CHAPTER 4

Fossilized Remains: The Martin Lister and Edward Lhuyd Ephemera

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1 Introduction

While the current archival turn in the history of science emphasizes paper and ink, archives engaged in a culture of more diverse materiality.[1] The Lister ephemera provide a case in point. Martin Lister (1639–1712), the first scientific arachnologist and conchologist, entrusted his daughters Susanna and Anna to illustrate his landmark *Historiae sive synopsis methodica Conchyliorum*, assembled between 1685 and 1692. (2nd edition, 1692–1697) (Fig. 4.1). The Lister ephemera were analysed and repurposed by Ashmolean Museum Keeper William Huddesford to produce an updated second edition of the *Historiae,* which was in continual demand by naturalists, incorporating new Linnaean taxonomy. We argue that Huddesford's activities reflected increasing antiquarian interest in scientific archives, as well as his desire to raise the status of the Ashmolean Museum as an institution. The preservation and use of the ephemera to create a new edition thus had practical and tactical uses.

We will then argue that an analysis of the afterlives of the Lister ephemera used to create the *Historiae* elucidates the book's complex bibliographic history and construction, and the enterprise of early modern scientific illustration. An examination of the afterlives of the ephemera also elucidates the intellectual and artisanal challenges presented to a naturalist in the transformation of field specimens into aesthetically pleasing illustrations and scientific objects conveying new developments in taxonomic information. We then consider the surviving Lister shell specimens figured in the book, as taxonomic classification involved both refined powers of visual apprehension, but

BL = The British Library, London.

Bodl. = The Bodleian Library, University of Oxford.

NHM = Natural History Museum, London.

1 For example, the Max Planck Working Group, "Working with Paper: Gendered Practices in the History of Knowledge."

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also tactile ones. Not only does having the specimen with the drawing next to it reveal roots of visual techniques in natural history, but as Aby Warburg stated, between the "imagination's act of grasping and the conceptual act of observing, there is the tactile encounter with the object ... which we term the artistic act."[2] The visual and material qualities of the Lister ephemera and specimens reveal to what extent the tactile artistic act was used for natural history classification; we argue that an embodied empiricism was necessary to determine type characteristics of species.

2 The Survival of the Lister Ephemera and Their Afterlives

The survival of the Lister ephemera was due to a unique set of circumstances. On 20 July 1758, Emanuel Mendes Da Costa (1717–91), botanist, malacologist and antiquarian, wrote William Huddesford (1732–1772), the Keeper of the Ashmolean Museum, that "about a year ago at a sale of a gentleman's effects, who it seems was a distant relation of Dr. [Martin] Lister's, there were found put up in band-boxes, confused like waste paper, several bundles of Dr. Lister's papers, consisting ... of letters from several learned men to him.... All these papers were bought by, and are now in the custody of Dr. John Fothergill." [3] Fothergill (1712–1780) was an English physician, Quaker, and F.R.S. who, in his leisure time, studied conchology and botany, so had a logical interest in the manuscript collection. Fothergill subsequently informed Huddesford by letter that he had bought the papers which "had been thrown aside in the dirt as wast[e] paper" to save them from annihilation in the "pastrycooks oven."[4] The papers were not just only letters but also a "collection of many, (not all)

2 Aby Warburg, "The Absorption of the Expressive Values of the Past," trans. Matthew Rampley, *Art in Translation* 1,2 (2009): 277.

3 "Letter of Emanuel Mendez Da Costa to William Huddesford, 20 July 1758," in John Nichols, ed. *Illustrations of the literary history of the eighteenth century* (London: Nichols, 1822), 4: 458; Arthur MacGregor, "William Huddesford, (1732–1772): his role in reanimating the Ashmolean Museum, his collections, researches and support network," *Archives of Natural History* 34 (April 2007): 58.

4 Bodl. MS Ashmole 1822, ff. 225r. In the next line, Fothergill went on to say that he also purchased "Dr. Loyds [Lhuyd's] letters" from "Da Costa, at least I accepted them as payment for a large debt." Da Costa had substantive financial difficulties and was dismissed as Royal Society secretary for the supposed embezzlement of subscription funds. See Geoffrey Cantor, "The Rise and Fall of Emanuel Mendes da Costa: A Severe Case of the Philosophical Dropsy?" *English Historical Review* 116, 467 (2001): 584–603. See also Elizabeth Yale's chapter on Lhuyd in this volume.

of the drawings of the Land Snails. They are coarsely done, but extensive."[5] Fothergill wrote that he should not "detain a treasure in my hands, that I cannot enjoy, merely on speculation that I may enjoy it in some future period."[6] He also lamented that he should "never have the leisure to peruse them," and wondered "what to do with them?"[7] Fothergill then mused that he "had best give them to some public Body—either to the Universities or to the Royal Society," asking Huddesford "What dost Thee think?"[8] Huddesford quickly replied, "You ask Dr an interested Man. I say to the University of Oxford and to the Ashmolean therein. But I will give you a reason also—The Papers consist of letters to ... Lister ... a very great Benefactor."[9]

These were the papers of Martin Lister had assembled for the *Historiae.*

FIGURE 4.1
Title pages, Martin Lister, Historiae Conchyliorum, Liber Primus. *London: The author, 1685–92.*
WELLCOME LIBRARY, LONDON.

5 Bodl. MS Ashmole 1822, f. 226r.

6 Bodl. MS Ashmole 1822, f. 225r.

7 MacGregor, "Huddesford," 59 and 66; As MacGregor indicates, Fothergill's laments were related in an undated letter from Huddesford to the antiquarian John Loveday, received on 12 April 1769. The letter only exists in typescript in the collection of Robert William Theodore Gunther in the Museum of the History of Science, Oxford, MS Gunther 45/2, and reproduced in the appendix to B.F. Roberts, "A note on the Ashmolean collection of letters addressed to Edward Lhuyd," *Welsh History Review* 7 (1975): 183–185.

8 MacGregor, "Huddesford," 59.

9 MacGregor, "Huddesford," 59.

This first comprehensive study of conchology consisted of over 1000 copperplates portraying shells and molluscs that Lister had collected from around the world, as well as an appendix of molluscan dissections and comparative anatomy. As for Huddesford, he was described as the only "eighteenth-century Keeper known to be active in his office," began his post when the "museum was in decline, and immediately set to work to re-form the geological collections which were in disarray and to lay the foundations of new collections;" Huddesford also searched out new manuscript collections of past donors to the Ashmolean, such as those of Lister.[10] By doing so, Huddesford wished to repair the reputation of the Museum, so "it did not appear the nasty confused heap of trifles it has been invidiously represented to be."[11] Ordering such papers was also part of the impulse (discussed in the introduction) of the increasing antiquarian interest in the early modern period in preserving private papers for posterity by depositing them in public archives and, in some cases, publishing them.

