Chapter 3

Augustus De Morgan (1806–71), His Reading and His Library

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In her seminal work *Marginalia*, Heather Jackson aims 'to set out the history and conventions of a widespread custom by reference to a substantial body of specific cases',[1] chiefly of literary giants. To a large extent, we may associate the history of individual reading with the humanities: with literary authors, historians and philosophers, like Samuel Taylor Coleridge, Thomas Carlyle and Voltaire, gaining inspiration and developing their thoughts from their reading matter, as documented by marginalia, or perhaps by statesmen, such as William Ewart Gladstone, discussed by Michael Wheeler in Chapter 4 of this volume.[2] This chapter supplements and amends such emphasis by focusing on a nineteenth-century mathematician and mathematical historian, Augustus De Morgan (1806–71), much of whose reading was in his academic area, and on his largely subject-related book collection, now at the University of London. The chapter discusses the formation and content of De Morgan's library. It then examines De Morgan's use of his books. His annotations, never previously analysed, provide one indication of this, his published output another; and the existence of both enables us to see the connection between them. Similarities with and differences from the annotators studied by Jackson emerge throughout. In a significant divergence from the theory that marginalia prove annotated books to have been read,[3] De Morgan's marginalia provide instances where annotation does not prove reading, or where it proves reading of a book other than the one in hand. A case study of De Morgan thus further exemplifies the unreliability of equating a

scholar's extant library with his reading, and provides a useful addition to previous scholarship on the problem of using marginalia as evidence.

Such was De Morgan's renown that newspaper obituaries throughout Britain described him as 'one of the profoundest mathematicians in the United Kingdom',[4] 'one of the most profound mathematicians of his time'[5] and 'the greatest of our mathematicians'.[6] Following undergraduate studies at Trinity College, Cambridge, in 1828, aged twenty-one, he became the first professor of mathematics at the infant University of London, soon to become University College London. He gave his name to two laws in logic. He was a leading figure in the London Mathematical Society and the Royal Astronomical Society. He wrote a few books, including a pioneering bibliography, *Arithmetical Books from the Invention of Printing to the Present Time* (1847), and numerous articles on mathematics and on its history, the latter extending into bibliography. Although his renown had diminished by the second quarter of the twentieth century,[7] he continues to merit lengthy entries in such staple biographical sources as the *Encyclopaedia Britannica*, the *Oxford Dictionary of National Biography* and the *Dictionary of Scientific Biography*, and to be accepted as a pioneering mathematical historian.[8]

De Morgan's library was also renowned. De Morgan himself and his wife, Sophia, wrote modestly about it. Sophia, terming it a 'little library', claimed: 'Had he been rich his collection would have been large and valuable, but he was soon obliged to deny himself the luxury of buying, except the chance treasures which fell in his way at bookstalls'.[9]

Others, unhampered by a desire to present De Morgan as a responsible family provider, were less reticent. While De Morgan was still young, William Frend wrote to him of a mechanics' institution in Hastings: 'They have also a reading-room for the more select inhabitants, which is about the size of your study, but not so well filled with books'.[10] De Morgan's most detailed obituary describes him as 'the possessor of a very

choice collection of mathematical works',[11] and James Ludovic Lindsay, twenty-sixth earl of Crawford, wrote, in describing his own purchase in 1871 of Charles Babbage's library through Bernard Quaritch: 'The offer, needless to say, I accepted without hesitation. It was the best collection of its time after that of Prof. DeMorgan [sic]',[12] and Lindsay used De Morgan's library to build up his desiderata lists.[13] Subsequent connoisseurs have described De Morgan's collection as 'one of the best surviving collections of early scientific books formed at this date', 'one of the major surviving collections formed before the present [i.e. twentieth] century' and as 'one of the finest accumulations of books on the history of mathematics in the country'.[14]

Institutions echoed private opinions. A mere fortnight after De Morgan's death, *The Spectator*, on 1 April 1871, using adjectives reflecting both the rarity of De Morgan's books and their annotations, wondered whether 'the late Professor de Morgan's unique mathematical library, which probably contains the most curious collection of books on the history of mathematics to be found in England', might be secured for the University of London.[15] Six weeks later it reported: 'a great desire to purchase his [De Morgan's] rare mathematical library (valued at something like £1,200) on behalf of the University of London'.[16] University of London senator Samuel Loyd, Baron Overstone, realised the desire,[17] thereby thwarting the acquisitive interest in the collection expressed by Cambridge University Library.[18]

De Morgan collected as comprehensively as he could, taking the view that:

> The most worthless book of a bygone day is a record worthy of preservation. Like a telescopic star, its obscurity may render it unavailable for most purposes; but it serves, in hands which know how to use it, to determine the places of more important bodies.[19]

His library, as we know it, comprises almost 4,000 titles, ranging from pamphlets to multi-volume works, published between 1474 and 1870.[20] All major mathematicians are

represented. De Morgan's collection included multiple editions of significant or popular works such as Johannes de Sacrobosco's *Sphaera mundi* ('On the Sphere of the World'), Euclid's *Elements*, William Oughtred's *Clavis mathematicae* ('Key to Mathematics'), James Hodder's *Arithmetick*, Cocker's *Arithmetick* and Napier's work on logarithms. Iconic treasures included the first five printed editions of Euclid, the first and second editions of Copernicus's *De revolutionibus*, and the first editions of Newton's *Principia* and *Opticks*. Rarities included Lucas Lossius's *Arithmetices erotemata puerilia* (1557; 'Questions and answers in arithmetic for boys'), Theodoricus's *Canon sexagenarum et scrupularum sexagesimorum* (1609; 'Canon of sixties and of sixtieth parts'), the only complete extant copy of Bernardus de Granollachs's *Lunarium ab anno 1491 ad annum 1550* (Lyons: Johannes Siber, 1491) and such apparently unique works as an edition now dated to about 1520 of Johannes de Muris's *Arithmetices co[m]pendium ex Boetij libris* ('Compendium of arithmetic from the books of Boethius'). De Morgan's main interest was arithmetic, which he regarded as the basis of mathematics, and it is the area most comprehensively represented; but algebra, geometry, trigonometry, calculus, logarithms, probability, annuities and functions are all present, as also are astronomy books (among others, early editions of Proclus, Galileo, Ismaël Boulliau and Tycho Brahe) and, though to a far lesser extent, mechanics. Also held were encyclopaedic works including sections on mathematics, such as two editions of Gregor Reisch's *Margarita philosophica* (1508 and 1515; a third edition, from 1504, was noted as missing by 1908);[21] a little philosophy (some classical); a little scientific biography; and some literary texts, such as an English translation of José Francisco de Isla's Spanish satirical romance *The History of the Famous Preacher, Friar Gerund de Campazas, Otherwise Gerund Zotes* (1772) and a late edition of *Paradise Lost* (1790). Unsurprisingly, the quantity of books increases per century of publication: twenty-two incunabula constitute 0.6 per cent of the collection, while 7.5 per

