When the Tallamys Met John French:
Translating, Printing, and Reading *The Art of Distillation*

by Elaine Leong*

ABSTRACT

Centered on the life story of the Tallamy family's copy of John French's *The Art of Distillation* (London, 1651), this article explores translation, print, and medical reading in early modern England. It traces the adaptation and reuse of textual and practical knowledge across linguistic, geographical, gender, and spatial boundaries and shines light on the scientific labor of translators, technicians, and householders, historical actors who are so often hidden by structures of the archival record. By historically situating translation, reading, and writing practices, it joins recent calls to view each translation as an independent text shaped by new contextual settings. It concludes by offering the concept of "knowledge itineraries" as a framework for analyzing long-view connected histories of knowledge transfer across time and space.

In 1736, Rebecca Tallamy started a recipe collection. After inscribing her name and the title "Book of Stilling & Reccepts," she diligently gathered and wrote down medical and culinary recipes in the thick black leather-bound book. Like many householders of the time, Rebecca collected know-how from family and friends and took copious notes from contemporary printed medical books. And as was common practice, recipe collecting was a family affair.[1] However, unusually, the Tallamys did not follow

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[1] Wellcome Library, London, Western MS 4759 (all references in this article refer to the pencil foliation at the top left-hand corner of each recto page). Rebecca wrote "Rebecca Tallamy her Book of Receps" on fol. 2r and "Rebecca Tallamy Her Book 1738" on fol. 12r. She also wrote "Rebecca Tallamy her Book of Stilling & Reccepts 1736" on fol. 17r. Additional ownership notes by Rebecca can be found on fols. 40v and 72r. William and Patience Tallamy also signed their names on the title page. Additionally, there is a "Catalogue of Books p*er* WT: Divinity Books" dated "[17]26 July 29th" on fol. 155v. The (likely) unfinished list contains twelve entries, including, for example, Richard Sibbes, *A Heavenly Conference between Christ and Mary* (London 1654); John Flavel, *Sacramental Meditations upon Diverse*

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the typical practice of storing their recipes in a notebook bought especially for this purpose; rather, they chose to build the family's collection in an eighty-year-old printed book: *The Art of Distillation*, written in 1651 by the physician John French (1616–57) (see fig. 1).

As advertised on the cover, *The Art of Distillation, or A Treatise of the Choisest Spagyricall Preparations Performed by Way of Distillation* contained the knowledge of "the most select Chymicall Authors of Severall Languages," know-how based on "the Authors manuall Experience," and descriptions of the "chiefest Furnaces and Vessels used by Ancient and Modern Chymists." Just in case that was not enough, it also included hundreds of recipes for various drugs and compound medicines, descriptions of diverse experiments and curiosities, anatomical knowledge, and instructions for the preparation of gold and silver.[2] The work drew heavily on French's previous experiences as a translator, particularly his work "Englishing" the *Furni novi philosophici*, a series of five German-language tracts published in Amsterdam in the 1640s. Written by the German chemist Johann Rudolf Glauber (1604–70), the *Furni novi philosophici* described a new alchemical furnace invented and sold by Glauber and offered relevant technical instruction and methods for making various iatrochemical substances. As outlined below, French's endeavors to adapt these tracts for English readers involved not just a linguistic translation but rather a reordering of the content and an expansion of the text. The result is a book organized around different kinds of medicines, much like other pharmaceutical texts and household recipe collections of the period.

With their copious notes, the Tallamy family tailored French's work to suit their needs, adapting knowledge designed to be used in an artisanal workshop to the eighteenth-century home. By personalizing the text with recipes gleaned from friends and family, they added new functions and layers of meaning to the object, utilizing it as an archive of family history and affording it social value. Yet the work of the Tallamys was not the first set of customization practices employed in the production of this object. *Those* occurred when the mid-seventeenth-century physician John French penned the *Art of Distillation* through his reading, translating, and compilation practices.

Books such as the Tallamys' handwritten compendia or French's printed *Art of Distillation* occupied a central place in the English early modern medical landscape. Seventeenth-century London saw a remarkable boom in vernacular medical printing, and book sellers stocked their shelves with books to fit every budget.[3] Titles addressed all branches of medicine, from physic to surgery to pharmacy, and were designed to aid readers from all walks of life with their everyday health practices. Householders

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Places of Scripture (London, 1679) and *Touchstone of Sincerity* (London, 1679); and Nicholas Byfield, *The Marrow of the Oracles of God* (London, 1619). All these works appeared in multiple editions in the seventeenth and early eighteenth century, either as stand-alone entries or as part of omnibus editions.

[2] John French, *The Art of Distillation* (London, 1651), title page.

[3] See Mary F. Fissell, "The Marketplace of Print," in *The Medical Marketplace and Its Colonies c. 1450–c. 1850*, ed. Mark Jenner and Patrick Wallis (Basingstoke: Palgrave Macmillan, 2007), 108–32; Fissell, "Popular Medical Writing," in *The Oxford History of Popular Print Culture: Volume One: Cheap Print in Britain and Ireland to 1660*, ed. Joad Raymond (Oxford: Oxford Univ. Press, 2011), 417–30; Paul Slack, "Mirrors of Health and Treasures of Poor Men: The Uses of the Vernacular Medical Literature of Tudor England," in *Health, Medicine and Mortality in the Sixteenth Century*, ed. Charles Webster (Cambridge, UK: Cambridge Univ. Press, 1979), 237–73; and Elizabeth Lane Furdell, *Publishing and Medicine in Early Modern England* (Rochester, NY: Univ. of Rochester Press, 2002).

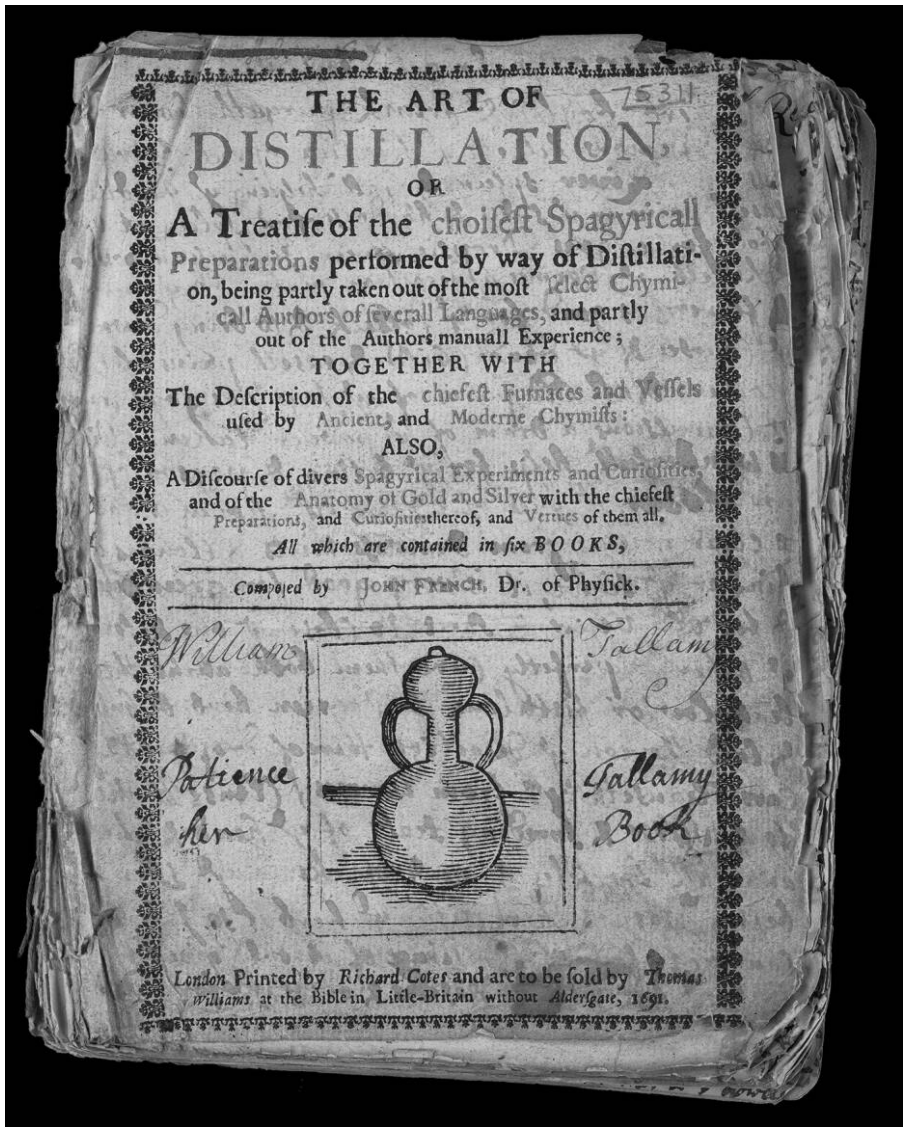

Figure 1. *Title page from the Wellcome Collection copy of John French's* Art of Distillation *(London: R. Cotes for T. Williams, 1651) with annotations written by members of the Tallamy family, including notes from works by Nicholas Culpeper. Wellcome Collection, MS 4759, fol. 1r.*

in particular avidly read the abundance of printed medical books available, and many left traces of their reading practices in margins and notebooks filled with handwritten notes. Householders' medical reading practices informed home-based medical practices *and* shaped decisions in medical encounters. Books were a crucial part of early modern medical economies.

While past studies have illuminated our understandings of medical book production, the intertwined textual practices at the core of this article still await further

exploration.[4] Objects such as the Tallamy/French printed book/manuscript bring to the fore complex entanglements of translating, reading, and writing practices, shining light on the numerous changes that occur when a body of knowledge is in transit.[5] In many cases the boundaries between acts of translating, reading, and writing were flexible and continually changing.[6] Readers became translators, authors, and users, and through their own reading and hands-on practices extended the original text. By juxtaposing linguistic transfer against what we might consider appropriation or knowledge consumption, we open conversations about the utility of translation as an analytic and complicate notions of knowledge circulation.

