University of Reading

The Tenacity of Brontology in Late-Medieval England: the evidence of manuscripts

A Thesis submitted for the degree of Doctor of Philosophy

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Declaration: I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

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Contents

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Abstract

This thesis takes the form of a historical and cultural narrative of the phenomenon of texts on brontology placed in English medical and scientific manuscripts, from the mid-thirteenth century to the first half of the sixteenth century. Brontology is the study of thunder, in practice it operates by offering sets of predictions for the year ahead when thunder events are heard, either during a calendar month or one of the twelve periods of the signs of the Zodiac. The majority of examples selected for this study date from the late-fourteenth century to the end of the fifteenth century with a few significant outliers. Brontology rarely appears alone in these manuscripts, so a close physical, codicological, and palaeographical examination of manuscript witnesses was carried out with analysis of wider textual contexts in which it is found. Many of these witnesses owe their survival to the present day to the broad scientific, medical and academic interests of antiquarians and collectors of the Early Modern period, for this study notably: Sir Kenelm Digby via his Oxford tutor Thomas Allen,[1] Dr. John Caius,[2] and Sir Hans Sloane.[3] These people preserved them in their own collections from as early as the sixteenth century, which is concurrent with the end of the study period. The introduction to this thesis commences with a historiographical background to brontology as an entity and its later-medieval history and context. Following this, there is a detailed description of how this study was designed and the methodology devised for it.

Abbreviations

col.	column
CUP	Cambridge University Press
DIMEV	Digital Index of Middle English Verse
EETS	Early English Text Society
eTKeVK2	eTK and eVK2, Thorndike and Kibre online (Voigts-Kurtz), the electronic version expanded to include English texts of Lynn Thorndike and Pearl Kibre, *A Catalogue of Incipits of Mediaeval Scientific Writings in Latin* (Cambridge, Massachusetts, Medieval Academy of America, 1963).
f., ff.	folio, folios
f.1r, f.1v (e.g.)	folio recto, folio verso

[1] See A.G. Watson on Allen's manuscript collections, 'Thomas Allen of Oxford and his Manuscripts,' in Malcolm B. Parkes and Andrew G. Watson (eds.), *Medieval Scribes, Manuscripts and Libraries*: *Essays Presented to N.R. Ker* (London, Scolar Press, 1978), pp.279–316 (pp. 279, 284–286). Allen bequeathed most of his collection to Digby, p. 279.

[2] John Caius was an academic physician who refounded Gonville Hall at Cambridge University in 1557 as Gonville & Caius College and created an extensive library there, see Vivian Nutton, 'Caius, John (1510–1573)', ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/4351 [last accessed 31 Dec 2023].

[3] See Linda Ehrsam Voigts 'The 'Sloane Group': Related Scientific and Medical Manuscripts from the Fifteenth Century in the Sloane Collection' *British Library Journal*, Vol. 16, No. 1 (Spring 1990), pp. 26–57 (pp. 26–37).

fl.	*floruit*
fn.	Footnote
IMEP	Index of Middle English Prose
IMEV	Index of Middle English Verse
MLGB3	Medieval Libraries of Great Britain 3, online
n.	note
ODNB	Oxford Dictionary of National Biography
ODS	Oxford Dictionary of Saints
OUP	Oxford University Press
Sphere	'The Sphere of Life and Death,' 'The Sphere of Apuleius,' 'The Sphere of Pythagoras'
USTC	Universal Short Title Catalogue

Transcription Conventions

þ – thorn, for the 'th' consonant blend

ȝ - yogh, represents 'g', 'gh' and 'y' sounds, depending on context and dialect

( ) - signify expanded abbreviations

< > - signify missing or deleted text

· - indicates an original "punctus" point representing a pause, also used to identify numbers in texts.

