

Trends in the History of Science

Philip Beeley
Ciarán Mac an Bhaird
Editors

Mathematical Book Histories

Printing, Provenance, and Practices
of Reading

 Birkhäuser

Trends in the History of Science

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Mathematical Book Histories

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Reading

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The Russell Library, Maynooth, looking from the east

Foreword

It is an honour to have been invited by the editors to set down a few words at the beginning of this scholarly book. Friendships at Maynooth have extended over almost 60 years during which there have been great changes, both religious and secular, in the intellectual life of a venerable place of learning.

At Maynooth, mathematical studies have been always—from the founding of Saint Patrick's College onwards—a strong part of the curriculum. It has been pleasing to see in recent years the flourishing of the History of Mathematics as a subject within the Department of Mathematics and Statistics; a conspicuous merit of the historical teaching has been the generation—at a time of increasing specialization—of links between the exact sciences and the humanities. Visiting lecturers have also enhanced the reputation of the Department in historical studies. The courses extend far in time from remoter antiquity to the recent past and have geographical breadth.

A vital role in the Department's teaching and research has been taken by the Russell Library. I recall my joy at first seeing the Fermat Diophantus (*Arithmetica*, Toulouse, 1670) and in time there came a recognition of the abundant mathematical and other treasures to be found on Russell's shelves. The reading of Greek texts printed from early fonts has brought delight to me as a Hellenist. The collection of many Euclids is especially noteworthy.

Thanks are due to the contributors to the volume, and for their careful editing, Drs Beeley and Mac an Bhaird deserve warm praise. Let us not forget the dedication of the librarians and their assistants who—often with scant resources—over so many years have kept the treasures safe and sound. The library was built in the Epoch of Augustus Welby Pugin and James Joseph McCarthy, but its origins are far back in the Irish Colleges of continental Europe, long before—some two and a quarter centuries ago—Saint Patrick's came to be.

Church Enstone, Oxon, UK

George Huxley
Hon. D. Litt. N.U.I. Maynooth

Preface

This book has arisen out of a productive collaboration some years ago between the Oxford-based Reading Euclid project and the Russell Library in Maynooth. That collaboration led to a carefully curated and well-received public exhibition of the library's considerable collection of editions, commentaries and translations of Euclid's *Elements*, which first alerted the scholarly community in Ireland and beyond to the rich scientific holdings in that august institution.

Buoyed by the success of the collaboration and with a view to exploring the Russell Library holdings further and in greater depth, we decided to organize a workshop that would bring together historians of mathematics working in the long seventeenth century and allow them to investigate individual items in the scientific collection from a variety of perspectives: their materiality, provenance, contemporary significance or, in some cases, their role within teaching practice at St Patrick's College, Maynooth, whose historical collections the library houses. In part, these were questions thrown up by the exhibition itself. It had revealed that a large number of the mathematical books in the Russell Library had formerly been in the possession of Irish colleges on the Iberian Peninsula. There was evidently a close connection between the Maynooth collection and Irish clerical training on the European continent that needed to be explored. Other facts that stood out were that many of the books had been authored or edited by members of the Jesuit order, and that there were notable clusters of books associated with Newtonian mathematics or with mathematical practice. Furthermore, a considerable number of the books had been annotated by their readers, suggesting that work on them might provide new insights into early modern book ownership and reading practices.

Facilitating the workshop required finding a suitable way to link up individual books with those who were going to work on them. To this end, we created a list of suitable titles, starting out with the most obvious candidates: those which displayed clear signs of heavy use or whose binding indicated that they originated from Irish colleges in Europe. The list was extended with volumes containing remarkable material features such as volvelles or inserted notes and finally complemented by those which seemed to reflect the existence of a specific thematic collection policy. When we subsequently distributed it among established scholars and early career researchers working in the history of mathematics, we were overwhelmed by the response.

To bring in as wide an audience as possible, the workshop was eventually arranged as part of a 2-day conference on the history of mathematics that took place in Maynooth in August 2019, made possible through the generous support of the Irish Mathematical Society and the British Society for the History of Mathematics (BSHM). Munificent local funding came from Maynooth University and included support both from the Department of Mathematics and Statistics and the University Library.

