Ehret/da Costa 28536*, f. 276.

About a week before Ehret sent the invitation to Shirburn Castle, da Costa wrote to Linnaeus. He replied on November 9, noting that da Costa's letter had "been read at a full meeting of the Royal Academy of Sciences," just a few days earlier. Linnaeus complimented da Costa on his "unparalleled knowledge and rare learning." However, the Swedish naturalist wondered what had become of *A Natural History of Fossils*, which da Costa had sent through one Mr. Brander.²⁹⁷ Linnaeus, who did not often comment on the process of scientific communication, asked on behalf of the Academy, "how Mr. Brander has forwarded the book," since the membership was "extremely anxious to possess what is likely to be so useful to science." Furthermore, Linnaeus himself desired da Costa's treatise, as he was "occupied in preparing the 10th edition of the *Systema Naturae*, with numerous additions," and "I intend to quote it, with due commendation." Linnaeus then reiterated that da Costa should "forward it to us as soon as possible."²⁹⁸ Linnaeus spent a career accumulating knowledge and disseminating it through letters and print. Da Costa's missing volume was clearly a reminder that the movement of ideas, regardless of the medium, was subject to conditions beyond the control of either the sender or the recipient.

Da Costa replied to Linnaeus on February 10, 1758. Apparently, "a tedious illness" had kept da Costa from writing sooner. Once "restored to health," da Costa contacted Brander, who reassured da Costa that the copy of *A Natural History of Fossils*

²⁹⁷ Gustav Brander (1720-1787), born in Sweden, was a merchant in London and collected fossils.

²⁹⁸ Linnaeus to da Costa, November 9, 1757. *COL*, II:488-489. Da Costa's August 5, 1757 missive is no longer extant.

“had been forwarded long ago by a safe conveyance.”²⁹⁹ Bander had postulated that “the early setting in of the frost might have delayed its arrival.” While the Seven Years’ War could have been the source of the delay, it was not mentioned by Linnaeus, da Costa, or Brander.

After expressing his thanks to the Royal Academy and Linnaeus for the anticipated receipt of his book, da Costa returned to a familiar theme. He wished “to cultivate an epistolary correspondence” with Linnaeus, “especially on the subject of Natural History.” Da Costa then asked Linnaeus to send da Costa’s “best respects to the excellent Mr. Wallerius.” Johan Gottschalk Wallerius (1709-1785) was a physician, chemist and, of particular interest to da Costa, a mineralogist. Da Costa informed Linnaeus that he had “already communicated” with Wallerius. Clearly aware of his former failures in the pursuit of establishing correspondence, da Costa assured Linnaeus that both he and Wallerius could “depend on my ever conducting myself with due respect towards correspondents of such distinction.” Moreover, da Costa was prepared “to render any service in my power.”³⁰⁰ Although da Costa once again sought only limited epistolary connections to the scientific community, he removed most of the self-serving prose that previously characterized his letters. Unfortunately, he did not remove all of it.

“I beg leave to recommend myself to your illustrious Society in general, as well as to each of its members in particular,” da Costa continued. Referring to the success of

²⁹⁹ Da Costa to Linnaeus, February 10, 1758. *COL*, II:489-490.

³⁰⁰ *Ibid.*, 490. Since Wallerius was a physician, it is unusual that da Costa did not refer to him as “Dr.” in his letter.

his submission that had been read at the Academy's November meeting, da Costa thought he was "worthy to become a member" of the institution.³⁰¹ As it turned out, Linnaeus and the rest of the membership thought otherwise.

Over a year later, in February 1759, Linnaeus replied to da Costa. *A Natural History of Fossils* had finally made its way to Linnaeus, although it likely had been physically in Sweden for quite sometime. Apparently, da Costa's book had "been put aside in the warehouse at Stockholm, where it was at last found more by accident than intention." The Swedish naturalist and his Royal Academy associates praised the work for its completeness and originality. But while Linnaeus was asked by the Academy to send "the thanks of all the members," he made no mention of da Costa's self-nomination.³⁰² In October, da Costa acknowledged the February missive, expressing happiness that his work had, at long last, been received. After thanking Linnaeus and the Academy for their compliments, da Costa discussed his "earnest wishes" for Academy membership once again. "But as you pass over this subject in absolute silence in your last letter," da Costa wrote, "I cannot but conjecture that I have been judged unworthy of the honour." Da Costa asked for an explanation while insisting that he still had the utmost respect for the Academy.³⁰³ Da Costa, clearly unhappy with the decision, spent the rest of the missive on other topics.

³⁰¹ *Ibid.*, 490-491.

³⁰² Linnaeus to da Costa, February 27, 1759. *COL*, II:491-492.

³⁰³ Da Costa to Linnaeus, October 5, 1759. *COL*, II:492-493.

Attempting to elevate his correspondence with Linnaeus to a level of importance above that of membership in the Academy, da Costa noted “the high gratification” from not only the exchange of letters, but also of fossils. Moreover, da Costa was “in want of certain Swedish fossils,” and offered to “communicate English ones in return.” Da Costa then related considerable amount of information from “Our mutual friend, the worthy and learned” artist-naturalist George Edwards. Linnaeus and Edwards exchanged letters, albeit infrequently. In this case, Edwards had received a missive from Linnaeus, and utilized da Costa as an intermediary instead of sending a reply himself. Da Costa reported that Edwards had sent “proof impressions of 25 plates of the second volume of his *Gleanings*” that Edwards was going to publish, “God willing,” in March 1760.³⁰⁴ As an intermediary, da Costa reported the information he received from Edwards faithfully and in detail. However, this does not reflect a change in da Costa’s own engagement with the epistolary web. But da Costa’s focus on the transmission of knowledge via print culture reflected his own interests as well.

Having “no further literary intelligence,” da Costa hoped for a quick reply from Linnaeus, “abounding with literary news.” Then da Costa closed the missive by wishing Linnaeus “all publick and private happiness” and good health.³⁰⁵ Da Costa never received a response to this letter, nor did he ever correspond with Linnaeus again. Sir James

³⁰⁴ *Ibid.*, 493-494. Although time was a factor in any correspondence between London and Sweden, any exchange with Linnaeus was subject to the naturalist’s poor corresponding habits. Edwards likely knew this very well. “*Gleanings*” is *Gleanings of Natural History*, 3 vols. (1758-1764).

³⁰⁵ *Ibid.*, 494-495.

Edward Smith, founder and president of the Linnean Society, as well as editor of the Swedish naturalist's correspondence, offered a possible explanation.

In 1821, Smith wrote, "We have found no answer to this letter among the papers of Linnaeus, nor in the correspondence of Da Costa." According to Smith, da Costa took "great offence" when he was passed over for membership in the Royal Academy. Moreover, da Costa blamed the rejection on Linnaeus. Apparently, Smith heard da Costa discuss his dissatisfaction on many occasions. Smith maintained that the Academy exercised judiciousness "in its choice of foreign members," and da Costa had offended them by nominating himself.³⁰⁶

Although da Costa was forced from his post as Royal Society clerk in 1767, he continued to associate with members of the London scientific community.³⁰⁷ Smith, a botanist, was elected to Royal Society membership in 1785, six years before the death of da Costa. Thus, the two men likely had interacted with some frequency. However, Smith, who was a member of both the Royal Society *and* the Royal Academy, may have been influenced by da Costa's soured relations with both institutions when he wrote about da Costa and Linnaeus in 1821.

George Edwards, while not a frequent participant in the epistolary web, was nonetheless entrenched in the scientific public sphere. Da Costa understood this since Edwards was both a member of the Royal Society and the librarian for the College of Physicians. In December 1762, Edwards wrote to da Costa, "I have Just Sold all My

³⁰⁶ *Ibid.*, 495.

³⁰⁷ *Ibid.*, 495. For the dismissal of da Costa, see "Rise and Fall of da Costa," 592-593.

Drawings of Birds &c to Lord Bute, I suppose for the Kings Use. He payd me for them £300-0-0.”³⁰⁸ This would have been of particular interest to da Costa, who had mentioned the second volume of “Gleanings” in his final missive to Linnaeus in 1759. Edwards probably told da Costa of work on the third and final volume, but why Edwards chose to write a note about the sale is unknown. Da Costa had yet to be appointed librarian for the Royal Society, so clearly it was not for the Society’s records. However, the information in the note is telling.

John Stuart, Lord Bute (1713-1792), though more (in)famous for his role as tutor and advisor to the would-be George III, was himself a botanist and instrumental in the development of the Royal Botanical Gardens at Kew, popularly known as Kew Gardens. Although Bute briefly served as Prime Minister, his political influence diminished quickly after the ascension of George III to the throne. However, Bute’s botanical work flourished until his death. At the time Bute acquired the Edwards drawings, he was still in the good graces of the King, thus the remark by Edwards in his note to da Costa.

A broad engagement with the epistolary web eluded da Costa. Content to establish single lines of communication, he never participated in the conversations of the scientific letter-writing community. However, da Costa’s correspondents included many of those

³⁰⁸ Edwards to da Costa, n.d.. *Edwards (George), Correspondence with E. M. da Costa 1758-1763*. British Library Add. 28536 f. 251. The December date is culled from an entry containing the same information in Peter Collinson’s *Commonplace Book*. See *Collinson Commonplace Book*, f. 209. Collinson also noted that these were the original drawings. The third and final volume of *Gleanings of Natural History* was officially published in 1764, but Edwards had obviously completed the artwork by this time.

practitioners. Da Costa's primary interest was advancing his own career, but given his vast epistolary output, it is remarkable that he opted to limit himself.

Swedish botanist and naturalist Pehr Kalm shared many traits with da Costa: dedication to scientific practice, the desire to disseminate knowledge to a broader audience, and an ability to irritate many of those around him.³⁰⁹ Clearly gifted, Kalm was elected to membership of the Royal Academy at age thirty, then given a professorship at the University of Åbo two years later. Kalm's inclusion in the Royal Academy was not the only difference between himself and da Costa, however. While da Costa was often self-serving, his offers for the exchange and the procurement of specimens were genuine. By contrast, Kalm used the scientific community purely to his own ends. While his scientific brilliance and boundless energy were never questioned, Kalm's arrogance became his most noticeable trait. By avoiding contact with members of the British scientific community except when he deemed it absolutely necessary, Kalm placed himself outside the epistolary web and the scientific public sphere. Kalm's university education influenced his interactions with the scientific community. Unlike his teacher Linnaeus, Kalm took a dim view of the less-educated British practitioners, particularly in America. Like many of his European counterparts, he saw them as mere collectors, whose primary responsibility was to gather specimens for a "real" man of science, like Kalm himself. For Kalm, the lack of an advanced education precluded any sort of valid

³⁰⁹ Kalm is frequently referred to as "Peter" Kalm by English speakers, both in his own time and afterwards.

contribution to science—one of the reasons that he so thoroughly dismissed the colonial natural historians and natural philosophers.

In order to acquire natural history knowledge, as part of his plan to find useful agricultural plants for Sweden, Linnaeus sent Kalm to North America in 1748.³¹⁰ Kalm remained until 1751, and upon his return to Sweden, published the journal from his stay in the British colonies and French Canada. The publication was translated into four languages over the following two decades, but did not appear in English until 1771.³¹¹ The delay of the English version was only one of the many ways Kalm aggravated the British scientific community. However, Kalm's initial contact with the practitioners of science in London went smoothly.

After leaving Sweden and before sailing to America, Kalm stopped in London, procuring letters of recommendation from Peter Collinson and John Mitchell, clearly at the direction of Linnaeus. Prior to his departure from Sweden, Kalm is never mentioned in the correspondence between Collinson and Linnaeus. However, Kalm delivered a letter of introduction from Linnaeus to Mitchell.³¹² Although the letter is no longer extant, in it Linnaeus likely asked Mitchell for a recommendation for Kalm. Since Collinson also

³¹⁰ For Linnaeus's instructions to Kalm for the latter's visit to North America, see Lisbet Koerner, *Linnaeus: Nature and Nation* (Cambridge, Massachusetts and London, England: Harvard University Press, 1999), 117-118.

³¹¹ A thoroughly accurate English version was not available until 1937. See Adolph Benson, *ed. and trans., Peter Kalm's Travels in North America*, 2 volumes (New York: Wilson Erickson, 1937).

³¹² Mitchell to Linnaeus, August 10, 1748. *COL*, 2:444. For Collinson's letter of recommendation for Kalm, see below.

wrote a recommendation for Kalm, he too was probably the recipient of a letter from Linnaeus.

Recommendations for Kalm came not only through intermediaries, but also by Linnaeus himself. Both John Bartram and James Logan received letters written by the Swedish naturalist. While the letter to Logan was apparently sent prior to Kalm's departure for America, Bartram noted in his reply to Linnaeus, "I received thy kind letter by the hands of our Curious friend Mr Kalm whome I have had ye pleasure to converse with," and "I value not onely for thy sake by for his own ingenuity."³¹³ Clearly, Kalm had made a favorable impression with Bartram, although both Logan and Benjamin Franklin reserved judgement.

After Kalm landed in Philadelphia in early September 1748, he met with Franklin, and then "went immediately into the country to botanize."³¹⁴ Kalm's absence quickly became Franklin's obsession. Complaining to Cadwallader Colden in late September, Franklin noted, "I have not seem him since the first Day he came."³¹⁵ Then on October 18, Franklin wrote to Collinson, "Mr. Kalm has been much out of Town since his Arrival, and is now gone to New York."³¹⁶ Twelve days later, Franklin sent a letter to Logan detailing his first meeting with Kalm, including the receipt of the recommendations from Collinson and Mitchell. Repeating what he had told Collinson concerning Kalm's swift

³¹³ See Logan to Franklin, November 9, 1748. *PBF*, 3:326 and Bartram to Linnaeus, [Fall 1748]. *COJB*, 293. Neither letters are extant.

³¹⁴ *PBF*, 319n4.

³¹⁵ Franklin to Colden, September 29, 1748. *PBF*, 3:319.

³¹⁶ Franklin to Collinson, October 18, 1748. *PBF*, 3:321.

disappearance from Philadelphia, a somewhat irritated Franklin told Logan, “I invited him to lodge at my house, and offered him every service in my power.” But Franklin’s disposition changed when Kalm “was now come to settle in town for the winter.” Logan had expected Kalm to visit, but he had yet to do so. Logan had written to Franklin two days earlier, noting that Kalm might have intentionally been avoiding him. Franklin reassured Logan that Kalm was not neglecting him, but that Kalm went to see a fellow Swede in New Jersey had been very ill, and in fact, was dead when Kalm arrived.³¹⁷ Franklin gave Kalm the benefit of the doubt, for the time being.

“I know not what to think of Kalm,” Logan wrote in his November 9 letter to Franklin. Though still unsure, Logan too seemed willing to forgive Kalm for not visiting. Logan noted that “tho’ I’m very Sensible Age and the Palsey have weakened me much,” he would gladly entertain Kalm even though “the hesitation in my Speech has greatly disabled me.”³¹⁸ Logan, in his seventies, had grown infirm, though he still had his mental faculties intact. As it turned out, Kalm did not call on Logan until 1750. It seems that Kalm did not fully comprehend Logan’s stature as perhaps the most learned man in the colonies. Since Linnaeus sent Logan Kalm’s recommendation directly, Linnaeus surely briefed Kalm on Logan’s position within the intellectual community before he left Sweden.

³¹⁷ Franklin to Logan, October 30, 1748. *PBF*, 3:323-324. Logan’s letter to Franklin of October 28, 1748 is no longer extant.

³¹⁸ Logan to Franklin, November 9, 1748. *PBF*, 3:326 and 3:326n4. Logan would, in fact, lose his ability to speak entirely. See Franklin to Colden, June 28, 1750. *PBF*, 3:483.

In February 1749, Collinson wrote to Colden, “I am glad Mr Kalm has been with you[,] you’ll find Him an indefatigable Ingenious Man,” but “pray tell Him I do not take kindly his not giving mee a Line.”³¹⁹ In return for his recommendation, Collinson simply wanted Kalm’s occasional correspondence. The epistolary web did not trade in “polite letters,” but rather in *acknowledgement of communication*.³²⁰ Furthermore, common courtesy should have dictated Kalm’s behavior in this case. In other words, even a brief note from Kalm to Collinson would have sufficed, and had the additional function of placing Kalm within the correspondence network. Long or short, a letter served not only as a line of communication, but also as a signal that the line was open.

Although they had received letters of recommendation from colleagues they trusted, Franklin, Logan, and Collinson likely entertained the thought that Kalm’s behavior was not necessarily worthy of such high praise, at least on a personal level. John Bartram probably felt similarly after receiving a letter Kalm sent from Quebec in August 1749. Kalm had gone to Canada as part of his North American survey. “I am obliged to stay here myself to the middle of September,” Kalm wrote to Bartram, “to have several seeds which not can be ripe before.” Bartram certainly would have endorsed this strategy regarding seed-collection. In the meantime, Kalm sent his “servant-man” from Quebec “to Philadelphia to gather there seed of all trees and herbs he can find,” or those which Kalm had previously identified himself. Kalm then commented on the diversity of

³¹⁹ Collinson to Colden, February 24, 1748[/49]. *LPCC*, IV:103.

³²⁰ David Shields describes the exchange of “polite letters” whereby a letter-writer always waited for a reply before sending another missive. See Shields, *Civil Tongues*.

vegetation in both Canada and Pennsylvania, specifically pointing out that many did not grow in the northern climate of Canada.³²¹ Again, Bartram would have surely been pleased with Kalm's observations. However, the content of the letter changed, in ways that Bartram likely did not expect or approve.

Kalm informed Bartram that "Fifteen years ago, when the French King did send several of his learned men to Swedland to measure there a degree of latitude by the North Pol," the King of Sweden "let them have all thing the[y] wanted gratis, or for nothing." As repayment, "the French King have given orders to this gouverneurs herein Canada" that Kalm receive like treatment. Kalm went on to list the necessities and the luxuries afforded him during his stay, repeating that "the French King he pays that all."³²² Kalm obviously thought that he and his "servant-man" should receive similar treatment from Bartram.

"You can, sir, inform my man in several things where he can find some rare plants, pray do it." Kalm continued his orders, "show him all places, where you have seen some small Mulberry Trees, or Grapes, but especialement, Mulberry Trees, – these I cannot have too many." Moreover, Kalm wrote impudently, "I am persuaded it will be a pleasure for you to assist me." When he returned to Philadelphia, Kalm promised, "I can inform and satisfy your curiosity in great many things in all parts of Natural History."

³²¹ Kalm to Bartram, August 6, 1749. *COJB*, 304-305.

³²² *Ibid.*, 305. "Swedland" is Sweden.

However, in the interim, Kalm suggested that his servant “can in [a] great many things, too, satisfy your curiosity.”³²³

The demanding nature of Kalm’s missive would have offended Bartram in several ways, but unfortunately, Bartram left no extant record that refers to the letter sent by Kalm. However, where the “French King” was concerned, nothing that Kalm had to say about the French monarch, no matter how positive, would not sit well with Bartram, or most other British subjects. Ongoing tensions between Britain and France would, in a few short years, fully manifest themselves as the Seven Years’ War, or as it was known in America, the French and Indian War. Political issues aside, Kalm seemed to assume that Bartram had nothing better to do than assist Kalm’s assistant in a search for small mulberry trees. Linnaeus surely desired the trees as a source for silk production in his plan for Sweden’s self-sufficiency, even though Kalm had not told this to Bartram.³²⁴ An explanation may have made Bartram more receptive to Kalm’s orders, since Bartram would have seen the request as coming from Linnaeus, whom he respected. Moreover, the implication that Kalm’s servant knew more about natural history than Bartram was certainly a cause for resentment, as it rejected the intellectual ability of not only Bartram, but of all his colleagues in America.

Like da Costa, Kalm had no difficulties ordering his correspondents to do his bidding. Kalm’s letter to Bartram clearly reflects this attitude. Also similar to da Costa, Kalm expected positive responses to such orders. Perhaps his position as a Linnaean

³²³ *Ibid.*, 305

³²⁴ Mulberry leaves are the only food source for the silkworm.

“disciple” gave Kalm a sense of superiority, and his condescension toward Bartram seems to have been consistent with such entitlement.