As part of this restoration of the reputation of the Ashmolean, Fothergill and Huddesford hoped they could convey "the solid virtue of learned men of the past century in contrast to this frivolous age."[12] Fothergill recommended to Huddesford that he accession the material offered at the auction so he could create of a new edition of Lister's *Historiae*: "let the plates be retouched from as many originals" as can be procured. You have some shells no doubt in the Musaeum at Oxford. Procure an able engraver to compare the plates with these originals, and amend them when necessary.[13] Fothergill was prescient in his advice, as in 1715, Huddesford's predecessor, John Whiteside, (keeper of the Ashmolean from 1714 to 1729) had sought permission to reprint 30 copies of the *Historiae* due to the demand. [14]

Huddesford took Fothergill's advice, and subsequently gleefully recorded:

> ... came down one large Box, near a hundred weight. The contents as followeth

10 Bryn Roberts, "Memoirs of Edward Lhuyd, Antiquary and Nicholas Owen's British Remains," *National Library of Wales Journal* 19, 1 (1975): 74.

11 "Letter from Huddesford to Emanuel Mendez Da Costa, 30 November 1757," in John Nichols, ed. *Illustrations of the literary history of the eighteenth century* (London: Nichols, 1822), 4: 456.

12 Bodl. MS Ashmole 1822, ff. 225–226.

13 Bodl. MS Ashmole 1822, ff. 225v.

14 John Whiteside, "Account of Coins Missing before the year 1715," fol. 1., AMS 21, formerly MS Ashmole 1821.

1. 3 large Vols of letters to Lhuyd [Lister's colleague Edward Lhuyd] (Now Bodl. MSS Ashmole 1813, 1816, 1817b, 1820a, 1829, 1830. Letters of Martin Lister primarily to and from Edward Lhuyd, and Robert Plot; Bodl. MSS Lister 3, 35, and 36)
2. Several Bundles of Letters to Lister (Now Bodl. MSS Lister 2–4; 34–37)
3. Near 40 Books in 4to [quarto] of MSS annotations on, and extracts from various Authors—Lister's hand. (possibly Bodl. MSS Lister 5–8; 10–15; 23–26; 38–40)
4. Several Private Pocket Books in which Lister kept an account of the Fees He received in Practise. (Bodl. MSS Lister 27, 29, 30, 31, 32, 32*. Copies of printed almanacks, interleaved, with ms notes by Lister, forming a rough account book, chiefly of fees, for each year, with personal lists and notes.)[15]

In the course of the mid-nineteenth century, these collections passed from the Ashmolean to the Bodleian Library. Most of these papers were kept together, forming the bulk of what is known appropriately enough as MSS Lister. The collections of drawings of land snails that Huddesford mentioned, for instance, most likely comprise MS Lister 12, the first draft of Lister's *Exercitatio anatomica in qua de cochleis maxime terrestribus et limacibus agitur*.

However, four boxes of ephemera that had also come in the "large box," consisting primarily of loose papers and two stray copperplates, were separated from the bulk of MSS Lister. In March 2012, Diane Bergman, the Griffith Librarian at the Sackler Library at the University of Oxford, rediscovered them, archival remains not "lost" in a physical sense, but not catalogued.[16] Alexandra Franklin of the Bodleian Library subsequently found 20 more copperplates and drawings listed as "Lister uncatalogued."[17] Why were the ephemera in the Sackler? Huddesford set aside the ephemera because the ephemera directly relate to the *Historiae's* production and could inform his creation of another edition of Lister's *Historiae Conchyliorum,* which he accomplished in 1770.[18]

15 MacGregor, "Huddesford," 59. These documents comprise MSS Lister at the Bodleian Library, University of Oxford. I have added the numbers into the list for ease of reading.

16 Dianne Bergman. Email to Dunja Sharif, 19 March 2012, forwarded to author by Alexandra Franklin on 27 March 2012. A preliminary look at the ephemera can be found in Anna Marie Roos, "A Discovery of Martin Lister ephemera: the Construction of Early Modern Scientific Texts," *Bodleian Library Record* 26, 1 (2013): 125–36. This article will significantly add to my analysis.

17 Alexandra Franklin. Email to the author, 23 May 2013.

18 It is only recently that items that are not books or manuscripts have appeared in the public catalogue of the Bodleian Library.

The Sackler, which opened in 2001, incorporated the former holdings of the Ashmolean Library, which of course had been under Huddesford's control, and the ephemera thus became part of the Sackler's collection.

Huddesford had a long-held interest in Lister, seeing his research into early natural history as an escape from some of his endeavours in town-and-gown politics. He remarked when doing research about "Lister and the old Nat[ural] Historians," he became so engrossed in his research "conversing with Lister and the old Nat[ural] Historians I scarce know who is minister of state."[19] He was so obsessed with Listeriana that his friend James Granger (1723–76) wrote a fantasy in his honour occasioned by reading one of Huddesford's letters. Granger imagined Venus, "in all her Charms, just risen from the Sea, and seated in an ample shell. She was preceded by Tritons sounding their Buccinums (whelk shells) and attended by Nereids, adorned with Chains and Bracelets of Couris (cowries), intermixed with Pearls. ... Go, said she, with a significant, but ineffable Smile, to the nimblest Diver of all her train, and fetch me one of my own Shells. I intend it as a present to the Editor of the Synopsis Conchyliorum who is a great Lover of *natural Curiosities.*"[20] The Nereid returned with a "most beautiful Concha Veneris," for presentation to "Huddesford for the Ashmolean Museum."[21] The goddess then accompanied Huddesford to the afterlife where he was able to meet and converse with the "respectable Shade of Dr Martin Lister, who expressed the greatest Joy upon the Discovery of a large Ventletrap." (a "staircase shell" in the family of gastropods, *Epitoniidae*)[22]

Huddesford also hoped to append Lister's biography to his new edition of the *Historiae*. In 1769, he wrote Granger, "In your work you mention a Mr Gregory [Edward Gregory, Fellow of Magdalene College, Cambridge and a nephew of Lister's] as your acquaintance, who has pictures, &c. of the Lister family. I could wish you would make known to him, that I am engaged in a work that will do honour to Dr Martin Lister ... having in my possession a considerable deal of his Philosophical correspondence, given us by Dr Fothergill."[23] In return, he gave Granger's wife "a little addition to

19 William Huddesford to William Borlase, 31 July 1770, Borlase papers in the Morrab Library, Penzance, MOR/BOR/3, f. 62.

20 James Granger to William Huddesford, 5 July 1770, Bodl. MS Ashmole 1822, f. 323r. James Granger was the author of *A Bibliographic History of England,* his name lent to the term "grangerizing" or adding additional prints, letters, engravings, etc to a book that were not included in the original volume.