This book project would not have been possible without the wonderful institutional support of the Russell Library and St Patrick's College. Members of staff at the library were not only generous in sharing their knowledge and in giving helpful advice but also went out of their way to facilitate access outside normal opening times. A large part of the success of the project can be put down to their enthusiasm. In particular, we would like to thank former special collections librarian Barbara McCormack who curated the Euclid exhibition and is also a contributor to this volume. Much of the initial exploratory work on the Russell Library holdings was made possible through her generosity in taking time out from other tasks to provide information and access to volumes that needed to be consulted. Her successor, Alexandra Caccamo, has continued in the same spirit and has willingly given the editors every assistance in bringing the volume to its conclusion. We would also like to express our thanks to Susan Durack, Adam Staunton and Audrey Kinch of special collections at Maynooth University Library, and to Anna Porter, archivist at St Patrick's College for their support. Catherine Ahearne and David Rinehart kindly provided help with photography, and David also assisted with transcribing examples of seventeenth-century Spanish handwriting.

We would like to express our deep gratitude to Yelda Nasifoglu and Benjamin Wardhaugh, members of the Reading Euclid team, for their invaluable help in realizing the exhibition and workshop in Maynooth. It is not too small a claim that neither would have taken place without them.

At Birkhäuser, we would like to thank Sarah Kempf, formerly Goob, Sabrina Höcklin, Katherine Lund, Dorothy Mazlum and Frida Trotter for their unwavering support and patience during the long preparatory phase of the book, and Mano Priya Saravanan and her team for seeing it through production.

For graciously granting permission to reproduce images of copyright material from their collections we are indebted to the Librarian, Maynooth University, the Archivist at St Patrick's College, the Bodleian Libraries, University of Oxford, Exeter College, Oxford, The Queen's College, Oxford, History of Science Museum, Oxford, Cambridge University Library, St John's College, Cambridge, the Yale Centre for British Art, New Haven, CT, National Portrait Gallery, London, the Royal Society, London, and The National Archives, Kew.

A substantial part of the editorial work on this volume was carried out through the visiting fellowship scheme of the Arts and Humanities Institute at Maynooth University. We would like to thank Ann Donoghue and in particular Thomas O'Connor, director of the Institute, for providing such a pleasant and productive environment for focused scholarly endeavours.

In organizing the conference and exhibition, the editors were able to build on the foundation of a strong focus on the history of mathematics in Maynooth, including a well-established undergraduate course and the annual Huxley Lecture. The latter grew out of a regular series of talks by the eminent classical philologist, George Huxley, whose close association with St Patrick's College and Maynooth University goes back 60 years. It is a matter of great regret to the editors that he did not live to see this volume in print.

Oxford, UK
Maynooth, Ireland

Philip Beeley
Ciarán Mac an Bhaird

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**Collaboration and Rivalry in the Publishing of Newton's
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Introduction

Philip Beeley and Ciarán Mac an Bhaird

Abstract

This Introduction situates *Mathematical Book Histories* and its various chapters in the broader context of current work on the history of the book. It considers how a library collection such as that of the Russell Library came to be formed, what the collection can tell us about mathematical teaching practices, and the kind of information on reader engagement that can be gleaned from annotations, marginal working, hand-drawn diagrams, and the like. It also provides useful insights into various aspects of early modern mathematical book production, ranging from initial proposals and subscriptions to the collaborations of booksellers, printers, engravers, correctors, and others. Above all, it shows that as material objects mathematical books can often reveal on close reading more than initially meets the eye.

This book both articulates and responds to increasing scholarly interest in what is broadly subsumed under the heading History of the Book. Taking as its base the unique collection of mathematical books in the Russell Library at Maynooth,

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it addresses questions related to printing techniques and print culture, book production, provenance, and reading practices.¹ It considers the, in some cases, spectacular histories of individual items of the Russell collection, including their previous locations and owners, and explores ways in which annotations, underlinings, hand-drawn diagrams, and other interventions reveal patterns of reading and usage. Likewise, it considers how certain books came to be published in the first place: the motivations of their authors and agents, the means whereby compelling publication packages for prospective subscribers were created, and technical and financial difficulties that potentially threatened their realization overcome. Unsurprisingly, there is also a specific Irish dimension to the volume: it seeks to elicit more information on a previously under-researched topic, namely, the historical role of mathematics in the extensive network of Irish colleges that once spanned Catholic Europe, located in places such as Salamanca, Rome, Douai, and Prague.