“I have Spent most of this day for the first time with thy friend Kalm accompanied with B. Franklin,” Logan wrote to Collinson in February 1750. Logan’s impression of Kalm was no different than it had been earlier. “I know not what to make of him,” Logan noted, repeating almost word-for-word what he had written to Franklin in November 1748. Furthermore, Kalm had not visited anyone that Logan knew “during the 8 months or more that he had been here,” with the exception of Bartram or Franklin. In part, Logan’s suspicions involved Kalm’s visit to French Canada and plans for a second such trip. Escalating tensions between France and England were cause for alarm for Logan, given that France and Sweden were on friendly terms. However, Logan dismissed any potential trouble arising from the Swedes in the British colonies fighting alongside French forces from Canada should war break out. According to Logan, the existing Swedish population had become “Anglified,” thus their threat would have been nonexistent.³²⁵

Identifying Kalm as *Collinson’s* friend, Logan demonstrated that he was no longer ambivalent about Kalm, but rather, distrustful of the Swedish visitor. Kalm’s eight-month sojourn in Philadelphia without calling on Logan was clearly an irritant as well. However, the close relationship between Logan and Franklin likely prevented the former from expressing his feelings to the latter. It seems that Logan did not want to influence

³²⁵ Logan to Collinson, February 28, 1749/50. *PBF*, 3:469-470.

Franklin's opinion of Kalm. Given Kalm's unwillingness to communicate with most British Americans, Logan may have wanted to insure at least one avenue of contact. Thus, Logan vented to Collinson. Moreover, the correspondence suggests Collinson kept Logan's criticisms of Kalm to himself, never relaying them to Franklin.

Cadwallader Colden was more fortunate in his dealings with Kalm than Franklin, Logan, and Bartram. Colden's experience began with a letter that Kalm sent from Philadelphia. Much of the letter's content detailed Kalm's plans for his stay in North America. Ironically, it was enclosed with the missive Franklin sent to Colden complaining about Kalm's absence.³²⁶ Writing to Linnaeus after Kalm's departure from America, Colden noted that "Mr. Kalm has so much more knowledge in Botany and Natural History than any in this country can pretend to." Furthermore, Kalm "risqued such dangers" to himself in his travels through the backcountry "in the pursuit of knowledge." According to Colden, Kalm was "so industrious, I could not persuade him to stay above one night at my house," even though Colden thought Kalm needed "some ease and refreshment" after the "fatigues he underwent."³²⁷ Twenty years later, Colden's positive view of Kalm changed dramatically, but for the present, the "industrious" Kalm had Colden's complete support. Furthermore, support was also forthcoming from Franklin.

³²⁶ Kalm to Colden, September 29, 1748. *LPCC*, IV:77. Enclosed in Kalm's letter was a letter from Linnaeus to Colden, no longer extant.

³²⁷ Colden to Linnaeus, February 1, 1750/51. *COL*, II:457-458.

“Our Friend Mr. Kalm goes home in this Ship,” Franklin wrote to Collinson in February 1751. Sounding not unlike Colden, Franklin continued, “I love the Man, and admire his indefatigable Industry.”³²⁸ Kalm stopped in London and once again met with Collinson. The two men “had many conferences;” John Bartram’s lack of literary output was the topic on at least one occasion. Kalm regarded Bartram very highly in “Most things,” but was upset that Bartram did not keep a journal with “Many Curious Articles” of his travels and discoveries. Kalm told Collinson that Bartram told him many stories, which Kalm would have added to his own journal had there been time to record them.³²⁹ Kalm’s admonishment of Bartram echoes the desires of Cadwallader Colden in 1744 and prefigured those of Benjamin Franklin in 1769 for Bartram to produce a natural history of America.³³⁰

While only speculation, it seems possible that Franklin’s gracious attitude toward Kalm was the result of Franklin’s own engagement with science at the time Kalm was in America. Having retired from the printing business, Franklin was just beginning to focus seriously on science. He had begun his electrical experiments the year before Kalm arrived, and continued them after Kalm’s departure. While one historian has portrayed Franklin’s scientific endeavors as an almost nonstop lifetime venture, the five-year period he spent working on electricity clearly overshadows his more sporadic, though no less

³²⁸ Franklin to Collinson, February 4, 1750/51. *PBF*, 4:113.

³²⁹ Collinson to Bartram, April 24, 1751. *COJB*, 324.

³³⁰ For Colden’s request of Bartram, see Colden to Bartram, October 24, 1744, *COJB*, 246. For similar requests by Franklin, see Franklin to Bartram, January 9, 1769 and July 9, 1769, *COJB*, 708 and 713.

worthwhile, forays into science.³³¹ However, Franklin's role as a facilitator of scientific knowledge more accurately depicts his life-long continuous commitment to science.

In November 1752, Bartram replied to a March letter from Johann Frederick Gronovius: "I am in expectation of enjoying great satisfaction by thy next letter & Kalm's Catalogue of plants which thee mentions thee desighns to send me."³³² Gronovius was either in contact with Kalm, or, what seems more likely, had been informed by Linnaeus about Kalm's intention to produce such a work. A year later, Bartram asked Linnaeus, "Pray how doth our friend Peter Kalm go on with ye description of ye plants of our Country"? Unlike the query he sent Gronovius, Bartram added that Kalm "would do me Justice in mentioning what Plants or specimens I shewed him." Moreover, Bartram noted that Kalm was going to send a copy "as soon as printed."³³³ His letter to Gronovius contained no mention of Kalm sending the publication directly. The following month, Bartram wrote again to Gronovius, who still had not replied to Bartram's query from the previous year. Bartram repeated, "Thee gave me an expectation of sending me Peter

³³¹ See Joyce Chaplin, *The First Scientific American: Benjamin Franklin and the Pursuit of Genius* (New York: Basic Books, 2006). Chaplin places science on equal footing with business, political, and intellectual activities in Franklin's life, which is a useful approach for historians of science. However, it was precisely those non-scientific activities often made it possible for him to pursue science with the vigor that Chaplin claims.

³³² Bartram to Gronovius, November 30, 1752. *COJB*, 339-340. The March 24, 1752 letter from Gronovius is no longer extant.

³³³ Bartram to Linnaeus, November 11, 1753. *COJB*, 355. In *COJB*, the editors have reprinted both the copy Bartram sent to Linnaeus, as well as the draft copy Bartram kept. In the former, Bartram begins with a description of a new species in great detail, then moves on to ask about Kalm's publication. In his draft, Bartram opens with his query about Kalm, then gives a less-detailed description of the new plant.

Calm's Catalogue of Our American Plants but I have heard no more about it."³³⁴

Gronovius never responded to the inquiry. Bartram, however, could not get the issue resolved until 1756, almost for years after he first wrote to Gronovius about it.

Writing to Philip Miller in April 1755, Bartram had learned of the publication of Kalm's travels in America. This time, Bartram repeated what he had written to Linnaeus: "I long to see these books to see if they have done me justice as Kalm promised." Then Bartram added, "Dr Gronovius promised to send them to me as soon as they came to hand."³³⁵ Miller replied in September, but due to conditions on the Atlantic brought about by the Seven Years' War, that missive never reached Bartram. Miller suspected "it may miscarry," so he wrote again in February 1756 and informed Bartram, "Kalm has published two volumes of his observations." Moreover, Miller knew of no one that had read it.³³⁶ Miller's words offered a less-than-satisfactory conclusion for Bartram. However, even if Bartram had received Kalm's work before Miller had written, Bartram would have been disappointed. On opening the parcel, Bartram would have seen that the books were published in Swedish.

The discrepancies in Bartram's correspondence about Kalm's "Catalogue" raise questions that do not have satisfying answers. First, *when* was Kalm's catalogue going to

³³⁴ Bartram to Gronovius, December 6, 1753. *COJB*, 356.

³³⁵ Bartram to Miller, April 20, 1755. *COJB*, 380.

³³⁶ Miller to Bartram, February 2, 1756. *COJB*, 396-397. The correspondence of Miller and Bartram, which took place entirely during the Seven Years' War, was fraught with difficulties. A complete examination follows in Chapter Four.

be published? Bartram's missive to Linnaeus provides a clue, and might very well have been a calculated strategy to spur Kalm into publication. Indeed, the logic was simple enough: Linnaeus, already well-acquainted with Bartram's botanical contributions, would repeat what Bartram had said Kalm had promised, and would insist his student print his North American observations sooner rather than later. However, Kalm's work was published before Bartram's letter ever reached Linnaeus, although there was no way Bartram could have known that.

Next, *who* was going to send Kalm's books, Gronovius or Kalm himself? If Bartram had hatched a plan to encourage Kalm's publication, Bartram could have included information that Kalm was sending the work in his letter to Linnaeus as extra incentive. However, the evidence suggests that Bartram expected Gronovius to do so. But evidence also points to another possible outcome: that Gronovius told Bartram Kalm was sending the finished publication, or at least that was the intention. To make matters worse, Gronovius may have mentioned both scenarios.

Language differences contributed to the problem. Recall Bartram's difficulties with a missive containing "usefull instructions of which those of Doctor Gronovius is very curious," which was "so mixed with Latin" that he wanted Colden's help with a translation. Bartram also wrote of Gronovius, "I can understand his English prety well."³³⁷ In addition to admitting his own difficulty with Latin, Bartram here did not exactly give high marks to Gronovius for English. So, any letter Gronovius received from

³³⁷ Bartram to Colden, October 4, 1745. *COJB*, 260.

Linnaeus regarding Kalm's publication endeavors was likely the ultimate source of the current predicament. If Gronovius translated the information from Linnaeus incorrectly into English, Gronovius could have accidentally written that he himself, not Kalm, was going to send Kalm's finished work, while at the same time (read: in another sentence) saying Kalm was shipping the material. Moreover, it was not simply translating Linnaeus's Latin into English: since Gronovius likely translated then Latin into Dutch first, then the Dutch into English. Although Bartram sought validation for his work on a regular basis, he also implicitly understood the public nature of correspondence. Thus, he would have not offered two different versions of the same event to two different correspondents. Clearly, something went awry somewhere.

Whatever the actual circumstances surrounding the transmission of Kalm's publication, the complexity of this situation speaks directly to the remarkable nature of the epistolary web. The dissemination of information came first, sometimes without regard for the potential problems associated with moving knowledge. Here, the problem, the translation between not one, but two languages, added a layer of difficulty that proved confusing for the end recipient.

Unlike Bartram, Peter Collinson apparently received notice of the publication of Kalm's journal soon after its release. In March 1754, Collinson advised Franklin that "Your paquet for Proffessor Kalm will go by first Ships," and "He is now publishing his american Travels in Sweedish, but Wee hope to see It translated in some more Intelligible

Language.”³³⁸ A few days later, Collinson wrote to Colden, “Professor Kalm is publishing his *Travels & observations on his American Expedition* - in Swedish - but Wee hope to See it translated into Some more Intelligible language.”³³⁹ Collinson’s message to Colden was contained in a postscript, suggesting Collinson had copied the words from the still-unsent letter to Franklin. Writing duplicate information to multiple correspondents was commonplace, but it seems Collinson enjoyed his own phraseology here, even editing it somewhat when copying it for Colden. However, Collinson was justifiably cautious in his next letter to the Swedish Linnaeus. Showing the kind of restraint that often eluded both da Costa and Kalm, Collinson wrote to Linnaeus in April, and chose his words carefully. “I am glad to hear our worthy friend Professor Kalm’s *Voyage* is printed,” and then Collinson hoped, “some ingenious man will translate it into either Latin, English, or French.” Although Collinson may have thought about his earlier phrasing, using it would have been insulting to Linnaeus. Collinson’s hopes for an English version of Kalm’s work would not be fulfilled within his own lifetime.³⁴⁰ Linnaeus apparently did not discuss Kalm’s publication with Collinson. Kalm was never again the subject of any conversation between Linnaeus and Collinson.

Philip Miller concurred with Collinson’s assessment for the need for a translation from the Swedish. “I do not understand it,” wrote the Chelsea gardener, “so I have not

³³⁸ Collinson to Franklin, March 7, 1754. *PBF*, 5:230.

³³⁹ Collinson to Colden, March 10, 1754. *LPCC*, IV:379.

³⁴⁰ Collinson to Linnaeus, April 20, 1754. *COL*, I:32. The first English translation was not published until 1770.

been curious enough to send for the book.”³⁴¹ No evidence exists that any member of the British scientific community on either side of the Atlantic had a reading or speaking knowledge of Swedish before 1760.³⁴²

Swedish royal funding of Kalm’s journey caused South Carolina physician and naturalist Alexander Garden to reflect on why Kalm’s book was published in Swedish first. Furthermore, Garden was displeased that the Swedish scientific community in general, and Kalm in particular, were unwilling to share the knowledge acquired in North America with the wider scientific community. Writing to John Ellis in March 1755, Garden theorized, “the advantages of such discoveries,” as well as “the entire honour should be the invaluable possession of Sweden,” since the King of Sweden commissioned the affair. Speaking for the broader scientific community, Garden sarcastically added, “we should by no means reap the advantages of their labours or public-spiritedness.”³⁴³ Garden was, correctly of course, suggesting that it was not Kalm alone who provided Sweden with scientific knowledge of North America, but rather the cooperative nature of British scientific practitioners on both sides of the Atlantic.

Kalm raised the ire of some members of the British scientific community in America during his stay, and continued to do so long after his return to Sweden. Moreover, Kalm’s list of detractors after his departure from North America. Bartram,

³⁴¹ Miller to Bartram, February 2, 1756. *COJB*, 396-397.

³⁴² A discussion of the arrival in London of Daniel Solander (1733-1782), who like Kalm, was a student of Linnaeus, appears in Chapter Five. Solander traveled on Captain Cook’s first voyage. Like German-born Georg Dionysius Ehret, Solander made London his home, served as a librarian for the British Museum, and integrated himself into the British scientific community.

³⁴³ Garden to Ellis, March 25, 1755. *COL*, 1:346.

writing to Linnaeus in March 1753, spoke on behalf of his colleagues, “We are all surprised that we have not one letter from Peter Kalm whom we are ready to tax with ingratitude.”³⁴⁴ He echoed Collinson’s complaint to Colden of February 1749.³⁴⁵ Bartram’s usual deference to practitioners of high scientific status was clearly not present in this postscript. Also notable was Bartram’s intentional use of “we,” stressing the collective nature of the complaint. Perhaps, Bartram still bore ill-will towards Kalm after the “servant-man” episode three-and-a-half years earlier. In addition, Kalm’s lack of correspondence irritated Bartram. Reiterating his disdain in his November 1753 missive to Linnaeus, Bartram noted that Kalm had not written “since he left my house.”³⁴⁶

Regular correspondence was the foundation of the scientific community, as Bartram, and many others, of course, understood it. Kalm had been offered every kindness during his time in Philadelphia, and the only repayment Bartram *needed* was a letter. Furthermore, Bartram reflected a communal opinion, insofar as the expected regular communication, concerning Kalm. Eventually, even Kalm’s more fervent supporters, Cadwallader Colden and Benjamin Franklin, became disenchanted with Kalm.

Colden’s son David Colden (1733-1784) wrote to Franklin in late 1772, expressing surprise after having read “the Abstracts from Mr. Kalm’s account of his Travels in America.” The younger Colden learned that his father had told Kalm “a

³⁴⁴ Bartram to Linnaeus, March 20, 1753, *COJB*, 346.

³⁴⁵ See above.

³⁴⁶ Bartram to Linnaeus, November 11, 1753, *COJB*, 355.

wonderfull Story” about “a black Snake that attacked one of our Servants.” David Colden had not heard anyone in the family tell this tale, nor did he remember it himself. The elder Colden was perplexed as to “how Mr. Kalm came to father such a Story upon him,” since “no such Thing ever happend in our Family, or to any one that he ever heard of.” Kalm “could not have got it from him.” David Colden then related a narrative Kalm had written about one particular group of Indians who “could out run the swiftest Horses. And a Frog out run the Indians.” Kalm also repeated the often-told tale about “a Snake facinating a Bird,” but the bird drove off the snake, successfully defending the nest and chicks. David Colden dismissed it as folklore.³⁴⁷ Franklin’s reply reflected his knowledge of the English edition of Kalm’s publication.

Writing from London in March 1773, Franklin told David Colden, “Kalm’s Account of what he learnt in America is full of idle Stories, which he pick’d up among ignorant People.” Strong words from a formerly strong supporter, and more followed. Kalm had attributed stories “to Persons of Reputation,” Franklin continued, due to “either forgetting of whom he had them, or willing to give them some Authenticity.” Obviously, these “Persons of Reputation” were surprised when they found their names attached to Kalm’s stories. Moreover, Franklin noted, when Kalm “really had Accounts from such Persons, he has varied the Circumstances unaccountably,” leading Franklin to be “asham’d to meet with some mention’d as from me.” Franklin ended his diatribe with some very Franklinian advice for the younger Colden: “It is dangerous Conversing with

³⁴⁷ David Colden to Franklin, November 30, 1772. *PBF*, 19:330.

these Strangers that keep Journals.”³⁴⁸ By 1773, Franklin’s “Reputation” would not suffer from *Kalm’s* wrongful attributions, but as demonstrated in his letter to David Colden, Franklin always remained true to his own character, or at least the character he had fashioned. It was, however, the unembellished Franklin who had been intimately acquainted with the English version of Kalm’s publication.

In late-1771, the translator of the English edition, Johann Reinhold Forster (1729-1798), sent Franklin a copy of the work, along with several other books, to be forwarded to the recently reestablished American Philosophical Society in Philadelphia.³⁴⁹ Franklin had been elected president of the Society despite residing in London. Clearly, Franklin was intrigued by finally seeing an English translation and read it thoroughly, given his remarks to David Colden. Furthermore, Forster made his own sentiments about Kalm’s perceptions plain in the preface to the third volume of the translation.

Sounding not unlike James Logan twenty years earlier, Forster wrote, “The *French*, the natural enemies of the *English*, have, for upwards of a century, been the allies of the *Swedes*, who therefore are in general more fond of them than of the *English*.” According to Forster, Kalm had been taken in by “The external politeness of the *French* in *Canada*,” who “prejudiced him in their favor,” and thus “alienated his mind, though

³⁴⁸ Franklin to David Colden, March 5, 1773. *PBF*, 20:95.

³⁴⁹ The editors of the *Papers of Benjamin Franklin* date Forster’s letter as late-1771. See Johann Reinhold Forster to Franklin, [late 1771]. *PBF*, 18:274. This first English version was a translation and abridgment of an earlier German edition. The third and final volume of the three-volume translation was published in 1771. Assuming that Forster would not have sent Franklin an incomplete work, the date of Forster’s letter seems likely. Forster replaced Joseph Banks (1743-1820) as naturalist on Captain Cook’s second voyage.

unjustly, from the *English*.”³⁵⁰ Of course, Kalm’s trip to Canada was subsidized by the “French King,” explaining Kalm’s positive disposition toward the French Canadians. This analysis eluded Forster, but he offered a strong critique to a comment from Kalm concerning the practice of science in the British colonies.

Kalm characterized the British colonies as a place “where the sciences were held in universal contempt.” France, like Sweden, had government-driven science, so for Kalm, the unfunded undertakings of the British scientific community would have left an impression of apathy. Furthermore, Forster’s preface had already laid out his discontent with Kalm’s conclusions concerning the English.

As a corrective measure, Forster thought it necessary “to do the English justice,” particularly when Kalm was “carried away by prejudice, misinformation, or ignorance.” As evidence of Kalm’s bias against the English, Forster noted that Kalm was influenced by his winter 1748-1749 in Raccoon, New Jersey, as well as his stays in Philadelphia, “in the company of the *Swedes*.” Forster put the blame on the local Swedish population for giving Kalm “many partial and disingenuous accounts of the *English*.”³⁵¹ However, Forster also was guilty of nationalistic bias.

³⁵⁰ Johann Reinhold Forster, ed., Peter Kalm, *Travels into North America; Containing Its Natural History, and a Circumstantial Account of its Plantations and Agriculture in general*, Vol. III (London: Printed for the Editor, 1771) iii-iv. Original emphasis. Forster took Kalm to task, “It seems Mr. *Kalm* has forgotten his own assertions in the first volume,” Forster wrote in a lengthy footnote. Exactly what these “assertions” were is difficult to determine. Forster seemed not to understand Kalm’s perception of the lack of government financial support for British science. While “universal contempt” was surely an overblown description, Forster was no less strident in his assessment.

³⁵¹ *Ibid.*, iv. Original emphasis.