Chapter One – Introduction

Background history and historiography of brontology

The history of brontology texts is a deep one, stretching far back to the dawn of history. In his history of ancient astrology, Roger Beck identifies a Babylonian origin for prognosis by thunder (also known as brontology from its later, ancient Greek use) from as far back as the second millenium BCE, noting thunder as a prominent manifestation of 'omen astrology'.[4] He describes omen astrology as the oldest form of astrology, dealing with the 'discrete and occasional phenomena'[5] perceived as omens, usually dramatic natural events like thunder or eclipses. He distinguishes it from 'horoscopic astrology'[6] which relies on the mechanical movements of stars and planets in relation to each other for information (not the stars and planets themselves).[7]

In the first century CE, Pliny the Elder identified a direct connection between thunder and prognostication which he attributed to a divine origin.[8] During the Early Middle Ages, this simpler omen astrology tradition for brontology was still extant, as seen in a calendar owned by John Lydus,[9] an administrator, historian and poet from Greece born at the end of the fifth century CE.[10] Lydus' text purports to be a translation from Etruscan by Roman polymath Nigidius Figulus (a scholar from the first century BCE and friend of Cicero)[11] on 'a variety of agricultural, social, and political concerns'.[12] Although these concerns continue in brontologies through to the end of the study period, this study aims to prove that they are not the whole raison d'être and fate of later brontology, but that it was applied in various ways. Later, brontology is found in the early-medieval Christian world through the seventh-century encyclopaedic works of Isidore of Seville,[13] which became a factor in its acceptability.

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[4] Roger Beck, *A Brief History of Ancient Astrology* (Oxford, Blackwell, 2007), p. 12.
[5] Ibid., p. 11
[6] Ibid., pp. 10–11.
[7] Beck quotes from *Tetrabiblos*, 1.1, the work of Claudius Ptolemy from Alexandria, who wrote on astrology and mathematics in the second century CE, *Ancient Astrology*, p. 7.
[8] John Bostock and H.T. Riley (eds.), Pliny the Elder, *The Natural History* (Tufts University, Perseus Digital Library), Book II, Chapters 43 and 54, https://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.02.0137%3Abook%3D2%3Achapter%3D43 [last accessed 31 Dec 2023]. See also Lynn Thorndike, *History of Magic and Experimental Science During the First Thirteen Centuries of Our Era*, Vol. 1 (New York, Columbia University Press, 1923), p. 629.
[9] David Engels and Alex Nice, 'Divination in Antiquity,' in Matthias Heiduk, Klaus Herbers, and Hans-Christian Lehner (eds.) *Prognostication in the Medieval World*: *A Handbook* (Berlin, De Gruyter, 2021), Vol. 1, Part 1, 'Introductory Surveys,' pp. 15–54 (p. 34).
[10] Peter Bell, 'John Lydus (b. 490) Civil servant, historian, poet, and antiquarian,' *The Oxford Dictionary of Late Antiquity* (Oxford, OUP, 2018, online 2018), https://www.oxfordreference.com/display/10.1093/acref/9780198662778.001.0001/acref-9780198662778-e-2516?rskey=Pyyp8g&result=2632 [last accessed 4 Jan 2024].
[11] Alun Hudson-Williams and Antony J.S. Spawforth, 'Nigidius Figulus, Publius (praetor 58 BC), scholar and mystic,' *The Oxford Classical Dictionary* (4 ed.), (Oxford, OUP, 2012, online 2012), https://www.oxfordreference.com/display/10.1093/acref/9780199545568.001.0001/acref-9780199545568-e-4424 [last accessed 4 Jan 2024].
[12] Engels and Nice, 'Divination,' p. 34.
[13] See Andrew Fear and Jamie Wood (eds.), *A Companion to Isidore of Seville* (Leiden, Brill, 2020), p. 3.

In '*De natura rerum,*'[14] Isidore offers a scientific explanation of the generation of thunder from clouds, noting however, that there is 'another sense' to it, 'the supernal rebuke of the divine voice or the clear preaching of the saints' which act to warn people of their sinfulness.[15] This provides a strong motivation to the God-fearing to pay attention to thunder events, reinforced by several references to divine thunder which are found in the Bible:[16]

- God communicates to Moses through thunder and hail, Exodus (9:23)
- God's voice is conflated with thunder as a rebuke, Psalms (103:7)
- God wills thunder against his adversaries and sends it at Samuel's request, First Book of Samuel (2:10; 12:18)
- God communicates through thunder, Job (37:5; 40:4)
- God demands attention through the medium of thunder, Ecclesiastes (46:20)
- Thunder heard at Jesus' entrance into Jerusalem is interpreted by some of the crowd as the voice of an angel, John (12:29).