Located in the intersection between histories of science and medicine and histories of the book and reading, this article traces the life story of the Tallamys' copy of *The Art of Distillation*. Through analysis of the knowledge practices evidenced in this one object, I shine light on the scientific labor of translators, technicians, and householders, historical actors who are so often hidden by structures of the archival record.[7] The focus on pharmaceutical processes and technologies offers an opportunity to examine the connections between translation and the practice of medicine production. As others have noted, linguistic translation aside, the transfer of practical knowledge often brings an additional layer of resistance.[8] Three points of knowledge transfer are examined in this essay. I begin by exploring the tensions, nitty-gritty practices, and multiple actors involved in producing *The Description of Philosophical Furnaces*, the English translation of Glauber's *Furni novi philosophici* that formed the basis of French's subsequent work, *The Art of Distillation*. I unpack John French's practices of compilation and assemblage in creating *The Art of Distillation* and then investigate how the Tallamy family customized a distillation manual for their home-based medical activities. My emphasis on historically situating translation, reading, and writing practices joins recent calls to view each translation as an independent text shaped by new contextual settings. Scrutinizing the practices of translation, reading, and writing in concert, I posit, enables us to better understand what "to English" meant to our historical actors. I conclude this essay by offering the concept of "knowledge itineraries"

[4] Early work on medical reading includes Mary E. Fissell, "Readers, Texts, and Contexts: Vernacular Medical Works in Early Modern England," in *The Popularization of Medicine, 1650–1850*, ed. Roy Porter (London: Routledge, 1992), 72–96; Peter Murray Jones, "Book Ownership and Lay Culture of Medicine in Tudor Cambridge," in *The Task of Healing: Medicine, Religion and Gender in Early Modern England and the Netherlands 1450–1800*, ed. Margaret Pelling and Hilary Marland (Rotterdam: Erasmus, 1996), 49–68; Jones, "Reading Medicine in Tudor Cambridge," in *The History of Medical Education in Britain*, ed. Vivian Nutton and Roy Porter (Amsterdam: Rodopi, 1995), 153–83.

[5] James A. Secord, "Knowledge in Transit," *Isis* 95 (2004): 654–72.

[6] Other essays in this volume also draw our attention to connections between translation, reading, and archive building; see Ahmed Ragab, "Translation and the Making of a Medical Archive"; Alisha Rankin, "New World Drugs and the Archive of Practice"; and Dror Weil, "Unveiling Nature"; all in *Osiris* 37.

[7] Recovering voices "lost" in our archival records is a theme running through essays in this volume; see Montserrat Cabré, "Female Authority in Translation"; Shireen Hamza, "Vernacular Languages"; and Pablo Gómez, "[Un]Muffled Histories"; all in *Osiris* 37.

[8] See, for example, Heinz Otto Sibum, "Reworking the Mechanical Value of Heat: Instruments of Precision and Gestures of Accuracy in Early Victorian England," *Studies in History and Philosophy of Science Part A* 26 (1995): 73–106; Pamela H. Smith, "In the Workshop of History: Making, Writing, and Meaning," *West 86th* 19 (2012): 4–31; Sven Dupré, "Doing It Wrong: The Translation of Artisanal Knowledge and the Codification of Error," in *The Structures of Practical Knowledge* (Cham, Switzerland: Springer, 2017), 167–88; and Thijs Hagendijk, "Learning a Craft from Books: Historical Re-Enactment of Functional Reading in Gold- and Silversmithing," *Nuncius* 33 (2018): 198–235.

as a framework for analyzing long-view connected histories of knowledge transfer across time and space.

TRANSLATING GLAUBER FOR ENGLISH READERS

In 1650, the Oxford-trained physician John French busied himself with a string of publications.[9] Within a little more than twelve months, he translated no fewer than four books on occult philosophy, alchemy, distillation, and iatrochemistry, including the works of Heinrich Cornelius Agrippa (1486–1535), Michael Sendivogius (1566–1636), Paracelsus (1493–1541), and the *Furni novi philosophici*, a series of five tracts in German by Johann Rudolf Glauber (1604–70) published in Amsterdam in the 1640s.[10] It was in this same period that French authored the work at the center of this study: *The Art of Distillation*.

As John French's list of publications demonstrates, translation from Latin and European vernaculars was a mainstay of his work as a book producer. In this, he was not alone, nor were his activities unusual. Early modern London was a sprawling metropolis and a vibrant multilingual community where French, Spanish, Italian, Dutch, German, and other immigrants rubbed shoulders along the narrow streets, exchanging ideas and knowledge.[11] This melting pot of cultures and languages fostered an active translation scene that rippled through different areas of the book world.[12] During the early years of English publishing most printed works consisted of texts translated and adapted from Latin, French, and other European vernaculars, a process often described as "to English" by contemporary book producers. As Anne Coldiron reminds us, the first book printed in English—the *Recuyell of the Hystoryes of Troye* (1473)—was a translation from Raoul Lefèvre's *Recoiel des histoires de Troie* (1473)

[9] For a biography, see Peter Elmer, "French, John (c. 1616–1657), Physician," in *Oxford Dictionary of National Biography* (Oxford University Press, 2008); online ed., January 3, 2008, https://doi.org/10.1093/ref:odnb/10164; and Charles Webster, *The Great Instauration: Science, Medicine and Reform, 1626–1660* (London: Duckworth, 1975), 279.

[10] French's translations included *Three Books of Occult Philosophy* by Cornelius Agrippa, which is a version of the *De occulta philosophia libri tres* first published in Paris in the 1530s; and *A New Light of Alchymie* by Michael Sendivogius, which was a version of his *Novum lumen chymicum* published in 1604. In English, the latter was often issued and bound with *Of the Nature of Things, Nine books*, reportedly by Paracelsus. *Of the Nature of Things*, as bibliographers have often shown, was based in part on *Dictionarium Theophrasti Paracelsi* by the German physician Gerhard Dorn and was first published in Frankfurt in the 1580s. French's translation of the *Furni novi philosophici* appeared as *A Description of New Philosophical Furnaces* (London, 1651).

[11] On multilingualism and language learning, see John Gallagher, *Learning Languages in Early Modern England* (Oxford: Oxford Univ. Press, 2019). On multilingual publishing, see Anne E. B. Coldiron, *Printers without Borders: Translation and Textuality in the Renaissance* (Cambridge, UK: Cambridge Univ. Press, 2014). On multilingualism in other European contexts, see, for example, Eric R. Dursteler, "Speaking in Tongues: Language and Communication in the Early Modern Mediterranean," *Past & Present* 217 (2012): 47–77.

[12] For translation of literature, see, for example, Peter France, ed., *The Oxford Guide to Literature in English Translation* (Oxford: Oxford Univ. Press, 2001); Fred Schurink, *Tudor Translation* (Basingstoke: Palgrave Macmillan, 2011); and S. K. Barker and Brenda M. Hosington, *Renaissance Cultural Crossroads: Translation, Print and Culture in Britain, 1473–1640* (Leiden: Brill, 2013). For history of science, see, for example, Bettina Dietz, ed., "Translating and Translations in the History of Science," special issue, *Annals of Science* 73 (2016): 117–21; Marwa Elshakry and Carla Nappi, "Translations," in *A Companion to the History of Science*, ed. Bernard Lightman (Chichester: Wiley-Blackwell, 2016); Sietske Fransen, Niall Hudson, and Karl E. Enenkel, eds., *Translating Early Modern Science* (Leiden: Brill, 2017); and Maeve Olohan, "History of Science and History of Translation: Disciplinary Commensurability?," *The Translator* 20 (2014): 9–25.

and was printed in Bruges by a bilingual printer-translator using continental printing technology, materials, and design.[13] The complexity of this "Englishing" process has been emphasized by literary scholars who argue that, oftentimes, these works were not solely translations but rather remakings of texts within specific contexts.[14] For Coldiron, to "English" in the fifteenth century involved "appropriative acculturation performed by means of verbal translation and material-textual mediation."[15] Guyda Armstrong similarly contends that the "translated book-object, as a historically situated 'container' of the text, carries its transmission history within itself."[16] The emphasis on translations as texts worthy of study in their own right has brought the crucial work of translators and book producers into the limelight, recovering the agency of the multiple actors involved in these practices.[17] These nuanced and multilayered interpretations of cultural translation offer helpful frameworks for understanding cases such as the Tallamys' reading of *The Art of Distillation*. Drawing on this rich historiography, this article takes the current narrative to the realm of medical publishing, extending our gaze to instructional texts and the various processes required to transfer technical know-how for drug production.

By the mid-seventeenth century, the bookshops near St. Paul's in London were stocking an astonishing array of English-language medical books and, crucially, many were translations from Latin or other European vernaculars.[18] For instance, one often reprinted and cited title, the *Praxis medicinae universalis; or A Generall Practise of Physicke* (London, 1598), was a translation of the Ausburg/Heidelberg physician and apothecary Christoph Wirsung's (c. 1500–71) popular *Artzney Buch* (Heidelberg, 1568). Another well-known example was John Frampton's translation of the Spanish

[13] Coldiron, *Printers without Borders* (cit. n. 11).

[14] Tania Demetriou and Rowan Cerys Tomlinson, eds., *The Culture of Translation in Early Modern England and France, 1500–1660* (Basingstoke: Palgrave Macmillan, 2015); Schurink, *Tudor Translation* (cit. n. 12).

[15] Coldiron, *Printers without Borders* (cit. n. 11), 1.

[16] Guyda Armstrong, "Translation Trajectories in Early Modern European Print Culture: The Case of Boccaccio," in *Translation and the Book Trade in Early Modern Europe*, ed. José María Pérez Fernández and Edward Wilson-Lee (Cambridge, UK: Cambridge Univ. Press, 2014), 126–44, on 126.

[17] Marie-Alice Belle and Brenda M. Hosington, "Translation, History and Print: A Model for the Study of Printed Translations in Early Modern Britain," *Translation Studies* 10 (2017): 2–21; Belle and Hosington, eds., *Thresholds of Translation: Paratexts, Print, and Cultural Exchange in Early Modern Britain (1473–1660)* (Basingstoke: Palgrave Macmillan, 2018). On translators, see, for example, Peter Burke, "Lost (and Found) in Translation: A Cultural History of Translators and Translating in Early Modern Europe," *European Review* 15 (2007): 83–94; and Andrea Rizzi, *Trust and Proof: Translators in Renaissance Print Culture* (Leiden: Brill, 2017).