Kalm “often displays prejudice of a nation, now at the head of the enlightened world, in regard to every religious, moral, and social virtue.” Defending not only England, but also its colony Pennsylvania, Forster took great pains to tell his readers that because of the influence of local Swedes, Kalm “often omits, or misrepresents, more important points” about William Penn. Directing the reader to the first volume of the translation, Forster cited specific pages where Kalm’s writing was “founded on such misrepresentations.” Forster continued, “A *philosopher* should examine such accounts, hear both parties, and emancipate himself from prejudice.”³⁵² Britain was the center of the intellectual universe, and deserved the respect of the citizens of the world, according to Forster.

The second volume of Forster’s translation had no preface. About the third, Forster noted, “I could have left this volume without preface, was it not for some circumstances, which I am going to mention.”³⁵³ Clearly, Forster had taken stock of Kalm’s work since commencing the project. It seems that Forster had paid little attention to the meaning of Kalm’s words during the process of translating the first two volumes, and had an epiphany while working on the third. The strong editorializing is present in that volume’s preface and in footnote material appended to Kalm’s text. Forster’s preface to the first volume explicates Forster’s translating and editorial methods. Indeed, Forster plainly described that he was omitting Kalm’s sojourn in England prior to sailing for America, as well as “some trifling circumstances, viz. the way of eating oysters, the art of

³⁵² *Ibid.*, iv-v. Original emphasis.

³⁵³ *Ibid.*, iii.

making apple dumplings.” Furthermore, Forster complimented Kalm on his thoroughness, noting that although British citizens on both sides of the Atlantic might find Kalm’s agonizing detail less than enthralling, it would be of great interest to those back in Sweden.³⁵⁴ Whether readers took Forster at his word in the two prefaces is unknown, but if Benjamin Franklin read the three volumes in order, he surely would have appreciated Forster’s remarks in the third volume’s preface.

Cultural productions—books, art, theater, and the like—are often more reflective of the time of their creation than of their overt subject matter. Forster’s translation, published in 1770, was released at a time of growing tensions between Britain and its colonies. While the insurmountable issues surfaced a few years later, Forster recognized the potential for trouble looming on the horizon. The preface to the first volume expressed the desire “to go on in this work as soon as possible.” Furthermore, Forster wished “to be supported and encouraged” to finish the project “by a nation which is the possessor of that great continent,” referring to Britain and North America. Completing the translation “at this time when *American* affairs attract the attention of the public” was of particular importance to Forster.³⁵⁵ After thanking all “the ladies and gentlemen” who promoted the first volume of the translation, Forster once again reminded his reader that Kalm, “an impartial, accurate and judicious foreigner,” had provided “useful remarks” concerning the “country which is at present so much the object of public deliberation and

³⁵⁴ Johann Reinhold Forster, ed., Kalm, Peter, *Travels into North America; Containing Its Natural History, and a Circumstantial Account of its Plantations and Agriculture in general*, Vol. I (Warrington: Printed for William Eyres, 1770) xii-xiii.

³⁵⁵ *Ibid.*, xiv-xv. Original emphasis.

private conversation.”³⁵⁶ Forster’s identification of the political debates surrounding the colonies, both in the public and private spheres, and committing the idea of participating in such debates to print, is a direct manifestation of Habermas’s original conception of the public sphere, and its private counterpart.

Emanuel Mendes da Costa and Pehr Kalm placed themselves outside the epistolary web and the scientific public sphere while benefitting the activities of both. Da Costa wrote many letters designed to advance his own career, but he failed to engage in broader conversations. Kalm utilized the links established between European and transatlantic British scientific practitioners without becoming one of those links himself. Kalm and da Costa effected the British scientific community in similar ways, which on first inspection, may not necessarily be evident.

Kalm’s sojourn in North America reflected, more than anything else, his commitment to his mission. For his return to Sweden, Kalm had amassed “a great Cargo of Curious Things.”³⁵⁷ While his self-serving attitude irked his provincial British hosts, he carried out his orders exactly. The Swedish version of his observations offers not only the fanciful stories that David Colden and Franklin discussed, but also the valuable information his colleagues at the Royal Academy, including Linnaeus, desired. Similarly, da Costa’s focus on his own career advancement proved detrimental in some cases, but

³⁵⁶ *Ibid.*, xvi. Forster’s use of “country” is geographic, not political.

³⁵⁷ Franklin to Collinson, February 4, 1750/51. *PBF*, 4:113.

his judicious fossil studies marked an important contribution to knowledge, which everyone in the scientific community applauded.

The actions of Kalm and da Costa, whether professional or personal, brought scientific practitioners closer together, illustrating the community's own perceptions of how the communication of scientific knowledge was to proceed, both within the community itself, and to a broader audience. While neither the scientific public sphere nor the epistolary web spoke with a unified voice concerning da Costa and Kalm, both groups spoke with a communal one.

CHAPTER SIX

MOVING SCIENTIFIC KNOWLEDGE ACROSS GENERATIONS

Sir Hans Sloane and Mark Catesby bridged the generational gap between seventeenth- and eighteenth-century practitioners of science. Both had strong transatlantic connections. Sloane never went to mainland North America, but resided in Jamaica for fifteen months, publishing a two-volume work of natural history about the island. Catesby had been to the Bahamas as part of his natural history study, after spending considerable time on the continent itself. Sloane and Catesby worked primarily in the period pre-dating the fully developed epistolary web and the scientific public sphere, but left an indelible impression on the later practitioners who participated in the exchange of letters and the circulation of knowledge.

The accumulation and dissemination of scientific knowledge was an evolving process in British America. Before the mid-eighteenth century, a scant number were engaged in the study of natural history in North America, and those who were, like Sloane and Catesby, were temporary visitors. Progress was slow in terms of the increase of the numbers of practitioners in the colonies, but unlike their predecessors, they were residents, not transients from across the Atlantic.

Like Sloane and Catesby, Alexander Garden (1730-1791) and Daniel Solander (1733-1782) bridged a generational gap, but in a much different fashion. Both Garden and Solander asserted their presence within the scientific public sphere and engaged in

the epistolary exchange. In fact, with few exceptions, the two men could not have been more dissimilar from Emanuel Mendes da Costa or Pehr Kalm discussed in the previous chapter. Most importantly, for others in the scientific community, neither Garden nor Solander presented the self-serving attitudes apparent in either da Costa or Kalm.

This chapter examines the arrival, both in the intellectual and geographic sense, of two members of a younger generation of scientific practitioners, and their efforts to advance new knowledge, while participating in the ongoing conversations of the established scientific community. While Garden and Solander often used the epistolary web as a platform to offer strong critiques of their colleagues and recently-deceased predecessors, clearly their interest was to promote good scientific practice, strident comments notwithstanding. In Garden's case, his geographic isolation in South Carolina made his epistolary connections all the more valuable to him. In London, Solander had no such worries.

Both Garden and Solander bridged the generational gap in the scientific community, as most of their epistolary and corporeal connections linked them to those who had long participated in the exchange of knowledge. Through his own correspondence, Garden promoted the continuation of letter-writing practices within his own generation.

This chapter also explores the hurdles Garden and Solander faced—potentially disruptive to their practice of science, as well as to the process of disseminating it. In addition, challenges to the authority of Linnaeus are examined, especially the ways in

which the time-lags in mail delivery exacerbated the debates in which naturalists engaged.

Scots-born physician Alexander Garden arrived in Charles Town (Charleston), South Carolina in 1752, and by 1754 became a partner in a thriving medical practice, which became his sole responsibility after Dr. John Lining (1708-1760) retired a few years later.³⁵⁸ Indeed, medicine kept Garden away from natural history pursuits. However, when time and his health, permitted Garden worked tirelessly identifying new species of plants and fish. He mastered the Linnaean system, even though he found many mistakes in Linnaeus's work, for which he offered corrections, that were usually accepted without question by the Swedish naturalist. Garden's success in medicine allowed him to incorporate himself *completely* into eighteenth-century South Carolina society. He purchased a small plantation, and with it, slaves. Ironically, Garden could not find a long-term partner to bear some of the load in his extensive medical practice.

Garden's medical studies in Edinburgh included work with the botanist Charles Alston. Significantly, Alston, acknowledged as one of Europe's leading botanical minds, repudiated the Linnaean system. However, Garden, unlike his teacher, became one of the most vocal proponents of the Swedish naturalist's work. While Garden established a direct correspondence with Linnaeus, London merchant and naturalist John Ellis served

³⁵⁸ Lining was a Scot like Garden, However, unlike his young protégé, did not receive formal medical training. He did, however, publish the first treatise on Yellow Fever and repeated Franklin's lightning experiments in Charles Town, leading to the installation of lightning rods. See "John Lining and His Contributions to Early American Science," in *Isis*, Volume 51, No. 3 (September, 1960), 278-292.

as Garden's epistolary connection to Britain and beyond, much the same way that Peter Collinson fulfilled that position for John Bartram.

Sometime before March 25, 1755, Ellis wrote to Garden. It is unclear if Garden had initiated the correspondence prior to his receipt of the Ellis missive. What is clear, however, was that Garden's "absence on some country jaunts" had prevented him from replying to "so obliging an epistle." While Ellis endorsed Garden's "study of Natural History," it seems the London merchant may have hinted at the lack of precision of Garden's work. "As to any degree of accuracy," wrote the twenty-six-year-old Garden, "it scarce could be expected from so young a beginner," since Garden lived "at such a distance from the proper helps and assistances of either men or books." Obviously a willing student, Garden noted "that the continuance of your correspondence may greatly improve me both in knowledge and accuracy." Garden humbly added, "Let me assure you that both yours and the approbation of other learned men, should I ever merit any, will greatly induce and encourage me to proceed in the study of nature."³⁵⁹ Indeed, Garden reported he had already received "the favour of several correspondents from Holland and Sweden," which gave him "the greatest honour."³⁶⁰ Although he had asked Ellis for a continuing correspondence, this was his only request. Most of Garden's missive congratulated the work of others or inquired how he himself could better serve

³⁵⁹ Alexander Garden to John Ellis, March 25, 1755. *COL*, I:342.

³⁶⁰ *Ibid.*, I:343.

the scientific community.³⁶¹ This is in direct contrast to da Costa, whose self-serving transparency belied his seemingly refined epistolary disposition.

Poor health plagued Garden throughout his life, and 1754 was no exception, as he reported to Ellis. Garden's illness, however, allowed him to meet Cadwallader Colden. Garden was "taken violently ill by an acute inflammatory distemper," and after the initial effects had subsided, he travelled "to New York, in search of cool air." Although illness necessitated his journey northward, Garden used the time for both recovery *and* the study of natural history. Noting the family predilection for natural history when he met Colden in New York, Garden wrote, "Not only the doctor himself is a great botanist, but his lovely daughter is greatly master of the Linnaen method and cultivates it with great assiduity."³⁶² Garden was clearly impressed by the by the botanical talent of Jane Colden, much in the same way Collinson and Ellis were.

Having re-gained much of his strength, Garden expanded his itinerary to include a trip to the Appalachian mountains, as not to "leave any place unvisited, where plant were to be seen or met with." Garden not only collected many plants not found in the southern colonies, but he gathered "some very curious minerals, too." Garden, exalting the benefits of his mountain trip, wrote, "I returned to New York greatly pleased both with my perfect recovery and my collection."³⁶³ On his return journey to South Carolina, Garden stopped

³⁶¹ *Ibid.*, I:343-354.

³⁶² *Ibid.*, I:343.

³⁶³ *Ibid.*, I:344.

in Philadelphia, where he sought out several of the most important figures in American science.

John Bartram made two distinct impressions on Garden. Bartram was “a plain quaker, but a most accurate observer of nature,” Garden noted, as if these characteristics were somehow mutually exclusive. Garden, in all seriousness, then reported, “I met with Benjamin Franklin here too, a very ingenious man, especially in electricity.”³⁶⁴ Ellis probably laughed when he read Garden’s observation, since he Ellis knew of Franklin’s work long before Garden’s missive of 1755. Most likely, Garden too was aware of Franklin’s electrical studies and Franklin’s receipt of the Royal Society’s Copley Medal in 1753. Garden’s comment to Ellis thus seems superfluous, or even as if the young physician was trying to impress the London merchant with knowledge of the scientific community. However, the practice of natural history in the colonies concerned Garden even more.

“Mr. Colden, Mr. Bartram, and Mr. Clayton are the only botanists I know of on the continent,” Garden continued. Garden clearly positioned himself among the botanically inclined in the colonies. He simultaneously expressed the common belief in the superiority of science, making the point that the paucity of botanical practitioners in the colonies stood in stark contrast to their numerous counterparts on “the Continent.” His reference to John Clayton of Virginia spoke volumes. Garden’s familiarity with Clayton likely stemmed from the latter’s *Flora Virginica*, edited and published by Johann

³⁶⁴ *Ibid.*, 1:345.

Frederick Gronovius, and widely available throughout Europe. Garden had seen it prior to his arrival in America.³⁶⁵

“After many jaunts, and some agreeable botanizing journeys,” Garden returned to South Carolina and re-established his medical practice in the fall of 1754. Apologizing again for the long delay in responding to Ellis’s letter, Garden wrote, “what with settling, what with absence, and one thing or another, I have been hitherto prevented from acknowledging your favour.” However, Garden promised, “I will carefully cultivate a correspondence I value so much.”³⁶⁶ This second reference not only to the gap between Ellis’s missive and Garden’s response, but also to Garden’s desire to establish regular communication with Ellis, demonstrates the importance Garden placed on the circulation of knowledge. Furthermore, Garden’s earlier mention of the “several correspondents from Holland and Sweden,” together with his assurance to Ellis of a continual exchange of letters and specimens, Garden placed himself squarely within the epistolary web, and the scientific public sphere.

Garden’s talent for botany was immediately visible to Ellis, who offered to have “any new plants” that Garden sent “drawn by Mr. Ehret.” The resulting artwork and Garden’s own descriptions would then be given to the Royal Society. Garden thanked Ellis profusely for this “greatest honour.” However, he could not accept immediately

³⁶⁵ *Ibid.*, I:345. Why Garden referred to Colden here as “Mr.” is likely a simple mistake by either Garden himself or Linnaean Correspondence editor Sir James Edward Smith, especially since Garden referred to Colden as “doctor” previously in the letter. Although likely unintentional, Garden’s use of “the continent” brings to mind the long-used moniker of mainland Europe. For Clayton, Gronovius, and *Flora Virginica*, see above.

³⁶⁶ *Ibid.*, I:345.

because, although his descriptions were available, he did not have the “dried specimens” to send. As it turned out, Garden had sent “some to other Societies” who had offered membership. Garden inquired of Ellis, “I should be greatly obliged to you if you would inform me on what terms, and after what manner you admit the new members of the Royal Society.”³⁶⁷ Although a nascent member of the scientific community, Garden’s contribution of specimens and descriptions positioned Garden for membership in other learned institutions His keen interest in Royal Society membership illustrates his perception of the Society’s distinguished status, as well as the effect on his own, should a nomination be forthcoming. Unlike da Costa, and his attempts to gain membership to the Royal Academy in Sweden, Garden followed the more traditional paths, inquiring about the process and not simply offering himself as a candidate.

Changing topics, Garden then identified the government and institutional support of science on the Continent, decrying the situation in Britain. He pointed out “the increase of botany in every kingdom of Europe but in Great Britain,” and used Swedish royal and institutional support of Pehr Kalm’s journey to North America as an example. Garden wished that “some of our grandees of such animated inclinations for the improvements in natural knowledge” would offer the same support.³⁶⁸ Garden understood the economics behind the accumulation and dissemination of scientific knowledge. He also appears to have been the first to voice his frustrations in writing with the British system of funding.

³⁶⁷ *Ibid.*, I:345 “Mr. Ehret” is, of course, Georg Dionysius Ehret.

³⁶⁸ *Ibid.*, I:345-346.

Like John Bartram, Garden enthusiastically welcomed the exchange of “books for seeds.” In fact, he promised Ellis to collect seeds for those who would “agree to that condition.” Expressing the less-than-satisfactory state of his botanical library, he listed its contents and included a brief review of “Eulalio Francesco Savastano’s four books of botany in Italian.” He “found it a trifling performance as to science, but musical enough in poetry.” He had purchased the work in Lisbon, taking the recommendations of a Jesuit priest.³⁶⁹ While he understood that Savastano was a poet, he also thought mistakenly that Savastano was a trained botanist. Garden’s capsule review set the stage for similar critiques aimed at dead (and living) scientific practitioners, which characterized his correspondence. However, his harsh treatment of some of his colleagues paled in comparison to his disposition toward African Americans.

Though Garden had not been in South Carolina for very long, his attitude concerning the colony’s black population sounded not unlike a seasoned white racist. Ellis, who studied corallines (corals or polyps), had requested some specimens from Garden. Attempting to comply, Garden “spoke to several of the fishermen, but as yet to no purpose.” He attributed the problem to the fact that “Most or indeed all of them are negroes,” who could not comprehend the instructions. According to Garden, the black men exhibited “gross ignorance and obstinacy to the greatest degree.” Garden “hired several of them,” he “could not procure anything.” Garden instead planned “to go down

³⁶⁹ Francesco Eulalio Savastano (1661-1717) was a Jesuit didactic poet. The “four books of botany” were Savastano’s *Botanicorum, seu Institutionum rep herbaria libri iv* or *Four Books on Botany, or the Principles of Plant Science* (Naples, 1712). See Yasmin Annabel Haskell, *Loyola’s Bees: Ideology and Industry in Jesuit Latin Didactic Poetry* (Oxford: Oxford University Press, 2003), 101.

on the coast” and collect the specimens himself.³⁷⁰ It is unclear if the fishermen in question were free blacks or slaves who had been given permission to hire themselves out.

Plantation slaves in South Carolina had little independence, but their urban counterparts in Charles Town, particularly those skilled in a trade, often supervised themselves. The small number of free African-Americans joined with slaves who enjoyed some independence in their worklives to establish a parallel economy. Black merchants and hucksters offered goods and services not only to their own community, but also to whites.³⁷¹ Garden’s hiring of black fishermen was completely in step with the local economic systems of the time. However, the Charles Town newcomer Garden in all likelihood offended the black fishermen while bargaining for their services. Perhaps he breached some communication, perhaps he revealed his own racial prejudices. The African Americans responded by displaying “gross ignorance and obstinacy.”

Garden continued his lengthy March 25 missive with some detailed scientific observations, but paused again to thank Ellis for a “present of seeds.” Then, in reference to the specimens, including “some butterflies, with camphor stewed around them,” he had sent to Ellis, Garden hoped that Ellis would “be kind enough to let me know if these

³⁷⁰ *Ibid.*, 349.

³⁷¹ For the urban experience of slaves and free blacks in Charles Town, see Ira Berlin, *Many Thousands Gone: The First Two Centuries of Slavery in North America* (Cambridge, Massachusetts: Belknap Press of Harvard University Press, 1998), 154-161.

things that I send be agreeable to you or *proper*.”³⁷² Notable here is Garden’s concern that the materials he sent were those that Ellis thought necessary, rather than simply just “agreeable.” For Garden, an ongoing exchange of specimens carried almost the same importance as that of correspondence.

After closing his letter, Garden added an inquisitive postscript: “About two years ago I wrote to Mr. Miller, of Chelsea garden, but never yet received an answer.”³⁷³ Garden directed his question to the wrong man. By all accounts, Ellis had a friendly demeanor, offering help and guidance to nearly all.³⁷⁴ However, if there was one person John Ellis did not like, it was Philip Miller. (An exploration of Ellis’s disdain for Miller appears later in this chapter.)

Just like their inclusion of sometimes harsh critiques, Garden’s letters were characterized by their length. It seems that Garden understood the inherent difficulties of his geographic position, as it pertained to letters and specimens: ships from southern ports did not necessarily travel directly to Britain before stopping at other colonial locales. Therefore, prudence suggested writing as much as possible within each missive, since the next opportunity may not come for some time.

³⁷² Garden to Ellis, March 25, 1755. *COL*, I:352. Garden also mentioned that during the upcoming summer he intended “to make a collection of our insects in general, with great quantities of which we abound.” Like Garden’s previous reference to Franklin’s electrical experiments, Ellis likely chuckled when reading about the large variety, and of course number, of insects inhabiting South Carolina. Information about the abundance of insects in all colonies during the warmer months, but especially those in the south, would have been long-known. My emphasis.