Alongside delivering important new insights into print culture as a medium for transmitting scientific ideas, *Mathematical Book Histories* is thus also intended to contribute to a better understanding of the role and significance of mathematics in the context of clerical instruction and more broadly in the academic tradition of Ireland up to the beginning of the twentieth century. Many of the volumes in the Russell Library reflect the rich printing tradition and book trade that flourished in seventeenth and eighteenth-century Dublin,² and which was quite distinct from their counterparts in London.³ Booksellers often bought in their wares directly from the continent, with the result that publications could enter collections that did not enter the purview of contemporary scholars in England or Scotland.

¹ Recent studies on these topics include Heather J. Jackson, *Marginalia: Readers Writing in Books*, New Haven and London: Yale University Press 2001; Sarah Werner, *Studying Early Printed Books, 1450–1800*, Hoboken, NJ and Chichester, West Sussex: Wiley Blackwell 2019; David Pearson, *Provenance Research in Book History: A Handbook*, second edition, Oxford: The Bodleian Library and New Castle, DE: Oak Knoll Press 2019; idem, *Books as History: The importance of books beyond their texts*, second edition, London: The British Library and New Castle, DE: Oak Knoll Press 2011; William H. Sherman, *Used Books: Marking Readers in Renaissance England*, Philadelphia: University of Pennsylvania Press 2007; *Owners, Annotators and the Signs of Reading*, ed. Robin Myers, Michael Harris, and Giles Mandelbrote, New Castle: Oak Knoll Press and London: The British Library 2005; *Books and Readers in Early Modern England: Material Studies*, ed. Jennifer Andersen and Elizabeth Sauer, Philadelphia: University of Pennsylvania Press 2002; Stephen Orgel, *The Reader in the Book: A study of spaces and traces*, Oxford: Oxford University Press 2015.

² On this topic see Mary Pollard, *A Dictionary of Members of the Dublin Book Trade, 1550–1800*, London: Bibliographical Society 2000; Máire Kennedy, “‘Politicks, coffee and news’: the Dublin book trade in the eighteenth century”, in: *Dublin Historical Record* 58 (2005), pp. 76–85; Charles Benson, *The Dublin Book Trade, 1801–1850*, London: Bibliographical Society and Dublin: Lilliput Press 2021; *The Oxford History of the Irish Book. Vol. III. The Irish Book in English, 1550–1800*, ed. Raymond Gillespie and Andrew Hadfield, Oxford: Oxford University Press 2006.

³ See *The London Book Trade. Topographies of Print in the Metropolis from the Sixteenth Century*, ed. Robin Myers, Michael Harris, and Giles Mandelbrote, New Castle, DE: Oak Knoll Press, and London: The British Library 2003; James Raven, *The Business of Books: Booksellers and the English Book Trade, 1450–1850*, New Haven, CT and London: Yale University Press 2007.

While many of the mathematical volumes in the Russell Library were sourced by their intermediate owners from booksellers in Dublin or London, others were evidently obtained either through donation or through purchase at auction. In quite a few cases, judging by occasional details recorded on endleaves, there was a combination of two or all three of these routes. Wherever possible previous owners of the books investigated or cited have been identified. Ideally, such information can help in identifying the author of a book's annotations, but more often it simply contributes to our understanding of the composition of the Russell Library's collection, particularly with regard to its breadth and diversity.