[18] On medieval medical translation within the English context, see, for example, Faye M. Getz, *Healing and Society in Medieval England: A Middle English Translation of the Pharmaceutical Writings of Gilbertus Anglicus* (Madison: Univ. of Wisconsin Press, 1991); and Peter Murray Jones, "Four Middle English Translations of John of Arderne," in *Latin and Vernacular: Studies in Late-Medieval Texts and Manuscripts*, ed. A. J. Minnis, York Manuscripts Conferences, vol. 1 (Cambridge, UK: D. S. Brewer, 1989), 61–89. While Fissell, Furdell, and Slack all note the importance of translations in early modern English medical print, as yet, there are few detailed studies of medical translation in sixteenth- and seventeenth-century England; see note 4 of the present article. Recent works include Mary C. Erler, "The First English Printing of Galen: The Formation of the Company of Barber-Surgeons," *Huntington Library Quarterly* 48 (1985): 159–71; Isabelle Pantin, "John Hester's Translation of Leonardo Fiorvanti: The Literary Career of a London Distiller," in Barker and Hosington, *Renaissance Cultural Crossroads* (cit. n. 12), 159–84; and Elaine Leong, "Transformative Itineraries and Communities of Knowledge in Early Modern Europe: The Case of Lazare Rivière's The Practice of Physick," in *Civic Medicine: Physician, Polity, and Pen in Early Modern Europe*, ed. J. Andrew Mendelsohn, Annemarie Kinzelbach, and Ruth Schilling (Abingdon: Routledge, 2019), 257–79.

physician Nicolás Monardes's (1493–1588) *Historia medicinal de las cosas que se traen de nuestras Indias Occidentales* (1565) as *Joyfull Newes out of the Newe Founde Worlde* (1577), discussed in Alisha Rankin's essay in this volume.[19] By the 1650s, Wirsung's and Monardes's works sat next to the translated works of other European practitioners, from the Parisian physician Jean Fernel (1497–1558), to the German surgeon Fabricius Hildanus (1560–1634), to the French Royal apothecary Moise Charas (1619–98).[20]

Johann Rudolf Glauber, the German chemist whose *Furni novi philosophici* tracts were translated by French, first came into the purview of the English reading public through the work of the German émigré Samuel Hartlib (1600–62) and his circle of reformers. An intelligencer, reformer, and writer, Hartlib gathered around him a group of like-minded men and women who collected and made public useful knowledge as part of their schemes for the improvement of the Commonwealth.[21] Their considerable efforts to bring Glauber's works to England, as detailed below, were likely driven by these political aims. French's preface to *A Description of Philosophical Furnaces* outlines a commitment to opening access to knowledge in the name of public interest. Lamenting that it was a "pitty such useful and so learned writings should be obscured from the English Nation," French claimed that through reading his translation, "the poorest man may in a short time become very rich, the most sickly very healthy, and the basest truely honorable." And, thus, he vowed, "It shall be my practise as long as I live to be instrumental in promoting true knowledge, wheather by way of Translation,

[19] See Rankin, "New World Drugs" (cit. n. 6); and Antonio Barrera-Osorio, "Translating Facts: From Stories to Observations in the Work of Seventeenth-Century Dutch Translators of Spanish Books," in *Translating Knowledge in the Early Modern Low Countries*, ed. Harold John Cook and Sven Dupré (Zurich: LIT Verlag Münster, 2012), 317–32.

[20] Jean Fernel's *consilia* are included in Lazare Riviére's *The Practice of Physick* (London, 1658 edition onward), translated by Nicholas Culpeper and issued by Peter Cole. Hildanus's works most obviously appear as *Gulielm Fabricius Hildamus, His Experiments in Chyrurgerie* (London, 1642); and *Cista militaris, or, A Military Chest* (London, 1674). Moise Charas's *Pharmacopée royale galénique et chimique* was translated as *The Royal Pharmacopoea, Galenical and Chemical* (London, 1678). Also translated were his *Nouvelles expériences sur la vipère*, which appeared as *New Experiments upon Vipers* (London, 1670 and other editions). On Charas's arguments with Francesco Redi over experimentation, vipers, and poison, see Jutta Schickore, "Trying Again and Again: Multiple Repetitions in Early Modern Reports of Experiments on Snake Bites," *Early Sci. & Med.* 15 (2010): 567–617.

[21] On the Hartlib circle, see, for example, Webster, *Great Instauration* (cit. n. 9); Mark Greengrass, Michael Leslie, and Timothy Raylor, eds., *Samuel Hartlib and Universal Reformation: Studies in Intellectual Communication* (Cambridge, UK: Cambridge Univ. Press, 1994); Koji Yamamoto, "Reformation and the Distrust of the Projector in the Hartlib Circle," *Hist. J.* 55 (June 2012): 375–97; Paul Slack, *The Invention of Improvement: Information and Material Progress in Seventeenth-Century England* (Oxford: Oxford Univ. Press, 2015), chap. 4; Vera Keller and Leigh T. I. Penman, "From the Archives of Scientific Diplomacy: Science and the Shared Interests of Samuel Hartlib's London and Frederick Clodius's Gottorf," *Isis* 106 (2015): 17–42; Penman, "Omnium Exposita Rapinæ: The Afterlives of the Papers of Samuel Hartlib," *Book History* 19 (2017): 1–65; and Carol Pal, "The Early Modern Information Factory: How Samuel Hartlib Turned Correspondence into Knowledge," in *Empires of Knowledge: Scientific Networks in the Early Modern World*, ed. Paula Findlen (Routledge, 2018), 126–58. French's earlier forays into translation were commissioned by Hartlib, who recorded that he visited French at his lodgings at Warwick Court on November 30, 1652, receiving updates on the translation of "Erker" and Agricola and lending him copies of Glauber's tracts; Samuel Hartlib, Ephemerides 1652, Part 2, 1652 [7 October–31 December], Sheffield University Library, MS 61 28/2/37A-44B (28/2/42B), as published online by M. Greengrass, M. Leslie, and M. Hannon, *The Hartlib Papers*, The Digital Humanities Institute, University of Sheffield, 2013, http://www.dhi.ac.uk/hartlib (hereafter Hartlib Papers).

or any other way of making what is occult manifest."[22] As many scholars have noted, these kinds of sentiments were widely shared among members of the Hartlib circle.

Hartlib and his circle had strong interests in the potential of iatrochemistry, and it was Glauber's fame as a producer of medicines that caught their attention.[23] From 1644 onward, Henry Appelius (fl. 1640–58) and Johann Moriaen (c. 1592–1668) sent individual tracts of the *Furni novi philosophici* to Hartlib, along with descriptions of Glauber's Amsterdam laboratories, his inventions, and his whereabouts.[24] Throughout the late 1640s, various members of the circle, including Hartlib himself, tried their hand at translating Glauber's confusing prose. French acknowledges this work in *A Description of Philosophical Furnaces*, writing that "the greatest part of the treatise in private hands [was] already translated into English by a learned German."[25] However, the translation of Glauber's technical know-how required more than linguistic competence. The *Furni novi philosophici* tracts were likely written-down versions of Glauber's teachings. In August 1647, Appelius told Hartlib that Glauber "taught the furnaces et the mannour of distilling for monyes." However, despite the fact that direct instruction of his techniques constituted a source of income for him, Glauber planned to communicate these ideas to the "whole world" as soon as he could fund the publication.[26] In other words, from the start, because of the technical nature of these processes, Glauber took a multipronged approach to disseminating his expertise and know-how and to establishing his reputation and authority. The archive makes clear that Hartlib and others took a similarly ambitious approach to gaining information about Glauber's furnaces and techniques, with obtaining and translating the text of the *Furni novi philosophici* as just one path. This was crucial because the group quickly realized that although Glauber was happy for his printed tracts to be translated into French and Latin and considered them "no more his, but all mens," he was much more guarded when it came to divulging exact methods and recipes.[27] As Moriaen wrote, "he also wanted to

[22] John French, "Letter to the English Reader," in Johann Rudolf Glauber, *A Description of Philosophical Furnaces*, trans. French (London, 1651), sig. A4r-v.

[23] On chemical medicines in the 1640s and 1650s, see, for example, Antonio Clericuzio, "From van Helmont to Boyle: A Study of the Transmission of Helmontian Chemical and Medical Theories in Seventeenth-Century England," *Brit. J. Hist. Sci.* 26 (1993): 303–34; and Webster, *Great Instauration* (cit. n. 9), chap. 4. On the Hartlib circle and chemistry, see Stephen Clucas, "The Correspondence of a XVII-Century 'Chymicall Gentleman': Sir Cheney Culpeper and the Chemical Interests of the Hartlib Circle," *Ambix* 40 (1993): 147–70; and John T. Young, *Faith, Medical Alchemy, and Natural Philosophy: Johann Moriaen, Reformed Intelligencer and the Hartlib Circle* (Aldershot: Ashgate, 1998).

[24] The first mention of the *Furni novi philosophici* appears to be in a letter from Appelius to Hartlib sent in June 1644 in which the two discussed Hartlib's issues with kidney stones; Letter, Henry Appelius to Samuel Hartlib, 12 June 1644, Hartlib Papers 45/1/8A-B. Appelius and Moriaen wrote often about Glauber's movements. Appelius, for example, reported that Glauber had gone to Utrecht in September 1644 and to Arnheim in August 1647; Letter from Henry Appelius to Samuel Hartlib, 5 September 1644, Hartlib Papers 45/1/13A-B and 26 August 1647, 45/1/33A-34B.

[25] Glauber, *A Description of Philosophical Furnaces* (cit. n. 22), sig. A4r. On Glauber in London, see Young, *Faith, Medical Alchemy, and Natural Philosophy* (cit. n. 23); Pamela H. Smith, "Vital Spirits: Redemption, Artisanship, and the New Philosophy in Early Modern Europe," in *Rethinking the Scientific Revolution*, ed. Margaret J. Osler (Cambridge, UK: Cambridge Univ. Press, 2000), 119–36; and Stephen Clucas, "Correspondence," (cit. n. 23).

[26] Letter, Henry Appelius to Hartlib, 26 August 1647, Hartlib Papers 45/1/33A-34B.

[27] Ibid. On notions of openness and secrecy in craft and technical knowledge, see Pamela O. Long, *Openness, Secrecy, Authorship: Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance* (Baltimore, MD: Johns Hopkins Univ. Press, 2001); and Elaine Leong and Alisha Rankin, eds., *Secrets and Knowledge in Medicine and Science, 1500–1800* (Farnham, UK: Ashgate, 2011), particularly the essay by Pamela Smith, "What is a Secret? Secrets and Craft Knowledge in Early Modern Europe," 47–66.

keep his thumb, as they say, in his hand and didn't reveal the secret."[28] Robert Child (1613–54) further exclaimed in relation to the recipe for the Alkahest: "I Cannot beleeve that Glauber will reveall it to any one, though perhaps they may get some particulars from him."[29] In fact, Glauber excelled at walking the fine line between desiring to communicate information freely and openly and protecting his own commercial interests.[30]

By the autumn of 1647, the group was eager to clarify matters and, as Glauber was reluctant to travel to England, they decided to send a member to gain firsthand knowledge of his processes and technologies, and assess their feasibility and utility.[31] Ideally, this person would possess skills "in Chymicall et Alchymisticall matters . . . [and] bee best able to judge of his Inventions." After all, as Henry Appelius reported, "[Glauber's] Operations are not so havy and long, they can better be tryed than disputed."[32] In early 1648, Benjamin Worsley (1618–77), a self-styled medical practitioner, traveled to the Netherlands to gather information on a range of topics including Glauber's furnaces.[33] While much can be written about Worsley's eventful time with Glauber, for the purposes of this article it suffices to note that despite sharing common skills and training in chemical operations, Worsley and Glauber found their time together challenging. The minutiae of everyday life intervened at every corner, and linguistic and technical issues abounded, for Worsley had no German, and Glauber, though able, was reluctant to communicate in Latin.[34] At various points, the two men brokering this knowledge exchange, Moriaen and Appelius, expressed doubts on whether Worsley could coax

[28] "Er hatt aber gleichwoll den daumen wie man sagt in der hand behalten vnd das secret nicht offenbahrt"; Letter from Johann Moriaen to Hartlib, July 1650, Hartlib Papers 37/163A-164B (37/163A). Translation mine. Unless otherwise noted, the translations in this article are mine.