³⁷³ *Ibid.*, I:354.

³⁷⁴ See Roy A. Rauschenberg, “John Ellis, F.R.S.: Eighteenth Century Naturalist and Royal Agent to West Florida.” *Notes and Records of the Royal Society of London*, Vol. 32, No. 2 (March, 1978), 149-164.

In his zeal to reply to Ellis, Garden forgot to enclose seeds from South Carolina's most valuable crop—indigo. He subsequently remedied the situation, sending “common indigo” and “some French indigo,” as well as seeds from a species he thought to be related, which, once processed like common indigo, “produces a beautiful yellow dye.” Garden's knowledge of the plant came “from an imperfect description” given to him by “some planters.”³⁷⁵ Though he desired to be a member of the Royal Society, Garden seemed not to understand that material in the *Philosophical Transactions* originally came from the scientifically untrained public. In this case, that “public” were the very planters Garden complained as having had provided less-than-detailed information. Not content with simply attacking his South Carolinian neighbors, Garden also used this missive to start his lifelong critique of Mark Catesby.

Garden thought he was in possession of a new plant (at least *new* to Europeans), so he sent the seed and the pericarp to Ellis.³⁷⁶ Garden described it as “a most elegant and beautiful vine,” and compared what he had observed to “what Mr. Catesby has done, *which besides his print is just nothing.*”³⁷⁷ Catesby, who died in 1749, would never have an opportunity to respond to this or any other of Garden's disapproving remarks. However, Garden's condemnation of Catesby illuminates a larger issue.

³⁷⁵ Garden to Ellis, March 25, 1755 (Second letter from that date). *COL*, I:354.

³⁷⁶ *The Oxford English Dictionary* defines the *pericarp* as “A structure containing the seeds of a flowering plant; a seed-vessel or fruit; (now) spec. the wall of the ripened ovary of a plant.” Garden certainly meant the former part of the definition. He utilized John Ray's term “*Pericarpium*” in the letter.

³⁷⁷ Garden to Ellis, March 25, 1755 (Second letter from that date). *COL*, I:354. My emphasis.

For the duration of his correspondence, Garden's own sense of the *history* of natural history seemed to be wanting. As illustrated above, Garden could not contextualize the contributions of the untrained. Likewise, his criticism of Catesby draws attention to the idea that the acquisition of scientific knowledge, and its dissemination, was an evolving process. In this sense, "progress" was somewhat measurable: in Catesby's time, far fewer people were engaged in the study of natural history in North America. By 1755, as Garden noted in his first letter to Ellis, there were only three others besides himself practicing botany in the colonies. While not a vast improvement in the *number* of practitioners, it was surely a major step forward because those people *resided* in the colonies. Thus, Catesby's work, though thorough for its era, was certainly not definitive, and no one, except perhaps Garden, expected it to be. Garden's own lack of historicism continued to define his epistles, as will be seen throughout the remainder of the chapter.

Whatever their economic status, scientific practitioners held book in the highest regard. In December 1755, Garden acknowledged receipt of multiple letters from Ellis. Garden thanked Ellis profusely: "Each of your presents were extremely obliging, and singularly useful to me." Bartram-like, Garden continued, "The books I value more than gold."³⁷⁸ Among them was Linnaeus's *Species Plantarum*, which was at top of Garden's botanical library wish-list.³⁷⁹ That volume, Garden wrote, "has enabled me to ascertain

³⁷⁸ Garden to Ellis, December 24, 1755. *COL*, I:357. Unlike other members of the epistolary web, Garden frequently failed to note the dates of the letters that he received.

³⁷⁹ Garden to Ellis, March 25, 1755. *COL*, I:347.

several species, and to discover some of Linnaeus's mistakes." Garden, who idolized the Swedish naturalist, frequently offered corrections that appeared in future editions of *Species Plantarum*, along with other works. Never once was Linnaeus insulted by his much younger colleague's emendations, perhaps because Garden always sent complete descriptions to replace those that he found deficient. Garden criticized the work of living scientific practitioners in a more circumspect fashion. In the process, Garden stimulated the transmission of up-to-date knowledge: his corrections enabled Linnaeus to produce revised editions, which in turn circulated within the scientific community. Ellis, too, offered corrections to outdated notions in natural history. The use of Latin as a means of communication within the British scientific community, for example, was also outdated. While Garden comprehended Ellis's revisions, he could not do the same for the *lingua franca* of published works.

Garden, like many others at the time, assumed that the animals within corals were in the same class as vegetables. Ellis proved otherwise in his extensive study of corallines, and Garden thanked Ellis "for freeing my mind from the error it laboured under."³⁸⁰ Moreover, Garden insisted, "having my mind relieved from error, and my judgment informed" was the overriding debt Garden had incurred to Ellis, "other favours" notwithstanding. As a show of gratitude, Garden named a plant for Ellis, sending the character, along "with several others" for Ellis to "peruse" and "correct."

³⁸⁰ Garden to Ellis, December 24, 1755. *COL*, I:357.

Furthermore, if Ellis thought the descriptions worthy, he “may present them to the Society.”

Defying the prevailing trend, however, Garden insisted the work be presented “only in latin, and if they will not accept of them in that language, I will send them elsewhere.”³⁸¹ The following year, Garden reiterated his disdain for publishing in English. In reference to a series recently-sent plant descriptions, Garden told Ellis, “As to publishing them in english, I think that would be absurd,” and if the Royal Society refused to print them in Latin, “it shall be the last that I shall give leave to communicate.” These harsh words came in spite of a warning from naturalist and poet Henry Baker (1698-1774) “that the Society only chuses things in english.”³⁸² Garden’s insistence on Latin runs counter to what he should have known about the Royal Society and its *Philosophical Transactions*, publishing work in English, not Latin. Garden’s tone also recalls da Costa’s impertinent stance toward John Ambrose Beurer regarding the latter’s worthiness of correspondence.³⁸³ It is important to note, however, that Garden’s stance on English referred to publication, *not* epistolary communication.

By insisting on Latin for his characters, Garden placed himself among elite, learned men. At the same time, he (dangerously) placed himself above the established

³⁸¹ *Ibid.*, I:357-358.

³⁸² Garden to Ellis, March 22, 1756. *COL*, I:376-377. Garden had a correspondence with Henry Baker, who is most known for his bequest to fund the Royal Society’s Bakerian Lecture, his work in microscopy, and devising an educational system for deaf and dumb children. Baker was elected a Fellow of the Royal Society in 1740/41. Much of Baker’s extensive correspondence is held at the John Rylands University Library at the University of Manchester. Time did not permit me to utilize the collection.

³⁸³ For da Costa and Beurer, see above.

Ellis, who could read Latin, but freely admitted his difficulty writing the language. Thus, while trying to cultivate a correspondence with Ellis, Garden likely insulted the London merchant. Furthermore, the overwhelming use of English scientific description by members of the British scientific community situated Garden squarely in the past, a time, in the practice of natural history, that he railed against at every opportunity.

Garden may not have demonstrated the expected tact in his letters on many occasions, but his concern for a continuous correspondence with Ellis remained a repeating theme. Acknowledging the nascent Seven Years' War, Garden wrote, "The French War quite puts me in the hip, as I can easily see it will prevent my hearing from you as often as I could wish." Furthermore, Garden noted that "vessels going home heavy" were more likely "than those outward bound" to be taken by the French.³⁸⁴ Like John Bartram and Philip Miller considered in an earlier chapter, Garden's identification of the difficulties attending wartime communication illustrated the need to address those problems openly, preemptively ameliorating any thoughts by one individual of the deliberate cessation of correspondence by another.

Multiple lines of correspondence were a priority for Garden, but unlike da Costa, Garden sought interconnectedness, thereby establishing his presence within the epistolary web. Moreover, Garden never hesitated to ask one correspondent to link him to another. However, such requests were occasionally ill-timed.

³⁸⁴ Garden to Ellis, December 24, 1755. *COL*, I:359-360. The Oxford English Dictionary defines this form of the word "hip" as "Morbid depression of the spirits; the 'blues.'" In Garden's time, it was a relatively new expression. The OED's first reference is from 1710 and the meaning seems to have only been in use for about a century.

Although Garden was well-aware of the Seven Years' War, he did not fully appreciate the difficulty of establishing a correspondence with Bernard de Jussieu (1699-1777), a naturalist in Paris.³⁸⁵ As previously mentioned, an ongoing agreement between the natural historians in France and Britain allowed that while letters were thrown overboard, all specimens on captured ships were to be delivered to a designated practitioner, then eventually forwarded to their destination. During the Seven Years' War, the process of forwarding was subject to long delays given the magnitude of the military conflict. Furthermore, letters between individuals in Britain and France were viewed as suspect by officials. Of course, the American colonies still were considered as part of Britain, just as Canada was part of France (for the time being at least).

Of obtaining a correspondence with Jussieu, Garden wrote on December 24, 1755, "all my desires would be fulfilled."³⁸⁶ Just over a week later, he repeated his wish, noting an exchange with Jussieu "would be very acceptable."³⁸⁷ He continued his quest after only ten more days. "The correspondence of these two other gentlemen you

³⁸⁵ While Garden makes it clear in his letter to Ellis of January 13, 1756 that he desired a correspondence with *Bernard de Jussieu*, demonstrator at the *Jardin des Plantes*, it is possible he actually was initially referring to Bernard's older brother, Antoine de Jussieu (1686-1758). Antoine was a physician and professor of botany at the *Jardin des Plantes*. Although asked to assume the professorship when Antoine died in 1758, Bernard chose to remain a demonstrator. For Garden's specific mention of Bernard de Jussieu, see Garden to Ellis, January 13, 1756, *COL*, I:362. Bernard's nephew, Antoine Laurent de Jussieu (1748-1836), also a professor of botany at the garden, developed a natural system of classification (using the work of some others, as well as his own) that ultimately replaced the Linnaean System, except for Linnaeus's binomial nomenclature.

³⁸⁶ Garden to Ellis, December 24, 1755. *COL*, I:358.

³⁸⁷ Garden to Ellis, January 3, 1756. *COL*, I:361. Writing to Ellis on March 22, Garden once again repeated his desire for a correspondence with Jussieu. However, Garden's recapitulation only served as insurance in case the current missive did not reach Ellis. See Garden to Ellis, March 22, 1756, *COL*, I:372.

mentioned” would “fully gratify my desire of correspondents,” Garden wrote, “especially if I could add to them that of Bernard de Jussieu.”³⁸⁸ Garden was nothing if not persistent. After his third attempt, he dropped the subject, perhaps finally realizing why such an exchange was nearly impossible. However, his own opinion of himself, insofar as epistolary communication was concerned, ran counter to his persistence in establishing these sorts of contacts.

“You will no doubt think that it is odd in me, who live so far from the learned world, to have such an avaricious desire after new correspondents,” Garden wrote to Ellis. He continued, “I own it is really odd; but I cannot help it.”³⁸⁹ However, Garden was not “really odd;” in fact, the opposite was true. Garden’s geographic location distanced him not only from Britain, but also the center of knowledge in the colonies—Philadelphia—due to the unreliable nature of the colonial postal service in the south. Thus, anyone in Garden’s position wishing to engage in the acquisition and transmission of knowledge needed to forge as many links, transatlantic and otherwise, as possible. Such multiple connections insured at least *some* flow of knowledge.

Garden associated his “avaricious desire” with his own “further improvement.” He thought “nothing is a greater spur” to advancing knowledge “than some demands from literary correspondents.” As he noted, “every letter which I receive not only revives the little botanic spark in my breast, but increases it quantity and flaming force.” Garden continued his “fire” metaphor: “Some such thing is absolutely necessary to one, living

³⁸⁸ Garden to Ellis, January 13, 1756. *COL*, I:362.

³⁸⁹ *Ibid.*, I:362-363.

under our broiling sun.”³⁹⁰ Apparently, the excessive South Carolina heat impeded learning, unless the impetus for acquiring knowledge came from outside sources. In addition to the “demands” of an epistolary nature, “improvement,” for Garden, also came from books.

As previously noted, Garden’s attitude toward printed material mirrored that of Bartram and many other colonial scientists. A theme repeated frequently throughout his letters, Garden thought books “must be the most valuable” since they inculcated “improvement,” which Garden placed “above all the riches in the world.”³⁹¹ Books supplemented both men’s respective educations (as they also did Franklin’s), whether meager like Bartram’s or advanced like Garden’s. Furthermore, printed works represented value. As expensive commodities, they signified a financial wherewithal (or least the appearance of it). As tools of learning, book ownership also symbolized *immediate* access to knowledge.

Like his attention to books, Garden obsessed over membership in learned societies, particularly the Royal Society. Garden had inquired about membership in his first letter to Ellis in March 1755. Ellis, who had only been elected in 1754, clearly had discussed Garden with other fellows of the society and had assured Garden of his election. In his January 1755 reply to Ellis’s offer of nomination, Garden refused, claiming “little merit” for the honor. In truth, Garden did not want to pay the annual dues, which had been part-and-parcel of the Royal Society since its inception. Garden’s refusal

³⁹⁰ *Ibid.*, I:363.

³⁹¹ *Ibid.*, I:365.

was not an economic issue—his medical practice provided a handsome income—but based on the idea he would not have the benefit of attending meeting and voting. Instead, Garden opted to send material to his “private friends,” as well as “to the Edinburgh Society,” an organization lacking a financial commitment. Trying to deflect his true feelings, Garden reiterated even with his “poor endeavours,” membership in the Royal Society would have provided him “satisfaction.”³⁹² Two months later, Garden repeated his objection to “giving any money” in order “to be admitted a member.” Furthermore, Garden thought membership “should be a matter of choice in the society, not of any pecuniary reward.” There was no other “body of learned men in the world” that Garden would be “more willing to oblige or serve,” but as a foreign member, which Garden thought he would be, dues should not be required.³⁹³ Like the Royal Society’s publication of material in English, Garden did not understand the operation of the institution, this time its administration. Garden finally recognized how his actions might have effected Ellis, albeit a year later.

“Now my dear friend I must come to a final éclaircissement about my having given you so much uneasiness in procuring my admittance into your Society,” Garden wrote to Ellis in July 1757. Garden then offered a lengthy apology, expressing that he was “quite ashamed of the plague” he had brought on Ellis. Above all, Garden wanted a continued correspondence with Ellis. Reiterating his previous explanations for refusing

³⁹² *Ibid.*, I:367-368.

³⁹³ Garden to Ellis, March 22, 1756. *COL*, I:377.

membership, Garden also noted his “great distance from books and men.”³⁹⁴ As seen earlier, Garden was well-aware of geography as he strove to incorporate himself into the scientific community. However, Garden used his lack of proximity as a reason to not associate with the Royal Society, as opposed to the previous instance when his geographic location was the motivation for securing epistolary connections abroad. In little more than two years, John Ellis had become the most secure of these epistolary connections. But Garden, who had already caused a “plague” with the Royal Society affair, not to mention his potentially insulting remarks concerning the use of English for scientific publication, seemed at times to do his best to breach that security.

Although Ellis was the most reliable, he was not Garden’s only correspondent. After Garden had visited Cadwallader Colden on the 1754 health-related excursion, Garden sent Colden a letter before leaving Philadelphia for Charles Town. Fearing his missive might “intrude on a Philosophic hour,” Garden expressed the “pleasure” that had attended his visit, but he had “met wt Little new in the Botanic way” since his departure from New York. However, Garden noted his current “acquaintance,” John Bartram, “makes amends for other disappointments in that way.”³⁹⁵ In short, Garden saw no new flowers, but found Bartram so engaging that it did not matter. But critiques were always a possibility in a Garden letter, and this one was no exception.

Garden and his dining companions, “Govr Tinker and Dr Bond,” were “agreably pleased & surprised” that they were “received wt so much ease, Gaiety & happy Alacrity,

³⁹⁴ Garden to Ellis, July 6, 1757. *COL*, I:411.

³⁹⁵ Garden to Colden, November 4, 1754. *LPCC*, IV:471-472.

& invited to dine with so much rural vivacity.”³⁹⁶ Garden clearly had the impression that the “plain quaker” Bartram would not be able hold his own in the company of learned men.³⁹⁷ Moreover, Bartram’s “garden is a perfect portraiture of himself.” Garden noted the contradictions in Bartram’s appearance (and Garden’s perception of Bartram’s education) and personality as manifest in the Philadelphia farmer’s garden. In one location, “you will meet wt a row of rare plants almost covered over wt weeds,” while at another, “a Beautifull Shrub, even Luxuriant Amongst Briars,” not to mention “an Elegant and Lofty tree lost in common thicket.”³⁹⁸ Colden never commented on Garden’s exaggerated symbolism, and although Colden and Bartram never corresponded after 1747, Colden may have been displeased with Garden’s commentary.³⁹⁹ Indeed, this was the case with a future Garden missive.

Seven months later, in May 1755, Garden acknowledged receiving Colden’s letters of February 22 and March 26. While Garden expressed that “each gave its particular pleasure on perusal,” he was surely more happy with the first than the second. Garden had been corresponding with Colden’s daughter, Jane, and clearly wrote something, perhaps of a sexual nature, that crossed a line. Garden apologized profusely, “I find I have very innocently offended Both you & Miss Colden by some expressions

³⁹⁶ *Ibid.*, IV:472. Tinker might be John Tinker (d. 1758), governor of the Bahamas. Bond was likely Thomas Bond ((1712-1784), Philadelphia physician and co-founder (with his brother Phineas and Benjamin Franklin) of Pennsylvania hospital, the first in the colonies.

³⁹⁷ For Garden’s description of Bartram as a “plain quaker,” see above.

³⁹⁸ Garden to Colden, November 4, 1754. *LPCC*, IV:472.

³⁹⁹ As noted earlier, Colden and Bartram did *not* have a falling out of any sort. The increasing demands of Colden’s political life restricted his correspondence to those matters.

that insensibly dropt from my pen as archetypes of what my heart dictated in was on sincerity.” Expressing “real concern,” Garden promised “to amend any thing in my conduct or manner of writing that you are kind enough to point out as wrong.” Once again Garden emphasized that his remarks were “due to such merit” of Jane’s work in botany. Then Garden added, “The Expression which you say gave her most offence, gives me now a great deal of uneasiness.” However, Garden’s addendum had nothing to do with “The Expression,” but only the repercussions for *himself*. “I suspect it has deprived me of the pleasure of a letter from her,” he concluded.⁴⁰⁰ Colden declined to comment on the self-centered nature of Garden’s closing words, and offensive as Garden’s “Expression” might have been, in this case the evidence suggests that he had indeed “innocently offended” both father and daughter.

All was forgiven, as the exchange of letters and specimens between Jane Colden and Garden continued, as did Garden’s correspondence with the elder Colden. With his missives to Cadwallader Colden, like those to Ellis, Garden bridged a generational gap in the epistolary web. By writing to Colden’s daughter, Garden also established a link to a scientific practitioner in his *own* generation. Unfortunately, this was the only such link Garden created, and ultimately, as will be seen in Chapter Six, it ironically contributed to the collapse of the epistolary web.

⁴⁰⁰ Garden to Colden, May 23, 1755. *LPCC*, V:11.

Disruption of communication during the Seven Years' War was characterized by delays and miscarriages as illustrated by the wartime correspondence of John Bartram with Philip Miller and Peter Collinson. Alexander Garden likewise demonstrated an acute awareness of these problems. Like most Britons, Garden would have been completely familiar with the long-standing issues between Britain and France. The Seven Years' War was only the latest incarnation of such problems, albeit geopolitically far more wide-reaching. Unfortunately, Garden's arrival in South Carolina only briefly predated the global military conflict. Thus, Garden, who sought to strengthen both transatlantic and intercolonial scientific communication, fought an uphill battle nearly from the start.

Although Garden did not consistently acknowledge the dates of his correspondents' letters in his replies, he regularly mentioned both ship captains and their vessels as the carriers of missives and specimens. Though not as exact as a notation of an incoming letter's date, Garden's method seems to have served that purpose. And he freely admitted a lack of punctuality in replying to his correspondents, using the ship captain's name to refer to previous outgoing missives, even though Garden always dated his letters. Garden did not want to draw further attention to his failure to respond promptly. However, Garden's particular awareness of the conveyors of mail and merchandise underscores the problems inherent in wartime communication discussed in chapter ???