Some book owners were notable figures in themselves. Gerald Molloy (1834–1906), who donated his copy of James Wood's (1760–1839) *Elements of Algebra* to the library, had originally studied for the priesthood at St Patrick's College and later became professor of theology there. Eventually, however, he was drawn by his stronger inclination and indeed aptitude for the sciences to the Catholic University, Dublin, where after resigning his Maynooth post he was appointed professor of natural philosophy in 1874. Already in 1870, Molloy had published *Geology and Revelation*, an important work in which he considered the ancient history of the Earth in the light of geological facts and revealed religion. In those turbulent times in Irish higher education Molloy soon became institutionally reunited with his alma mater. The Catholic University had been founded in 1854 by John Henry Newman (1801–1890), following the Synod of Thurles and in response to the creation of the non-denominational Queen's University of Ireland. As a mark of the new foundation's initial success, St Patrick's became a constituent college of the Catholic University two years after Molloy's arrival, in 1876. There was then what amounted to further consolidation, following the reforms of 1880. These saw the establishment of the Royal University of Ireland as successor institution to the Queen's University, with St Patrick's and University College Dublin becoming constituent members of the new institution along with the Queen's University colleges in Belfast, Limerick, and Cork. Among other books that came to the Russell Library directly from the Catholic University is a copy of the French translation of *Het regt gebruik der wereltbeschouwingen* by Bernard Nieuwentijt (1654–1718), an influential work, in which the Dutch mathematician and philosopher sought to provide a teleological argument for the existence of God.

Bartholomew Crotty (1769–1846) who hailed from Clonakilty, Co. Cork, was probably the Russell Library's most generous donor. Having been educated locally and at the classical school in Glanworth, he was sent to the Irish College in Lisbon, aged only 16. Following his studies, he was ordained priest and made professor of philosophy at the college in 1791. He later became rector and steered the institution prudently through the difficult years of Iberian occupation by Napoleonic French forces. Crotty returned to Ireland in 1811 and two years later was appointed president of St Patrick's College, where he gained the reputation of being a strict disciplinarian. In March 1833, he was made bishop of Cloyne and Ross, a post he held until his death in 1846. He left his entire library to Maynooth, including a fine copy of Christian Wolff's (1679–1754) *Elementa matheseos*, discussed in this volume.

Another bibliophile represented in the collection of the Russell Library is the physician Robert English Travers (1807–1888) who studied medicine at Trinity College Dublin before opening a small private practice in the city where he cared especially for the poor. From 1864 until his death, he held the post of professor of medical jurisprudence at Trinity College while also working assiduously to support Marsh's Library. He had intended to donate most of his substantial book collection to that library, but in disappointment at not being appointed keeper he gave most of his books to Chetham's Library in Manchester instead. Those that remained were auctioned by his daughters, including presumably Travers's copy of George Berkeley's (1685–1753) *Alciphron*, now in the Russell Library. A bound collection of philosophical and theological tracts, including Berkeley's *Three Dialogues between Hylas and Philonous*, owned first by Thomas Russell (1693–1745), and then Robert Austen (1723–1792), was evidently sold at some stage by a book dealer, who has noted the prices of the five items on the front inside flyleaf. Interestingly, both Russell and Austen studied at Trinity College Dublin and were later archdeacons of Cork, from 1725 to 1745 and from 1785 to 1792, respectively. How the volume passed from Russell to Austen or indeed how it came to Maynooth remains unknown.

The scientific author and Irish nationalist Felix O'Gallagher (fl. 1784–1799), about whom little is known except that he describes himself as a philomath, and claims to have taught mathematics and physics for many years, donated at least two books to the Russell Library: a copy of Nicholas Saunderson's *Elements of Algebra* and one of a number of publications of his own, *The System of Nature*, in which he critically analyzes the principles on which Isaac Newton (1642/3–1726/7) founded his philosophical system.⁴ The epithet 'philomath' was generally used by independent practitioners of mathematics and we can assume that O'Gallagher plied his trade as teacher and author in Dublin and possibly also London, where his works were also published.⁵

Alongside provenance *Mathematical Book Histories* also considers questions of book production. For far too long, historians of early modern mathematics have paid scant attention to the circumstances and technical conditions under which

⁴ Felix O'Gallagher, *The System of Nature, scientifically built on her native principles, the matters of the creation, according to holy writ, never before attempted in any physical system*, Dublin: Campbell and Shea for the author 1798, preface. See also his 'Astronomical Intelligence Extraordinary', in: *The Anti-Union* 21 (12 February 1799), pp. 83–84. The Russell Library also holds O'Gallagher's *An Essay on the Investigation of the First Principles of Nature: together with the application thereof to solve the phaenomena of the physical system*, 2 parts, Dublin: Joseph Hill 1684 (Pt I); Dublin: John Chambers 1685 (Pt II).