21 Bodl. MS Ashmole 1822, ff. 323–324.

22 Bodl. MS Ashmole 1822, f. 323v.

23 Nichols, *Illustrations*, 4: 140. Gregory sent Huddesford accounts of the Lister family, something that Granger noted in his work *A Bibliographic History of England* (London: T.

her Collection of Fossils." Huddesford then sent a series of queries to the Gregory family of Harlaxton Hall, as well as Lister's descendents living in the family's manor house in Burwell Park, Lincolnshire, accomplishing "oral history interviews" by post. In a similar manner, Huddesford contacted the President of St John's College, Cambridge, Lister's *alma mater*.[24] Huddesford subsequently remarked to Granger, "I think from the Materials which I have at present, and from what he [Gregory] might be persuaded to add, I might be able to prefix some sort of Life to the *Conchyliorum*, and do his Worthy Ancestor some little Credit." [25]

Though Huddesford never finished the biography due to his premature death at the age of 40, he did successfully complete another limited 250-copy edition of Lister's *Historiae Conchyliorum* in 1770 using the ephemera, the original plates, as well as notes and observations written by Lister in a working copy of the first edition containing details of shells given by him to the Ashmolean.[26] In his new edition, Huddesford provided updated

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Davies, J. Robson, 1775), 2: 289 and 388. The accounts in Granger's work that Gregory sent were of Sir Matthew Lister, Martin Lister's great uncle, and Susanna Temple, Lister's mother. In a letter of Grgory to Huddesford of 20 December 1769, Gregory noted, "I shall be extremely happy to give you all the information I can procure relative to Dr Lister; for which purpose, I will make a diligent enquiry among my Relations ..." Gregory also noted he had communicated information about the Lister family to "Mr Granger." Bodl. MS Ashmole 1822, f. 284r.

24 Lister held a fellowship by Royal Mandate at St John's College, granted in 1660. For Huddesford's letters concerning oral history interviews, see the following in BL Additional Manuscripts 22596:

1. Edward Gregory to William Huddesford; Magd. Coll. [Cambridge], 27 Feb. 1770, f. 86.
2. T[homas] Martyn [Professor of Botany at Cambridge 1761–1825], to Edward Gregory; Sidney Coll., 22 Dec. 1769, f. 88.
3. Susanna Gregory to her nephew, Edward Gregory; Short Hill, Nottingham, 31 Jan. 1770. With *seal*. Accompanied by a paper of answers to questions about Dr. Lister. ff. 90, 92.
4. Matthew Lister [of Burwell Park, near Louth] to Edward Gregory; Leadenham [near Sleaford], 22 Feb. 1770, f. 94.
5. Rev. George Ashby [President of St. John's College, Cambridge], to William Huddesford; "S[t] J[ohn's] C[ollege] C[ambridge]," 9 Mar. 1770, f. 95.

25 Bodl. Ms. Engl. Misc. d91, f. 146.

26 The biography's structure is only extant as an outline in manuscript. See "Dr Martin Lister: Life of, by Rev. W. Huddesford: 1769–1770 Imperfect," BL Additional Manuscripts 22596, f. 84. Lister's working copy in the Linnean Library, London is: *De Cochleis, tam*

indexes and transcriptions of Lister's relevant marginalia as well, along with two parallel tables and indices with Linnean classification for fellow natural philosophers and with common names for "English Naturalists" who "have, as yet, formed no system of Conchyiology in their own Language."[27] These tables were dedicated to Margaret Cavendish, the Duchess of Portland, as Huddesford used for taxonomic reference her renowned shell collections and the expertise of eminent conchologist John Lightfoot (1735–1788). In a 4 January 1770/1 letter to Huddesford, Lightfoot indicated he had spent three weeks comparing the Duchess' collection of shells to Huddesford's new index for the *Historiae* and Linnaeus's new taxonomic descriptions and found Huddesford's references "very correct and just."[28] In his new edition, Huddesford was able to draw attention to the legacy of Oxonian natural philosophers and the importance of the collections in the Ashmolean, and at the same time repurpose Lister's work as one still relevant and authoritative to eighteenth-century natural philosophers. Because of Huddesford's efforts, even when F. W. Martini and J.H. Cheanitz published their *Conchyliorum Cabinet* (1795), which became the standard text in the field, it was still seen as useful to publish a new index to Lister's *Historiae* in 1823. Dillwyn, the editor of the index, remarked that the *Historiae* was a work "which has been so long and universally referred to by every naturalist who has published on either recent or fossil shells."[29]

3 The Contents of the Boxes of Lister Ephemera and the Art of Science

When we look more closely at the contents of the boxes, we see that the papers within confirm and extend what we know about the *Historiae's* original construction, techniques of classifying the drawings of shells, and publication, all of which were of great interest to Huddesford as he prepared his new edition. The first three contain draft engravings of shells on white paper pinned

terrestribus, quam fluviatilibus exoticas, item de ijs quae etiam in Anglia inveniantur Libri II.(*Conchyliorum Marinorum Liber III* … [&] *Buccinorum Marinorum Liber IV*)*; De Cochleis* (London: the Author, 1685–92), MS 131, Case 2c.

27 Martin Lister, *Historiae Sive Synopsis Methodicae Conchyliorum et Tabularum Anatomicarum Editio Altera*, ed. William Huddesford (Oxford: Clarendon Press, 1770), Index II: 3.

28 Bodl. MS Ashmole 1822, ff. 291–292.

29 L. W. Dillwyn, Preface to *An Index to the Historiae Conchyliorum of Lister* (Oxford: Clarendon Press, 1823), 221.

to seventeenth-century blue and chocolate-brown paper for the *Historiae.* The blue paper is similar to that of MS Lister 9 in the Bodleian Library, the original sketchbook of shells that belonged to Martin Lister's second daughter, Anna; there are also drawings of shells on the same type of paper in another draft notebook for Lister's *Historiae* (Bodl. shelfmark RR.y.56).

The pins have verdigris on their shafts, indicating copper content; they presumably were straight pins. Such remains point to the domestic sphere in which the *Historiae* was produced by Lister's daughters; not only were pins used in sewing and mending, but they were also employed to fasten clothes together: a gentleman's neck cloth or the front bodice of a lady's gown; in elite dressing "pins were used in vast numbers, as is evidence by Elizabeth I ordering over 100,000 pins of different types in one six-month period in 1565, but they were also used as makeshift fastenings for those who could not afford buttons."[30] Here they are used for the purposes of arrangement of specimens and taxonomic classification. The draft engravings are pinned to different decorative borders; the press, possibly at his house or nearby, turned out images on Lister's correspondence paper.[31] The engravings in the boxes of ephemera also have the same watermarks as his stationery, dating them as draft images printed for the first or second seventeenth-century editions. The decorative baroque borders around the frontispieces and shell specimens that Susanna and Anna created added an extra step to the printing process. The Listeriana confirm Guy Wilkins' surmise that "borders of all sizes and designs were run off in quantity, to be over-printed with plates of figures, and varied at will."[32] In the final editions, as the sheets were run through the home press twice, the strain on the thin paper meant it was sometimes cut through the surface, and strips had to be pasted on the back of the sheets.