Surviving early-medieval brontological texts from western Europe are less common than those from the East, as described by Jean Lempire in the recent work on medieval prognostication by Heiduk et al.[17] One early western example is a brontology survival in a ninth-century French manuscript currently in Florence (Florence, Biblioteca Laurenziana, MS Ashburnham 82). Ashburnham 82 was part of a larger book; the other part now exists separately in Orléans.[18] The brontology and calendar, written in Latin in a Breton-influenced hand and added to Ashburnham 82 in the tenth or eleventh century, are thought to be English by David Juste and Hilbert Chiu.[19] The Breton connection hints at intellectual networks involving travel over the English Channel. Juste and Chiu also investigated an eleventh-century, pseudo-Bede brontological work which they argue is of Irish origin.[20] Otherwise, Sándor Chardonnens has defined a corpus of ten Anglo-Saxon brontology texts in English and also refers to a single, earlier English brontology in Latin.[21] This is not to suggest that England was the only or major producer of brontology texts in the West at this time, as a new corpus of early-medieval Latin manuscripts from

[14] 'On the Nature of Things'.
[15] Isidore of Seville, *On the Nature of Things*, Chapter 29, 'Thunder,' Calvin B. Kendall and Faith Wallis (trans.), *Isidore of Seville: On the Nature of Things* (Liverpool University Press, 2016), p. 157.
[16] *The Latin Vulgate Bible*, https://vulgate.org/ [last accessed 8th December 2023].
[17] Jean Lempire, 'Traditions and Practices in the Medieval Eastern Christian World' in Heiduk et al, *Prognostication*, Vol. 1, Part 2 'Calendrical Calculations,' p. 626, see p. 2.
[18] Orléans, Bibliothèque municipale, Médiathèque, MS 116.
[19] David Juste and Hilbert Chiu, 'The *De Tonitruis* Attributed to Bede: An Early Medieval Treatise on Divination from Thunder Translated from Irish,' *Traditio*, Vol. 68 (Fordham University Press, 2013), pp. 97–124 (p. 97).
[20] Ibid., pp. 97–124.
[21] László Sándor Chardonnens, *Anglo-Saxon Prognostics, 900–1100: Study and Texts* (Leiden, Brill, 2007), p. 14, with text editions, pp. 248–269; British Library, Royal MS 2.B.v, also known as the *Regius Psalter*, p. 46.

further afield reveals.[22] Although the Anglo-Saxon manuscripts represent a relatively late use of Old English, they are also early vernacularisations of specialist material,[23] suggesting a wider readership or audience than scholars. A key enquiry of this study, therefore, is whether this also characterises little-studied later-medieval brontologies and the linguistic choices of each manuscript compiler.

By the tenth century, Greek brontology had acquired a particular framework of the star Sirius and the Moon for its application, reproduced in an agricultural work called *Geoponica*.[24] This sort of celestial reference was common in later Byzantium along with attributions to 'famous figures such as the prophet David, the prophet Esdras…'[25] from the Bible. This consultation of astronomical and seasonal phenomena had its own term, '*entechnos stochasmos*,' or 'skilful guesswork'.[26] This can be interpreted as an acknowledgement that skills were required to achieve a prognosis coupled with a mistrust of unpredictable natural phenomena like weather. Later in the Middle Ages, a wider blurring and conflation of omen astrology with the Zodiac are seen in English practical scientific manuals, in the manner of Byzantine examples from Michael Grünbart.[27] A direct link between these texts and the brontologies is not suggested, however it is argued in this thesis that a similar, combined approach gave the later use of brontology in England unique, specialist, and bespoke qualities.