cent of the books are from the sixteenth century, 13 per cent from the seventeenth and 15 per cent from the eighteenth. Sixty-one per cent of the library's items are from the nineteenth century, a figure enhanced considerably by a large quantity of offprints and other bound pamphlets, such as sale catalogues. The predominant language is English (64 per cent of titles), followed in decreasing order by Latin and French (16.5 and 15 per cent respectively), then, with a large drop, Italian (2 per cent) and German (fifty titles; 1.5 per cent). Annotations and other references to books reveal that he read his books in all these languages.

Concerning the acquisition of his books, De Morgan wrote:

> I have bought what happened to come in my way at show or auction; I have retained what came in as part of the *undescribed* portion of miscellaneous auction lots; I have received a few from friends who found them among what they called their rubbish; and I have preserved books sent to me for review.[22]

De Morgan bought particularly extensively at the sale of James Orchard Halliwell's mathematical books (June 1840); other auctions at which he was active are those of the books of the astronomer Francis Baily (April 1845) and the mathematicians Abigail Lousada (March 1834), Thomas Galloway (February 1852) and Samuel Maynard (January 1863). Illustrious former owners include the physician and collector Georg Kloss, the mathematicians Christoph Clavius and Jean-Étienne Montucla, and the politician and colonial administrator Frederick North, fifth earl of Guilford. Several books bear inscriptions or accompanying letters that indicate their source as presentation copies and other gifts – a sign of the high regard in which De Morgan was held and the circles in which he moved – with donors including George Salmon, Charles Babbage, Henry Brougham (1st Lord Brougham and Vaux) and John Couch Adams among a host of others.

Quantitatively, De Morgan's mathematical library was surpassed by the wider-ranging one of his friend and contemporary at University College London, John Thomas Graves (1806–70), whose collection bequeathed to University College (which included astrology, chemistry and more physics than De Morgan's) was assessed as numbering upwards of 10,000 volumes and some 5,000 pamphlets, and embraced seventy-five incunables and fifty-one manuscripts.[23] Yet Graves's collection was far less celebrated.[24] De Morgan's greater mathematical eminence and more prolific publishing may partly account for this. But a major factor is the copy-specific value of De Morgan's books acquired through his habits of annotation, carried out from student days onwards.[25] De Morgan usually wrote his notes on the title pages of volumes or pasted or wrote them directly on front flyleaves. At a time when washing books to obliterate former signs of ownership remained fashionable,[26] the manuscript notes De Morgan added to his books were consistently regarded as an enrichment. 'The value of this collection is besides greatly enhanced by Mr. de Morgan's own numerous and characteristic annotations', declared the *Spectator*,[27] while the Astronomical Society's obituary claimed that 'most of the volumes contain bibliographical notes'[28] and Sophia De Morgan wrote:

> Visitors to the University Library, who take down any of these works from the shelves, will almost certainly light upon some of the numerous marginal notes and illustrations, serious or otherwise, with which their former owner embellished them.[29]

Once recorded, the opinion was perpetuated, such that the thirty-three-line entry on De Morgan in J. A. Venn's *Alumni Cantabrigiensis*, not noted for recording reading, describes his books as 'enriched with quaint marginal notes and learned annotations',[30] a view echoed most recently by the *Oxford Dictionary of National Biography*.[31]

In fact, analysis reveals that annotations beyond mere ownership inscriptions adorn a minority of De Morgan's books. Of some 3,830 titles in his collection, around 2,280 (59

per cent) remain completely unmarked, in line with predictable practice as noted by David Pearson and others; or, also in line with standard practice of the most common form of annotation, they contain only De Morgan's name, possibly with a date.[32] Volumes of bound pamphlets tend to be marked merely by De Morgan's utilitarian list of the contents of the volume (485 titles). This leaves approximately 1,097 titles (29 per cent) bearing an annotation with some kind of content. Yet this is still more than many owners have done, and provides an angle from which to examine the connection between ownership, reading and scholarship.

Assumptions linking De Morgan's reading practices too closely with his library catalogue risk being misleading. For one thing, personal libraries are fluid entities during the assembler's lifetime, as books are not only acquired but also discarded. De Morgan did give books away, such as presentation copies which he could not use[33] and duplicates,[34] and, as an annotation in his copy of Edmund Wingate's *Arithmetique logarithmetique* (Paris: M. Mondiere, 1625) describes, he also made exchanges:

> Galloway [the Scottish mathematician Thomas Galloway] collected Keplers; I collected logarithms: Galloway had this book, which I had not: I had a Kepler, which he had not: I proposed an exchange: he demurred, saying that the book was a favourite of his father-in-law (Wallace). I rejoined that I was more nearly connected with Wingate than his father-in-law with him, for that my great-grandfather had published an edition of Wingate's Arithmetic, which is a much closer connection, looked at as a matter of science, than the mere marriage with a man's daughter. He rather doubted this, at first, but by help of a Kepler in the background, he was prevailed upon to see it, and the exchange was made.[35]

Most significantly, in 1868 the De Morgans moved house from Adelaide Road to 6 Merton Road, near Primrose Hill. The room devoted to the library was smaller than in the previous house, so that, as Sophia recorded, 'A large number of the books had been sold, but about

3,000 remained'.[36] Evidence of disposal appears in volumes found in St John's, St Catherine's and Trinity Colleges in Cambridge and at University College London, easily traced through provenance details in their catalogue records. Occasionally books emerge from private hands: in February 2013 a private collector sold through Bonhams auctioneers De Morgan's inscribed copy of William Jones's *Clavis campanologia, or, A Key to the Art of Ringing* (1788), described in De Morgan's arithmetical bibliography,[37] and in 2017 Senate House Library purchased his annotated copy of William Pope's *The Triumphal Chariot of Friction* (1829), described in his *A Budget of Paradoxes* (1872), from Quaritch.[38]