"Every ship almost brings me a letter," Garden wrote to Ellis in May 1757, "and every letter a fresh instance of your friendship and generosity." Garden's reply to several of Ellis's "kind, friendly, and obliging letters" was, by Garden's own admission, long-

delayed. Unlike the delays precipitated by shipping difficulties associated with the war, Garden confessed, “you would readily imagine that I was prevented by some evil omen,” when in fact Garden had “already resolved on doing it, and how often I have again put it off.”⁴⁰¹ While Garden did not identify it as such, his “evil omen” was embodied in the Seven Years’ War, another contribution to the disruption of correspondence between himself and Ellis.

Just as Bartram and Collinson had their group of reliable ship captains, so too did Garden and Ellis. “Captain Ball” appears regularly in Garden’s correspondence, but as reliable as Ball was, circumstances did not always insure a safe transatlantic passage. Garden, who was frequently given to exaggerated language, pined, “The capture of Ball was the most inconsolable disappointment that ever I met with,” referring to one of Ellis’s letters. Garden then identified that Ball himself was an integral part of the communication process between Garden and Ellis, noting the captain’s participation in both directions of exchange.⁴⁰² Garden “had not heard of the declaration of war” at the time he had sent his letter to Ellis on Ball’s ship. “I imagined my letter would have got safe,” Garden continued, “else I should have made a shift to have sent a duplicate.”⁴⁰³ Garden understood the necessity of sending multiple copies of letters during wartime.

Ellis, sounding much like his friend Peter Collinson, suggested a different form of security, the packet, especially for “the rarest seeds.” Garden objected, noting, “our great

⁴⁰¹ Garden to Ellis, May 6, 1757. *COL*, I:392.

⁴⁰² *Ibid.*, I:393.

⁴⁰³ *Ibid.*, I:394.

distance from, and little intercourse with, New York,” to which “before the war, we had vessels going and coming” frequently. However, “since the declaration of war,” Garden supposed there had not been “three vessels from that port.” While Garden was “well acquainted with Mr. Colden, jun. who has the office there,” he identified “the risque of sending things would be as great as to send them home at once.”⁴⁰⁴ Equating the current dangers of maritime shipments from Charles Town to New York with those to London, Garden keenly analyzed the potential trouble caused by his geographic location, and realized there was nothing he could do about it.

Two months later, Garden’s frustrations increased almost twenty-fold. “Good God! what is the meaning, that out of 21 ships that sailed from hence in January last and beginning of February, there should be 19 taken.”⁴⁰⁵ Among the captured vessels were those of “both Captain Coats and Cheesman.” Unfortunately, Garden had sent what he described as “the two most valuable collections of seeds.”⁴⁰⁶ Wisely divided into two shipments, Garden likely thought at least one would arrive to Ellis safely. Momentarily forgetting about his previous requests for a direct correspondence with the *Jardin des Plantes* demonstrator, Garden noted, “They were all counter directed to Monsieur Bernard de Jussieu; so that if you correspond, I beg you will enquire about their fate.”⁴⁰⁷

⁴⁰⁴ *Ibid.*, I:398. “Mr. Colden, jun.” was not “jun.” at all, it was Alexander Colden, postmaster at New York. Garden was obviously just trying to distinguish the younger Colden from his father, Cadwallader Colden.

⁴⁰⁵ Garden to Ellis, July 6, 1757. *COL*, I:412.

⁴⁰⁶ *Ibid.*, I:411.

⁴⁰⁷ *Ibid.*, I:411-412. For Garden’s desire for a correspondence with Jussieu, see above.

In spite of this miscarriage, he continued his epistolary vigilance, writing this time both by “the Arundel man of war,” as well as the reliable, and once again free, Captain Ball.⁴⁰⁸ Garden’s concerns about the process of communication continued as the war pressed on.

In January 1758, Garden decided to send a box of specimens to Ellis “by the Fanny, Captain Brooks, for Lisbon and London.” Garden understood it was “indeed a round-about way.” However, he saw the circuitous route as a means for the specimens’ “safe arrival.” Garden then added, “It was the seeming best of some few opportunities that are now in our harbour.” As Garden noted, transatlantic communication was only part of the problem; the colonial postal service was also problematic. “It is in vain almost to settle any correspondence by the post on this continent.” Describing the service as “so uncertain, so tedious, so precarious, and so ill managed from the northern provinces,” Garden, with his customary critical eye (and pen), told Ellis, “all our mercantile correspondences are obliged to be carried on by the opportunities by sea.”⁴⁰⁹ Garden then related his misfortunes of using the post to communicate with friends and colleagues in the north.

Apparently, any correspondence sent via colonial post, in either direction, virtually never arrived, although both Garden and his correspondents had consistently attempted to use the service. Furthermore, Garden reported, “This is the case with every body here, so that we have now almost dropt it.” Repeating what he told Ellis about six

⁴⁰⁸ *Ibid.*, I:412. The two shipments of seeds were sent by Cheesman and Coats in January 1757. Ball had arrived in Charles Town on June 10, 1757. See Garden to Ellis, June 12, 1757, *COL*, I: 408-409.

⁴⁰⁹ Garden to Ellis, January 18, 1758. *COL*, I:415.

months earlier, Garden wrote, “Opportunities from this place to New York by sea, are now much seldomer than before the war,” so “that method of correspondence will not answer.”⁴¹⁰ While Garden’s harsh criticisms were often exaggerated, his commentary regarding the operation of colonial post office, particularly its handling of mail between the northern and southern colonies, was accurate. Though only in his late-twenties, in matters of transmitting knowledge during wartime, Garden proved savvy, unlike some of his much older colleagues in the epistolary web.

Although Garden’s critique of the colonial post office had merit, execution of the war contributed to the problems surrounding communication. “It is now some time since I had your obliging favour,” Garden wrote to Ellis in August 1758, “and would have done myself the honour of answering it long ago had our communication with England been open.” This time, Garden’s predilection for procrastination was not the issue. Garden continued, “but for these four months past, an embargo on our shipping has entirely put a stop to all commerce or correspondence whatever from our parts.” The embargo he referenced was put in place in March along the entire British colonial coastline in order to prepare for the siege of Louisbourg in June.⁴¹¹ The campaign, which drove the French from Atlantic Canada and prefigured the British victory in Quebec the following year,

⁴¹⁰ *Ibid.*, I:415-416.

⁴¹¹ Garden to Ellis, August 11, 1758. *COL*, I:418-419. For the embargo, see Mary Beacock Fryer, *More Battlefields of Canada* (Toronto and Niagara Falls, NY: Dundurn, 1993), 29. This was the second embargo on colonial shipping authorized by the British military. In 1757, British commander Lord Loudoun issued a trade embargo for colonial ports in order to stop goods from reaching the French in Canada. Ultimately, colonial governors and legislatures forced Loudoun to acquiesce as colonies’ economies were adversely affected. See Anderson, *Crucible of War*, 182-184.

was complete when Garden wrote to Ellis in August, finally allowing Garden “the honour of answering” Ellis’s missive.

Paradox characterized Garden’s engagement with epistolary discourse. At once he desired multiple threads of correspondence, while at the same time his own lack of punctual responses placed him in the same category as his idol, Linnaeus. In pursuit of more scientific connections, and perhaps not realizing the potential consequences, Garden began writing to the Swedish naturalist. Garden held strong religious beliefs that frequently manifest themselves in his missives, often as expressions of the wonders of natural productions of God.

Garden’s first wrote Linnaeus in March 1755, about the same time as he started corresponding with Ellis. On the surface, Garden’s letter was excessively complimentary, almost obsequious. Garden chose to use Latin, demonstrating his seriousness, and, perhaps in his own mind, commitment to scientific communication. (Garden sent a duplicate just over two weeks later, hoping that one letter would reach the famous scientist.)⁴¹²

Though not a Congregationalist himself, in some ways his current letter resembled a seventeenth-century New England Puritan conversion narrative more than a piece of eighteenth-century scientific correspondence. “I have sedulously devoted myself to the study of your sexual system,” Garden began, adding that he had “made greater

⁴¹² Garden to Linnaeus, April 2, 1755. *COL*, I:289.

progress in the space of a year than in the three preceding ones, following the method of Tournefort.” He spent the previous summer “re-perusing” the Linnaean method almost weekly, as the “inimitable little collection of aphorisms engaged and delighted” him. It was “so clear and supremely ingenious a system, [which] undoubtedly never appeared before in the Botanical world.” Garden’s epiphany continued: “Nothing can be more finished than your works, which will be read with avidity, by those deeply versed in such studies, for ages to come.”⁴¹³

Of particular importance in any conversion narrative was the effect that the individual experienced through the process, including its confessional aspect, and Garden’s situation was no different. “I freely acknowledge that I, when I read your works, learn from you, not only things of which I was previously ignorant, but even what I thought I had already learned from other teachers.” In Garden’s view, those “other teachers” had corrupted his mind, but through the Linnaean system, Garden realized that “Botany never was placed before in so clear a light.” His conversion nearly complete, Garden praised the exalted Linnaeus, “I therefore earnestly intreat you to accept this testimony of my gratitude for the benefit which I have received from your writings.”⁴¹⁴ Garden’s missive compared favorably with the Puritan tradition. According to historian Daniel B. Shea, Jr., a conversion narrative had to go “beyond the usual confession of

⁴¹³ Garden to Linnaeus, March 15, 1755. *COL*, I:284. The Puritan conversion narrative is outlined in Edmund S. Morgan, *Visible Saints: The History of a Puritan Idea* (New York University Press, 1963), especially 90-92. Sir James Edward Smith provided “re-perusing” in his translation from Garden’s Latin. See correspondence.linnean-online.org/3978/ to view Garden’s original.

⁴¹⁴ *Ibid.*, I:284-285.

faith,” presenting “a satisfactory narrative of his experience of grace.”⁴¹⁵ Garden achieved that requirement with little difficulty. The Swedish naturalist’s reaction to his profession of allegiance went unrecorded. Although Linnaeus replied, Garden never received the missive.⁴¹⁶

Garden’s Calvinist overtones in this first letter to Linnaeus prefigure the overt religious context in his correspondence as a whole. Like many contemporaries, he believed that man could possess “proper knowledge of the works of our Common Father.”⁴¹⁷ In his extensive correspondence with Ellis, Garden’s theological references were few. However, in the limited exchange with John Bartram, the South Carolina physician offered relatively frequent “pious reflections” that “much affected” Bartram.⁴¹⁸ In February 1761, for instance, Garden packed some plants to ship to Bartram, and noted the captain’s impending departure. “May God grant him a speedy & prosperous voyage” in order that Bartram could have “a further opportunity of viewing & admiring” God’s “amazing & Wonderful works.” True happiness, Garden added, resulted from “investigating & Contemplating the inconceivable beauties & mechanism of the works of

⁴¹⁵ Daniel B. Shea, Jr., *Spiritual Autobiography in Early America* (Princeton, New Jersey: Princeton University Press, 1968), 91.

⁴¹⁶ For the miscarriage of Linnaeus’s reply, see Garden to Linnaeus, November 30, 1758, *COL*, I: 291 and Linnaeus to Garden, May 30, 1759, *The Linnaean Correspondence*, linnaeus.c18.net, letter L2538.

⁴¹⁷ Garden to Ellis, January 13, 1756. *COL*, I:363.

⁴¹⁸ Bartram to Garden, March 25, 1762. *COJB*, 551.

nature” given by “that supremely wise & powerful Agent who daily upholds and blesses us.”⁴¹⁹

Scholars have long analyzed and debated how seventeenth- and eighteenth-century naturalists viewed the connection between nature and religion. Nina Reid, for example, has argued that Garden’s study of natural history was, in the true religious sense, “a form of worship.”⁴²⁰ However, as illustrated here, Garden sometimes seemed more concerned with *understanding* God’s works, rather than simply utilizing science as a devotional form. A century earlier, John Ray, who developed a system of natural classification, defined a trajectory similar to Garden’s, but with an interesting twist. Ray took church orders, preached, and wrote on natural theology, but his anti-scholastic empiricism reflected a desire to comprehend God’s creations, yet not necessarily use the process as a means of worship. In this sense, Garden should have found Ray a compelling figure, but Garden rejected Ray’s system, as he had done with Tournefort’s, in favor of the artificial, sexually-based system of Linnaeus.

Reid acknowledges Garden’s “effusive praise” for Linnaeus, but she fails to examine the contradiction inherent in what is presented as Garden’s “oft-repeated definition of natural history in terms of its value as a religious exercise.” According to Reid, Garden thought the examination of “natural artifacts was only the first step.” Then, one should “study, using the Linnaean system to map out the features of the natural

⁴¹⁹ Garden to Bartram, February 23, 1761. *COJB*, 508.

⁴²⁰ Nina Reid, “Loyalism and the “Philosophic Spirit” in the Scientific Correspondence of Dr. Alexander Garden.” *The South Carolina Historical Magazine*, Vol. 92, No. 1 (January, 1991), 7.

world,” which ultimately led to “the adoration of God.”⁴²¹ What Reid has overlooked is Garden’s use of the system he thought so perfect, but his inability to see the conflict in using an *artificial* system to describe the *natural* world. It was precisely the artificiality of the Linnaean system that engendered critique from some of Linnaeus’s contemporaries and those who followed after his death. The system was supplanted by a natural system late in the eighteenth century, although the Linnaean system continued to be taught for some time.

Garden’s spiritual beliefs ran deep, and he conceived of his relationship to God as a personal one. Throughout his correspondence, Garden never placed God in the context of formalized church practice and never identified Christianity specifically. While the “Christian” quality of Garden’s writings could be assumed, along with the framework of organized religion, it is not necessarily so. Garden’s on-again, off-again correspondent John Bartram, for example, was disowned by the Darby, Pennsylvania Friends Meeting for not believing in the divinity of Jesus.⁴²²

Garden and Bartram provide one example of intergenerational communication between practitioners of science, Bartram’s interactions with his own son, William, illustrate another. More importantly, Garden and the younger Bartram potentially

⁴²¹ *Ibid.*, 7.

⁴²² Historian Whitfield Bell has noted that Bartram was reinstated to membership in the Darby Meeting in 1993, 235 years after being disowned. See Whitfield J. Bell, Jr., “John Bartram: A Biographical Sketch,” in Nancy E. Hoffman and John C. Van Horne, eds., *America’s Curious Botanist: A Tercentennial Reappraisal of John Bartram, 1699-1777* (Philadelphia: The American Philosophical Society, 2004), 15.

provided one source of continued scientific epistolary communication for their own generation of practitioners. Two factors shaped the correspondence between Garden and Bartram before 1765. Garden apparently wrote the first letter in the exchange in May of 1755, as the Seven Years' War in America intensified. As previously noted, the colonial post office, the bane of Garden's epistolary existence, was inefficient at the best of times, and during the war service between northern and southern provinces was chimerical. Furthermore, Garden's own predilection for delaying his responses surely contributed to the problem, regardless of postal system issues.⁴²³

Bartram's March 14, 1756 letter was much more conversational, and acknowledged Garden's "very kind letter of February ye 13 1756 but alas very short."⁴²⁴ As mentioned above, Bartram's October missive was quite long indeed, and for Bartram to comment on the length of Garden's letter, it must have been little more than a quick note. In response, Bartram not only utilized his typical relaxed writing style, but also

⁴²³ Like other Charles Town loyalists, Garden's property was confiscated during the American Revolution, and papers were destroyed. Almost all incoming Garden correspondence exists in the form of drafts or commonplace book notes by the senders. For the content of Bartram's reply see Bartram to Garden October 12, 1755, *COJB*, 388-390. Given the wartime situation, it is not surprising that during 1755 and 1756 Bartram and Garden exchanged only four letters. While most of Garden's incoming correspondence has been lost, in this case the letters from these two years from Garden to Bartram are also no longer extant. Bartram's October 1755 reply to Garden's missive of the previous May discussed matters only pertaining to science, which calls into question the content of Garden's May letter.⁶⁷ Had Garden's critical pen been evident in his May missive? Did Garden possibly issue the same backhanded compliment as he had done in his letter to Cadwallader Colden in November 1754 after Garden and Bartram had first met?⁶⁸ Or, was it simply that Garden's initial epistolary contact only dealt with science as well, perhaps as a form of deference to the much older Bartram? Without Garden's letter, answers to these questions only can fall within the realm of speculation, with one exception. It is unlikely that Garden's letter contained anything offensive, since Bartram's reply, though only of a scientific nature, was lengthy. If Garden had overstepped his bounds, Bartram surely would have offered a short response, if he sent one at all.

⁴²⁴ Bartram to Garden, March 14, 1756. *COJB*, 402.

composed another lengthy reply. Early on, Bartram expressed appreciation to Garden. “I am much obliged to thee for thy kindness to my son William,” Bartram wrote. William Bartram apparently desired to meet with Garden “more for ye sake of Botany then Physic or Surgery.” The elder Bartram clearly hoped for even an informal apprenticeship for his son in one of the two medical fields, but even though Bartram owned “several books of both” subjects, William would not “read A page.”⁴²⁵

As a parent, John Bartram was deeply concerned for William’s future. This theme pervaded Bartram’s letters during this period. William had received praise for his artistic endeavors in natural history, and clearly wanted to pursue art as a career. His father had other ideas, however. A year before his missive to Garden, Bartram wrote to Collinson. Bartram sought a “temperate reasonable liveing” for his son, but was “afraid Botany & drawing will not afford him one & hard labour does not agree with him.” At that time, Bartram had already hatched his plan to apprentice William “to learn Phisick & surgery.” However, as Bartram noted, “that will take him from his drawing which he takes particular delight in.” Bartram asked for Collinson’s opinion on the matter.⁴²⁶ Collinson suggested the printing business, or perhaps engraving since “as printing is an Ingenious Art, Drawing and Engraving may with advantage be applied to It.” Collinson looked to William’s strengths, while at the same time urging Bartram that William “consider how

⁴²⁵ *Ibid.*, 402-403.

⁴²⁶ Bartram to Collinson, April 27, 1755. *COJB*, 384.

he Must Live in the world.” Engraving would allow William to “give up his Darling amusements in some Degree,” but not remove them altogether.⁴²⁷

In *The Natures of John and William Bartram*, Thomas Slaughter examines the resultant conflict concerning William’s future that ensued between the two Bartrams. Slaughter sees this as a turning point in their relationship, which clearly it was. The multiple points-of-view that Slaughter addresses—John Bartram, William Bartram, Peter Collinson, George Edwards, and others—effectively unpacks the inherent difficulties of an eighteenth-century father who wanted more for his son than he himself had. Moreover, Slaughter places the younger Bartram squarely within the scientific community, then illuminates how William was extricated from that position, essentially against his will.⁴²⁸

William Bartram’s desire to engage with Alexander Garden “for ye sake of Botany” would have provided another link, like that of Garden and Jane Colden, between two naturalists of the next generation. Garden, the younger Bartram, and Jane Colden would have been able to continue epistolary communication among members of the next generation of the scientific community. Within their own generation, Garden, Bartram, and Colden had a potential transatlantic correspondent, Daniel Solander.

When Daniel Solander arrived in London in late-June 1760, he might very well have elicited some skepticism on the part of the British scientific community. Almost a decade had passed since another student of Linnaeus, Pehr Kalm, was last in Britain, and

⁴²⁷ Collinson to Bartram, February 1756, *COJB*, 394.

⁴²⁸ Slaughter, *The Natures of John and William Bartram*, 118-131.

in that time the list of Kalm's detractors was growing. Kalm, was, of course, received with the respect his position as a Linnaean Disciple warranted when he arrived in England prior to his North American sojourn. While in 1760 it had still not come to light that Kalm fabricated the sources for some of his observations, comments concerning his personal behavior had been widely circulated. Solander's reception in London could very well have been predicated on his colleague's actions. Fortunately for Solander, the scientific community in London judged him on his own merits, not to mention a glowing recommendation from Linnaeus.

No extant evidence indicates that Linnaeus had difficulty in asking Ellis and Collinson to accept Solander. Furthermore, the lack of correspondence regarding Kalm between Linnaeus and his London contacts following Kalm's return to Sweden suggests that Linnaeus wanted to distance himself from his student's unfortunate behavior.⁴²⁹ Moreover, neither Ellis nor Collinson held Linnaeus responsible for Kalm's actions: both were ready to receive Solander warmly. At least they had planned to.