Later-medieval history and historiography of brontology

Although there are small-scale surveys, references in wider works on prognostics and editions of individual or small numbers of texts, there has not been a comprehensive study of later-medieval English brontology until now. Since the earliest manuscript in this study corpus is thirteenth-century and the latest are technically early-modern, although arguably antiquated, the term 'later-medieval' has been chosen to cover these variations. The work of early twentieth-century scholar Max Förster provides a starting point for the study of western weather prognostics. Förster, a philologist from Germany whose interest in English manuscripts lay in Old and Middle English language, came across weather prognostics in the course of his studies. His writing on thunder prognostics explored Old and Middle English texts which use the temporal framework of the months, not the signs of the

[22] The early-medieval Latin corpus from Europe more widely was produced by Bram Van den Berg for 'Early Medieval Brontologies: Thunder Prognostication in Medieval Thought, from the Ninth to the Eleventh Century,' his unpublished 2020 RMA thesis at Utrecht University, cited in Tim Hertogh, Carine van Rhijn, Bruno Schalekamp, and Petra D. Schmidl, 'Medieval Divination by Unexpected Incidents: The *Tabula prenostica Salomonis*,' *International Journal of Divination and Prognostication*, Vol. 4 (30 Aug 2023), pp. 81–103, (pp. 83, fn. 5, 100), https://brill.com/view/journals/ijdp/4/2/article-p81_2.xml [last accessed 5 Jan 2024].
[23] See Chardonnens, *Anglo-Saxon Prognostics,* p. 2.
[24] Beck, *Ancient Astrology*, p. 11.
[25] Lempire, 'Traditions and Practices,' pp. 619–632 (p. 626).
[26] Michael Grünbart, 'Prognostication in the Medieval Eastern Christian World' in Heiduk et al, *Prognostication*, Vol. 1, Part 1, 'Introductory Surveys,' pp. 153–174 (p. 159).
[27] Grünbart, 'Prognostication,' p.160.

Zodiac.[28] Therefore, scientific astrological applications from the Zodiac (common in manuscripts in this study, as later chapters show) were not generally part of his discourse, although he does note one exception in his edition of corpus manuscript Cambridge, CUL MS Ff.5.48. This frames the brontology by calendar month with an astrological overlay (or secondary framework) of when the 'Sun (is) in the (zodiac) sign'.[29] He interprets the use of verse for this brontological composition as a sign that it had had special treatment compared with his other examples, stating '*und also zeigt, dafs man diese Dinge für wert genug hielt, um sie in ein dichterisches Gewand einzukleiden*' ('and thus shows, that these things were considered valuable enough to be clothed in poetic garb').[30] He also states that brontology was widespread at its time of production, i.e. not just from one or two places of learning in England, demonstrating his further examples of English manuscripts with dissimilar Middle English texts:[31] Oxford, Bodleian MSS. Ashmole 189, and Ashmole 342 (both also in this study). Further to this, the Zodiac as a brontology framework, and related use of verse, will be examined in this study to identify prominence and exceptionality of brontology compared with other weather prognostics.

In earlier work, Förster had attempted to define the scope of surviving brontology by noting Latin examples in addition to his subjects, the Old and Middle English versions.[32] Most of them are English-produced manuscripts which form part of this study and it should be noted that the earlier English brontologies had Latinate origins.[33] Later, returning to the topic of scope, Förster listed the brontologies he had discovered in the following other languages:[34] Greek, Swedish, Romanian, Russian and Bulgarian. He then adds late-medieval Welsh to them, as Welsh manuscripts with brontology had come to light when he was writing due to the foundation of the National Library of Wales at Aberystwyth.[35] The latter are not part of this study because they belong to a later period and a particular cultural context, most likely the border regions of Wales and England when brontology had become associated more with weather forecasting than astrological medical science. There are two exceptions though, Aberystwyth, National Library of Wales Peniarth MSS 26 and 27, which do resemble the manuscripts in this study which use vernaculars and would certainly benefit from further separate study of their contexts.

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[28] Max Förster, 'Beiträge zur Mittelalterlichen Volkskunde I,' *Archiv für das Studium der neuren Sprachen und Literaturen*, Vol. 120 (Braünschweig, George Westermann, 1908), pp. 45–52; 'Beiträge zur Mittelalterlichen Volkskunde VII', *Archiv für das Studium der neuren Sprachen und Literaturen*, Vol. 128 (Braünschweig, George Westermann, 1912) pp. 285–308 (p. 285).
[29] Förster, 'Beiträge VII,' pp. 285–287.
[30] Ibid., p. 285.
[31] Ibid., pp. 287–288.
[32] Max Förster, 'Die Kleinlieratur des Aberglaubens im Altenenglischen,' *Archiv für das Studium der neuren Sprachen und Literaturen*, Volume 110 (Braünschweig, George Westermann, 1903), pp. 346–358 (p. 351).
[33] See Chardonnens, *Anglo-Saxon Prognostics,* p. 2.
[34] Förster, 'Beiträge VII,' p. 288.
[35] Förster, 'Beiträge VII,' pp. 289, 290.