Ample evidence exists of De Morgan's professional and recreational awareness and use of libraries beyond his own: private, circulating, professional, academic and national. William De Morgan remembered his mother changing books, which could easily have been for family consumption, at Mudie's.[39] As an undergraduate, De Morgan 'did with Trinity College Library what I afterwards did with my own – I foraged for relaxation'.[40] He exhausted the stock of the Cambridge Circulating Library,[41] and his later use of circulating libraries is perhaps implicit in his query about a Gothic novel by E. T. A. Hoffmann to Sir John Herschel (although it might simply demonstrate an excellent memory): 'Did you ever read a novel called *The Devil's Elixir*? – If not, try for it at the circulating library'.[42] He compiled his bibliography of arithmetical books 'From the Royal Society's library, the stock of Mr. Maynard the mathematical bookseller, and my own collections, with a few from the British Museum and the libraries of private friends'; [43] the collector John Bellingham Inglis, for instance, opened his library to De Morgan.[44] His correspondence shows examples of such borrowing, as, for example, he borrows and returns a volume of Le Verrier from Sir John Herschel,[45] writes to Charles Babbage 'I want to borrow your Lambert's *Neues Organon* again',[46] and asks Sir William Rowan

Hamilton, 'Have you got Rigaud's tract (1806) – or can you borrow it for me?'[47] Elsewhere, use of Dr William's Library and the libraries of University College London, Lambeth Palace, the Mathematical Society and the Royal Astronomical Society emerges. The importance he laid on using various collections is manifest in his assertion: 'There is no library in London, public or private, which contains every work from which one authoritative statement on matters of science might be made'.[48]

But instances also abound where the source of De Morgan's reading matter is unclear, when De Morgan might or might at some time have owned books which are not in the library as received by the University of London: De Morgan wrote to William Hepworth Dixon in 1856, 'I have been eight hours reading Mrs Stowe's book' (an experience recalled also by Sophia De Morgan);[49] he explained the views of proportion in Laurence Sterne's *Tristram Shandy* to Sir John Herschel;[50] and quoted Byron and referred to a factual error in Scott's *Guy Mannering* when writing to Sir William Rowan Hamilton.[51] In a letter to Sir William Rowan Hamilton he wrote: 'I am just come in from Herne Bay – seven miles from Canterbury – where I have been reading novels for three days'.[52] His own books, or not? The probability of ownership increases when a particular source was repeatedly read over a long period, or was read immediately after publication. For example, towards the end of his life De Morgan spent considerable time reading the Greek New Testament and comparing texts,[53] yet the book is present in his library only in an edition from 1549. De Morgan's predilection for the novels of Charles Dickens is well documented, with De Morgan's *Athenaeum* obituarist recalling: 'Give him a line or two out of 'Pickwick' or 'Oliver Twist' and he would repeat by heart, and with the heartiest zest, the page following the quotation',[54] while Sophia recalled him reading several of Dickens's novels aloud to her in entirety, describing how they devoured the original parts as soon as they appeared.[55] The likelihood is that the novels were seen as family books,

outside the remit of Lord Overstone's avowedly mathematical purchases, and that the literature that has slipped into the library is an anomaly, a gesture towards broader holdings.

De Morgan's relationship with his own books is that of a genuine book lover who knew his books. He claimed 'that he never laid out a shilling on a book which was not repaid with interest, even as a money transaction, from the use he made of the purchase.'[56] When his family went away on holiday, he remained in London with his books. On one such occasion he wrote to his daughter Mary: 'I am glad you like your present situation – I like mine. A book is a book: and a mountain is a mountain – mountain for you, book for me',[57] and to George Boole: 'My wife etc are at Port Madoc in Carnarvonshire … and I am here as usual, routing in my book like a pig in a potatoe garden, who does not need much care where his snout goes, as he is sure of finding something'.[58] During another family vacation he wrote to Sir John Herschel: 'My folks are at Walmer … and I am here with one son, who joins the rest on Monday. The time flies when I and my books are left to fight the enemy without foreign aid.'[59] He arranged books slowly because 'I stop and look into books, and find out fun'.[60] He would return to books several times, noticing new things, as when he wrote about Diogenes Laërtius: 'I have had occasion to read later – not *refer*, which I have often done, and I wonder that his stories come out so lame'.[61] Also, he sometimes annotates a single book on different dates: for example, on 21 February 1848 and again on 13 July 1852 with Johannes de Sacrobosco's *Sphaera mundi* (Venice: F. Renner, 1478), and on 9 September 1864, 20 November 1864 and 29 July 1866 with Johannes Widmann's *Rechnung auf allen Kaufmannschaften* (Leipzig: K. Kachelofen, 1489).[62] The first annotation sometimes considerably postdated acquisition. The note describing De Morgan's acquisition of Wingate's *Arithmetique logarithmetique* from Thomas Galloway, quoted above, is dated 17 September 1859, almost eight years after

Galloway's death, while De Morgan's note in John Castle's *The Scholar's Guide to Arithmetic*, edited by E. C. Tyson (1828), is dated 15 September 1857, at least twenty-seven years after De Morgan received and first read it:

> This book was sent to me by the publisher […]. It convinced me that a work on demonstrative arithmetic was wanting – and was the book which suggested the existence of the deficiency to supply which I wrote my own arithmetic in 1830.[63]

Random as De Morgan's foraging may sound, he regarded arrangement, in a generation preceding the emergence of the first sophisticated library classification schemes, as essential. In a broad context, he exhibited interest in the intellectual arrangement of books by participating in the hot debate of his time about the best way to arrange books in the British Museum library catalogue.[64] Within his own library, physical arrangement by subject matter was paramount for findability and therefore use: 'Books not in ranks are a mob of undisciplined paper clowns'.[65] De Morgan outlined to George Biddell Airy:

> Here I am – surrounded by unarranged books. I thought that if, when I handed them to the shelves as they came, I put aside in distinct heaps – 1. Work of general reference. 2. Logic & its cousins. 3. Bibliography. 4. Annuities, statistics &c. 5. Mathematical Tables. 6. Ancient mathematicians and works relating to Euclid. 7. Volumes of tracts – On all of which my collection is rather strong, I should leave an easy residuum.…[66]

'A job of 126 hours solid work, to get them to places that I know where to find any one', he wrote to Airy after completing the task, underlining retrievability as a prerequisite for use.[67] Part of De Morgan's concern for order emerges in the orderly binding together of tracts to promote findability, as shown by a complaint he made to James Orchard Halliwell about the difficulty of locating single items in volumes of tracts: 'O these volumes of tracts! They keep safe – and so does the grave!'[68] De Morgan wrote one annotation

justifying the binding together of two works on the basis of their similarity – 'as nearly contemporary, and of the same character of speculation'[69] – and he demonstrated concern to bind all of Sir William Rowan Hamilton's quarto tracts together, writing to Hamilton before binding to check for completeness, and recording in the bound volume: 'I believe this volume to contain all Wm Rowan Hamilton's quarto writings up to Jany 1, 1848'.[70] The binding indicates knowledge of contents; annotation as an aid to finding frequently occurs in manuscript lists of contents in *Sammelbände* (individual works bound together) as a precursor to ready location and further reading.