"I lament the long absence of poor Solander," Collinson wrote to Linnaeus in July 1759. Uncharacteristically, Collinson continued with a flurry of questions, "What can be the meaning of this delay? Is no certain advice come of his fate? Is not the name of the ship known, or the port from whence she sailed?"⁴³⁰ Collinson's concern speaks directly

⁴²⁹ Bartram's 1753 letter to Linnaeus contained the observation that Kalm had not written to anyone in the colonies after his departure from North America. Thus, the members of the scientific community there were ready to "tax with ingratitude." This letter surely could have influenced Linnaeus regarding his disposition toward Kalm. See above.

⁴³⁰ Collinson to Linnaeus, July 25, 1759. *COL*, I:52.

to the regard that Linnaeus had for his pupil, which was likely reflected in a no longer extant letter to Collinson sometime the previous year. Writing to Linnaeus in October 1758, Ellis assumed Solander's impending arrival was not a rumor. "I hear your pupil Mr. Solander intends to come to England." Ellis, in all likelihood, received this information from Collinson, along with Linnaeus's praise for Solander. "I should be very glad to do him any services that lay in my power, as I find you have a great esteem for him," Ellis affirmed.⁴³¹ Ellis was not the only one who assumed that Solander would soon be in London.

Under the impression that Solander had arrived in London, Linnaeus wrote to Ellis in May 1759: "No doubt my much-loved pupil Solander has, ere this, found a tranquil asylum in your friendship," and "I have recommended him to your protection as I would my own son."⁴³² Linnaeus earnestly hoped that Solander could "enrich himself from the treasures" of Ellis's knowledge. Worrying like a father about a son's well-being, Linnaeus continued, "I only apprehend that your country may be too expensive for him."⁴³³ Solander clearly was not in the same class as Kalm, at least in Linnaeus's eyes.

⁴³¹ Ellis to Linnaeus, October 24, 1758. *COL*, I:108.

⁴³² Linnaeus to Ellis, May 30, 1759. *COL*, I:123-124. Lisbet Koerner discusses Linnaeus's paternalism and the effect it had on his students. See Koerner, *Linnaeus: Nature and Nation*, 152-158.

⁴³³ *Ibid.*, I:123-124. Lisbet Koerner discusses Linnaeus's paternalism and the effect it had on his students. See Koerner, *Linnaeus: Nature and Nation*, 152-158. Linnaeus was not only concerned about Solander's finances, but also Ellis's. At the beginning of this same letter, Linnaeus acknowledged receiving "a box from Dr. Fothergill," which it seems that Ellis had forwarded. Linnaeus noted he had already sent his thanks "in a cover to Mr. Collinson, that I might not encroach upon your time or pocket." Recipients, of course, paid the postage for letters. Linnaeus thought better than to require Ellis to pay for a letter other than the one Linnaeus was currently writing, especially since Ellis took the time to handle Fothergill's parcel.

Six months later, having heard nothing from Ellis, Linnaeus wrote to him again on November 6, 1759. Linnaeus explained that Solander had left Upsala, Sweden for London in April, stopping in Skåne along the way. Linnaeus queried, “Whether he is detained there by indisposition, as his letters indicated, or whether he is afraid to venture on shipboard on account of the war, I know not.”⁴³⁴ Identifying the Seven Years’ War as a barrier to travel, and thus the acquisition of knowledge, in this case Linnaeus understood that the process of engaging with the scientific community depended on factors that were not always within one’s control. However, Linnaeus never once posited that the war contributed to the lack of communication from Ellis.

Linnaeus was concerned about Ellis, given the absence of letters. Referring to his May letter, Linnaeus noted, “It is long since I wrote to you, or received any of your letters; nor shall I be quite free from anxiety till I hear you are in good health, and retain your regard for me.” Linnaeus also wrote that Solander had letters in his possession from Linnaeus to Ellis and other London correspondents. Delivery of those missives would confirm Solander’s arrival in London, as well as the condition of Ellis’s health.⁴³⁵ Thus, a reply to this current missive, the previous one, or the one Solander carried, would provide reassurance to Linnaeus that Ellis was alive and well. Linnaeus reported that he had also

⁴³⁴ Linnaeus to Ellis, November 6, 1759. *COL*, I:124-125. Skåne, or Scania, is in southern Sweden. For the letters mentioned by Linnaeus concerning Solander’s “indisposition,” see Daniel Solander to Linnaeus, October 15, 1759 and November 2, 1759, in Edward Duyker and Per Tingbrand, eds. and trans., *Daniel Solander: Collected Correspondence 1753-1782* (Oslo-Copenhagen-Stockholm: Scandinavian University Press, 1995), 44-48 and 60-61. Hereafter cited as *Solander Correspondence*. Solander repeated several times in the first letter that he did not write to Linnaeus for fear his parents would find out about his poor health.

⁴³⁵ Linnaeus to Ellis, November 6, 1759. *COL*, I:124-125.

received assurance from Solander that he hoped to arrive in London “in about a week.”⁴³⁶

However, this was *not* what Solander told Linnaeus.

A November 2 letter to Linnaeus detailed the reasons why Solander decided against traveling to London “until the first day of spring” 1760. Poor health and potentially bad weather topped Solander’s list.⁴³⁷ The contradiction between Solander’s letter to Linnaeus and Linnaeus’s to Ellis is striking. The public nature of eighteenth-century scientific correspondence precluded outright lying. Did Sir James Edward Smith take liberties with Linnaeus’s Latin missive to Ellis, perhaps adding the passage referring to Solander’s impending arrival? It seems impossible that Linnaeus could have misinterpreted Solander, but very well could have confused Solander’s letters from October and November. In his October 15 missive, Solander, feeling recovered from his illness, “decided to set out” for England the following week. He reminded Linnaeus of this in the November letter.⁴³⁸ Thus, Linnaeus reported Solander’s October plan of departure to Ellis instead of Solander’s message that he was staying in Skåne for the winter.

The confusion that attended Linnaeus’s mistake was uncommon in the epistolary exchanges of the scientific community. Delays, both infrastructural and personal, as well as miscarriages, should have made these situations far more commonplace. The paucity

⁴³⁶ *Ibid.*, I:125.

⁴³⁷ Solander to Linnaeus, November 2, 1759. *Solander Correspondence*, 60.

⁴³⁸ Solander to Linnaeus, October 15, 1759 and November 2, 1759. *Solander Correspondence*, 47-48 and 60.

of such examples demonstrates the prudence that the members of the epistolary web exhibited when composing their missives.

In April 1760, Linnaeus wrote again to Ellis, “I have long regretted the want of your letters, and the silence of a friend I so highly value,” but learned, “with great pleasure, that you enjoy your health.” The same could not be said for Solander. Linnaeus continued, “I lament that ill health has kept my dear Solander a whole year from the benefits of your society.” Once again, Linnaeus noted, he had word of Solander’s departure for London.⁴³⁹ As of June 13, when Ellis replied, Solander *still* had not arrived. “I am much concerned that your friend Solander is detained by sickness,” Ellis wrote, promising that “If he comes, I shall introduce him with pleasure to all my friends, who indeed have long expected him.” Ellis then reminded Linnaeus, “it is now above a year since you wrote so warmly in his favour.”⁴⁴⁰

Solander finally arrived in London on June 29, 1760, and wrote to Linnaeus two days later. Solander reported that he met Ellis and described the London merchant as “quite a pleasing man,” who “has offered me his services in every way.”⁴⁴¹ Ellis clearly had kept his promise to Linnaeus.

In addition, Ellis had also taken Solander to the Mile-End nursery of James Gordon. Both Ellis and Collinson frequently wrote of Gordon’s talents as a gardener, but

⁴³⁹ Linnaeus to Ellis, April 29, 1760. *COL*, I:128.

⁴⁴⁰ Ellis to Linnaeus, June 13, 1760. *COL*, I:131-132. Ellis, speaking on behalf of the rest of the London scientific community, almost seemed to doubt Solander’s existence.

⁴⁴¹ Solander to Linnaeus, July 1, 1760. *Solander Correspondence*, 105.

the two clearly disagreed about Philip Miller. Ellis seems to have been one of Miller's most vocal critics and had no compunction about voicing his complaints about his Royal Society colleague. In his first letter to Linnaeus, Ellis granted that Miller was "a good gardener," but "he is of opinion that he is a most excellent botanist, which all the world will not allow him."⁴⁴² In 1758, Ellis recommended Gordon to Linnaeus as "a correspondent here that is a curious gardener." But Ellis went further, noting that Gordon had "more knowledge in vegetation than all the gardeners and writers on Gardening in England put together."⁴⁴³ Solander's letter to Linnaeus further illuminated Ellis's disdain for Miller.

Ellis quickly convinced Solander that Gordon was far superior at raising plants than was Miller. Influenced by Ellis, Solander accompanied him to visit "Gordon, considered here in London to be the greatest in his art." Furthermore, according to Solander, Gordon had "far more insight than Miller," and grew plants that Miller did not.⁴⁴⁴ In reality, Miller was able to grow certain species at Chelsea that Gordon could not grow at Mile-End, Gordon's vast talents notwithstanding. Miller's advantage in those cases was the micro-climate at the Physic Garden, a feature that still allows the propagation of plants that will grow nowhere else in London. Solander also reported that Ellis was not "very friendly with Miller," who thought the gardener at Chelsea was

⁴⁴² Ellis to Linnaeus, n.d.. *COL*, 1:82, 1:84-85. The letter is undated, but probably written in 1756 or 1757 according to Smith.

⁴⁴³ Ellis to Linnaeus, April 25, 1758. *COL*, 1:93.

⁴⁴⁴ Solander to Linnaeus, July 1, 1760. *Solander Correspondence*, 105-106.

“capricious and vain.”⁴⁴⁵ Solander was unaware that his former teacher already knew Ellis’s position regarding Miller and Gordon.

Despite their disagreement concerning Philip Miller, Ellis and Collinson were, as has been shown, close friends and scientific colleagues. Ellis wasted no time informing Collinson of Solander’s arrival. Solander, writing his letter to Linnaeus in the morning, noted, “at noon today Mr Ellis will accompany me to Collinson.” The following day, Solander called on Miller, likely to the chagrin of Ellis.⁴⁴⁶ After he had only been in London for three days, Solander was thoroughly indoctrinated into the scientific public sphere.

On July 11, Solander wrote to Linnaeus once more, thanking his former teacher for the letters of recommendation, which had brought Solander “many patrons and friends,” especially “indefatigable Mr Ellis, and the very worthy Collinson.” Describing the pair as Linnaeus’s “sincere friends,” Solander added, “their devotion for you cannot be augmented.”⁴⁴⁷ Of course, Collinson’s “devotion” was limited by the fact he had not learned the Linnaean system, nor did he ever plan to. Solander reported that he received a specimen from Ellis originally sent by “Garden in America.”⁴⁴⁸ Linnaeus probably had shown Solander other material Alexander Garden had sent to Sweden, thus Solander would have known of the South Carolina physician before his departure for England. It is

⁴⁴⁵ *Ibid.*, 107.

⁴⁴⁶ *Ibid.*, 106.

⁴⁴⁷ Solander to Linnaeus, July 11, 1760. *Solander Correspondence*, 113.

⁴⁴⁸ *Ibid.*, 113-114.

also possible that Solander first learned of Garden from Ellis. After closing his letter, Solander added a postscript containing the names of nine people, including Ellis and Collinson, who “report their respects” to Linnaeus.⁴⁴⁹

Although his correspondence was exclusively with Linnaeus at this point, Solander’s missives already resembled those of the seasoned members of the epistolary web. Solander wrote again to Linnaeus on July 21, and this particular letter mentioned Ellis, Gordon, Garden, Ehret, Clayton, Miller, Collinson, and Edwards. Notable here was Solander’s intent: he was not dropping names, rather, he was describing the purveyors of the specimens he was sending to Linnaeus along with the letter. In the case of Collinson and Miller, Solander reported they both had promised to contribute specimens as best they could.⁴⁵⁰ Either Linnaeus never mentioned the decades-long contributions of Collinson and Miller, which seems unlikely, or Solander forgot this important lesson during his tutelage.

On July 23, Linnaeus noted the receipt of Solander’s missive of July 1, and was much relieved that his student had finally arrived in England.⁴⁵¹ Linnaeus had accumulated several of Solander’s letters before writing to Ellis on August 11, thanking Ellis for the “peculiar kindness” shown to Solander, “who, in his letters, cannot sufficiently praise your hospitality, in not only welcoming him yourself with *paternal*

⁴⁴⁹ *Ibid.*, 114.

⁴⁵⁰ Solander to Linnaeus, July 21, 1760. *Solander Correspondence*, 118-119.

⁴⁵¹ Linnaeus to Solander, July 23, 1760. *Solander Correspondence*, 127.

affection, but in recommending him also to your friends.”⁴⁵² Here, Linnaeus projected his own paternalism onto Ellis. Although Solander was deeply gratified by his reception by Ellis, he had not implied such a paternal-filial relationship between himself and Ellis in any of his letters to Linnaeus. Even though he had only recently arrived, Solander obviously possessed the ability to bridge the generational gap between himself and the members of the scientific community in England. Thus, British practitioners of science looked upon Solander as an equal, not a student, and certainly not a son.

Ellis’s friend Philip Carteret Webb (1700-1770), Member of Parliament from Surrey, was “in great distress for want of a Gardiner,” so Ellis felt “oblig’d to supply that office” until Webb could find a replacement.⁴⁵³ Ellis wrote to Solander from Webb’s estate at Busbridge, “I was oblig’d to leave London without taking my leave of you.” More importantly, Ellis stressed the need for Solander to “learn English as fast as you can that I may introduce you to my Friends here who will be glad to see you when they can converse with you.”⁴⁵⁴ Solander’s comprehension of written English was not the problem, and he was able to speak the language. The issue, as Solander told Linnaeus soon after his arrival in London was, “people here generally speak so fast and indistinctly that much practice is needed before I can comprehend what they say.” Then Solander informed Linnaeus of a plan “To learn the language better and more quickly,” Solander

⁴⁵² Linnaeus to Ellis, August 11, 1760. *COL*, I:134. My emphasis.

⁴⁵³ Ellis to Solander, August 1, 1760. *Solander Correspondence*, 135. Ellis spent the better part of three years in the role.

⁴⁵⁴ Ellis to Solander, July 26, 1760. *Solander Correspondence*, 134.

would go “to the country for a couple of weeks in order to associate only with English people.” Ellis was one of many who had made the suggestion to him.⁴⁵⁵ He immediately immersed himself in the British scientific community, and he did the same with the community’s preferred language.

Ellis, like other members of the epistolary web, always demonstrated an awareness of the process of the circulation of knowledge. “When you write to me,” Ellis told Solander in his first missive from Busbridge, “give your Letters to Mr Usher at my Lodgings and he will forward it to me.”⁴⁵⁶ Even with his hasty departure from London, Ellis insured that communication between himself and Solander continued, particularly since their association had just begun. Just two weeks later, Solander received an invitation to Busbridge.

In his letter inviting Solander to Webb’s estate, Ellis was anxious, even obsessive, about the details. Ellis informed Solander of a “stage coach, that comes twice every week to the town of Godalming,” not far from Busbridge. Solander should “take a place in the stage coach for Wednesday next, which is one of the Days it comes to Godalming,” and Ellis would meet Solander “at the Inn where the coach comes.” Ellis immediately reminded Solander to reserve his “place soon for fear of being disappointed.” Ellis then queried, “I hope you are as much improved in speaking as writing English.” Ellis commanded, “Write to me to morrow night,” and provided mailing instructions. If by

⁴⁵⁵ Solander to Linnaeus, July 1, 1760. *Solander Correspondence*, 106.

⁴⁵⁶ Ellis to Solander, July 26, 1760. *Solander Correspondence*, 134. Duyker and Tingbrand identify “Mr Usher” as “Probably James Usher (1720-1772),” erstwhile farmer and Dublin linen draper who “established a school in Kensington” in London. See *Ibid.*, 135n1.

chance Solander misunderstood any of the directions, Ellis reiterated, “pray don’t fail to write to me to morrow night whether you are resolved to do me the pleasure to come to Godalming on Wednesday next, that I may wait on you at the Inn to conduct you here.” Finally, Ellis requested that Solander bring nice clothes “and a pair of shoes extraordinary.”⁴⁵⁷ All of Ellis’s worry was for naught, as there is no indication that Solander ever attended the gathering.

Although Ellis acknowledged Solander’s competency in written English, Ellis’s repetition of his instructions suggests at least some uneasiness concerning Solander’s English reading comprehension. Moreover, Ellis addressed Solander’s ability to speak English, indicating discomfort on that score as well. Ellis clearly understood the prospects for Solander to engage fully with the British scientific community, as well as the wider British public, provided he could meet certain conditions. For Ellis, German-born Georg Ehret served as a model, having emigrated a generation earlier, made London his home, and immersed himself in the English language.

When Ellis wrote to Linnaeus on July 21, 1758, he described a recent visit to the botanical garden of Richard Warner (1713-1775) at Woodford, near London. Ellis, along with Collinson and Ehret went to view Warner’s “rare plant like a Jasmine, with a large double white flower, very odoriferous, which he received about four years ago from the Cape of Good Hope,” which was, at the moment, referred to as *Warneria*.

⁴⁵⁷ Ellis to Solander, August 8, 1760. *Solander Correspondence*, 136.

Thus began a long, sometimes convoluted, conversation among many members of the epistolary web and the scientific public sphere, not concerning the actual *genus* of the plant, but what to name it. This was a well-known subject of debate among naturalists throughout Britain, Europe, and North America.⁴⁵⁸ Daniel Solander entered this discussion not long after he landed in England, although quite unknowingly. Furthermore, letters between Solander and Linnaeus, as well as Solander and Ellis, on the matter illuminate the small rift that had formed between Ellis and Linnaeus. The rift in question concerned Linnaeus's rules concerning the naming of plants, and the perception by both men of a lack of communication. This familiar theme echoes the issues encountered by Bartram and Collinson during this same period—the Seven Years' War. Even though communication might not entail a transatlantic journey, letters needed time to reach their destination. Even short delays had the potential to exacerbate tensions among letter-writers.

Sometime between June 30 and July 10, 1760 Solander had already been to Warner's Woodford garden, seen the plant in question, and was making arrangements to send a specimen back to Linnaeus.⁴⁵⁹ While Solander wrote about his visit and

⁴⁵⁸ Ellis to Linnaeus, July 21, 1758. *COL*, I:99. Although Philip Miller thought otherwise, Ellis, Linnaeus, and others quickly determined that the plant was not a jasmine at all, but a new *genus*. The following letters, all written before Solander arrived in London, address the issue: Ellis to Linnaeus, August 1, 1758; Linnaeus to Ellis, September 29, 1758; Ellis to Linnaeus, October 24, 1758; Linnaeus to Ellis, December 8, 1758; Linnaeus to Ellis, [January 1759]; Ellis to Linnaeus, March 2, 1759; Linnaeus to Ellis, April 29, 1760; Ellis to Linnaeus, June 13, 1760; Ellis to Garden, June 13, 1760; *COL*, I:99; I:103; I:104-106; I:110-111; I:112-114; I:120-122; I:127-128; I:130; I:493.

⁴⁵⁹ Solander to Linnaeus, July 11, 1760 and Solander to Linnaeus, July 21, 1760. *Solander Correspondence*, 113 and 117.

acquisition, Linnaeus had already sent a letter to Solander concerning the *Warneria*. The two missives crossed paths, with Linnaeus's July 23 letter arriving just two days after Solander sent his to Sweden. Both men likely reacted when reading each other's letters. Linnaeus wrote, "remember the *Warneria* that we examined together?" Evidently, Solander had no such recollection, since he did not refer to having seen the plant before his visit to Warner's garden. Linnaeus reminded Solander of some details, adding more to the ever-complicated story: "Warner did not want it named after him," and "Ellis ordered that it should be named *Augusta*." Linnaeus reported he and Ellis were in conflict over the name, but Ellis now "wants *Warneria* to be named *Gardenia*, after Garden who is an enquiring botanist in Carolina who has sent me a couple of new genera." Linnaeus thought it better "to name *Warneria* after Warner, who in Europe has had it first in his garden."⁴⁶⁰ Never mind that Warner did not want the plant named after him. Then Linnaeus attacked Ellis.