Lister left behind multiple copies of the *Historiae*, giving drafts to friends and colleagues as gifts and to invite their suggestions for improvement, and there were numerous printed variants. Lister's acquisition of new specimens

30 Abigail Shinn, "Cultures of Mending," in The *Ashgate Research Companion to Popular Culture in Early Modern England*, ed. Andrew Hadfield, Matthew Dimmock, Abigail Shinn (Aldershot: Ashgate, 2014), 246.

31 The watermark is extant on several pages of the 1685–1688 edition of the *Historiae Conchyliorum*, Shelfmark Gough Nat. Hist. 57, Bodleian Library, as well as in several pages of Lister's letters. The watermark's three circles, Griffins, Cross and Crown and Arms of Genoa is similar to ARMS.099.1 from the Thomas Gravell Watermark Archive. http://www.gravell.org. The source of the Gravell watermark was a 1666 London imprint from the Folger Shakespeare Library, Washington, D.C., shelfmark L.F. WM Coll 1.

32 Guy L. Wilkins, *A Catalogue and Historical Account of the Sloane Shell Collection* (London: British Museum, 1953), 39.

also necessitated rearrangement of the engravings for taxonomic purposes, with interleaving notes. A draft notebook in the Linnean Library of the first book of the *Historiae,* the *De Cochleis,* shows a similar approach that we see in the ephemera, using glue (probably wheat paste) sometimes instead of pins to rearrange the engravings of shells.[33] Another working copy of Lister's in the Bodleian Library also demonstrates his method.[34] The Listeriana in the box files show several numbering systems used to rearrange his shells, including pasted in numbers, annotations, and numbers that had been engraved on the copperplates themselves. We also find several prints of the same image, waiting to be cut, pasted and rearranged.

In addition to the visual evidence provided by his daughters, Lister's practices of processing and creating written information in the *Historiae Conchyliorum* shaped his conceptions of a natural order, blurring the boundaries between printed works and manuscripts. Lister' s system was not unique to him, but typical of many naturalists. The chapter by Arnold Hunt shows that the herbarium of James Petiver was a paper archive containing labels, and pasted loose papers on brown paper, his publication used as indexes and finding aids to his collection. Scholarship by Müller-Wille and Charmantier has demonstrated, from the early 1750s onward, Linneaus did his work similarly by interleaving "copies of his own publications, a method that had been endorsed by some Renaissance scholars, and was used by jurists and historians in the early eighteenth century to produce revised editions of their works ... Linnaeus perfected this method for natural history, designing his taxonomic publications accordingly."[35] Later, he used paper slips for botanical organisation, cross-referencing them with his herbarium sheets. It seems Lister used these techniques in interleaving, and in slip making, but in Lister's case the image of the shell rather than a Linnean *hortus siccus* was his reference point.[36]

On one of his grangerized *Historiae*, Lister scrawled Cicero's quotation about Pythagoras that the "imposition of names on things is the highest part

33 Working copy of Martin Lister's *De Cochleis.* MS 131, Case 2c, Linnean Society, London.

34 Lister, *Historiae Conchyliorum* Grangerised, Shelfmark RR. y. 56, Bodleian Library.

35 Isabelle Charmantier and Staffen Müller-Wille, "Carl Linnaeus's botanical paper slips," *Intellectual History Review* 24, 2 (2014): 219.

36 For other uses of paper slips in the work of classification in natural philosophy, particularly in the work of naturalist Conrad Gesner (1516–65), see Ann Blair, *Too Much to Know: Managing Scholarly Information before the Modern Age* (New Haven: Yale University Press, 2010); Lothar Müller, *White Magic: The Age of Paper*, trans. Jessica Spengler (Cambridge: Polity Press, 2014), 124.

of wisdom."[37] With the constant accumulation of new mollusc species from his international contacts, his improvised filing system allowed him to gain taxonomical sagacity. For instance, the engravings are supplemented on several pages by Lister's notes commenting on the shells' morphology and classification. He remarked for instance on the subtle depths of color of varieties of shells within a given species, or on its slightly different pattern.[38] Because shells were valued not only for their status as biological specimens, but as art objects, it is not entirely surprising that for Lister, the visual and the textual went hand in hand.

The fourth box of Listeriana not only contains draft engravings of shells pinned to album paper much in the same manner as in the other boxes, but two copperplates. The copperplates correspond to specimens 495 in his *Historiae* (now named *Pholadomya margaritacea*, a fossil bivalve specimen belonging to naturalist John Woodward) and 156 (the freshwater bivalve now named *Mytilus Cygneus*, the figure also taken from the Appendix to Lister's *Historia Animalium Angliae,* t.1. f. 3.).[39] The copperplates are wrapped in what seems to be their original papers, or papers later provided by Huddesford when he reprinted the *Historiae Conchyliorum*. Two copies of Huddesford's notice in French and English of his intent to re-publish Lister's *Historiae* are also in the box; Huddesford in particular indicates that he would be greatly "obliged to any Person who would favour him with the Use of any good Copy of his Work, which shall be carefully and punctually returned."

Huddesford's correspondence shows his reach was wide. Reverend George Ashby (1724–1808), a don at Lister's alma mater of St. John's College Cambridge, arranged for Huddesford to consult John Woodward's correspondence regarding Lister and fossilised shells.[40] James Granger mentioned Huddesford to the Duchess of Portland, Lady Margaret Cavendish, and on 12 December 1770, she wrote that she looked forward to the pleasure of

37 Linnean Society, London, Working copy of Martin Lister's *De Cochleis.* MS 131, Case 2c. Lister's inscription is in the front of the work, in the first endpaper. The quotation is from the first book of Cicero's *Tusculan Questions*. My thanks to Vera Keller for tracing the source of the quotation.

38 For instance, Lister wrote about depth of colour: *Huic color interdum fusius, quae altera tantum varietas esse videtur.* He then commented on pattern*: Rhombus c.p. lineis plurimus rufoscentibus et ex albu maculati distinctis clavicula leviter mericata, rostro purpurascente.* Bodl. Lister Ephemera, Box one, 17.