De Morgan annotated his books irrespective of age, iconic status or rarity. His annotations fall into seven main categories, namely: the content, quality or importance of a work (the most frequent); the source of acquisition; rarity; the physical features of the book; provenance; notes about the author; and, less often, the connection between De Morgan and a book. Annotations incorporating two or more elements are not uncommon, as in:

> This is one of Sloane's books – and the British Museum ought to have been ashamed of itself for selling any part of the original foundation. The book is rare. The list of Latin names of towns is particularly useful. Bought at Galloway's sale this 14th of February 1852.[71]

Further examples of each type of annotation are given below.

(1) *Remarks about the content of a book*. This is a standard sort of readerly according to Heather Jackson. Such remarks engage directly and intellectually with the book in question, and facilitate the placing of a books within a filing system.[72] De Morgan's notes, grounding his opinions about works or their significance with reference to other writers, contextualise the books within the wider history of the subject. They reveal the wide and deep reading for which he was respected by his contemporaries, as well as his view that all print items, not merely the accepted greats, are important for the history of a

subject: a view expressed at a non-verbal level by the totality of the collection. I offer three examples of this style of remark:

> Sir John Hill, as he was afterwards styled, and who published in 1757, the amusing & sarcastic attack on the Royal Society – deserves, for this book, to be called the English Hyginus. The book is a very good gossiping dictionary, out of which a common thing may be got more easily and pleasantly than out of many profounder works.[73]

> Jacob Coccaeus. Amsterdam 1660. Long life to him! He proposes such a system as is neither Ptolemy, Copernicus, Tycho Brahe, nor any mixture of them. See page 30 and Figure III.[74]

> This work was highly commended by Newton: I cannot see why.[75]

(2) *Source of acquisition*. Jackson notes this as one of the most common forms of annotation.[76] De Morgan's addition on occasion of such an anecdote is, however, unusual. One of his published papers does, though, begin: 'I lately found in a second-hand bookshop a trigonometrical canon by the celebrated Rheticus, which was totally new to me',[77] and the fullness of his phraseology for that canon – why 'This copy belonged to Benj. Gompertz', rather than 'Benj. Gompertz's copy'? –, may suggest recording for posterity rather than merely a personal record. Two further examples will suffice:

> This book was bought Jan 1 1845, out of the catalogue for 1845,[78] sent me the day before. When I saw this, I was after it at once, and not too soon, for Babbage, who has a keen nose for a mathematical table, was an hour after me. He was a little vexed, but he afterwards acknowledged, when he saw my paper on the subject, that it was better in my hands than his, because I made it known.[79]

> This copy belonged to Benj. Gompertz [the mathematician and actuary Benjamin Gompertz], and was given me after his death by Mrs Gompertz.[80]

(3) *Rarity*. This exceedingly common form of annotation reflects the collector rather than the reader. De Morgan shows himself as a bibliographer by substantiating his comments about rarity beyond the usual 'extremely rare'. One example reads 'The fourth printed Euclid, and by much the rarest of all. There is no copy in the British Museum.'[81] And another:

> This work of Stevinus [Simon Stevin] is not to be found either in the folio of Albert Girard or in the volumes of Hypomnomata. I cannot find any mention of it, except that made by Gerard Vossius, (de Scientiis Mathematicis) who gives it the date 1583. If this be correct it is probably the first work published by Stevinus. It is exceedingly rare.[82]

(4) *Physical features of the book and its production*. Like remarks about content, these annotations use the books as a filing system, but from a bibliographer's, rather than a reader's, viewpoint. De Morgan was, after all, both.

> The greatest peculiarity of this first edition is that the printer could not manage the double printing in black and red in the difficult parts. Accordingly, the saints' days in the right are <u>printed</u> in red, but the golden numbers on the left are <u>written</u> in red. This book therefore is not a <u>printed book</u>: nor is it a <u>manuscript</u>: it is a <u>mule-book</u>.[83]

> Libri cites an edition of 1585: but as the paging of this book agrees with his citations, it may be suspected* that this is the edition of 1585 with a new title page … Oct. 7, 1854

…

> * This is duly confirmed by examination of M. Libri's copy with this. His copy has the title of 1585. But his cataloguer does not know it.[84]

(5) *Original provenance*. Such remarks reflect the collector: in this instance, one who was well ahead of his time in valuing books which were not pristine. One example is 'This copy belonged to Montucla, and the errors noticed by the latter in his History, with several others are corrected in his handwriting'.[85] In another example, beneath the inscription 'Edmond Waller' appears 'Edm: Waller. [tracing]. Tracing from an autograph in the possession of Mr. Bolton Corney, apparently at a younger age'. Below half-title there is the annotation 'There is no autograph of Waller in the Brit. Mus. A De Morgan, Sept.r 1/53'. De Morgan has inserted letters from John Holmes of the British Museum, dated 13 September 1852, and from Bolton Corney, dated 1 November 1852, answering his questions about Waller's autograph.[86]

(6) *Remarks about the author*. These are analogous with remarks about content, but, while inspired by the book annotated, they always draw upon another source: 'Poor dear old Clavius! nailed to the barn Door 250 years after his death, because he acted kite to the heretic's chickens'.[87]

> Dutens, the editor of Leibnitz, was a worthy and a learned man, who fancied that he traced all modern science in antiquity. Born 1729; died 1812, a clergyman of the Ch. of Eng. first edition of this book, 1766.
>
> It is related of Dutens that he once told some friends that he had in his travels, picked up a tooth which he believed to have belonged to the great Scipio. Where is it, said they, Here, said he, showing his own mouth. He had made it do duty in place of one of his own. A De M. Dutens has missed Hero's steam-engine.[88]