Continuing his story of the *Warneria* to Solander, Linnaeus saw "no reason to name it after Garden, who although enquiring has never yet done anything for the *public*."⁴⁶¹ Ellis plainly disagreed or he would not have suggested *Gardenia* in the first place. Linnaeus then characterized Ellis as someone "who is already somewhat angry in this matter."⁴⁶² A few months earlier, Linnaeus wrote to Ellis, "you are displeased at my not having admitted your new genus by the name of *Augusta*." Linnaeus seems to have

⁴⁶⁰ Linnaeus to Solander, July 23, 1760. *Solander Correspondence*, 128.

⁴⁶¹ *Ibid.*, 128. My emphasis.

⁴⁶² *Ibid.*, 128.

thought that Ellis's anger brought about "the silence of a friend I so highly value."⁴⁶³ For his part, Ellis, wrote from Busbridge to Solander on August 24, 1760, "I was in hopes to have heard from Doctor Linnaeus. pray inform me whether you have heard from him," and more importantly, "whether he has recd. the Letter wherein I desired him to call Warner's Jasmine *Gardenia*." Ellis, whose concept of time seems to have momentarily left him, continued, "I am not pleased at his long silence unless my Letters have miscarried."⁴⁶⁴ In reality, little time had elapsed since Linnaeus had written. Linnaeus's last missive was sent April 29, which Ellis acknowledged in his June 13 reply. Ellis then directed Solander, "I desire you'll write to him and mention what I now write." Ellis also noted that a quick reply would insure that "no man shall be more industrious to serve him" than Ellis himself.⁴⁶⁵ Notable here is Ellis's worry of miscarriage, likely engendered by the war.

A week later, Ellis again wrote to Solander, who had received a letter that had detailed Linnaeus's refusal to use the name *Gardenia*. This new information disturbed Ellis since Linnaeus had promised Ellis the name *Gardenia* would indeed be given to *Warneria*, as per Ellis's request.⁴⁶⁶ If Solander followed Ellis's instructions from the previous week, more confusion would ensue, so Ellis directed Solander, "I must therefore

⁴⁶³ Linnaeus to Ellis, April 29, 1760. *COL*, I:127.

⁴⁶⁴ Ellis to Solander, August 24, 1760. *Solander Correspondence*, 139-140.

⁴⁶⁵ *Ibid.*, 140.

⁴⁶⁶ Ellis to Solander, August 31, 1760. *Solander Correspondence*, 141. For Linnaeus's promise to Ellis, see Linnaeus to Ellis, August 11, 1760, *COL*, I:134.

desire you to write to Doctor Linnaeus not to call it after any body till he hears from me according to his promise.”⁴⁶⁷

Although still disturbed by Linnaeus’s actions, at least as reported by Solander, Ellis demonstrated an understanding of how the process of communication contributed to confusion, and in this case, disagreement. Both Ellis and Linnaeus involved a third party, Solander, in their dispute. Solander’s location, London, placed him in a difficult position. Unlike transatlantic communication, letters between Busbridge and London (as well as between London and Upsal) required far less transit time. However, the two or three weeks for a letter to travel between Sweden and England ultimately interfered with epistolary conversations.

October 1760 brought an end to the *Warneria* episode. Solander wrote to Linnaeus that Ellis was “incomparably happy” that Linnaeus finally accepted Ellis’s name.⁴⁶⁸ Ellis’s quarrel with Linnaeus was about principle. The Swedish naturalist had promised, in writing, to name the plant after Garden. Ellis thought Garden’s regular contributions of specimens and their descriptions to the scientific community warranted recognition, despite Garden’s lack of “public” output. Ellis’s stance on the issue reflected his position regarding the community as a whole, not the rigid naming conventions Linnaeus imposed. When Garden was informed of the decision, he wrote to Ellis in January 1761, “Your compliment of the *Gardenia* was most acceptable to me and you need not doubt I shall gratefully remember it.” However, Ellis had not told Garden if

⁴⁶⁷ Ellis to Solander, August 31, 1760. *Solander Correspondence*, 141.

⁴⁶⁸ Solander to Linnaeus, October 31, 1760. *Solander Correspondence*, 141.

“Linnaeus adopted it.”⁴⁶⁹ Ellis replied in April that “Linnaeus has actually adopted it among his new genera.” Of greater importance, according to Ellis, “the Royal Society, which still makes it more public here,” was going to print Ellis’s description in the *Philosophical Transactions*.⁴⁷⁰ Ellis’s identification of a wider audience for knowledge, albeit more limited by publication in the *Transactions* as opposed to the *Gentlemen’s Magazine*, demonstrated the commitment of established members of the scientific community to transmitting their finding to the broader public, even in a time of geopolitical uncertainty.

Garden’s January 1761 letter to Ellis also revealed that Linnaeus had not written in quite awhile. The Swedish naturalist had requested that Garden send specimens of fish. Those specimens accompanied the letter to Ellis he was now writing. Seizing the opportunity, Garden once again took aim at his favorite target, Mark Catesby. “O my good friend,” Garden wrote, “how many blunders and gross misrepresentations have I seen in Catesby! – gross beyond conception!” Catesby had produced illustrations of Carolina fish species, but there were indeed many errors, a result of the fact Catesby had drawn them from memory. Garden enclosed “characters of most of the fish I have sent, merely that Linnaeus might correct me.” However, Garden continued, “I am grieved that I cannot hear oftener from him.” Then came Garden’s request to Ellis, “Pray be a mediator, and rectify all this.” Garden “spared no pains to procure these” for Linnaeus,

⁴⁶⁹ Garden to Ellis, [about January 1761]. *COL*, I:501.

⁴⁷⁰ Ellis to Garden, April 8, 1761. *COL*, I:506-507.

and Garden did it “in a horrid country, where there is not a living soul who knows the least *iota* of Natural History.” Jealously, Garden added, “I confess I often envy you the sweet hours of converse on this subject with your friends in and about London.” Though extant correspondence does not exist, Ellis must have praised Solander as much as Linnaeus had. Garden concluded, “How must you enjoy Solander! O my God!”⁴⁷¹

Garden had learned about the presence of Solander in London, yet never established a regular correspondence with Linnaeus’s former student. The two men wrote to each other a handful of times, although no letters survive. Both Garden and Solander utilized their strong connection with Ellis to further not only their own pursuits in science, but also their links to others in the scientific community. Such links prominently involved members of an older generation, rather than fostering a continuation of correspondence with their own peer group.

Ironically, during the 1760s and 1770s, Solander, Garden, and the other members of the scientific public sphere and the epistolary web strengthened their identities as Britons. At the same time, of course, political turmoil in Britain’s American colonies began to reshape most citizens’ vision of the future.

⁴⁷¹ Garden to Ellis, [about January 1761]. *COL*, I:501-502.

CHAPTER SEVEN

CONCLUSION: ENTROPY AND EPILOGUE

The Age of American Revolution brought significant changes to the scientific community, but it was not the War of Independence itself that affected those changes. Members of the epistolary web and the scientific public sphere were getting older. Worries that attended the possible death of a correspondent in earlier years, became realities. The epistolary web did not suffer a quick collapse, but rather a gradual decline. In other words, although the military conflict began with a bang at Lexington and Concord, the epistolary web ended with a whimper.

Before the web's deterioration, members of the scientific community strengthened their British identity in this period. By 1765, the scientific practitioners in America had been engaged in the international exchange of knowledge for three decades. That community produced few politically-active individuals at a time when many American colonists spoke publicly against Parliament and even the King. Scientific practitioners did not belie their allegiance, however. Their support for "King and country" was unwavering, if not uncritical.

Problems began to surface after the Treaty of Paris in 1763. The treaty, which officially ended the Seven Years' War, removed France as a political force from North America. Britain controlled the lands east of the Mississippi River as well as Canada, and Spain exercised the same power west of the Mississippi to the Rocky Mountains. But the

war was a global conflict and Britain spent a great deal of money fighting it. In 1764, newly-appointed Prime Minister George Grenville (1712-1770) proposed a tax on American colonists to help recover the costs. The idea of such a tax ran counter to the promise former Secretary William Pitt (1708-1778) made to the colonies at the war's outset: if the colonies raised militias, then Parliament would foot the bill. The colonies did not raise many militias, but thought the number sufficient to hold up their end of the bargain. Thus, when the Stamp Act was pushed through Parliament in early 1765, many on the other side of the Atlantic were none too pleased when word arrived of the new tax in the spring. Parliament announced the act would go into effect on November 1.

While Virginians began the protest against the Stamp Act, it was radical Bostonians who mobilized and made it clear that the new tax would not be tolerated. On August 14 (and again on August 26), Boston mobs sacked the houses and threatened the lives of government officials. Spurred on by the events in Boston, cities throughout the colonies hosted their own protests. In New York and London, two members of America's scientific community became central *political* figures in the crisis.

Cadwallader Colden, long-time government placeman, was currently serving as lieutenant governor of New York and put himself in the middle of the controversy. Colden was unlike his counterpart in Massachusetts, Thomas Hutchinson (1711-1780), since Colden thought the Stamp Act was reasonable and a good idea. Both Hutchinson and Colden were symbolic of what many in every strata of colonial society saw as problematic: British government officials getting rich by way of the taxpayer. And of

course, thought the colonials, the Stamp Act would surely add to the wealth of these officials. Despite the fact that Hutchinson had serious reservations about the Stamp Act, he and Colden shared similar a fate. Hutchinson's mansion, the largest and finest in Boston, was pillaged, and the October 31 New York Stamp Act riot saw Colden hung in effigy and his coach burned.⁴⁷²

Colden was never compensated for his losses during the New York mob action against the Stamp Act, but pushed the issue with Parliament for many years. Until his death in 1768, Peter Collinson worked on Colden's behalf, but the political situation had become too fluid and Collinson's ministerial contacts were no longer in power. Although his letters make clear that he was far more concerned with science, Collinson never shied away from offering an opinion on political situations. But unlike his verbose style evident in his writings on science in general and botany in particular, Collinson's political commentaries were, for the most part, concise. Having received news of the Stamp Act protests, Collinson wrote at the end of December 1765, "we hear with concern with what riotous Mobs the publick Tranquility is Disturbed, I hope when our Parliament Meets some happy Medium will be found to alay such unjustifiable proceedings & prevent them for the future." He then moved on to another subject.⁴⁷³

⁴⁷² For the Stamp Act, see Edmund S. Morgan and Helen M. Morgan, *The Stamp Act Crisis: Prologue to Revolution* (Chapel Hill: The University of North Carolina Press, 1953). For mob actions, see Gary B. Nash, *The Urban Crucible: The Northern Seaports and the Origins of the American Revolution* (Cambridge, Massachusetts: Harvard University Press, 1986), 184-196.

⁴⁷³ Collinson to Bartram, December 28, 1765. *COJB*, 656.

Meanwhile in London, Benjamin Franklin, like Colden, was in an untenable position. Franklin's well-known animosity toward the Penn family manifest itself in his desire for Pennsylvania to have the Penn proprietorship revoked and to be rechartered as a Royal Colony. On one hand, Franklin needed to support the Stamp Act to show his loyalty to the King. But on the other, he needed to support his fellow Pennsylvanians, who, like many of their counterparts throughout the colonies, found the tax distasteful. However, some Pennsylvania residents thought Franklin had authored the Stamp Act since he offered support for John Hughes, the appointed Stamp Distributor for Pennsylvania.

While Franklin's scientific achievements made him one of the most recognizable figures in America, Britain, and Europe, fame did little to offset the trouble he had caused for himself by siding with King and Parliament. However, Franklin's notoriety helped considerably in early-1766 when he testified before Parliament publicly calling for a repeal of the Stamp Act. One of Parliament's diarists even referred to Franklin as "the electric philosopher." In a remarkable performance (it is clear from the transcripts that Franklin steered the testimony away from the questions directed to him and toward his own well-rehearsed soliloquies), Franklin berated the governmental body for its shortsightedness. Of course, the act itself was long dead in the water due to the colonial protests that had begun six months earlier and Franklin obviously knew it while waxing poetic against the much-despised tax. When the Stamp Act was officially repealed in the spring of 1766, Franklin received much credit for its demise.

Franklin, unlike Colden, remained engaged with the other members of the scientific community, although most (but not all) of his own direct work in science had ended around 1753. Like his first extended stay in London (1757-1762), Franklin's second sojourn in the British capital (1764-1775) shifted his interactions with the scientific community in America from personal to epistolary, while his interactions with the scientific community in Britain moved in precisely the opposite direction. However, from 1765 onward, Franklin's primary concerns were political.⁴⁷⁴

As previously noted, Franklin was awarded the Copley Medal in 1753, with the help of Collinson's influence. Likewise, Collinson acted on John Bartram's behalf and secured the title, King's Botanist in America, along with a stipend of fifty pounds per year, for his longtime correspondent.⁴⁷⁵ Like Collinson, Bartram kept his political commentaries to a minimum, often ignoring politics completely. Although Bartram wrote of potential Indian attacks in the backcountry during the 1740s, he did not comment on the Stamp Act and the mob actions associated with it, or the Townshend Acts and the non-importation agreements put in place by several colonies. But like Franklin, Colden, and Collinson, Bartram's allegiance was clear: by assuming the title of King's Botanist, he publicly allied himself with the crown.

Alexander Garden was less than pleased with Bartram's royal appointment. Garden had no objections to the stipend, but thought Bartram did not deserve the title.

⁴⁷⁴ Franklin's allegiances obviously shifted in 1775, when he returned to Philadelphia to help author the *Declaration of Independence*.

⁴⁷⁵ Collinson to Bartram, April 9, 1765. *COJB*, 644.

Bartram stayed with Garden during a collecting trip to the Carolinas and Florida in July 1765 and informed the South Carolina physician of his award. Writing to John Ellis after Bartram's departure, Garden double-checked the claim and inquired somewhat rhetorically, "Is it really so? Surely John is a worthy man; but yet to give the title of King's Botanist to a man who can scarcely spell, much less make out the characters of any one genus of plants, appears rather hyperbolic."⁴⁷⁶ Earlier in the same letter, Garden both ridiculed and praised Bartram's abilities, at once describing the Philadelphian's knowledge as "rude, inaccurate, indistinct, and confused," but with an "alert, active, industrious, and indefatigable" personality that apparently made up for at least some of the former shortcomings.⁴⁷⁷ Garden's penchant for unbridled critique has been noted earlier. However, Garden's attack on Bartram did not go unnoticed.

In 1766, Garden wrote to Bartram, "How do you do? It is so long since I had a line from you."⁴⁷⁸ Bartram never replied. Nor did he reply to a second Garden missive sent not long afterwards. It seems that Bartram must have learned of Garden's condescending remarks in the July 1765 letter to Ellis. Of course, Ellis and Collinson saw each other frequently. Ellis could have shown Collinson Garden's letter or just simply told Collinson the disrespectful statements regarding Bartram. Although no record exists of Bartram learning of Garden's comments, it seems too coincidental that Bartram never again wrote to Garden. The reply Ellis sent to Garden in September 1765 is no longer

⁴⁷⁶ Garden to Ellis, July 15, 1765. *COL*, I:538.

⁴⁷⁷ *Ibid.*, 537.

⁴⁷⁸ Garden to Bartram, February 12, 1766. *COJB*, 658.

extant, and the next letter Garden sent to Ellis makes no mention of any comments that Ellis might have made concerning Bartram's abilities. Regardless of Garden's perceptions, Bartram garnered at least some respect of the British scientific community, and had been an integral part of it for almost as long as Garden had been *alive*.⁴⁷⁹

Like his predilection for critique, Garden did not hesitate to express his political views in his letters. Writing to Ellis in December 1765, the Scots-born Garden refers to opponents of the Stamp Act as "the Americans." Those who do not support the tax Garden explains, "call themselves the Sons of Liberty." Like Thomas Hutchinson, Garden did not see the act as a good thing, but nor did he appreciate the rhetoric against it. "Bad and oppressive as the Act is in itself," Garden continued, "it is represented by a few designing men as being ten times worse than it is."⁴⁸⁰ Garden's use of "Americans" as a *political* identity, rather than as a *geographic* one, brought a new wrinkle to the transatlantic correspondence of the scientific community. However, scientific practitioners seemed to be exempt from such labels. Garden's concerns about the Stamp Act went further than the political ramifications, however.

Obviously focused on the fate of transatlantic communication, Garden wrote to Ellis in December 1765, "The fatal Stamp Act is likely to put an end to our

⁴⁷⁹ In *The Natures of John and William Bartram*, Thomas Slaughter correctly points out that Garden was upset about the title Bartram had received, not the monetary reward associated with it. Slaughter is also correct in his assessment of Bartram's need for recognition, and claims Bartram was jealous because of Garden's titles, "M.D." and "F.R.S.". But Slaughter's evidence is faulty: Garden did not become a Fellow until 1773. While applying the "F.R.S." (Fellow of the Royal Society) to Garden's name makes for good narrative, in reality Garden's M.D. was his only title at the time. See Slaughter, *Natures*, 104.

⁴⁸⁰ Garden to Ellis, December 16, 1765. *COL*, I:543-544.

intercourse.”⁴⁸¹ Garden knew that if communication were disrupted, his contact with Europe would also end, including, of course, any exchanges with Linnaeus. In case transatlantic discourse was cut off, Garden naturally included a critique, once again offering steadfast support for the Swedish systematizer.

French naturalist, Georges Louis Leclerc, best known by his title, Comte de Buffon (1707-1788), annoyed Garden with the use of Iroquois Indian names for American animals in his published work, “merely out of opposition to Linnaeus.” Never one to mince words, Garden called Buffon’s actions “ridiculous and puerile.” But like his critical treatment of Bartram, Garden found things to admire in Buffon’s work. Garden pointed to the “easy, agreeable, lively style,” of Buffon’s writing, which in Garden’s estimation made the French naturalist “often truly a painter.” But Garden was “vexed at him for snarling so at Linnaeus,” but wondered with some agitation, “Plague on it, why cannot they agree?” Although his support for Linnaeus is unwavering, Garden saw the need for international cooperation in science.⁴⁸²

Garden received some of his medical training from the University of Edinburgh. The preeminent medical school of the time, Edinburgh not only attracted Britons like Garden, but also American-born students. John Morgan (1735-1789), William Shippen, Jr. (1736-1808), and Benjamin Rush (1746-1813) all received medical degrees from the prestigious university. All three would figure prominently in the establishment of the first medical school in America.

⁴⁸¹ *Ibid.*, 543.

⁴⁸² *Ibid.*, *COL*, 1:546.

The new medical school was attached to the College of Philadelphia (later, the University of Pennsylvania). The need for a medical school in America was clear: all potential physicians who wanted more training than an apprenticeship under a practicing physician (or sometimes quack) were required to travel abroad for their studies. Furthermore, the rapidly expanding population in eighteenth-century America was in need of more qualified medical practitioners. It may appear that the founding of the medical school in 1766 was a blow to the international scientific community by isolating the medical students of the American colonies, but this was not the effect. It took several years to produce graduating classes of any size, and furthermore, many American students continued to opt for training in Edinburgh. The medical school in Philadelphia was founded for geographic reasons, not because of political discontent with Britain. Even the future signer of the *Declaration of Independence*, Benjamin Rush, did not point to the quarrels with Parliament over taxation as a reason for introducing medical education in the colonies.⁴⁸³

The death of Peter Collinson in the late summer of 1768 might very well have destroyed the epistolary web he helped create. Remarkably, the fabric of the scientific community became stronger. Collinson's son Michael Collinson (1729-1795), although

⁴⁸³ For an in-depth examination of the founding of the medical school, see Whitfield J. Bell, *John Morgan: Continental Doctor* (Philadelphia: University of Pennsylvania Press, 1965). Bell not only provides an excellent biography of Morgan, but also details the in-fighting between the various factions within the medical community, the academic community, and the Philadelphia political community as the school prepared to open, admitted its first students, began graduating students, and, seemingly against all odds, continued to operate. Bell's study is also useful for understanding the genesis of medical education during the eighteenth century.

not the botanist that his father was, had a strong interest in natural history and engaged the other members of the community including John Bartram. Physician and botanist John Fothergill, Collinson's best friend, took a more active role in the transatlantic correspondence than he had previously. Even Franklin, who was deeply engaged politically as a colonial agent, resumed a more steady correspondence with the scientific practitioners in America. Although Collinson himself was hardly replaceable, the void was filled almost seamlessly.