[29] Letter from Robert Child to Samuel Hartlib, 2 February 1652, Hartlib Papers 15/5/18A-19B (15/5/18B).

[30] When asked if his book could be translated into Latin and French, Glauber answered that there was "no necessity to aske leave of him, seeing the book was no more his, but all mens"; Letter from Henry Appelius to Samuel Hartlib, 26 August 1647, Hartlib Papers 45/1/33A-34B (45/1/33B). See also Smith, "Vital Spirits" (cit. n. 25), 125; and Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago: Univ. of Chicago Press, 2004), on Glauber's efforts to protect his commercial interests.

[31] This episode is vividly described by John Young in *Faith, Medical Alchemy, and Natural Philosophy* (cit. n. 23), chap. 7. A letter from October 1647 goes into some detail on the logistics and costs of this arrangement. Appelius supposed that for "100^{lb} starling the friend may have of Glauber what hee desireth if not more"; Letter from Henry Appelius to Samuel Hartlib, 27 October 1647, Hartlib Papers 45/1/37A-B. On translators as mediators and cultural exchange, see Brenda M. Hosington, "Translation as a Currency of Cultural Exchange in Early Modern England," in *Early Modern Exchanges: Dialogues between Nations and Cultures, 1550–1750*, ed. Helen Hackett (Routledge, 2016), 27–54; and Peter Burke, "The Renaissance Translator as Go-Between," in *Renaissance Go-Betweens*, ed. Andreas Höfele and Werner von Koppenfels (Berlin: De Gruyter, 2005), 17–31.

[32] Letter from Henry Appelius to Samuel Hartlib, 26 August 1647, Hartlib Papers 45/1/33A-34B (45/1/33B).

[33] On Worsley, see Thomas Leng, *Benjamin Worsley* (Woodbridge, UK: Boydell Press 2008); and Charles Webster, "Benjamin Worsley: Engineering for Universal Reform from the Invisible College to the Navigation Act," in Greengrass et al., *Samuel Hartlib and Universal Reformation* (cit. n. 21), 213–35.

[34] Worsley's stay did not get off to a good start: he arrived at Glauber's lodgings only to be turned away as the latter's wife was in labor and the family had no desire to entertain an Englishman with no German in those circumstances; Letter from Johann Moriaen to Samuel Hartlib, 27 February 1648, Hartlib Papers 37/131A-132B. Hartlib had repeatedly asked Henry Appelius about Glauber's Latin skills and had received positive replies. See, for example, Letter from Henry Appelius to Samuel Hartlib, 27 October 1647, Hartlib Papers 45/1/37A-B (45/1/37A).

the required knowledge out of Glauber.[35] When Worsley returned to London in 1649, it was unclear whether this brief Dutch sojourn had yielded the hoped-for results.

Consequently, when John French took up the mantle to translate Glauber, he joined a years-long (albeit informal) collaborative operation. The efforts to bring the *Furni novi philosophici* to England went far beyond finding linguistic equivalence; rather, they became a lengthy and complex process requiring specialist expertise and first-hand experiential knowledge and involving assessment and trial of knowledge and techniques. The technical nature of the *Furni novi philosophici* and the artisanal/craft context within which it was created brought particular layers of resistance—the capture and transfer of tacit or gestural knowledge, the need to protect commercial interests, and issues of openness and secrecy.[36] Much of the translation, though now only archived on paper, took place within what historians of science have termed a "trading zone."[37] However, in this particular case, the exchange of knowledge was further encumbered by linguistic challenges. It is little wonder that *A Description of Philosophical Furnaces* turned out to be a wordy and cumbersome text, one not likely to induct newcomers to the trade.

CREATING *THE ART OF DISTILLATION*

Soon after his work translating the *Furni novi philosophici*, John French turned his attention to *The Art of Distillation*. Intended as a "generall treatise of Distillations," it offered "the choisest preparations of the selectest Authors both ancient, and moderne, and those of severall languages."[38] If the efforts to translate the *Furni novi philosophici* were collaborative, the work of remaking Glauber's technical tracts into a manual for general readers was conducted solely by French. And here, he did much more than just collate and complete the translations. French made clear that the knowledge contained within was gathered via his reading and translation practices and his "long, and manuall experience," extended by know-how he had "by way of exchange purchased out of the hands of private men, which they had monopolized as great secrets."[39] He thus fashioned himself as a compiler, a translator, an expert, and a maker. In producing what he considered a general guide to distillation, French articulated what he considered the most important texts and know-how in the field.

[35] In August 1648, for example, Appelius reported that Worsley's work was proceeding slowly, particularly as Glauber offered many compliments but was not forthcoming on exact methodologies and processes; Letter from Henry Appelius to Samuel Hartlib, 2 August 1648, Hartlib Papers 45/1/39A-40B. In September 1649, when he informed Hartlib of Worsley's return to England, Appelius stated plainly that the two men did not understand each other and that Glauber was hard on Worsley; Letter from Henry Appelius to Samuel Hartlib, 20 September 1649, Hartlib Papers 45/1/41A-B.

[36] On gestural knowledge, see Sibum, "Reworking the Mechanical Value of Heat" (cit. n. 8). On issues of openness and secrecy, see footnote 27 in the present article.

[37] The concept of "trading zones" was first developed by Peter Galison and was adapted and refined for early modern science (particularly artisanal science) by Pamela O. Long; see Long, *Artisan/Practitioners and the Rise of the New Sciences, 1400–1600* (Corvallis, OR: Oregon State Univ. Press, 2011); and Long, "Trading Zones in Early Modern Europe," *Isis* 106 (2015): 840–47.

[38] French, *Art of Distillation* (cit. n. 2), sig. *1r-v. More than twenty authors are named in the text, including contemporary or recent authors such as Michael Sendivogius, Paracelsus, Jean Baptista van Helmont (cited throughout the text), and Gregorius Agricola (177), and late medieval writers such as Albertus Magnus (178) and Thomas Aquinas (185). As with many early modern English recipe collections, there are also the usual references to recipes by hard-to-identify figures such as Dr. Burges (53) and Dr. Stephens (48).

[39] Ibid.

Within French's scheme for a general distillation guide, a central place was allotted to Glauber's inventions from the *Furni novi philosophici*. However, in order to create a general guide to distillation, French had to call upon common practices of textual compilation: extraction, reorganization, and embellishment. As befitting a publication selling a number of different furnaces and relevant technical know-how, each tract in the *Furni novi philosophici* is centered on a different kind of equipment. Aside from the opening chapter describing the distillation processes, *The Art of Distillation* is organized around types of medicines, with chapters on compound waters and on mineral and animal-based drugs. As a consequence, while *A Description of Philosophical Furnaces* and *The Art of Distillation* share common images and textual passages, these occur in different parts of the books and often have been significantly altered.

For example, the glass vessel in figure 1 was originally featured in the fifth tract of the *Furni novi philosophici*, offering advice for a range of processes from luting to the making of glassware and crucibles.[40] In *The Art of Distillation*, however, the illustration appears in the first book, in which French outlined the basics of the art, offering information on how to make instruments, build furnaces, and more. In fact, while almost all the images featured in the German and English version of *Furni novi philosophici* were included in *The Art of Distillation*, most appeared in the first book of *Distillation*, rather than dispersed across tracts dedicated to individual furnaces as per Glauber's original intention.

A Description of Philosophical Furnaces and *The Art of Distillation* were produced by the same printshop, and the images across the two works are almost identical, likely the result of the reuse of woodblocks. However, this was not a case of simple repurposing. As French moved the images from *A Description of Philosophical Furnaces* to *The Art of Distillation*, he made amendments and changes. For example, in the illustration of a glass vessel (see fig. 2), French added the label "D" with clear instructions on how to create a quicksilver (mercury) seal that would prevent any spirits stored within from escaping and preserve the glass.

Significant changes were also made to the text, and the recipe for aqua fortis is a good point of comparison. In *Furni novi philosophici*, the recipe can be found in the second tract, accompanying the description of a furnace designed for distillation. For reasons of protecting commercial interests and secrecy, recipes in *Furni novi philosophici* were often very brief. In this instance, the maker was simply told to mix vitriol and salt nitre in an equal or two-to-one ratio. In place of workable instructions, Glauber instead diverged into lengthy polemical discussions on the merits and faults of aqua fortis and salt nitre. This lengthy entry was reproduced largely unchanged in *A Description of Philosophical Furnaces*. However, when French featured the same recipe in *The Art of Distillation*, he not only repositioned it within the book but also significantly rewrote the instructions. Here, it sits in the section dedicated to recipes using "Minerals" alongside other instructions involving salt and vitriol. Omitting Glauber's discussion on aqua fortis and salt nitre entirely, French expanded the instructions, outlining the equipment required ("a glasse Retort coated, or earthen Retort that will endure the fire") and the production steps ("set them into the Furnace in an open fire, and then having fitted a large receiver distill it by degrees the space of 24 hours.")[41]

[40] Glauber, *Description of Philosophical Furnaces* (cit. n. 22), 293 ff.
[41] French, *Art of Distillation* (cit. n. 2), 70.