⁵ See O'Gallagher, *System of Nature*, p. x: 'The Author having waited above ten years for encouragement, after he had published his Essay upon the Investigation of the First Principles of Nature, both in England and Ireland, which met the applause of many learned men'. The English impressions of *An Essay* were produced by J. Murray in London in 1784 (Pt I) and 1786 (Pt II).

mathematical books were produced.⁶ This is all the more surprising because the mathematical book market in England was in many ways quite unique. The first thing to be said about it is that it comprised two fairly distinct sectors of markedly different size and character.

On the one hand, there was the numerically extensive sector of books aimed principally at practical mathematicians, and covering a vast range of topics such as surveying, merchants' accounts, dialing, navigation or basic arithmetic. These books were often instructional in nature and aimed at providing a straightforward introduction to the topic concerned. They were written in the vernacular, printed on low-quality paper, and were inexpensive to buy. They were therefore produced at little or no risk to the printer or bookseller who commissioned them. An added advantage was that in many cases they went through numerous editions and could, thus, provide a source of steady income.

On the other hand, there was the very much smaller sector of mathematical books of a more theoretical nature, which might treat of topics such as algebra, conic sections, number theory, or quadratures. Almost all of the advantageous factors on which the practical book market could depend were absent here. These books were intended to reach a geographically thinly spread scholarly audience and were typically written in Latin, the lingua franca of the Republic of Letters. Moreover, they were expected to contribute to contemporary scientific discussion and thus needed to impress not only through the intellectual quality of their contents but also through the material quality of their production. Producing mathematical books of this nature involved considerable costs and they would generally only have been taken on if a suitable number of subscribers had beforehand firmly committed to purchase the volume once published—a procedure that required a prospectus to be prepared and distributed among potential buyers beforehand. As the London philomath and mathematical intelligencer John Collins (1626–1683) aptly put it on one occasion, 'the truth of it is Mathematicall learning will not here goe off without a Dowry'.⁷

Thomas Salusbury (1620/30–c.1665), a translator of mathematical writings about whom very little is known, except that he died around 1665, draws attention to the problems besetting authors and publishers of what he calls 'the nobler and sublime part' of mathematics in the preface to his edition of the writings of Galileo Galilei (1564–1642).⁸ In his case, there was the additional problem of the book appearing in the English language, because most educated men in the British Isles could just as easily read such works in the original. Indeed, Salusbury suggests

⁶ See the studies collected in *Reading Mathematics in Early Modern Europe: Studies in the Production, Collection and Use of Mathematical Books*, ed. Philip Beeley, Yelda Nasifoglu, and Benjamin Wardhaugh, London and New York: Routledge 2021.

⁷ John Collins to Thomas Baker, 10/[20] February 1676/7, Cambridge University Library, MS Add. 9597/13/6, f. 176v–177r, esp. f. 176v; *Correspondence of Scientific Men of the Seventeenth Century*, 2 vols, ed. Stephen Jordan Rigaud, Oxford: at the University Press 1841, II, pp. 14–16, esp. p. 14.

⁸ Galileo Galilei, *The Systeme of the World: in Four Dialogues*, ed. and transl. Thomas Salusbury, London: William Leybourn 1661, Part I, sig. *2r.

that this combination of factors was precisely the reason why mathematics at that level ‘hath bin so sparingly imparted to our Countrymen in their native English’.⁹ The natural philosopher John Beale (1608–1683) expressed a similar sentiment to the secretary of the Royal Society, Henry Oldenburg (c.1619–1677), some years later.¹⁰ Naturally, few London stationers were willing to take on books with such a potentially small audience, especially if they were written in English. Oldenburg himself did not go far wrong when he suggested that the main difficulty in getting mathematical papers published was ‘because few lovers of them’.¹¹

But it was not simply a question of the unwillingness of stationers to risk potentially unprofitable ventures that were thereby decisive. There were also few printers who had the material resources, in particular the specialized type required, to undertake the production of mathematical books in the first place.¹² Salusbury was fortunate in landing upon the printer and bookseller William Leybourn (1626–1716) who was in many ways the ideal partner to take on the task of publishing his work. While being a printer and bookseller by training, Leybourn had since become an accomplished practical mathematician and author in his own right, who occasionally advertised his services as a teacher or land surveyor. Two years before the publication of Salusbury’s Galileo book, he had produced the second edition of *Horometria: or, the Compleat Diallist* by the philomath Thomas Stirrup (fl. 1651–1659), and a year afterwards the fourth edition of the *Works* of the sometime Gresham professor of astronomy Edmund Gunter (1581–1626)—both examples of the kind of popular books on which mathematical booksellers depended.¹³ In practical milieus, where the key to economic survival was the ability to adapt to changed circumstances—for that these would change was one of the few certainties—it was not uncommon to find individuals like Leybourn with such a wide range of talents.