Late in 1768, after the founding of the American Society, a group similar to the recently-reincarnated American Philosophical Society, a merger took place between the two competing intellectual societies. The product of this union, The American Philosophical Society, held at Philadelphia, for Promoting Useful Knowledge, elected Franklin as president. Franklin, of course, was in London, and was notified by mail of yet another honor bestowed upon him. In 1768, however, there were signs of things to come: two tax measures defeated by the power of the colonists as well as debates about liberty and freedom openly discussed in coffeehouses and taverns. The scientific community in America was, for the time being, identifiably British. The war that was to begin in seven years would dramatically change its composition, not because of shifting politics, but rather, shifting generations.

Collinson's death was not first among established members of the scientific public sphere and the epistolary web. Dutch physician and botanist Johann Fredrick Gronovius had died in 1762. In addition to his own longtime correspondence with Linnaeus,

Gronovius frequently forwarded letters from Britain to the Swedish naturalist. In addition, orders for European books were often sent through Gronovius.

Jane Colden's death in 1766 went unremarked in the epistolary discourse. Cadwallader Colden never mentioned her passing to Collinson, who at the time remained his only correspondent within the community. Had Collinson received such information, he surely would have passed it along to Ellis and Bartram. Since Garden never commented on the event, it seems likely that Ellis never sent word, providing further evidence that Ellis had no knowledge. As has been previously shown, both Collinson and Ellis offered strong support for Jane Colden's work, which went unrewarded in her own time. Moreover, Jane Colden's generational counterparts lost a potential link that would have served the continuation of the epistolary web.

Ellis mourned the loss of artist-naturalist Georg Dionysius Ehret in 1770. Noting the void left by the German-turned-Briton, Ellis wrote, "We have nobody to supply his place in point of elegance." Even as he eulogized Ehret, Ellis knew the dissemination of knowledge through visual representation continued. Informing Linnaeus of other artistic options, Ellis noted, "There is a valuable work now carrying on upon your system by Mr. John Miller, a German painter and engraver" at the British Museum.⁴⁸⁴ Transplanted Germans, it seemed, cornered the much of the market insofar as natural history artwork was concerned. Always cognizant of the wider audience for science, Ellis added, "This will make your system of botany familiar to the ladies, being in english as well as

⁴⁸⁴ Ellis to Linnaeus, December 28, 1770. *COL*, I:255. John Miller (1715-1780), a German painter and engraver. Linnaeus praised Miller's work.

latin.”⁴⁸⁵ As previously noted, Ellis had been a proponent of publishing the Linnaean system in English since the mid-1750s. Though he despaired of Ehret’s passing, other news from 1770 likely delighted Ellis.

After a protracted battle with his bosses at the Chelsea Physic Garden, Philip Miller was fired from his post in 1770, but allowed to retain a small stipend and his residence. Ellis was not surprised, and thought Miller’s own attitude warranted such action. Explaining the situation to Linnaeus, Ellis wrote of Miller, “His vanity was so raised by his voluminous publications, that he considered no man to know any thing but himself.” Ellis continued, noting that “Our booksellers have made fortunes by their imposition of new editions of Miller’s voluminous Dictionary,” when, in fact, an abridgment would have sufficed.⁴⁸⁶ However, Ellis may have been alone this view, in spite of continued critical acclaim for Miller efforts.

No one could deny the industriousness that Miller evinced in revising successive editions of *The Gardener’s Dictionary*, which continued even as his career at the Chelsea Physic Garden was on a downward slope. This publication clearly set the standard for works of its type. In a time when plagiarism was commonplace and often ignored, there were, surprisingly, limits where such standard-bearing works were concerned.

Nurseryman James Wheeler of Gloucester published *The Botanist’s and Gardener’s New Dictionary* in 1763. Two reviews appeared shortly after its publication, and were, to put it mildly, unkind. *The Monthly Review* for January 1764 opened with a

⁴⁸⁵ *Ibid.*, 1:255.

⁴⁸⁶ *Ibid.*, 1:255.

quote from Wheeler's own introduction to the work, where he insists it is not "an abridgment, or imitation of any one book, yet published." This was not the case according to the reviewer, which saw Wheeler's work "as little more than an abridgment of Miller's Dictionary." The review did point out that "its reduced size and price"⁴⁸⁷ would be attractive, but if readers thought they would "find in it, many additions to what Mr. Miller and others had before published, or many important discoveries, the result of Mr. Wheeler's own experience," they "will, we are afraid, be disappointed."⁴⁸⁸ Although Wheeler added an "Introduction to the Linnaean system of Botany," the review scathingly noted that "there was nothing more than hath been already often communicated to the public," and that Wheeler "is rather to be considered as a Book-maker, than as an Author."⁴⁸⁹

The Critical Review for March 1764 devoted far more space to its demolition of Wheeler's book than *The Monthly Review* had. In it, the journal reprinted long passages of Wheeler's introduction because, "before we give our opinion of the work, we shall be candid enough to permit the writer of it to say a word or two in his own behalf."⁴⁹⁰ Following the reprinted paragraphs, the review agreed with Wheeler's own assessment that his "work is systematical," and "the subjects well arranged, and the material

⁴⁸⁷ As previously noted, Miller's *Dictionary* was massive and expensive.

⁴⁸⁸ *The Monthly Review; or Literary Journal*, Volume XXX (London: Printed for R. Griffiths, 1764) January 1764: 73. The use of first-person plural as a literary device in reviews was commonplace at this time.

⁴⁸⁹ *Ibid.*, 74.

⁴⁹⁰ *The Critical Review: Or Annals of Literature*, Volume the Seventeenth (London: Printed for A. Hamilton, 1764) March 1764: 184. Hereafter, *The Critical Review*.

judiciously selected,” because, the review charged, “the greatest part of it is certainly transcribed for the last edition of Mr. Miller’s Gardener’s Dictionary.” The review acknowledged that “it may be imagined that we are mistaken in our judgment,” but went on to assure the reader that “Two men may, doubtless, *think* alike; had we, therefore, found in this work of Mr. Wheeler’s, Mr. Miller’s *thoughts* only, we should not have been so ready to censure.” The problem was that Wheeler used “in every part of it Mr. Miller’s *words* also.” Openly grappling with the problem, the review asked, “can silence be justified in us, whose duty it is to judge in these cases with the strictest impartiality?”⁴⁹¹

Such a charge of plagiarism could not be levied lightly, and as previously mentioned, was rarely levied at all during this time. Thus, the review’s author laid out proof for the reader, pointing to entries in Wheeler’s dictionary that Wheeler had “taken, *almost*, word for word from Miller,” or had paragraphs which had been “*artfully* enough transposed.” Still, to make sure that readers knew “how far we are in the right,” the journal reprinted “Wheeler’s account of the culture of the pine-apple.”⁴⁹² Although Wheeler inserted material concerning one “Mr. Barnes’s differing opinion from Mr. Miller” regarding insect infestation, “Wheeler has borrowed from [Miller], almost word for word, this account.” Like his counterpart at *The Monthly Review*, the author for *The Critical Review* agreed that Wheeler’s book was “very useful.” However, this was tempered by a backhanded compliment: the book “will doubtless prove great service to

⁴⁹¹ *Ibid.*, 187. Emphasis in original.

⁴⁹² *Ibid.*, 187. Emphasis in original. For the reprinted account see *Ibid.*, 187-191.

many whose pockets will not permit them to purchase a larger and more complete dictionary on the subject, we mean Mr. Miller's."⁴⁹³

Clearly, both *The Monthly Review* and *The Critical Review* thought Wheeler's work had the potential to disseminate knowledge to a broader readership than was possible with Miller's *Dictionary*, but *only* because of cost differences. Both journals openly criticized Wheeler's plagiaristic practices, and *The Critical Review* used valuable page space to provide extensive proof of its accusations. Moreover, the very next review in that publication further emphasized Miller's dedication to the transmission of knowledge, thus positioning Miller, not Wheeler, as the authority.

From the outset, M. Duhamel du Monceau's *The Elements of Agriculture* and "translated from Original French by Philip Miller," received high praise from *The Critical Review*. The two-volume set, an abridgment of Duhamel's earlier writings in twelve volumes, "preserved all the necessary meanings and conclusions, without troubling his readers with long and often repeated detail of experiments."⁴⁹⁴ The review was divided between the March and April issues, with acclaim for Miller's translation coming at the end. "Mons. Duhamel will be far from being displeased at the elegance of his English dress," with "the spirit of the original" intact "and in all parts faithfully rendered."⁴⁹⁵ The wider public benefited from Duhamel's abridgment and Miller's

⁴⁹³ *Ibid.*, 191. My use of the masculine personal pronoun here is dictated by the fact that the authorship of *The Critical Review* is attributed to "A Society of Gentlemen" on the title page.

⁴⁹⁴ *Ibid.*, 191.

⁴⁹⁵ *The Critical Review*, April 1764: 247.

translation as new audiences for the work were possible in both the francophone and anglophone worlds.

Miller's continued contributions may have further elevated his "vanity," but nonetheless, their importance cannot be denied. Although he was in his seventies, Miller's decision to undertake a translation and abridgment project, illuminates his dedication to the dissemination of scientific knowledge. Like his colleagues, good health trumped age, inasmuch as scientific practice was concerned. But the advancing years eventually caught up with the Chelsea gardener, who died in 1771, the year after his firing.

Artist-naturalist George Edwards, who like Ehret made sporadic contributions to the epistolary web was nonetheless entrenched in the scientific public sphere. Similar to Jane Colden, Edwards's death in 1773 went unreported in the correspondence network. There is no evidence to suggest that Ellis, who maintained the broadest geographic epistolary connections since Collinson's death, harbored any negative opinions regarding Edwards. However, Ellis did not mention Edwards passing to either Linnaeus or Garden.

Ellis himself was in poor health during his last years, and died in 1776. His extensive correspondence with Garden became more intermittent in Ellis's final years, although Garden's penchant for procrastination surely contributed to the lack of epistolary output. Indeed, the last known letter of their exchange was written by Garden in March of 1775, eighteen months before Ellis's death.⁴⁹⁶

⁴⁹⁶ Garden to Ellis, March 12, 1775. *COL*, I:603.

Cadwallader Colden's life began with the bloodless Glorious Revolution in 1688, and ended with the not-so-bloodless American Revolution in 1776. Colden's departure from science has already been noted. His much sought after retirement proved chimerical, as he was called to government service repeatedly, even as an septuagenarian. His son David, Franklin's correspondent, was a loyalist like Colden himself and eventually went to Britain.

John Bartram worked in his garden until a few hours before his death in 1777. In the collection of Collinson's correspondence in the British Library, the last letter addressed to Collinson was from Bartram. Similarly, in the Bartram correspondence, the final missive to Bartram was from Franklin. Somehow, it is very fitting indeed.

Linnaeus died in 1779. While he achieved fame within scientific circles within his own lifetime, it grew spectacularly after his death. His classification system was offered in many affordable publications and ultimately reached a very wide audience, though not without battles over the sexual nature of the content. During the period, scientific community eventually overturned the system, replacing it with a natural system, but with Linnaeus's binomial nomenclature intact. Linnaeus was an integral part of the epistolary web, even though his own habit of ignoring his correspondents, sometimes for years, occasionally proved problematic.

Alexander Garden, who had identified the problem of geographic isolation, was now very much alone. His primary correspondent and his idol were both dead, as were both Cadwallader and Jane Colden, and his erstwhile correspondent Bartram. Before

Ellis's death, Garden finally agreed to pay the dues associated with becoming a member of the Royal Society, and did so in 1773. A year earlier, Garden wrote to Ellis, "When I consider that you, Mr. Banks, Dr. Solander, and Mr Pennant, meet together sometimes in London, I often wish for Fortunatus's hat for a few minutes, to transport myself into a corner of the room."⁴⁹⁷ Garden's dream was partially fulfilled, although not in the way he might have hoped. In 1782, Garden, like all Charles Town loyalists, was forced to leave the city. Garden migrated to London, where he participated in Royal Society meetings regularly. Though his association with Banks and Pennant is not well-documented, Garden had written occasionally to Solander. However, the former student of Linnaeus died of a stroke the same year as Garden's arrival in the British capital. As for Garden, his lingering health problems continued and he died in 1791. The continuation of an epistolary web into the next generation was now impossible.

The creation of the epistolary web took place out of necessity. Its creators established no formal rules, but paradoxically, unwritten ones. Continuous contributions insured a steady flow of information, both within the scientific community and to a wider audience. Scientific practitioners recognized that the process of communication held nearly the same importance as the knowledge and specimens being transmitted, and explicitly wrote about it in their missives.

⁴⁹⁷ Garden to Ellis, December 10, 1772. *COL*, I:592. "Mr. Banks" is Joseph Banks. "Mr. Pennant" is Thomas Pennant (1726-1798), British zoologist. Although Solander was referred to as "Doctor," he never actually finished his degree.

A series of individual epistolary connections in the 1730s transformed into a complex web about a decade later, and fostered collaboration among members of the scientific community. This, in turn, encouraged the continued accumulation and dissemination of scientific knowledge. While the colonial postal service connected the practitioners of science in America, efficiently in the northern colonies, but less so in the southern ones, the primary concern of the British scientific community was the transatlantic transmission of letters and specimens. Practitioners thus relied on the captains of merchant vessels, since no other option for transatlantic communication existed, until the advent of the packet boat during the Seven Years' War.

Gathering, storing, and transmitting scientific information during the two decades before the Seven Years' War was the task of individuals, and the domain of institutions. Collection, deposit, and dissemination of knowledge relied on repositories like the Royal Society of London, its European counterparts, as well as formal and informal educational outlets. The first attempt at erecting a formal repository in America, the American Philosophical Society, failed, in part due to the success of the epistolary web, as the letter itself still provided the basis for knowledge exchange, more formal institutions notwithstanding.

The Seven Years' War affected the ability of scientific practitioners to pursue scientific exchange as the fundamental nature of the Atlantic Ocean transformed. Correspondents saw the Atlantic not as a distance to cross, but rather as a period of time that must pass. Delays and miscarriages, infrequent during the pre-war period, became

commonplace, and impinged on the regular shipments of letters and specimens, although the strategy for the dissemination of knowledge that the scientific community had developed in the preceding twenty years provided at least some semblance of continuity. While correspondents were hesitant to exchange missives and merchandise, the desire to circulate knowledge usually trumped any anxiety over geopolitical hostilities. The packet boat offered a new option for transatlantic communication, but its security was never certain. However, merchant vessels were still needed for the shipment of specimens, but delays suffered while waiting for the assembly of convoys often killed living plants. Negotiating the variables of wartime communication was even more difficult for isolated practitioners in the southern British colonies, who had to cope with uncertain colonial postal delivery.

Men of science who placed themselves outside the epistolary web and the scientific public sphere still relied the activities of both systems. Advancing one's own career, but failing to engage in broader conversations, or utilizing the links established between European and transatlantic British scientific practitioners without becoming an intrinsic link to the community engendered criticism from scientific colleagues. The actions of self-serving practitioners brought scientific practitioners closer together, illustrating the community's own perceptions of how the communication of scientific knowledge was to proceed, both within the community itself, and to a broader audience.

While some sought to distance themselves from the the epistolary web and the scientific public sphere, members of a younger generation of practitioners did the

opposite. However, the links they established were, for the most part, to the existing community, rather than with each other. Thus, a long-term continuation of correspondence within their own peer group was jeopardized.

It has been argued that for colonial science to flourish, formal “scientific organizations should be founded which are specifically dedicated to the promotion of science.” Furthermore, scientific communication is best “accomplished by founding appropriate scientific journals and then gaining their widespread recognition.”⁴⁹⁸ In fact, neither condition is necessary. Insofar as formal institutions were concerned, the first incarnation of the American Philosophical Society failed miserably, caused in part by the commitment by its members to the informal epistolary web. Similarly, the web also provided a substitution for the scientific journal. In fact, letter-writers widely recognized the usefulness of the network they established. The relative immediacy of communication through letters stood in contrast to the longer timeframes needed to complete more formal publications. Besides, the most viable outlet available to the greatest number of British scientific practitioners was not the *Philosophical Transactions*, but the *Gentleman's Magazine*, aimed at a *popular* audience. Thus, British men of science in the eighteenth century on both sides of the Atlantic created the means necessary to promote scientific endeavors without adhering to strict institutional rules or supposed norms of communication.

⁴⁹⁸ George Basalla, “The Spread of Western Science,” *Science*, New Series, Vol. 156, No. 3775 (May 5, 1967), 618.

Membership in formal scientific societies was an adjunct, not a necessity, to moving scientific knowledge. While the honors conferred by such membership enhanced the status of an individual, it is clear that engagement with the broader community, either through the epistolary web or the scientific public sphere, was paramount. The community itself functioned as a space for acknowledgment, offering “membership” to those who disseminated knowledge, regardless of whether an individual’s contribution was deemed sufficient enough to warrant recognition. Publication in established journals like the *Philosophical Transactions* or the *Gentleman’s Magazine* was also indicative of personal accomplishment, but initial communication of ideas often circulated first via the epistolary web. The conversational style afforded by the epistolary web allowed for the critique and refinement of ideas, and, ironically, a space where *published* material could also be examined thoroughly and corrected for subsequent editions. The blurred line between the formal and informal further indicates that publication alone did not insure communication of scientific knowledge. In the end, scientific communication during the mid-eighteenth century relied on the willingness of individuals to put pen to paper.

Letter-writing did not stop with the end of the epistolary web, but lost its international complexion. The scientific public sphere became *more* like the Habermasian model, with a local, face-to-face quality, rather than the virtual nature of mid-century.

Science moved forward, both in Britain and the United States. British explorations of the South Pacific in the 1760s and 1770s led to the plan of transporting breadfruit to Jamaica to feed British slaves, not unlike Linnaeus's scheme to make Sweden self-sufficient. Initially failing, not because of climate, but because of slave resistance to the new crop, the plan ultimately took hold on the island. In the nascent United States, David Rittenhouse (1732-1796), astronomer and clockmaker, had distinguished himself during the observation of the 1769 Transit of Venus. Much like Franklin, Rittenhouse rose from autodidact to the presidency of the American Philosophical Society, assuming the role when Franklin died in 1790. But unlike Franklin, Rittenhouse never seriously engaged in epistolary exchange. But as the eighteenth century gave way to the nineteenth, long-distance scientific communication seemed likely once again.

In 1803, erstwhile provincial Briton Thomas Jefferson (1743-1826) authorized a natural history survey of North America. However, while the United States was bounded by water on both sides, the western boundary was not, at that moment, the Pacific Ocean, but rather the Mississippi River. Thus, the group performing Jefferson's survey was headed onto foreign soil. France "owned" most of the land from the Mississippi River to the Rocky Mountains. And although the area from the mountains to the ocean was

unclaimed, original inhabitants notwithstanding, Britain, Spain, and even Russia, had designs on the region, the coastal portions in particular. Jefferson's friendly association with France enabled him to procure permission for the survey through French-owned territory. Furthermore, and paradoxically, the Anglophobic Jefferson managed to put aside his personal feelings, securing the cooperation of the Minister of England, should the survey team need help from any British traders they might encounter.

Jefferson's instructions required that the survey thoroughly examine botany, zoology, paleontology, mineralogy, vulcanology, and meteorology. While Jefferson did not specifically request specimens (either living or not), he did insist on written descriptions. Moreover, he instructed that multiple copies were to be made, and those duplicates were to be distributed among the survey team to insure against potential loss. The first transmission of the descriptions to Jefferson was to take place once the group reached the Pacific Ocean: two men would bring one copy back on a British trade vessel. While Jefferson made provisions in his instructions for the entire group to return by sea, he preferred that the remainder of the team return via their outbound route to confirm previous observations, and, obviously, to protect against the loss of the compiled observations.

Jefferson's survey instructions were a generation removed from the seemingly non-stop transmission of scientific knowledge, but their intent clearly reflected a desire for the same practices. For Jefferson, like his scientific predecessors, the content was important, but so was the *process*.

William Bartram, Jefferson's longtime friend, likely would have been a perfect candidate to lead the natural history survey. Like his father John, age was no deterrent for William, who was in his sixties, but unlike John Bartram, poor health prevented William from undertaking similar peregrinations. Instead, William remained in Philadelphia, tending the garden established by his father and writing to his local correspondents.

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