39 Martin Lister, *Historia Animalium Angliae* (London: John Martyn, 1678), table 1, figure 4.3.

40 Bodl. MS Ashmole 1822, ff. 278–279

showing Huddesford her shell collection.[41] As mentioned, John Lightfoot compared Lister's plates to specimens in the Duchess's collection to confirm Huddesford's updated taxonomic classification, a "long and arduous task."[42] Mr Evenus Hammer, a Danish colleague of Huddesford's studying in France, distributed Huddesford's advertisement to French intellectuals such as Joseph Mary Anne Gros de Besplas, Rector of the Sorbonne (1734–1783), Abbé Jean-Antoine Nollet (1700–1770), chair of physics at the Collège de Navarre and Director of the Académie des Sciences, and Jacques Laurent Berigny.[43] This assistance no doubt contributed to the great success of Huddesford's 1770 edition, which was hand-coloured.

The fourth box of ephemera also gives insights into other works in which Lister and Huddesford were involved. Interspersed in these papers are prints of engravings for Edward Lhuyd's *Lithophylacii Britannici Ichnographia* (1699), one of the first field guides to fossils (Table 1 and 3 fossilized corals; Table 5 *Lithophylaca*; table 9 and 10 *Ichthyodontes*). Although originally conceived as a guide to Oxford fossils, this study in Latin of "formed stones" was "arranged as a drawer-by-drawer guide to the cabinet of fossils which the author had collected and had deposited in the Ashmolean as deputy keeper and keeper."[44] Lhuyd and Lister were close friends, and about 200 pieces of correspondence between them are extant. Serving as a mentor, Lister helped Lhuyd bring his *Lithophylacii* to press, supervising the production of the illustrations and lent his friend copperplates that would be useful, telling him "Yor Booke is well printed for letter & paper, & cutts, as any ever was in England."[45] As Oxford University Press would not publish Lhuyd's work due to its expensive illustrations, Lister also encouraged his colleagues to subscribe, the cost of the 120 books produced being shared between ten virtuosi and noblemen, including Lister, Lord Somers, Lord Montagu, the Earl of Dorset, Dr Hans Sloane, Tancred

41 "James Granger to William Huddesford, 17 November 1769," in Nichols, *Illustrations*, 4: 139.

42 John Lightfoot to Huddesford, 3 December 1770, Bodl. MS Ashmole 1822, ff. 295–296.

43 Evenus Hammer to Huddesford 20 July 1769, Bodl. MS Ashmole 1822, f. 258r. Not a deal is known about Hammer. His signature appears in an *album amicorum* of Johann Thomas Ludwig Wehrs (1751–1811) of Göttingen dated 13 October 1770; Hammer was a student of maths. See Göttingen Stadtarchiv: Stabu Nr. 17, 55r. Shelfmark: wws 11.6.2013. Also see W.W. Schaubel, Repertorium Alborum Amicorum, accessed October 25, 2014, http://www.raa.phil.uni-erlangen.de/index.shtml.

44 MacGregor, "Huddesford," 57. See Elizabeth Yale's chapter in this volume for more on Lhuyd's archives.

45 Bodl. MS Ashmole 1816, ff. 128–29. The letter from Lister to Lhuyd was dated 28 January 1698.

Robinson, chemist and professor Étienne François Geoffroy of Paris, Francis Aston and Isaac Newton. Because of Lister's efforts, Lhuyd wrote "you have been at a great deal of trouble and expence about the graving which is a kindnesse I am troubled I know not how to make any amends for, tho I know your goodness never expected any."[46] Subsequently, Lhuyd dedicated his book to Lister, describing him as the "Fundator munificus" of the Ashmolean Museum as well as a great encourager of the study of British fossils.

Huddesford was also interested in the *Lithophylacii*, and as with the *Historiae,* he decided to publish a new edition as the original text had contained newly coined terms for species which eighteenth-century readers found incomprehensible, and it was in some places in an unfinished state. The imperfect nature of the original edition was due to several problems with the printers and compositors. "During one of Lhuyd's extended visits to Wales, the text had in fact been seen through the press in London by Tancred Robinson, who clearly found it a frustrating exercise."[47] Robinson commented: "Notwithstanding all possible care, the Compositors will commit many gross Mistakes, and will not correct half the Errata made on the Sides. They are an ungovernable race of men; however it is as correct as most Books of the kind."[48] Huddesford confirmed Robinson's complaints in his letter to Emanuel Mendes da Costa about Lhuyd's work:

... [the text] is in some places obscure and difficult to the greatest proficients in this study. The descriptions are not distinct, the new coined terms, &c. render it very difficult to be understood. As I found there great impediments to my progress in the undertaking, I concluded they must be so to other young Readers, for whose service I also intended the second Edition; but though I was sensible how much it wanted it, I was diffident of correction. Mr Lhuyd's knowledge I dreaded to question—and of his carelessness I had no suspicion; but I am now sensible that he was sometimes deficient in the former, and very often guilty of the latter. [49]

Although Da Costa also "had a quantity of Lhuyd's original papers," (two portfolios of his correspondence) which he put at Huddesford's disposal, Lhuyd's original fossil specimens were "much damaged by the confusion in which they lay."[50] In his edition of 1760, Huddesford thus attempted to right

46 Bodl. MS Lister 36, f. 215r.

47 MacGregor, "Huddesford," 59.

48 Bodl. MS Eng. hist. c. 11, f. 89. The letter was sent 23 August 1698.

49 "William Huddesford to Emanuel Mendes Da Costa, 25 July 1758," in Nichols, *Illustrations,* 4: 459–460.

50 Nichols, *Illustrations,* 4: 457 and 459.

some omissions. For instance, Lhuyd claimed he had been given *buccina* and *pecten* shells specimens *et cretaceis Richmondius*. Da Costa pointed out to Huddesford that this was an erroneous observation, as there is no chalk in the area around Richmond, a mistake that should be amended to *ex argillaceis Richmondianis*, or from the clay pits in the area.[51]

Huddesford even had some of the plates retouched or re-engraved to make them adhere to updated taxonomy, correcting for instance a figure legend for specimen 1656 in the table of *Ichthyospondyli* and omitting a figure of "piped waxen veins," otherwise known as *lapis syringoides* from table CLI of *Lapidi Crystallini* (Figs. 4.2a & 4.2b).

FIGURE 4.2A *Edward Lhuyd* (LHWYD), Lithophylacii Britannici Ichnographia (*London, 1699*).

51 Nichols, *Illustrations*, 4: 458–59.

FIGURE 4.2B *Edward Lhuyd* (LHWYD), Lithophylacii Britannici Ichnographia (*London, 1760*).
COURTESY OF HISTORY OF SCIENCE COLLECTIONS, UNIVERSITY OF OKLAHOMA LIBRARIES, © THE BOARD OF REGENTS OF THE UNIVERSITY OF OKLAHOMA.