(7) *Placing De Morgan himself within the history of ownership of the book*. This is the most individual form of annotation. Other readers (outside Jackson's remit) have recorded in a book the date or circumstances of reading, possibly as a distributed diary of reading, such as: 'June 12 1936. I read this book after a visit to Well Hall with Mr Magee Bookseller of San Francisco. A pleasant morning.'[89] De Morgan records a further dimension of his connection with the book, a more public record for the benefit of future readers, which deviates from the trend of nineteenth-century annotators treating annotation as primarily a private affair, for the reader's own benefit:[90] 'This book suggested my "Book of almanacs"'.[91]

Playfully, under the inscription 'C. Hutton [i.e. the mathematician Charles Hutton] 1785', he has added the number of years between Hutton's inscription and his (fifty-eight), and added spaces for the owners at future fifty-eight-year intervals, indicating the longevity of the printed word far beyond mortal spans:

+ 58
A de Morgan 1843
58
? 1901
58
? 1959[92]

The many articles and few books that stemmed from De Morgan's pen demonstrate richly that De Morgan read his books. The 500-page text of his *A Budget of Paradoxes* discusses exclusively books from his own library.[93] Articles in the *Penny Cyclopaedia*, his journal articles, and his bibliography of arithmetical books all refer to De Morgan's own books, among others. Like his book annotations, De Morgan's published observations

refer primarily to content, but also to bibliography, rarity, authors, acquisition and provenance. For example:

> Computation by counters and Roman numerals: the Arabic numerals are explained by not used. In the frontispiece is a cut representing the mistress settling accounts with her maid-servant by an abacus with counters. This book is said by Kloss to have been also printed by Kobel himself at Oppenheym in the same year.[94]

> And the same Thomas Digges, in his *Pantometria*, London, 1591, Preface, repeats the same story, with more detail, omitting, however, all mention of Bacon.[95]

De Morgan has annotated neither book referred to in the above examples.

Clearly, not all annotations indicate reading: in particular, those concerning the source of acquisition tend not to. Notes about physical features, such as the mention of the 'mule-book' quoted above, prove thorough examination, but not perusal of the printed words. Many annotations do demonstrate reading, at least in a reference sense, but of a book other than the annotated one, while the book read contains no markings. A salient example, publicised in the twenty-first century by Owen Gingerich and by David Pearson, is De Morgan's note on the title page of his copy of the first edition of Copernicus's *De revolutionibus*, highlighting censorship and drawing the first edition into the history of its reception: 'Aug. 4. 1864. I have this day entered all the corrections required by the Congregation of the Index (1620) so that any Roman Xtian [Christian] may read the book with a good conscience'.[96] De Morgan may well have read the first edition of Copernicus, but his manuscript 'corrections', and record of having made them, indicate no more than looking at Copernicus to find the passages to which the Congregation had objected. What

it does indicate is De Morgan's reading of the *Index librorum prohibitorum* of publications prohibited by the Catholic Church as heretical or immoral, an act of reading substantiated by De Morgan's reproduction of the *Index*'s corrections, with comments, in his *A Budget of Paradoxes*;[97] but De Morgan has marked neither of the two editions of the *Index*, from 1752 and from 1819–25, in his library.[98] Numerous annotations concerning rarity indicate consultation of bibliographies rather than the rare book itself. Take, for example, the above-quoted annotation on the rarity of Stevin's *Problematum geometricorum . . . libri V*, referring to Vossius as the only historian to refer to it: De Morgan's copy of Gerardus Vossius's *De quatuor artibus popularibus* (Amsterdam: J. Blaeu, 1650; 'On the four popular arts') is marked only by De Morgan's ownership inscription on the title page.[99] Elsewhere for rarity De Morgan mentions, among others, Lipenius, Dechales, Murhard, Hain, Riccioli, Clavius, Gassendi, Weidler, Heilbronner, Delambre, Montucla, Hutton and Kästner.[100] Nothing in these bibliographies or histories themselves indicates his frequent consultation of them: in several he has not even written his name. Annotations as an indication of reading must therefore be treated with caution, and in conjunction with other sources.

While manuscript indices and references to page numbers are widespread aids for personal use,[101] De Morgan's motivation for annotating books in other ways was, as illustrated above, more public. Thanking Halliwell-Phillips for a cutting and referring to some others, De Morgan wrote: 'I shall paste these all in proper places [i.e. the books to which they refer] – I am an inveterate paster-in of such things. Little things of the kind are often useful in history, in ways which cannot be conjectured until they arise in fact',[102] a view he later reiterated to John Stuart Mill.[103] He similarly respected manuscript notes in books, providing a reason for his own annotation through his views of the annotations of forebears:

> I have learned from experience that old notes, made in books by their possessors, are statements of high authority: they are almost always confirmed. I do not receive them without hesitation; but I believe that of all statements about books which rest on one authority, there is a larger percentage of truth in the written word than in the printed word.[104]

De Morgan communicated Victorian scientific scholarship partly by annotating his books. Although he could not know that his books would be kept together in a university after his death, many of his annotations move outwards, to other readers, in the awareness that his ownership was just one part of a book's history. The motivation can be implicit: De Morgan would surely have remembered his own writings and the books that stimulated them, so have had no personal need to jot them down. Sometimes it is more blatant, as in the outward-looking note of 1 October 1865 on the title page of his copy of the pamphlet *The Character of the Bible, and the Bible God* (London: R. Carlile, 1826):

> The greatest curiosity of this Tract is in p. 4, in the references to parts of the old Testament which are pronounced indecent: One of them can only be made so by a play upon words which has nothing to do with the meaning. Whether the writer really meant to affirm that his *équivoque* was the intended meaning, or whether he intended the reference as a joke, is a question above me. The reader must find out what I mean for himself.[105]

Curious, too, is De Morgan's anecdote about the library of Sir Joseph Littledale, auctioned in 1843, which contained 'one of the most extraordinary collections of erotic and otherwise indecent books that ever was put together'. De Morgan commented to the auctioneer's clerk, 'The executors ought to have weeded this library', to which the rejoinder was 'Bless you Sir, they have weeded it already as much as they dared under the will'. De Morgan has recounted the incident both in the sale catalogue of Littledale's library and in the book he purchased from it, Thomas Tanner's *Bibliotheca Britannico-Hibernica* (London: W. Bowyer, 1748; 'British-Irish library').[106] If De Morgan was using

his books as a personal filing system, why not cross-reference from one book to another? The impression is that he wanted the remark perpetuated in case of the separation of his books.