We know that Collins helped see Salusbury’s book through the press and that he likewise acted as ‘midwife’ to numerous other mathematical book projects. His good knowledge of the London book trade coupled with his unquenchable

⁹ Galileo Galilei, *The Systeme of the World*, Part I, sig. *2r.

¹⁰ John Beale to Henry Oldenburg, 28 July/[7 August] 1673, *The Correspondence of Henry Oldenburg*, ed. A. Rupert Hall and Marie Boas Hall, 13 vols, Madison, Milwaukee, London: University of Wisconsin Press et seq. X, pp. 101–102, esp. p. 101.

¹¹ Henry Oldenburg for John Beale, Spring 1676, *Correspondence of Oldenburg* XII, p. 229.

¹² See John Collins to Thomas Baker, 10/[20] February 1676/7, Cambridge University Library, MS Add. 9597/13/6, f. 176v–177r, esp. f. 177r; *Correspondence of Scientific Men* II, pp. 14–16, esp. p. 15: ‘I did not offer your treatises to Mr Brome [...] he being an English Bookseller, little concernd in Latin bookes and having no forreigne trade, and a person so wedded to his owne Printer that is not accustomed to Mathematicall worke nor furnished with proper types, that I would not run the hazard of an ill impression.’

¹³ Thomas Stirrup, *Horometria: or, the compleat diallist*, London: R. & W. Leybourn for Thomas Pierrepoint 1659; *The Workes of Edmund Gunther*. Fourth edition, London: W. L. for Francis Eglesfield 1662. This work also includes an appendix by William Leybourn ‘shewing how he parallels of Declination; the Jewish, Babylonish, & Italian hours; the Azimuths, Almicanter &c. may be easily inscribed in any Dial whatsoever’.

desire to promote mathematical learning made him the ideal person to fulfil this task. After a modicum of schooling, he had started working life as a bookseller's apprentice in Oxford, but was soon forced to take up paid employment elsewhere: first under the clerk of the kitchen to the Prince of Wales in London, and then on board an English merchantman hired by the Venetian Republic for its sea campaign against the Turks.¹⁴ Having received some training in the construction of sundials along the way, but otherwise teaching himself the rudiments of mathematics in his spare time, Collins was eventually able to establish himself as an accountant in the metropolis. Besides being in his own right the author of a number of books for the practical market such as *An Introduction to Merchants Accounts* and *Geometrical Dyalling* it was above all through his procurement of mathematical books from abroad and his agency in bringing about publications in England that Collins was most successful.

That said, there were often problems on the path to publication which stretched the patience even of well-inclined authors like Collins's academic friend John Wallis (1616–1703). The Savilian professor of geometry at Oxford was evidently persuaded by Collins to have his major work on the application of mathematics to the natural sciences, the *Mechanica: sive, de Motu, tractatus geometricus* printed in London, by Moses Pitt (c.1639–1697) rather than by a local printer. He soon came to regret this decision, because of the slowness of Pitt's workmen in producing the proofs, and by the inordinate amount of time taken up having them checked and corrected both by Collins in London and him in Oxford.¹⁵ Wallis knew the book contained important contributions to contemporary discussion and was understandably anxious for it to come off the press as soon as possible.¹⁶ He even sought to get the book back-dated so as to strengthen his position in case of an eventual claim to priority over one of his results.¹⁷

¹⁴ See John Collins to Thomas Baker, 10/[20] February 1676/7, Cambridge University Library, MS Add. 9597/13/6, f. 176v-177r; *Correspondence of Scientific Men* II, pp. 14–16, esp. p. 15; Anthony Wood, *Fasti Oxonienses, or Annals of the University of Oxford*, ed. Philip Bliss, Part II, London: for Lackington, Hughes, et al. 1820, pp. 202–204, esp. p. 202; John Collins, *Introduction to Merchants-Accounts*, London: William Godbid for Robert Horne 1674, sig. B1r.