Sixteenth-century natural philosophers thought these were Ludi Helmonti, prepared as a remedy for the 'stone disease' then sweeping through Europe, first described in J. B. van Helmont's *De lithiasi* (1644).[52] In contrast, seventeenth-century naturalists like Lhuyd, Nehemiah Grew and John Woodward thought these were "*stalagmites cereus, tubulorum in quibusdam calculis marinis cavitates occupans*" or aggregated marine worms, caught up into masses in the time of the Deluge. Although Woodward noted they had the texture of wood, it was not known until the time of Huddesford that they really were petrified wood,

52 AM Alfonso-Goldfarb, PM Rattansi, and MH Ferraz, "Seventeenth-century 'treasure' found in Royal Society Archives: the Ludus helmontii and the stone disease," *Notes and Records of the Royal Society* 68,3 (2014): 227–43.

often filled with iron pyrite in large masses or in the form of slender twigs and branches. As a result, they were no longer classified as crystalline, and one of the copperplates in the ephemera was retouched to eliminate their figure. There seems to be a good deal of rubbing evident around the area on the recto of the plate; this evidence indicates alteration of the title using a burnisher, the copper leveled out with a scraper. In a process akin to *repoussage*, the plate was also beaten out from the back with a punch or small hammer to knock out the old title and achieve a smooth surface that could be cut again; *repoussage* was a common technique of alteration among engravers.[53] Making corrections such as these may have been behind Huddesford's keeping the Lhuyd prints and plates of fossils in the Lister ephemera aside. Huddesford republished Lhuyd's work for similar reasons, as a means to preserve the Ashmolean's reputation, and to update and repurpose a valuable work of natural history.

5 Physical Remains: The Shell Specimens

When he catalogued the Sloane Shell collection, Guy Wilkins, the curator of mollusca at the Natural History Museum, first noticed the existence of the original specimens that were used by the Listers to create the *Historiae* in the NHM collections. They were part of the original collection of Sir Hans Sloane. When Sloane went to Jamaica in 1687, Lister asked him to bring back specimens not only of shells but also of what he termed "naked snails" or slugs; in turn Sloane permitted Lister and his daughter to borrow specimens from his collection to illustrate. Lister also borrowed specimens from the virtuoso and collector William Courten or Charleton (1642–1702), dedicating his *Historiae* to him, and proposed him as a candidate for fellowship of the Royal Society.[54] Courten had a public museum of curiosities in a suite of ten rooms in the Temple, London, including artwork, specimens of flora and fauna, and archaeological objects, "celebrated as one of the finest cabinets of natural and artificial rarities in Europe."[55] Just as he bought the collection of James Petiver (see the chapter by Arnold Hunt), Sloane bought Courten's collection, including Courten's shells that the Listers illustrated in their book. Courten also kept an inventory of what he bought from 1689–1702, extant in MS Sloane 3961; several of the shells that Lister borrowed from Courten are in the inventory with

53 Mei-Ying Sung, *William Blake and the Art of Engraving* (London: Pickering and Chatto, 2009), 13.

54 Thomas Birch, *The History of the Royal Society* (London: A. Millar, 1756–7), 4: 326–7.

55 Carol Gibson-Wood, "Classification and Value in a Seventeenth-Century Museum," *Journal of the History of Collections* 9,1 (1997): 61.

their geographic and commercial origins. Specimen exchange and collection involved far-reaching networks: traders, apothecaries, physicians, naturalists and collectors all populated a vast intellectual geography to create the conchological collections of Sloane that indirectly made Lister's work possible.

As an example, the first shell in the NHM collection with a clear provenance is *Borus oblongus*, a buccina from Surinam, a large ventricose shell, with a spine shorter than the body-whorl and of four volutions. It is unusual and was very collectable as it had especially large white eggs about the size of a blackbird's.[56] In his inventory, William Courten recorded in an entry for 4 July 1689 having paid £1. 5s for the specimen, described as a "Large \viviparous/ snaile of Surinam with one of ye eggs the small snails come out of 3 of xxx f. g. they are found at ye ~~foot~~ bottom of ye Hedges about an inch under ground ye yolke of ye egg is of a kind of glewy substance."[57]

The shell is referred to again in a letter from Martin Lister to Edward Lhuyd of 8 April 1690. Lister wrote "The governour of *Sirinam* presented Mr Charleton [Courten] the other day with a land snail not bigger than a hens Egg. yet it layes eggs with *hard* shells as bigg a sparrows egg full; & the yong ones that are hatched of them, are as large again as the egg that holds them. The egg is finelie strieated length wayes."[58] The puzzle of the size of the egg continued to be a matter of strenuous discussion, as Lhuyd in turn reported to the naturalist John Ray, "Dr. Lister acquaints me that Mr. Charlton has lately received a land-snail from Surinam, not bigger than a hen's egg, which yet lays eggs as big as those of a sparrow; and the snails that are hatched of them are, he says, twice as large as the eggs."[59] Ray considered the specimen "very remarkable. But how the young Snayl hatched of the egges sould [should?] be so big of the eggs, I understand not." [60]

The accompanying fragile eggs and young snail drawn by Lister's daughters also are, not surprisingly, missing in the NHM collection, perhaps already

56 Lewis B. Brown, "Notes on the Land and Freshwater Snails of Barbados," *Journal of Conchology* 10, 9, (1902): 68.

57 BL MS Sloane 3961, f. 27v.

58 Bodl. Ashmole 1816, F. 79R.

59 The location of the original manuscript for the Lhuyd letter is unknown, but there are printed versions in: William Derham, ed. *Philosophical Letters Between the Late John Ray and Several of His Correspondents, Natives and Foreigners. To which are Added Those of Francis Willughby* (London: Jenys, 1718), 224; Edwin Lankester, ed., *The Correspondence of John Ray* (London: The Ray Society, 1848), 212– 213; R.T. Gunther, ed., *Early Science in Oxford: Life and Letters of Edward Lhuyd* (Oxford: for the subscribers, 1945), 14: 99–100.

60 John Ray to Edward Lhuyd, 7 May 1690, Bodl. MS. Eng. hist. c. 11, f. 45.; Printed in R. T. Gunther, ed. *Further Correspondence of John Ray*, 206–207.

destroyed when Sloane bought Courten's collection; Sloane recorded his purchase in his inventory as 1895: *Buccinum admodum crassum ingens laeviter purpurascens a Surinam viparum*, noting its placement in table 23 in Lister's *Historiae*. [61] "Lister's figure of the young shell is a little larger than the egg figured on the same plate, and it is quite possible that some of the eggs sent to Courten hatched out, and increased the size of their shells in transit."[62] Lister also recorded that he received another specimen of the same type "idem cum proxime" to the Buccina with the egg, illustrating it in the next table in the *Historiae*. One of his draft notebooks for the *Historiae* reveals this copy of the specimen was also borrowed from Courten's museum. Lister subsequently gave his engraving of Courten's shells to him in thanks; Courten recorded in his inventory in April 1690, "1 Sheet of the ovum Testaceum a Surinam." [63]

Not only does having the original specimens present help us to understand their intellectual and material geographies, but also assists us in comprehending the techniques that Susanna and Anna Lister used to portray the specimens, and in turn, developing standards of classification and identification of species. For example, when Susanna and Anna Lister had an actual specimen to illustrate, they portrayed the shells in a one-to-one scale for ready identification. In the case of a shell (*Patella granularis*) from the genus *patella*, or a true limpet, the shell can be laid flat on the page, and it seems that his daughters traced around its periphery to portray its margins accurately in the final engraving. It is possible to place the shell down on the drawing and get a perfect match (Fig. 4.3).