Such use of annotation in this way to add to bibliographical history was frequently an alternative to publishing books or articles. De Morgan's *Arithmetical Books from the Invention of Printing to the Present Time* shows this particularly clearly. Of the 354 books featured in the main part, 176 are now to be found in De Morgan's library. Only one-third of those, fifty-nine in all, contain an annotation pertaining to the content. What annotation was not was a form of rough notes as preparation for a publication; indeed, where publication and notes are present, the publication may precede the annotation.[107]

That a Victorian scholar should use books from many sources is nothing new. That a historian or a bibliographer should collect and write on the same subject, whereby the collection and the writings inspire each other, is also a familiar scenario. What we see through a case study of Augustus De Morgan is a particularly rich instance of evidence of reading combined with evidence of the relationship between a man and his library. We see it, furthermore, in an area outside the norm of figures associated with the humanities. An examination of De Morgan from a bibliophilic point of view helps to develop awareness of the vast number of nineteenth-century collectors beyond the Dibdinesque giants. It re-establishes a balance between collecting and reading, as perception swings between either equating the two or seeing the two activities as diametrically opposed. It highlights the caution that needs to be taken in relating annotation automatically to reading, or to the reading of the book annotated. It mines a particularly rich source of annotations in an unusual field for annotation, to supplement the annotations of literary authors examined elsewhere, especially important as salient studies of scientific reading tend to focus on the book or author read by classes of readers.[108] Close study of the books of De Morgan's

scientific contemporaries will help to underline the particular contribution of this outstanding worthy.

Notes

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[1] H. J. Jackson, *Marginalia: Readers Writing in Books* (New Haven: Yale University Press, 2001), p. 13.

[2] See Samuel Taylor Coleridge, *Marginalia. The Collected Works of Samuel Taylor Coleridge, 12*, ed. H. J. Jackson and George Whalley (London: Routledge and Kegan Paul, 1980–2001); William Coolidge Lane, *The Carlyle Collection: A Catalogue of Books on Oliver Cromwell and Frederick the Great Bequeathed by Thomas Carlyle to Harvard College Library*, Library of Harvard University: Bibliographical Contributions, 26 (Cambridge, MA: Harvard University Library, 1888); Voltaire, *Corpus des notes marginales. Œuvres complètes de Voltaire*, ed. Natalia Elaguina et al. (Oxford: Voltaire Foundation, 2008–18), pp. 136–44.

[3] Jackson, *Marginalia*, p. 250.

[4] 'Our London Letter', *Newcastle Courant*, 24 March 1871, p. 5.

[5] 'London', *Western Mail*, 24 March 1871, p. 2.

[6] 'Our Contemporaries', *Lloyd's Weekly Newspaper*, 26 March 1871, p. 11.

[7] A. S. Russell, 'Augustus De Morgan, a Forgotten Worthy', *The Listener*,24 December 1935, p. 1161.

[8] See Judith Overmeier, 'Scientific Book Collectors and Collections, Public and Private, 1720 to Date', in Andrew Hunter (ed.), *Thornton and Tully's Scientific Books, Libraries, and Collectors: A Study of Bibliography and the Book Trade in Relation to the History of Science*, 4th edition (Aldershot: Ashgate, 2000), pp. 367–91 (p. 371), and especially Rebekah Higgitt, *Recreating Newton: Newtonian Biography and the Making of Nineteenth-Century History of Science*, Science and Culture in the Nineteenth Century, 2 (London: Pickering and Chatto, 2007), pp. 100–20.

[9] Sophia Elizabeth De Morgan, *Memoir of Augustus De Morgan* (London: Longmans, Green, 1882), p. 58.

[10] Sophia Elizabeth De Morgan, *Threescore Years and Ten: Reminiscences of the Late Sophia Elizabeth De Morgan*, ed. Mary A. De Morgan (London: Bentley, 1895), pp. 113–14.

[11] 'Professor De Morgan', *Monthly Notices of the Royal Astronomical Society*, 32 (1872), pp. 112–18 (p. 117).

[12] M.R. Williams, 'The Scientific Library of Charles Babbage', *Annals of the History of Computing*, 3 (1981), pp. 235–40 (p. 235).

[13] A. N. L. Munby, *The History and Bibliography of Science in England: The First Phase, 1833–1845* (Berkeley: University of California Press, 1968), p. 13.

[14] Ibid., p. 12; Adrian Rice, 'Augustus De Morgan: Historian of Science', *History of Science*, 34 (1996), pp. 201–40 (p. 222).

[15] 'News of the Week', *The Spectator*, 1 April 1871, p. 371; see also 'Miscellaneous', *Birmingham Daily Post*, 7 April 1871, p. 6; 'Multiple News Items', *Sheffield and Rotherham Independent*, 7 April 1871, p. 3; *Daily News*, 6 April 1871.

[16] 'News of the Week', *The Spectator*, 13 May 1871, p. 563.

[17] See University of London Archive, UoL/ST/3/2/8, Senate minute 156, 14 June 1871, Letter from Lord Overstone to W. B. Carpenter, registrar, 10 June 1871; cited in *Catalogue of the Library of the University of London, Including the Libraries of George Grote and Augustus De Morgan* (London: Taylor and Francis, 1876), p. [iv].

[18] Cambridge University Library (henceforth CUL), ULIB 1/2/3, University Library Syndicate minutes, 1868–79, meeting of 31 May 1871.

[19] Augustus De Morgan, *Arithmetical Books from the Invention of Printing to the Present Time* (London: Taylor and Walton, 1847), p. ii.

[20] See *Catalogue of the Library of the University of London*; and Senate House Library online catalogue <https://catalogue.libraries.london.ac.uk/search~S1> (accessed November 2019).

[21] University of London Archive, UoL/UL/1/1/1, Library committee minutes 1902–13, minute 123, 29 June 1908.

[22] Augustus De Morgan, *A Budget of Paradoxes* (London: Longmans, Green, 1872), p. 6.

[23] Described in *Catalogue of Books in the General Library and in the South Library of University College London* (3 vols, London: Taylor and Francis, 1879), vol. I, p. iii; and especially Alison R. Dorling, 'The Graves Mathematical Collection in University College London', *Annals of Science*, 33 (1976), pp. 307–9.