¹⁵ John Wallis to John Collins, 25 August/[4 September] 1668, *Correspondence of John Wallis (1616–1703)*, ed. Philip Beeley and Christoph J. Scriba, 4 vols (to date), Oxford: Oxford University Press 2003–2014, II, pp. 562–563, esp. p. 563: 'Pray let them make what dispatch may be, at the presse: which (do what they can) will be considerably retarded by passing of letters & papers to & fro; which is that which I would have prevented (beside your own trouble) by having it done here if it had been convenient.' See also John Wallis to John Collins, 3/[13] November 1668, *Correspondence of John Wallis* III, pp. 23–25, esp. p. 24: 'That at London gets on so slowly, that, if I had been aware of it I would never have given way to print it there.'

¹⁶ John Wallis to John Collins, 25 August/[4 September] 1668, *Correspondence of John Wallis* II, pp. 562–563, esp. p. 562: 'I perceive they make no great hast at the Presse, & I wish it were more. For it is no advantage either to the Bookseller or the Book to hang too long in hand.'

¹⁷ See John Wallis to John Collins, 11/[21] January 1669/70, *Correspondence of John Wallis* III, pp. 290–293, esp. p. 293: 'Hee hath made the year in the title page 1670, whereas I directed it to be 1669.'

Obtaining good mathematical books from abroad was no easy matter, either, and for similar reasons to the problems in getting home-grown books published. The few booksellers that engaged in foreign trade were reluctant to import more than a dozen or so copies of new mathematical books from the continent because there were so few buyers. Only if a foreign book succeeded in acquiring fame or reputation would it be brought over in larger quantities.¹⁸ As a result of the paucity of books arriving in the country through the market, Collins was forced to build up a network of contacts on the continent from whom he was able to get hold of copies of works that were cited or anticipated in his epistolary exchanges, often with the barest of detail. Some of the books from his personal collection he lent to contemporaries such as Thomas Storde (c.1626–1697) or John Kersey (1616–1677) while they were working on publications of their own. At the same time, he also procured numerous books for the library of the Royal Society of which he was effectively curator. As surviving lists show, these transactions were sometimes against payment, and sometimes involved the exchange of like-for-like in terms of value. By this means, a considerable number of scientific books published abroad found their way to England (and vice versa) that otherwise might not have done so.¹⁹

Mathematical texts played a crucial role in the formation of teaching agendas in specific educational settings. Engagement was encouraged, indeed sought at different levels. Plain introductory works often saw themselves—and were conceived as such—as personal tutors, taking their readers through successive stages until a certain level of proficiency was achieved. The mode of addressing readers was often characteristic for the type of work—the informal second person singular (thou and its correlates) often being used in popular books. More sophisticated works would do away with this form of familiarity, but would still develop knowledge systematically. Common to introductions to arithmetic, geometry, algebra, navigation, dialing, and so on was the employment of exercises as a way for readers to test their knowledge acquisition. These might take the form of requiring readers to use margins in order to draw and label figures themselves before proceeding to complete a certain task or the setting of arithmetical problems to be carried out, and for which the correct solution was located elsewhere in the book.

¹⁸ John Collins to Thomas Baker, 24 April/[4 May] 1677, Cambridge University Library, MS Add. 9597/13/5, f. 29r-29av, esp. f. 29r; *Correspondence of Scientific Men* II, pp. 20–22, esp. p. 21: ‘even of the best Mathematicall bookes that come out beyond Sea, the Stationers doe not import above a dozen or 20 or some small number, affirming they cannot sell more, at least till the booke hath got fame and is much desired.’

¹⁹ In his correspondence, Collins often set out details of the books he was seeking to obtain. See for example John Collins to Francis Vernon, 7/[17] February 1670/1, Cambridge University Library, MS 9597/13/5, f. 70r-71v; *Correspondence of Scientific Men* I, pp. 139–141; John Collins to James Gregory, 25 March/[4 April] 1671, University of St Andrews Library, ms31009, f. 24r-25v; *James Gregory Tercentenary Memorial Volume*, ed. Herbert Westren Turnbull, London: G. Bell & Sons 1939, pp. 178–181.