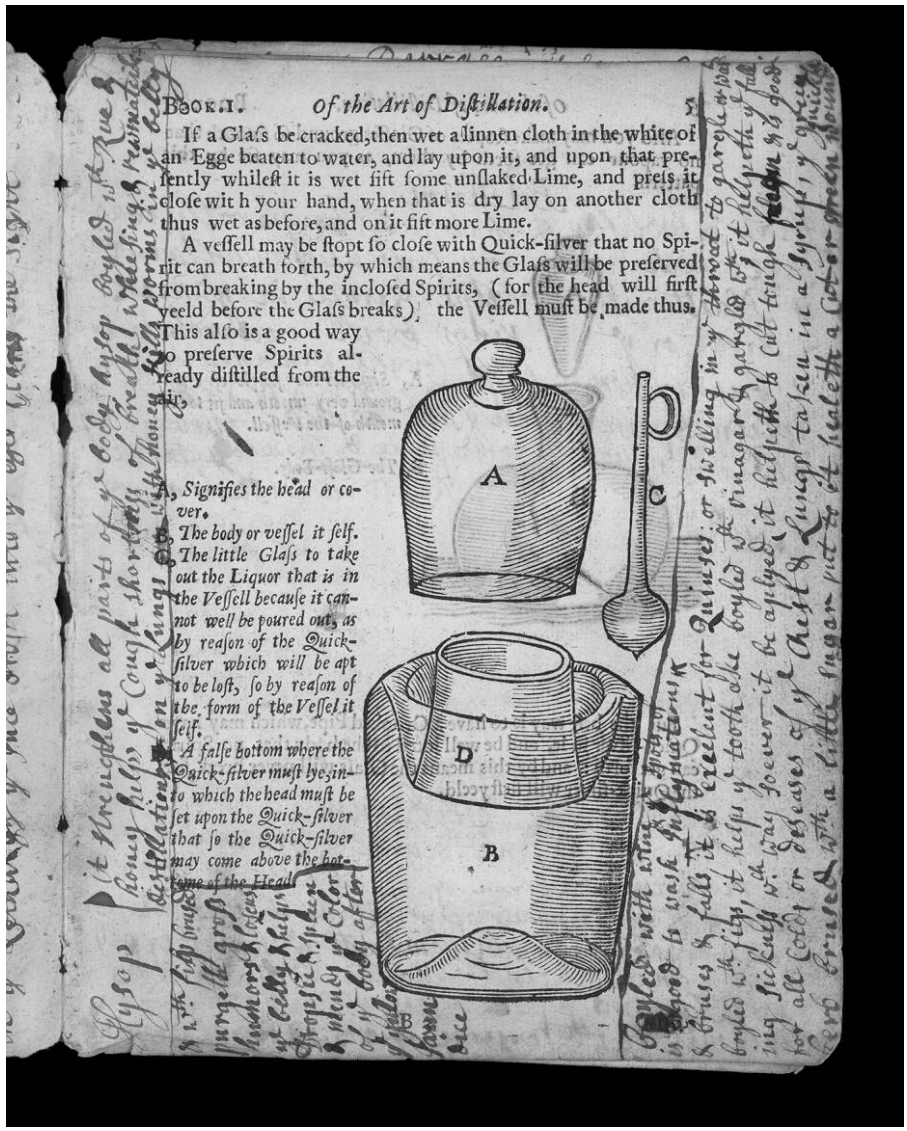

Figure 2. *Page from the Wellcome Collection copy of John French's* Art of Distillation *(London: R. Cotes for T. Williams, 1651) showing diagram and instructions for creating a quick-silver (mercury) seal, with annotations written by members of the Tallamy family. Wellcome Collection, MS 4759, fol. 20r.*

If the *Furni novi philosophici* was part of Glauber's scheme to sell furnaces and medicines, French had other plans for *The Art of Distillation*, aiming to offer an accessible set of instructions. Indeed, many of the subtitles in *The Art of Distillation* resemble those of contemporary pharmaceutical tracts or books of medicinal recipes. This is not by chance, for if Glauber's *Furni novi philosophici* offered descriptions of alchemical devices accompanied by examples to illustrate their use, French's work is largely filled with recipes to make medicines. In that, it is closely related to one of the most popular medical genres of the day.

While both *A Description of Philosophical Furnaces* and *The Art of Distillation* were translations of Glauber's *Furni novi philosophici*, they represent two different paths to bringing continental vernacular works to English audiences, accentuating the many modes of translation adopted by early modern book producers as well as their differing receptions. French's first rendition of Glauber in English—*A Description of Philosophical Furnaces*—was never reprinted after French issued it in 1651. By contrast, French's subsequent reworking of Glauber—"Englished" in language as well as in cultural appeal—was well received, and *The Art of Distillation* remains his best known work, being issued four times with the final edition appearing in 1667. From the second 1653 edition onward, enterprising printers merged *The Art of Distillation* with *The Distiller of London*, a book of rules and directions issued by the Distillers' Company in 1639 in a bid to regulate practices.[42] For readers, this would have meant a bounty of additional recipes.

Yet, the story of Glauber in England did not end there. A second translation of Glauber, *The Works of the Highly Experienced and Famous Chymist, John Rudolph Glauber*, appeared in 1688, "Translated in *English* and Published for the Publick Good by the *Labour*, *Care* and *Charge*" of a physician named Christopher Packe (c. 1657–c. 1708). By then, there was enough interest in the work for it to be produced by subscription, with the list of all-male subscribers including gentlemen, physicians, surgeons, and apothecaries hailing from all around the country, from York to Somerset. One of the subscribers was Robert Boyle, who had also been involved in the efforts to translate Glauber the first time around.

Unlike his countrymen earlier, Packe was able to work from the recently available Latin translations of Glauber's works, and his publication was also a work of textual compilation. Packe took great pains to obtain the original Dutch copper plates for the images and hunted down twelve additional tracts "never printed in Latin, but in the German Tongue only" to ensure that he had as complete a set of works as possible. As were the earlier efforts by the Hartlib circle, this was a collaborative enterprise as the newly located German tracts were not translated by Packe but rather an anonymous man "well skill'd both in the High-Dutch, and also in Chymistry."[43] Following in Glauber's footsteps, Packe also paired the publication with a flourishing drug business, selling a number of Glauber's famed medicines at his house and laboratory next to the sign of the gun in Little Moorfields, London. Over time, Packe's translation became the standard edition of Glauber's works for English readers, including modern historians of science.[44] For many readers of Glauber, the collective efforts of the Hartlib circle and John French are largely forgotten, obscured by the mechanics of print and the ever-changing world of book production. In this case, print might have brought

[42] Company of Distillers of London, *The Distiller of London. Compiled and set Forth by the Speciall Licence and Command of the Kings Most Excellent Majesty: For the Sole Use of the Company of Distillers of London. And by Them to Bee Duly Observed and Practized* (London, 1639), sig. Bv. On the Distillers Company, see Webster, *Great Instauration* (cit. n. 9), 253–4.

[43] Johann Glauber, *The Works of the Highly Experienced and Famous Chymist, John Rudolph Glauber*, trans. Christopher Packe (London, 1688), preface, sig. A2r.

[44] J. R. Partington provides a long list of Glauber's publications in *A History of Chemistry*, but *A Description of Philosophical Furnaces* is not included; Partington *A History of Chemistry* (London: MacMillan, 1961), 341–61. Similarly, Packe was used as the main translation in other major English research on Glauber, including Kathleen Ahonen, "Johann Rudolph Glauber: A Study in Animism in Seventeenth-Century Chemistry" (PhD diss., Univ. of Michigan, 1972); and Anna Marie Roos, *The Salt of the Earth: Natural Philosophy, Medicine and Chymistry in England, 1650–1750* (Leiden: Brill, 2007).

Glauber's inventions to wider audiences, but it also flattened the complex sets of practices—textual and experiential—required to make this knowledge travel.

THE ART OF DISTILLATION IN THE EIGHTEENTH-CENTURY HOME

Sometime in or before the 1730s, a copy of *The Art of Distillation* fell into the hands of the Tallamys, a family likely from the port town of Bideford in Devon. While little is known about the Tallamys, the extant ownership notes suggest that the book once belonged to William, Patience, and Rebecca Tallamy.[45] While all three signed their name in the volume, Rebecca emerges as the most prominent owner and active annotator, signing her name multiple times over the course of 1736–8 and extending French's work with substantial notes. By the 1730s, when French's book reached the hands of the Tallamy family, it was almost eighty years old. The difficulties and tensions experienced by the Hartlib circle in obtaining Glauber's know-how were long forgotten, and *The Art of Distillation* was out of print. We can only speculate how this decades-old object became such a central part of the Tallamys' knowledge practices, but once it was in situ, the Tallamys customized their copy of the book, augmenting French's distillation guide with their own carefully gathered household knowledge. Running out of space in the margins, the Tallamys bound another 140 blank leaves to the book, filling it with a cornucopia of notes, including information on the medicinal virtues of herbs and hundreds of additional recipes.[46] Many of the additional entries contained information collated from friends and other printed books, including works by well-known medical authors such as Nicholas Culpeper and William Salmon.[47] Entries such as "Mrs Maines receipt from Liverpool to make currant wine" from 1806 indicate that the book continued to be used into the nineteenth century.[48] Clearly, for generations of the Tallamys, the object functioned as a treasured archive filled with everyday health knowledge tailored specifically for their family.

The Tallamys were not alone in their interest in pharmacy and medicines. The early modern home was a bustling site for a range of medical activities, from self-diagnosis and medication, to nursing and caring for the sick, to drug production, with women taking on key roles across this broad range of health practices. To further their knowledge about medicine and the body, householders accessed a wide variety of sources.

[45] The Tallamys have proved elusive to track down. A William Tallamy is mentioned in a deposition taken by the Commission on the King's Remembrancer side of the Exchequer in 1719. The deposition concerned the price of tobacco in the port town of Bideford in Devon. Additionally, in 1724, Hannah and Patience Tallamy described as "of Bideford" and "spinsters" were leased "Moiety of 2 messuages in Potters Lane" in Bideford by John Williams of Trewargey, Cornwall, and Lewis Stucley of Middle Temple. Finally, Katherine Allen has found mentions of the family name in eighteenth- and nineteenth-century records for Mortenhampstead, also in Devon; The National Archives, London, UK, E 134/9Geo1/Mich29; North Devon Record Office (South West Heritage Trust), B156/L/B/13/1; and Katherine Allen, "Hobby and Craft: Distilling Household Medicine in Eighteenth-Century England," *Early Modern Women* 11 (2016): 90–114, on 111n77.

[46] Wellcome Western MS 4759, fols. 120r-256v.

[47] One recipe is titled "A diet drink out of Culpeper"; ibid., fol. 232v. See below for further discussions of reading notes from Culpeper. A number of recipes are labelled with "Salmon" in the upper right-hand corner; ibid., fols 240r-241v. On how householders collected medical information and utilized their reading practices to build recipe collections, see, for example, Sara Pennell, "Perfecting Practice? Women, Manuscript Recipes and Knowledge in Early Modern England," in *Early Modern Women's Manuscript Writing: Selected Papers from the Trinity/Trent Colloquium*, ed. Jonathan Gibson and Victoria E. Burke (Aldershot: Ashgate, 2004), 237–58; and Elaine Leong, "'Herbals She Peruseth': Reading Medicine in Early Modern England," *Renaissance Studies* 28 (2014): 556–78.

[48] Wellcome Western MS 4759, fol. 183v.

While some turned to their family and friends for advice or conferred with medical practitioners of various sorts, many also consulted the rich offerings by contemporary book producers, leaving traces of their reading practices in book margins and manuscript notebooks. Know-how for drug production in particular was much sought after by householders. It was common to make medicines at home, and distillation was a production method used within many domestic spaces by both male and female actors. Household inventories list equipment such as glass stills, alembics, and water baths, and recipes for distilled waters are regularly found in recipe books.[49] As such, it is not surprising that the Tallamys had use for a distillation manual, and indeed, a number of the Tallamys' handwritten recipes required distillation, such as the instructions to make a good water for the stomach, Dr. Bate's medicine against consumption, and a range of other medicinal waters.[50] This is not to say that all of French's complex chemical procedures made their way into the Tallamys' everyday practices. Without greater knowledge of the Tallamys' circumstances and their wider reading habits, it is difficult to ascertain the exact role served by French's text and the book as a material object in their daily lives and knowledge practices. After all, we have few clues about whether they so heavily annotated all of their books, medical or otherwise, or whether or how they might have used this volume alongside other works on their bookshelves. As illustrated below, many of their annotations only engage passively with the content of French's work, and it is possible that they might have been primarily using the book pages as a space to record know-how on food and drug preparation. We might also view their interest in *The Art of Distillation* as aspirational—that is, they viewed the book as a trove of ambitious recipes they hoped to make one day rather than as a collection of know-how for use in everyday life.