[24] Noted by Dorling, 'The Graves Mathematical Collection', p. 309. See also, though, W. Carew Hazlitt, *A Roll of Honour: A Calendar of the Names of over 17,000 Men and Women who throughout the British Isles and in our Early Colonies have Collected mss. and Printed Books from the XIVth to the XIXth Century* (London: Quaritch, 1908), which includes Graves and omits De Morgan.

[25] See Bewick Bridge, *Compendious Treatise on the Elements of Plane Geometry* (London, 1818), inscribed 'Augustus De Morgan, Trinity College Cambridge, May 6th 1823' and interleaved, with De Morgan's jottings on the interleaved pages ([DeM] L.5 [Bridge] SSR).

[26] See, for example, David McKitterick, *Old Books, New Technologies: The Representation, Conservation and Transformation of Books Since 1700* (Cambridge: Cambridge University Press, 2013), pp. 28–37.

[27] *The Spectator*, 1 April 1871, p. 371.

[28] 'Professor de Morgan', p. 117.

[29] Sophia De Morgan, *Memoir*, p. 58.

[30] J. A. Venn, *Alumni Cantabrigiensis: A Biographical List of All Known Students, Graduates and Holders of Office at the University of Cambridge, from the Earliest Times to 1900. Part II, 1750–1900* (Cambridge: Cambridge University Press, 1944), vol. II, p. 276. See also 'De Morgan, Augustus' in ACAD: A Cambridge Alumni Database <http://venn.lib.cam.ac.uk> (accessed November 2019).

[31] 'He made many amusing marginal and learned annotations'. Leslie Stephen, rev. I. Grattan-Guinness, 'De Morgan, Augustus (1806–1871)', *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004) (online edition accessed 5 December 2005).

[32] 'From my experience of looking at books in historic libraries, I would say that maybe half the books you see have no inscriptions or bookplates to show their previous ownership.' David Pearson, 'Provenance and Rare Book Cataloguing: Its Importance and its Challenges', in David Shaw (ed.), *Books and Their Owners: Provenance Information and the European Cultural Heritage* (London: Consortium of European Research Libraries, 2005), pp. 1–9 (p. 5); see also Jackson, *Marginalia*, p. 19.

[33] CUL, CUL Add. 9428/36, letter from Augustus De Morgan to William Hepworth Dixon, n.d.

[34] See, for example, Senate House Library, University of London (henceforward SHL), MS913A/2/10, letter from Augustus De Morgan to Lord Brougham, 18 June 1852.

[35] SHL, [DeM] L.5 Wingate SSR.

[36] Sophia De Morgan, *Memoir*, p. 364.

[37] De Morgan, *Arithmetical Books*, p. 77.

[38] De Morgan, *A Budget of Paradoxes*, pp. 166–7.

[39] A. M. W. Stirling, *William De Morgan and His Wife* (London: Thornton Butterworth, 1922), p. 49.

[40]Letter from A. De Morgan to William Heald, 21 August 1869; reproduced in Sophia De Morgan, *Memoir*, p. 393.

[41] Sophia De Morgan, *Memoir*, p. 17.

[42] Royal Society, MS H.6.288, letter of 9 October 1857.

[43] De Morgan, *Arithmetical Books*, pp. i–ii.

[44] Letter from John Bellingham Inglis to De Morgan, 3 August 1859, pasted in De Morgan's copy of Abraham Gotthelf Kastner, *Geometriae Euclidis* (Leipzig: litteris Langenhemianis, 1750; 'Euclid's geometry'), [DeM] L6 [Euclid – Kaestner] SSR.

[45] Royal Society, MS H.6.369 (2 May 1864); MS H.6.410-12 (20 Oct. – 8 Nov. 1869)

[46] British Library, MS Add. 37194, f. 414, letter of 19 July 1850.

[47] Trinity College Dublin (henceforth TCD), MS 1493, letter no. 954 (6 December 1857).

[48] 'References for the History of the Mathematical Sciences', *British Almanac of the Society for the Diffusion of Useful Knowledge for the Year 1843* (1843), pp. 40–65 (p. 41).

[49] CUL, CUL Add. 9428/9; Sophia De Morgan, *Memoir*, p. 182.

[50] Royal Society, MS H.6.372, letter of 18 August 1864.

[51] TCD, MS 1493, letters no. 296 (16 December 1844) and 575 (23 April 1852).

[52] TCD, MS 1493, letter no. 643 (16 August 1852).

[53] Sophia De Morgan, *Memoir*, p. 364.

[54] *Athenaeum*, 25 March 1871, p. 370.

[55] Sophia De Morgan, *Memoir*, pp. 93–4.

[56] Ibid., p. 58.

[57] SHL, MS913A/1/3, letter of 18 August 1863.

[58] G. C. Smith, *The Boole–De Morgan Correspondence, 1842–1864* (Oxford: Clarendon Press, 1982), letter no. 87 (p. 114, reproduced verbatim).

[59] Royal Society, MS H.6.385, letter of 17 August 1866.

[60] CUL, RGO 6/377/189, letter to G. B. Airy, 29 August 1859.

[61] Letter to Sir John Herschel, London, Royal Society, MS HS.6, letter no. 371 (24 July 1864).

[62] [Incunabula] 16 and [Incunabula] 2, respectively.

[63] [DeM] L.1 [Bonnycastle]; described by Jacqueline Stedall in Christopher Pressler and Karen Attar (eds), *Senate House Library, University of London* (London: Scala, 2012), no. 33.

[64] *Report of the Select Committee on Public Libraries* (London: [Hansard], 1850). De Morgan annotated his copy of a review of the book in the *Edinburgh Review*, [DeM] Z (B.P.362).

[65] TCD, MS1493, ms 1101, letter to Sir William Rowan Hamilton, 21 August 1859.

[66] CUL, RGO 6/377/186, letter to G. B. Airy, 21 August 1859.

[67] CUL, RGO 6/377/193, letter to G. B. Airy, 6 September 1859.

[68] Edinburgh University Library, Coll-103, letter, 3 October 1867.

[69] Ruggero Giuseppe Boscovich, *Philosophiae naturalis theoria* (Venice, 1763; 'Theory of natural philosophy'), bound with Gowin Knight, *An Attempt to Demonstrate, that all the Phœnomena in Nature may be Explained by Two Simple Active Principles, Attraction and Repulsion* (London, 1748), [DeM] N8 [Boscovich].