Sloane's manuscript inventory reveals that the shell, which Lister borrowed from Sloane to illustrate, was originally "From Guinea by Mr Staphorst would have asperities [unevenness of surface or roughness]."[64] The patella is indeed quite ridged. "Staphorst" may have been Nicholas Staphorst, who was the Society of "Apothecaries' fourth Chemical Operator and author of *Officina Chymica Londinensis, sive exacta notitia medicamentorum spagyricorum* (1685, 1698)." As William Poole has indicated, "Sloane had lodged with Staphorst in Walter Lane [in London] while he studied chemistry at the Apothecaries Hall; Staphorst was presumably his instructor as well as housemate."[65] It is

61 NHM Sloane Inventories, f. 275r., shelfmark 50.L.6.

62 Wilkins, *A Catalogue and Historical Account,* 22.

63 BL MS Sloane 3961, f. 40v.

64 NHM Sloane Inventories, f. 116 r., shelfmark 50.L.6.

65 BL Additional MS. 421, f. 2r. "... [Sloane] came into England, and liv'd in a House adjoining to the Laboratory of Apothecaries Hall with Mr Staphorst, the Chemist, who had learn'd that art under Mr. Stahl his Kinsman." William Poole, "A Fragment of the Library of Theodore Haak (1605–1690)," *Electronic British Library Journal* (2007): 12, accessed 12 October 2013, http://www.bl.uk/eblj/2007articles/pdf/ebljarticle62007.pdf

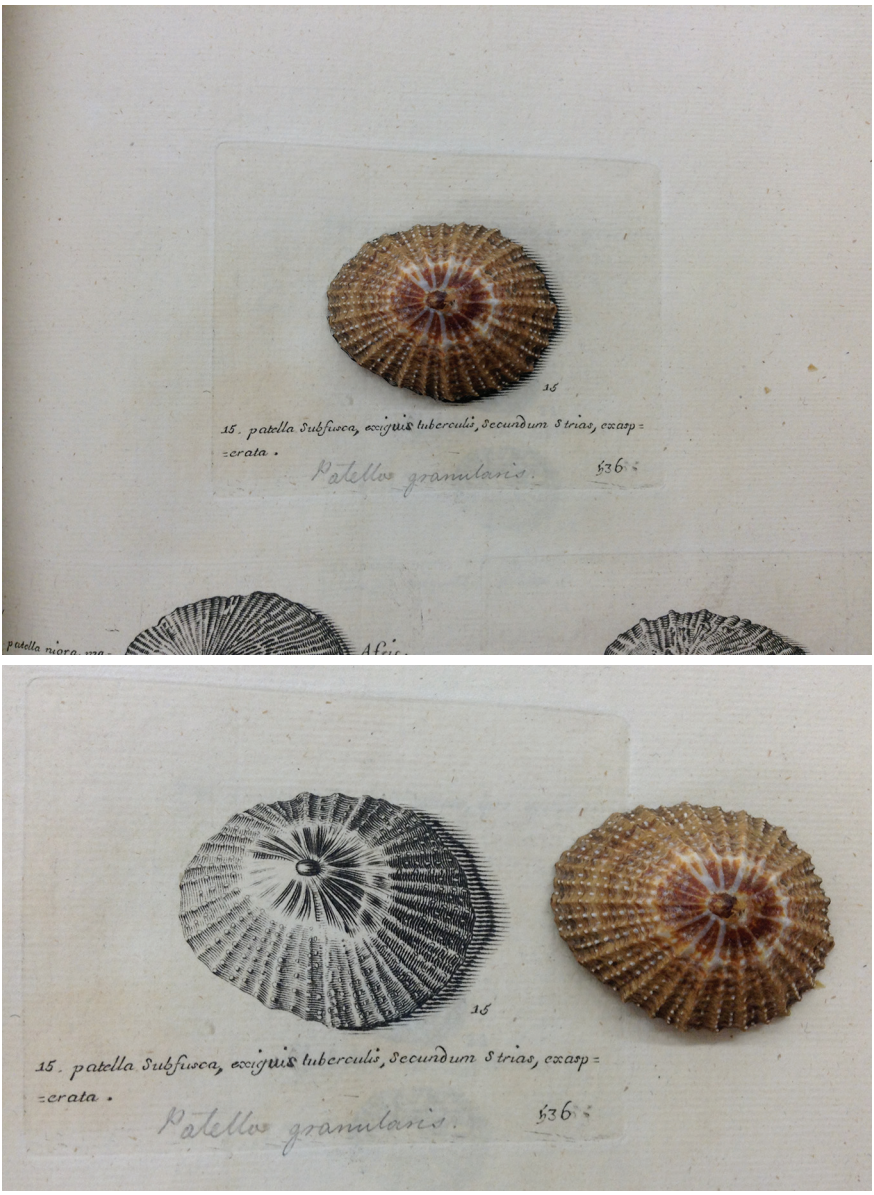

FIGURE 4.3 Patella Granularis. *Martin Lister Collection, Division of Invertebrates, Department of Life Sciences, Natural History Museum, London.*
PHOTOGRAPH BY THE AUTHOR.

also possible that Mr Staphorst was Nicholas's brother, Barthold Staphorst, a merchant of Rotterdam; In a letter to Sloane, Pieter Hotton (Petrus Houttuyn 1648–1709), the professor of Botany and Medicine at Leiden University,

advised Sloane that Nicholaus Staphorst could get books or specimens through his brother Barthold.[66]

We also see the same 1:1 technique utilized in the Lister's portrayal of an NHM specimen, the scallop shell, *Chlamys squamosa* (formerly *Ostrea squamosa* Gmelin, 1791). This shell is the lectotype, a biological specimen selected to serve as a definitive "type" example of a species, as Lister's *Historiae* is the earliest record of an identified specimen.[67] Lister described it in marginal notes in the Linnean Library's draft copy of the *Historiae* it as the "toothless under shell of a Scallop with a flat rib; it is smooth and curiously marbled with a white and dark hair colour." Anna Lister portrayed the markings on the surface of the shell absolutely accurately, paying special attention to the number of ribs, and equality or inequality of the valves and ears of the shells, which are the type characteristics for dividing the species of Pecten into groups.[68]

Anna and Susanna Lister also used tricks of artists' perspective to bring out type characteristics. *Melo aetheopica* has a distinctive *umbilicus*, the origin from which the whorls of the shell grew. However, looking down upon the shell hides this feature that is of great use in classification. As a result, Susanna Lister traced its outline to obtain the general shape and then portrayed it as tilted it upwards to reveal the *umbilicus* (Fig. 4.4).