The opening page of Book 1 in the *Art of Distillation* serves as a good example of the multiple ways in which the manuscript and printed books layered upon each other. As illustrated in figure 3, this page acts as a title-page of sorts for both the first chapter of the *Art of Distillation* and the Tallamys' recipe book. Rebecca Tallamy's ownership note, "Rebecca Tallamy her Book of Stilling and Reccepts 1736," and French's chapter title, "What Distillation is, and the kinds thereof," are both featured centrally. French's succinct explanation of distillation as an art appears directly under the chapter title; surrounding this block of printed text are Rebecca's handwritten notes on the herb madder copied out of Nicholas Culpeper's *The English Physitian Enlarged* (1653).

To signal that the herbal knowledge hails from another text, Rebecca turned the book sideways and wrote in the margins, inserting a boxed heading with the word "Madder" on the left (or the lower left-hand corner of French's page). The excerpt from Culpeper's entry on madder was then copied around the block of printed text, first filling in the left- and right-hand margins of French's page and then the space at the bottom. As a result, Rebecca's excerpt of Culpeper's entry on "madder" is superimposed onto French's printed text. Rebecca used the same layout for a number of entries taken from *The English Physitian Enlarged*, each with a boxed heading

[49] Elaine Leong, "Making Medicines in the Early Modern Household," *Bull. Hist. Med.* 82 (2008): 145–68; Allen, "Hobby and Craft" (cit. n. 45); Anne Stobart, *Household Medicine in Seventeenth-Century England* (London: Bloomsbury, 2016).

[50] Wellcome Western MS 4759, fols. 48v, 158v, and 124v (distilling fumitory); 165r (to make "Aqua Carminativa"); 222r (to make cordial water); 228r (to make a compound water of butter burrs and gentian water); 227v (surfeit water); 228v (cinnamon water); 253r (medicine for a hot and costive habit of body); and 253v (instructions to distill elder water and flowers).

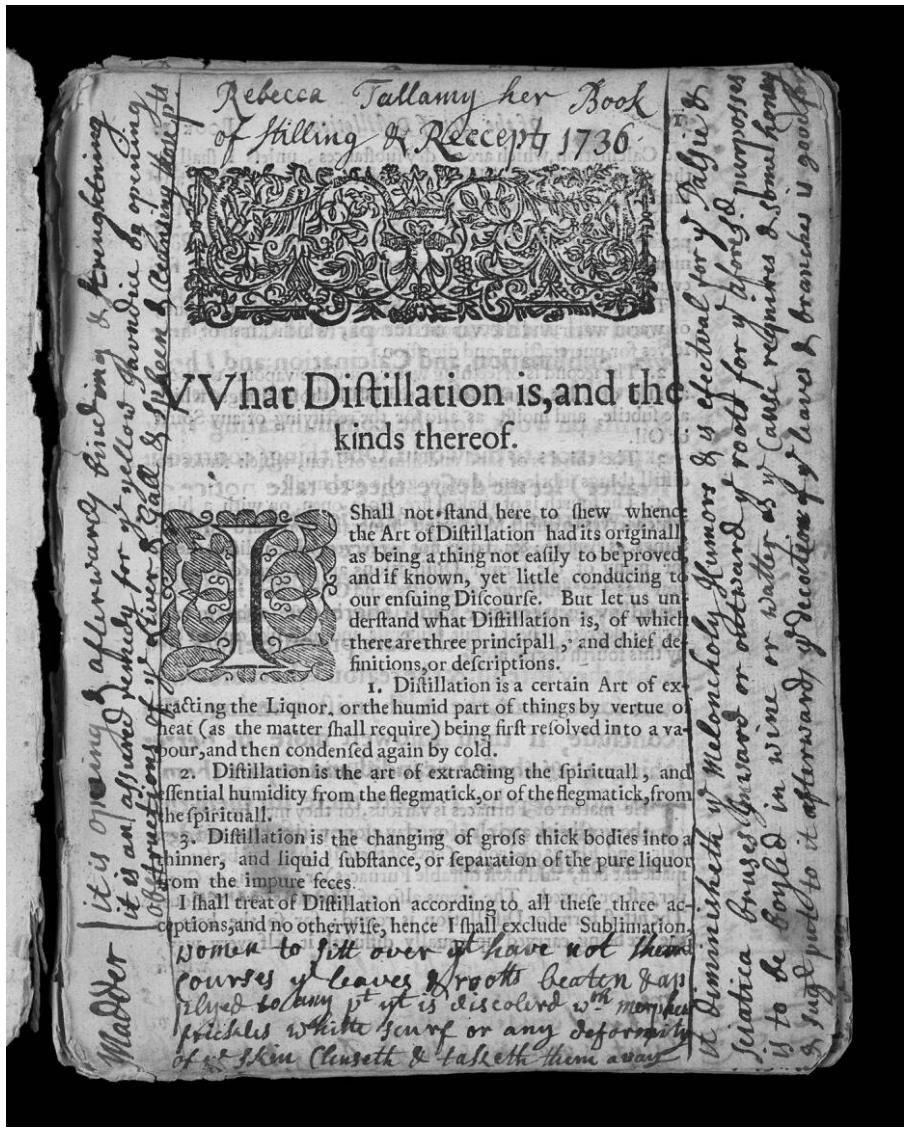

Figure 3. *Chapter opening from the Wellcome Collection copy of John French's* Art of Distillation *(London: R. Cotes for T. Williams, 1651) with annotations written by Rebecca Tallamy, including notes from works by Nicholas Culpeper. Wellcome Collection, MS 4759, fol.17r.*

placed in the corner. The eleven excerpts cover Culpeper's entries on sanicle, motherwort, mouse ear, tormentil, horehound, plantane, madder, nep or calmint, knot-grass, summer savory, and hyssop.[51] Directionality here is used to signal different kinds of knowledge, separating French's technical know-how from Culpeper's botanical

[51] Wellcome Western MS 4759, fols. 2v, 4v, 9v, 11v, 14v, 15v, 17r, 17v, 19r, 19v, and 20r. These entries are excerpted from Nicholas Culpeper, *The English Physitian Enlarged* (London,1653), 332, 164, 165, 359–60, 130–1, 301, 148, 171, 138, 334, and 128.

knowledge. Thus, when the book is orientated horizontally, Rebecca's consistently placed boxed headers work together to form a visual index of her herbal knowledge. In effect, Rebecca's canny mise-en-page enabled her to create a book within a book.

These were not the only excerpts Rebecca took from Culpeper's *The English Physitian Enlarged*. Another big batch of extracts, sometimes a full quarto-side long, can be found in the blank pages she bound with French's printed text.[52] Each entry in Culpeper's herbal offered information under four headings: description, place, time and government, and virtues. Rebecca's excerpts from the text were taken from the final part of each entry—government and virtues—and even in the long entries on madder and tormentil, her excerpts are selective. In choosing to record only the medicinal virtues and uses of herbs, Rebecca was following a fairly common practice at the time, particularly when the excerpts were combined with recipe knowledge in a single notebook.[53] It may be that the householders were seasoned foragers familiar with the appearance of common herbs, but more likely, they planned on buying their ingredients from apothecaries or herb women and did not see the need to acquire detailed knowledge or skills in botany.

Rebecca also turned to another one of Culpeper's popular works, *A Physicall Directory*, or *The London Dispensatory*, as it was titled from the second edition. This was a translation of *Pharmacopoeia Londinensis*—the official pharmacopoeia issued by the London College of Physicians.[54] Rebecca took numerous notes from this text and interspersed them throughout the French/Tallamy volume. For example, the notes on "roots" were written onto the recto side of a blank page inserted between pages two and three of French's printed work, where it is surrounded by passages taken from *The English Physitian Enlarged* on the two directly facing pages.[55] A comparison of Rebecca's excerpts and Culpeper's printed text demonstrates how this was not simply a copy but rather selected and amended passages pertinent to her own medical practices and needs. In other words, in her work of textual compilation, Rebecca interleaves excerpts from three different printed books, working across the print and manuscript medium to create her version of a household manual for health. Notably, each of these printed works—a herbal, a pharmacopoeia, a distillation manual—purported to offer a manual of specialist knowledge, and so, by bringing them into one, she also blurs the lines between different areas of medicine.

While Rebecca tended to write in the margins and blank spaces of the printed text, this was not always so. In one case, Rebecca's need to preserve or record information about materia medica overtook her need to retain French's explanations about distillation glasswork. Page six of French's text recommends particular types of glassware to preserve distilled spirits and contains the illustration of a glass and stopper, accompanied by explanatory labels (see fig. 4).[56] On this page, Rebecca added excerpts from

[52] The second run of entries includes information on burnett, butter bur, eyebright, featherfew, brown bugle, borrage and bugloss, liverwort and marigold, and much more.

[53] See Leong, "Herbals She Peruseth" (cit. n. 47) for examples.

[54] The publication history of the *Pharmacopoeia Londinensis* is complex. The notes in this article refer to the second English edition of the work, *Pharmacopoeia Londinensis, or, The London dispensatory further adorned by the studies and collections of the Fellows* (London, 1653).

[55] Wellcome Western MS 4759, fol. 18r. Folio 18v contains notes taken from the entry on juniper berries, and folios 17v and 19r contain excerpts on nep or calamint and knot-grass from *The English Physitian Enlarged*.

[56] Ibid., fol. 20v.