[70] TCD, MS1493, no. 347, letter, 23 December 1845; [DeM] L^{o} (B.P.17).

[71] Giovanni Battista Riccioli, *Geographiae et hydrographiae reformatae libri duodecim* (Venice: G. La Noù, 1672; 'Twelve books of reformed geography and hydrography'), [DeM] E^{o} [Riccioli] fol. SSR.

[72] Jackson, *Marginalia*, pp. 26–7, 88.

[73] John Hill, *Urania, or, A Compleat View of the Heavens* (London: T. Gardner, 1754), [DeM] CM [Hill].

[74] Jacobus Coccaeus, *Epistola de mundi, que circumferuntur systematis et novo alio* (Amsterdam: J. Ravestein, 1660; 'Letter about the world, which revolves around a new and different system'), [DeM] M [Coccaeus] SSR.

[75] Antonius Hugo de Omerique, *Analysis geometrica* (Gadibus: C. de Requena, 1698; 'Analysis of geometry'), [DeM] L.6 [Omerique] SSR.

[76] Jackson, *Marginalia*, p. 24.

[77] Augustus De Morgan, 'On the Almost Total Disappearance of the Earliest Trigonometrical Canon', *London, Edinburgh and Dublin Philosophical Magazine and Journal of Science*, 26 (1845), pp. 517–26 (p. 517).

[78] *W. Brown's Mathematical Catalogue* ([London: W. Brown, 1845]; [DeM] Z (B.P.356)).

[79] Georg Joachim Rhäticus, *Canon doctrinae triangulorum* (Leipzig: W. Günther,1551; 'Canon of the doctrine of triangles'), [DeM] M.1 [Joachimus] SSR.

[80]John Landen, *The Residual Analysis* (London: J. Landen, 1764), [DeM] L.2 [Landen].

[81] *Euclidis Megarensis philosophi acutissimi mathematicorumq[ue] omnium sine controuersia principis op[er]a* (Venice: P. Paganini, 1509; 'Euclid's complete mathematical works except the controversial postulate'), [DeM] L.6 [Euclid – Elements – Latin] fol. SSR.

[82] Simon Stevin, *Problematum geometricorum . . . libri V* (Antwerp: J. Beller, ([1583]; 'Five books of geometrical problems'), [DeM] L.6 [Stevin] SSR.

[83] Joannes Regiomontanus, *Calendarium* (Nuremberg: J. Regiomontanus, 1474), [Incunabula] 12. Original emphasis.

[84] Giovanni Battista Benedetti, *Speculationum liber* (Venice: B. Barezzi, 1599; 'Book of investigations'), [DeM] L.1 [Benedetti] fol. SSR.

[85] Johann Friedrich Weidler, *Historia astronomiae* (Wittenberg: G.H. Schwartz, 1741; 'History of astronomy'), [DeM] CN [Weidler].

[86] Giovanni Alfonso Borelli, *Euclides restitutus, siue, Prisca geometriae elementa, breuiùs, & faciliùs contexta* (Pisa: F. Onofri, 1658; 'Euclid restored, or, the ancient elements of geometry presented more briefly and easily'), [DeM] L6 [Euclid – Elementa – Latin] SSR.

[87] Christoph Clavius, *Theodosii Tripolitae Sphaericorum libri III* (Rome: D. Basa, 1586; translated into English as *Clavius's Commentary on the Sphericks of Theodosius Tripolitae*), [DeM] L.6 [Theodosius] SSR.

[88] Louis Dutens, *Origine des découvertes attribuées aux modernes* (London: Spilsbury, 1796), [DeM] CN^{o} [Dutens] fol. SSR.

[89] Annotation by John Burns (1858–1943) on his copy of G. C. M. M'Gonigle and J. Kirby, *Poverty and Public Health* (London: Gollancz, 1936), SHL [Burns] 3633.

[90] Jackson, *Marginalia*, p. 73.

[91] Louis-Benjamin Francœur, *Théorie du calendrier et collection de tous les calendriers des années passées et futures* (Paris: Roret, 1842), [DeM] M.8 [Francœur].

[92] Jean Etienne Montucla, *Histoire des recherches sur la quadrature du cercle* (Paris: A. Jombert, 1754), [DeM] L6 [Montucla] SSR.

[93] De Morgan, *A Budget of Paradoxes*, p. 5.

[94] De Morgan, *Arithmetical Books*, p. 10, about Jacob Köbel, *Ain new geordnet Rechen biechlin auf den linien mit Rechen pfeningen* ([Augsburg: E. Oeglin, 1514]).

[95] Augustus De Morgan, 'Bacon Roger', in *Penny Cyclopaedia, Vol. III* (London: C. Knight, 1835),pp. 241–4 (p. 242).

[96] [DeM] M1 [Copernicus] fol. (S). See Owen Gingerich, *An Annotated Census of Copernicus'* De revolutionibus *(Nuremberg, 1543 and Basel, 1566)* (Leiden: Brill, 2002), p. 236; David Pearson, *Books as History: The Importance of Books Beyond Their Texts* (London: British Library, 2008), p. 24.

[97] De Morgan, *A Budget of Paradoxes*, pp. 57–60.

[98] [DeM] 016.98 [Index] (both editions).

[99] [DeM[L^{o} [Vossius] SSR.

[100] De Morgan, 'On the Almost Total Disappearance', p. 520.

[101] See, for example, Jackson, *Marginalia*, p. 25.

[102] Edinburgh University Library, Coll-103, letter, 21 January 1862.

[103] Letter to John Stuart Mill, 10 October 1864, reproduced in Sophia De Morgan, *Memoir*, p. 328.

[104] De Morgan, *A Budget of Paradoxes*, p. 124.

[105] [DeM] M (B.P.7) SSR.

[106] *Catalogue of the Valuable Library of … Sir Joseph Littledale* ([London: S.L. Sotheby, 1843]), [DeM] Z (B.P.356); Tanner, [DeM] CC18.3 [Tanner] fol. The quotation is taken from Tanner.

[107] For example, Pietro Bongo, *Petri Bungi Bergomatis Numerorum Mysteria*, 2nd edition (Bergamo: C. Ventura, 1591; 'The mysteries of numbers by Pietro Bongo of Bergamo'), [Dem] L.1 [Bongus] SSR; the annotations are dated 29 February 1852 through to 25 May 1861.

[108] See James Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of* Vestiges of the Natural History of Creation (Chicago: University of Chicago Press, 2000).