FIGURE 4.4
Melo Aethiopica. *Martin Lister Collection, Division of Invertebrates, Department of Life Sciences, Natural History Museum, London.*
PHOTOGRAPH BY THE AUTHOR.

66 BL Sloane MS 4038, ff. 193–194, 296–97. Letters from Peter Hotton to Sir Hans Sloane, 22 July 1701 and 30 January 1702.

67 H.H. Dijkstra, "A contribution to the knowledge of the pectinacean Mollusca (*Bivalvia: Propeamussiidae, Entoliidae, Pectinidae*) from the Indonesian Archipelago," *Zoologische Verhandelingen Leiden* 271, 24 (1991): 32.

68 Wilkins, *A Catalogue and Historical Account,* 15.

Her use of perspective construction was thus was not "strictly correct" but opportunistic, entirely in keeping with what Martin Kemp has demonstrated in his work concerning the historical uses of perspective construction.[69] Her artistic judgment went beyond copying the shell, to featuring it as a taxonomic specimen of use in identification. In a letter of Rev. George Ashby to Huddesford, Ashby noted much the same thing, stating the copy of the *Historiae* that St. John's College, Cambridge had in its possession, "has many imperfect shells, which look like sketches only; but perhaps they are compleat and were intended to shew the remarkable part of the shell, as the *Hinge*."[70]

Lister's daughters also simply exaggerated type characteristics in their illustrations. *Neverita* (*Polynices*) *duplicata*, the shark eye, is a moon snail from the Bay of Campeche in the Gulf of Mexico; its circumference is often not completely smooth, and there can be two slightly angular protuberances, which generally can only be felt by holding the specimen. These protuberances are most pronounced in the illustration of the shell, its angular margin more felt that seen, but definitely perceptible (Fig. 4.5).

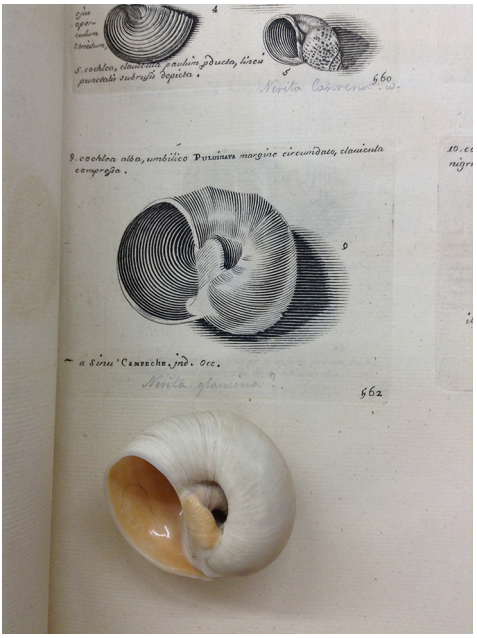

FIGURE 4.5
Neverita (Polynices) Duplicata. *Martin Lister Collection, Division of Invertebrates, Department of Life Sciences, Natural History Museum, London.*
PHOTOGRAPH BY THE AUTHOR.

69 See for instance, Martin Kemp, *Visualizations: The Nature Book of Art and Science* (Oxford: Oxford University Press, 2000).

70 Bodl. MS Ashmole 1822, f. 231r.

Although in early modern natural philosophy, we tend to see a Platonic and Aristotelian privileging of sight as the noblest of senses, the training, in Robert Hooke's words, "of a sincere Hand and a faithful eye" to accomplish illustration is accomplished by observing and doing, an interplay between sight and touch.[71] "Ideas of touch became increasingly visual during the Renaissance, giving rise to what Sander Gilman calls the "fantasy of 'seeing' the sense of touch, already commonplace in the seventeenth century."[72] It is also important to remember that Lister in his medical practice performed a type of embodied empiricism; just as early modern anatomical illustrations translated the dissector's manual touch into a visual touch for the viewer and readers of anatomy books, Lister's *Historiae Conchyliorum* did not just put his daughters handiwork in front of the reader's eyes.[73] The images of the shells developed a tactile dynamic of their own; seeing became a form of touching, of holding the specimens to classify them.

6 Conclusion

In a letter of 16 May 1694, John Place, the physician of the Grand Duke of Tuscany, told Lister of "the Great Duke's singular satisfaction ... especially with your ingenious, and elaborate booke [the *Historiae*]. I told him that the figures were the work of your daughters, which surprises him extremely." Place then wrote, "I believe he will present you with a parsell of his Florence wine."[74] The detailed illustrations and classifications of molluscs performed by Lister and his daughters meant the *Historiae* established a new standard for conchology, so that the work was in constant use by natural historians and taxonomists of the seventeenth, eighteenth and nineteenth centuries. The *Historiae's* plates and principles of classification were utilized by (among others) the explorer, botanist and entomologist James Petiver (1663–1718); Scottish physician and antiquarian Sir Robert Sibbald (1641–1722); Sir Hans Sloane, founder of

71 Robert Hooke, "Preface," *Micrographia* (London: John Martyn, 1665), 4.

72 Mark Michael Smith and Tristan Palmer, *Sensing the Past: Seeing, Hearing, Smelling, Tasting, and Touching in History* (Berkeley: University of California Press, 2008), 99.

73 Bettina Mathes, "As Long as a Swan's Neck?: The Significance of the Enlarged Clitoris in Early Modern Anatomy," in *Sensible Flesh: On Touch in Early Modern Culture*, ed. Elizabeth D. Harvey (Philadelphia: Pennsylvania State Press, 2003), 117. See also Joe Moshenka, *Feeling Pleasures: The Sense of Touch in Renaissance England* (Oxford: Oxford University Press, 2014).

74 Bodl. MS Lister 3, ff. 211–218.

the British Library; Belgian humanist and natural historian Carolus Langius (1670–1741); John Morton, the eighteenth-century natural historian of Northamptonshire, and Linnaeus. Thanks to Huddesford's efforts, his 1770 edition of the *Historiae* was in use until the nineteenth century.

In addition to these intellectual afterlives of Lister's work, this selective analysis of the significance and archival afterlives of the ephemera and the shell specimens revealed the employment of an embodied empiricism in the determination of type characteristics of species. The ephemera also demonstrated the migration of knowledge of nature, which occurred from one medium to another, from object to drawing to printed image. The archival remains of the Lister and Lhuyd ephemera are also witnesses to the important and often hidden role of intellectual networks, artisanal work, archival provenance and the history and bibliography in scientific book production in the early modern era.