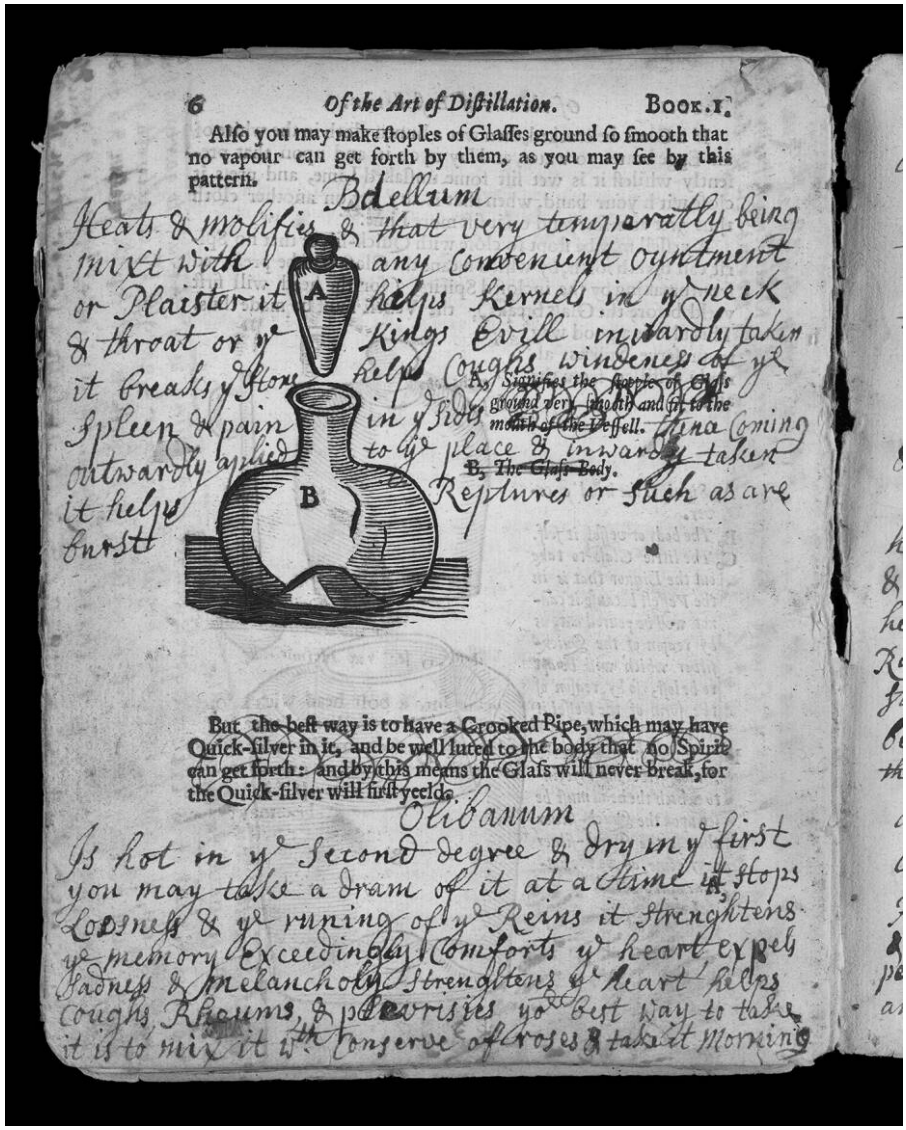

Figure 4. *Page from the Wellcome Collection copy of John French's* Art of Distillation *(London: R. Cotes for T. Williams, 1651), with annotations written by Rebecca Tallamy, including notes from works by Nicholas Culpeper. Wellcome Collection, MS 4759, fol. 20v.*

Culpeper's pharmacopoeia on two medical resins, bdellium and olibanum. Her entry on bdellium closely hugs the illustration of the glass and its explanatory labels, and in this instance, the handwritten excerpts overwhelm the printed text. To ensure that her notes are legible and clear, Rebecca crossed out most of the print on this page, including the explanatory labels for the illustration and French's recommendation for a second type of glassware, the crooked pipe. Rebecca's deliberate deletion of French's text suggests that she afforded more importance to her own reading notes than to French's technical knowledge, which she might not have found so useful. In these instances, the

complicated compilation processes both enhanced and effaced French's original printed book.

Rebecca also customized information she gleaned from Culpeper's pharmacopoeia. For instance, page eight of *The Art of Distillation* offered detailed instructions on how to prepare the necessary equipment for distillation.[57] In this particular passage, French discusses the art of nipping, or sealing up a glass vessel. The maker is instructed to first heat the long neck of the vessel with pan coals and then cut off the excess glass with shears. Finally, in the step shown in the woodcut, the reader should pinch the neck closed with tongs. In the margins and blank spaces, Rebecca added information on two medical ingredients, "camphire" (camphor) and "styrax calamitis" (storax, a kind of natural resin).[58]

Both entries have been amended or extended. In the entry for camphor, for instance, Culpeper argued that it eased headaches coming from heat, but Rebecca thought it aided headaches stemming from cold. She also provided extra information on how to apply the medicine: "w*ith* oyle anoynt *the* temples easeth *the* head ake," undoubtedly useful information if you intended to use the medicine. The entry for *styrax calamitis* shows similar attention to practicalities, although in this case, the only addition made to Culpeper's text was the advice to "take ten grains made up in a pill." The focus on application methods in both these entries suggests that Rebecca relied on her personal experiences in administering the drug to extend the bookish knowledge offered by Culpeper.

Experiential knowledge also plays a key role elsewhere in the handwritten part of the French/Tallamy book. As mentioned earlier, not content with the blank spaces around the printed text, Rebecca extended the space available in the printed text by binding additional pages to the back of the book. While she continued to copy excerpts from other printed works into these pages, it is here that she (and other members of her family) transformed French's printed text into a family archive by merging social knowledge with natural knowledge. Scores of medical and culinary recipes, including instructions on baking cakes or making balsamic syrup and fumitory water, fill these pages. The recipes span a broad range of knowledge areas and were collected from a wide variety of sources, including recipe books belonging to relatives and newspapers. While only a few of the recipes are precisely dated, it is clear that they were gathered over a long time. Some of the earliest recipes in the book are connected with well known sixteenth- and seventeenth-century figures, such as "A Reccept of Metheglin made for Queen Elizabeth" and "A Cake ye way of ye Princes Elizabeth Daug to King Charles ye First."[59] And the latest recipes date from the early nineteenth century, including one "For a bad Mouth," dated 1805, and a recipe for raspberry wine by Mrs Newcomes, dated 1807.[60]

Like many recipe collectors, the Tallamys turned to a range of sources for health-related information. A long excerpt taken from the *Gentleman's Magazine* in 1802 recounts Sir Joseph Banks's trials with a sugar, milk, and ginger mixture for breakfast to ease gout symptoms, detailing his experiences with varying the amount and grind of

[57] Ibid., fol. 22v.

[58] *Oxford English Dictionary online*, s.v. "Camphor, n.," accessed August 6, 2018, http://www.oed.com/view/Entry/26800; ibid., s.v. "Storax, n.," accessed August 6, 2018, http://www.oed.com/view/Entry/190926.

[59] Wellcome Western MS 4579, fols. 201v and 129r.

[60] Ibid., fols. 196v and 184r.

the sugar/ginger mixture.[61] The Tallamys also excerpted from the handwritten recipe books of family and friends. For example, two entries—one headed "Doct Houards Syrup for a Consumtion" and another "A Red Powder to Expel any Disease from the heart"— are noted to be taken out of Unkle George Daveys or Davies Book."[62] Social visits with family and friends often resulted in access to prized recipe collections, and though undated, the proximity of the two excerpts within the notebook and the closeness of the addressed ailments indicate that these two recipes were likely collected during the same social visit.[63] Rebecca's uncle George was a regular source of recipes; other entries connected to him include instructions to make a remedy for a cough and short breath, a brown plaster, and an ague.[64] Other recipes, such as one "To Pickle Salmon the Newcastle way which will keep good twelve month," attributed to the Duke of Newcastle's Cooke, were both practical and brought social cachet.[65]

Many of the recipes were tried and tested, and sometimes rewritten accordingly.[66] The instructions to make gooseberry wine, for example, appeared with the endorsement "this I have had Experience of many years," written in Rebecca's distinctive handwriting.[67] Other recipes, such as the remedy "For a Nevoious Weakness of the Stomach," were simply marked out as "Tried."[68] The recipe for a plague water was originally titled "A Good Plague Watter," but the endorsement was heavily crossed out. As interlineal annotations in a different ink clarified the production process and added camomile to the ingredients, the rejection of this recipe likely happened after several trials (fig. 5).

The rewriting of recipes to reflect newly gained experience and knowledge was commonplace among recipe compilers and was a crucial step of this kind of textual compilation. At times, such notes—for example, "you may grate a little Lemon bread in it," written at the bottom of a recipe to make custards—are suggestive and adjustable to taste.[69] Other times, the changes reflect perfected trials and continual refinement of production methods. Interlineal notes on a seedcake recipe written in Rebecca's handwriting, for example, suggested the addition of brandy, doubled the amount of caraway seeds used, and advised makers to beat the butter with the eggs together first before adding dried sugar and flour (see fig. 6).[70] Open and malleable, recipe knowledge was continually updated and adjusted to suit the needs of the household.

Taken as a whole, the production history of *The Art of Distillation* offers new insights for the history of pharmacy. Recent studies have highlighted the complex set

[61] Ibid., fols. 189v-190r.
[62] Ibid., fols. 124r and 128r.
[63] For a detailed discussion of the sociability of recipe collecting, see Pennell, "Perfecting Practice" (cit. n. 47), 237–58; Michelle DiMeo, "Authorship and Medical Networks: Reading Attributions in Early Modern Manuscript Recipe Books," in *Reading and Writing Recipe Books, 1550–1800* (Manchester: Univ. of Manchester Press, 2013), 25–46; and Elaine Leong, *Recipes and Everyday Knowledge: Medicine, Science, and the Household in Early Modern England* (Chicago: Univ. of Chicago Press, 2018), chap. 1.
[64] These are all signed with the initials "GD"; Wellcome Western MS 4759, fol. 162v.
[65] Ibid., fol. 193v.
[66] On testing drugs, see essays in Elaine Leong and Alisha Rankin, eds., "Testing Drugs and Trying Cures," special issue, *Bull. Hist. Med.* 91 (2017). See also Leong, *Recipes and Everyday Knowledge* (cit. note 63), chaps. 5 and 6.
[67] Wellcome Western MS 4579, fol. 192r.
[68] Ibid., fol. 199r.
[69] Ibid., fol. 209v.
[70] Ibid., fol. 164v.

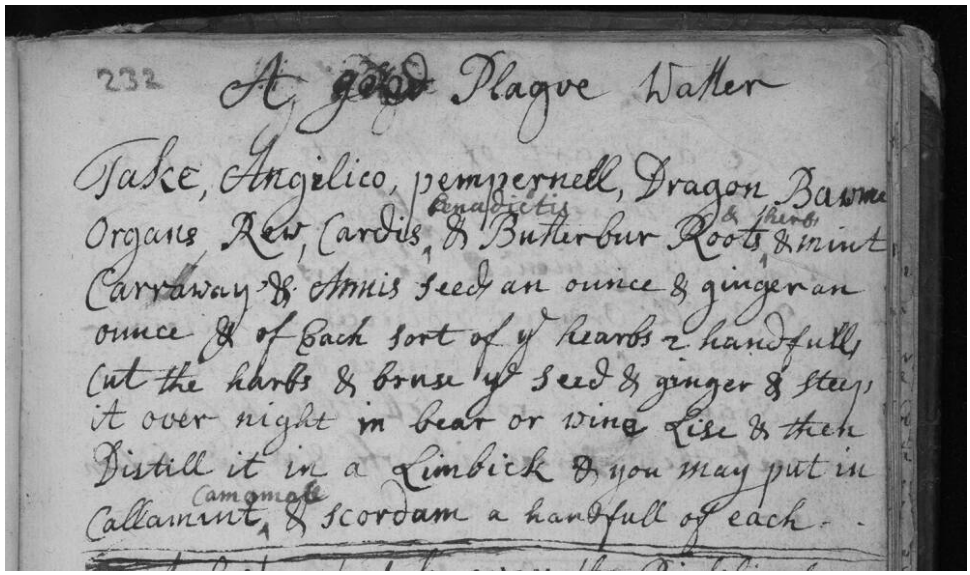

Figure 5. *Page showing recipe "A ~~good~~ Plague Watter" taken from the Wellcome Collection copy of John French's* Art of Distillation *(London: R. Cotes for T. Williams, 1651) with annotations written by members of the Tallamy family, including notes from works by Nicholas Culpeper. Wellcome Collection, MS 4759, fol. 232r.*

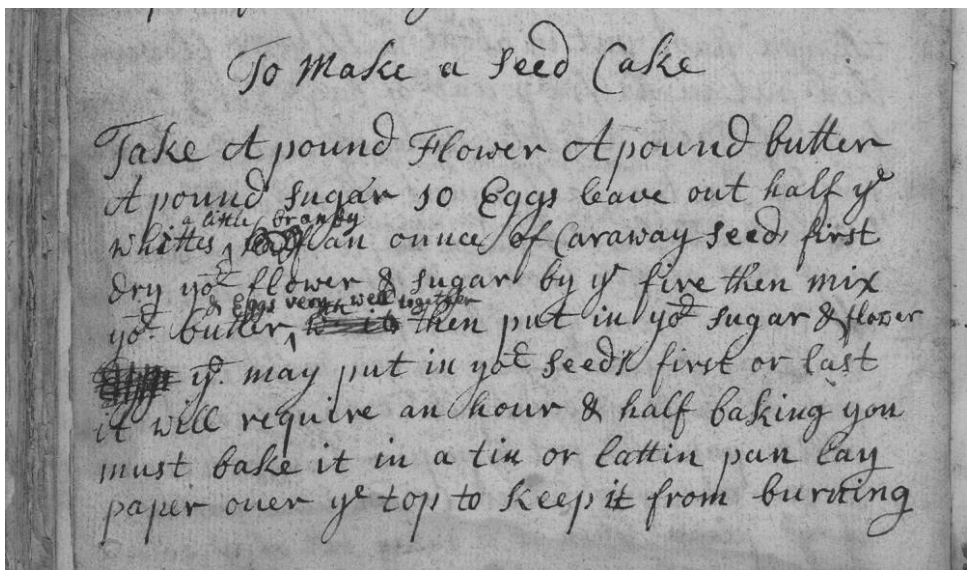

Figure 6. *Page showing the recipe "To make a seed cake" with interlineal annotations, from the Wellcome Collection copy of John French's* Art of Distillation *(London: R. Cotes for T. Williams, 1651) with annotations written by members of the Tallamy family, including notes from works by Nicholas Culpeper. Wellcome Collection, MS 4759, fol. 164v.*

of knowledge practices and power relations underpinning the movement of materia medica and botanical knowledge across the premodern world.[71] Complementing these studies, this story has focused on the transfer of the technologies and skills required for drug production. It has emphasized the resistance encountered in translating production processes that often could not be conveyed with mere words.[72] Concurrently, the Tallamys' annotations demonstrate that natural knowledge about materia media and technical knowledge and skills for drug production cannot be so easily separated.

CONCLUSION

From Glauber to French to Tallamy, the object, text, and body of knowledge now catalogued as Wellcome Western Manuscript 4759 traveled a long journey across national and linguistic borders, stopping at messy printers' workshops, the desks of London-based reformers and intelligencers, then moving all the way to the kitchens and stillrooms of an eighteenth-century household. This is a story about a printed book becoming a manuscript, and a story about how artisanal knowledge, touted for cash by a German inventor/chemist in Amsterdam in the 1640s, was read by householders in Devon in the 1730s. If the Hartlib circle's collaborative translation of Glauber's tracts tried to convey the latter's ideas somewhat faithfully, by the time John French read, extracted, and compiled from the tracts to make *The Art of Distillation*, the knowledge offered by Glauber was taken apart and reassembled. The Tallamys' additional notes further remake the text into a different kind of manual. Led by Rebecca, their extensive annotations and recipe writing brought the book into a different gendered space and intellectual milieu. The layers of handwritten notes and crossings-out reveal how the Tallamys confidently tested, and at times discarded, the knowledge offered by the printed text. The annotations also formed an additional layer, recording not only medical and technical know-how but also family history and social networks, and thus bringing this body of knowledge into new settings. As such, this story forcefully reminds us how one object can encode multiple layers of reading and writing practices, conducted over long time periods and across different knowledge communities. It encourages us to further investigate long-view histories of knowledge and to pay heed to how "knowledge in-use" responded to user needs and challenges as it moved from community to community.[73]

[71] See, for example, Matthew James Crawford, *The Andean Wonder Drug: Cinchona Bark and Imperial Science in the Spanish Atlantic, 1630–1800* (Pittsburgh, PA: Univ. of Pittsburgh Press, 2016); Crawford and Joseph M. Gabriel, eds., *Drugs on the Page: Pharmacopoeias and Healing Knowledge in the Early Modern Atlantic World* (Pittsburgh, PA: Univ. of Pittsburgh Press, 2019); Samir Boumediene, *La colonisation du savoir* (Vaulx-en-Velin: Des mondes à faire, 2016); Anna E. Winterbottom, "Of the China Root: A Case Study of the Early Modern Circulation of Materia Medica," *Soc. Hist. Med.* 28 (2015): 22–44; and Tara Alberts, "Curative Commodities between Europe and Southeast Asia, 1500–1700," in *Entangled Itineraries: Materials, Practices, and Knowledges across Eurasia*, ed. Pamela H. Smith (Pittsburgh, PA: Univ. of Pittsburgh Press, 2019), 79–98.

[72] On the transfer and "translation" of technologies across the premodern world, see the essay by Benjamin Breen in this volume, "Where There's Smoke, There's Fire: Pyric Technologies and Africa Pipes in the Early Modern World," in *Osiris* 37. On the transfer of medical skills, see Tara Alberts, "Translating Alchemy and Surgery between Europe and Southeast Asia," and Daniel Trambaiolo, "Translating the Inner Landscape," also in *Osiris* 37.

[73] This article is part of a larger project examining the notion of "knowledge maintenance" over long time periods. My interest in investigating the idea of "knowledge in-use" and maintenance is inspired by historians of technology such as David Edgerton, Lee Vinsel, and Andrew L. Russell; Edgerton, *The Shock of The Old: Technology and Global History since 1900* (London: Profile Books, 2006); Russell and Vinsel, "After Innovation, Turn to Maintenance," *Technology and Culture* 59 (2018): 1–25.

Reading and writing, translation and transformation are, of course, the processes by which text and knowledge traveled. The itineraries of these travels, I have shown, are meandering and complex and brought about significant epistemic consequences. Like other scholars, I am drawn to the term *itineraries* to emphasize nonlinearity. As a heuristic device, it encourages us to explore the seemingly never-ending and convoluted ways in which knowledge moved, pushing us to recognize the significance of each stop made along this journey rather than just the destination.[74] One does not have to assume that an itinerary has an end point or that it will complete a circuit or that we need to study a particular itinerary in its entirety. Itineraries can break off or connect or reconnect. We might think of each part of my story as a contact point for epistemic change; when joined together, they constitute a knowledge itinerary.[75] Notably, this particular itinerary encompassed a variety of contact points, from in-person exchange of know-how and ideas by Worsley and Glauber, to collective translation by the Hartlib circle, to textual engagement and enhancement by the Tallamy family. Some of these contact points, such as Worsley's stay with Glauber, are long and filled with linguistic, social, and cultural friction. Others, such as the translation of the Glauber tracts and French's assemblage of the *Art of Distillation*, are collaborative and involved deep entanglements of textual and experiential knowledge. Still others, such as the Tallamys' annotations in French's printed work, seem to be bare connections of text written upon text, knowledge added to knowledge. Paying attention to contact points, thus, pushes us to explore the many overlapping and interconnecting epistemic practices that occur at a particular juncture. It urges us to study practices across the traditional boundaries of print/manuscript, author/reader, and knowledge producer/consumer, and inspires us to recognize that bodies of knowledge are continually changing, responding to the needs and interests of different users, makers, and remakers.

This article used one particular material object to trace the itinerary of a body of knowledge—Glauber's ideas about the "philosophical furnace." The twisty itinerary through which this material object was created was deeply framed by contemporary social, political, and intellectual contexts. Building up thick descriptions of how these contexts shape instances of translation, reading, and writing—or contact points of epistemic change—allows us to better understand how vernacular medical knowledge was codified, transferred, and appropriated by a range of users and actors across early modern Europe. Moreover, narratives such as the story of the Tallamy family's copy

[74] Here, I join the salient call by Neil Safier and Pamela H. Smith to use "itinerary" as a heuristic term; Safier, *Measuring the New World: Enlightenment Science and South America* (Chicago: Univ. of Chicago Press, 2008); Safier, "Global Knowledge on the Move: Itineraries, Amerindian Narratives, and Deep Histories of Science," *Isis* 101 (2010): 133–45; Smith, *Entangled Itineraries* (cit. n. 71).

[75] Past models for book production and circulation have focused on historical actors or the material object of the book; by turning our attention to knowledge, we create a flexible system in which the impact of different contributing factors fluctuates as the body of knowledge journeys through its itinerary. See, for example, Robert Darnton's "communication circuit" and Thomas R. Adams and Nicholas Barker's revision of this model as the "socioeconomic conjuncture." Darnton's model, with clear roles assigned to authors, publishers, printers, suppliers, shippers, booksellers, and readers, beautifully highlights the role of human agency in book production and consumption. Adams and Barker's model, focusing on "events"—publication, manufacture, distribution, reception, and survival—shifts our attention to the book itself and the myriad processes the material object passes through at different stages of its life cycle; Darnton, "'What Is the History of Books?' Revisited," *Mod. Int. Hist.* 4 (2007): 495–508; Adams and Barker, "A New Model for the Study of the Book," in *A Potencie of Life: Books in Society: The Clark Lectures 1986–1987*, ed. Barker (London: British Library, 1993), 5–43.

of *The Art of Distillation* enable us to get a better sense of how "expert" and "popular" knowledge intersected and merged. Focusing on knowledge contact points and itineraries might also provide us with new ways of conceptualizing the local and the global. Finally, and most crucially for this volume, it might help us figure out the place of translation in histories of knowledge.