The title given to the first example, *Proffwydoliaethau, astroleg a barddoniaeth* ('Prophecies, astrology and poetry'), suggests the verse form previously mentioned by Förster.

An important influence on the textual groupings late-medieval brontology was placed in was Hippocrates' medical works (from the fifth and fourth centuries BCE). This was because weather observation was among the items Hippocrates applied to medical practice in *De methodo medendi*, noting, as shown by Lynn Thorndike, 'the importance of the time of year, the region, and the state of the sky'[36] (the latter is a term for weather). Another significant influence on medieval astrological medical writing, and bringing prognostication to the fore, was Galen's *Prognostication of Disease by Astrology* written in the early second century CE. Galen had developed Hippocrates' ideas into a wider cosmic mechanism in which humankind was intrinsically affected by astronomical circumstances such as different states of the moon throughout the month, first environmentally and then healthwise.[37] Thereby, scholars and doctors involved in the compilation of corpus manuscripts sought to expound this mechanism through the timeframe of the rotating Zodiac constellations, drawing on the works of earlier, Islamicate scholars and adding prognostic tools such as brontology.

In her work on medieval astrology and magic, Paola Zambelli cites the influential thirteenth-century work of Albertus Magnus on such mechanisms.[38] Albertus' treatment of these subjects was derived from Albumasar's *Liber Florum* which describes cosmic effects, specifically on weather, as follows: 'the accidents of the planets and their effects on the impressions from on high on the superior and inferior air'.[39] Albertus also references Claudius Ptolemy of Alexandria, who, like Galen, wrote on astrological and mathematical applications in the second century CE.[40] Earlier English brontologies researched by Chardonnens delivered the effects of weather using temporal frameworks such as liturgical hours or months with no astrological connection via the Zodiac or otherwise.[41] By the thirteenth century, however, Thorndike states that astrology was being popularised for prognostication in England through the work of scholars like Michael Scot.[42] In his *Introduction to Astrology*, Scot describes various types of prognostication, following Isidore of Seville, Hugh of St. Victor, and John of Salisbury,[43] but with some divergences. Under 'aerimancy' (sic), also called weather prognostics, he includes

[36] Thorndike (Vol.1, 1923), p. 178.
[37] Thorndike (Vol. 1, 1923), pp. 178-179.
[38] Paola Zambelli, *The Speculum Astronomiae and Its Engima; Astrology, Theology and Science in Albertus Magnus and His Contemporaries* (Dordrecht, Springer Science+Business Media, 1992), p. 228–230.
[39] Zambelli, *Speculum Astronomiae*, p. 231.
[40] Ibid., pp. 266–269.
[41] Chardonnens, *Anglo-Saxon Prognostics*, pp. 14 (with text editions), 248–269.
[42] Thorndike (Vol 2., 1923), p. 320.
[43] Isidore's writing is from the seventh century and the others wrote in the twelfth century, several decades earlier than Albertus.

divination from thunder, comets, and falling stars, as well as from 'shapes assumed by clouds'.[44] Thorndike deduces from this that Scot was approaching established scientific references in an exploratory way (which Thorndike terms 'magic') which regularly included brontology. Scot's contemporaries were also making similar enquiries which stretched the established parameters of science, for example, Robert Grosseteste, his younger contemporaries Roger Bacon and John Duns Scotus, and his pupils.[45] Scotus argued for the legitimisation of prognostication as a branch of natural science in his late-thirteenth-century theological work, *De primo principio*.[46]

The fact that Scotus had to do so shows a history of uncertainty about the legitimacy of prognostics from natural phenomena at that point. The work of Agobard of Lyons, a ninth-century archbishop and writer, gives an insight into these uncertainties. Agobard viewed thunder (and hail) portents as generally suspect because they were being used by some for illicit divination.[47] This suspicion was still bothering scholars in the eleventh century, specifically Aelfric of Eynsham who accepted lunar influence on life on earth as a fact of Creation, as long as it was not used for divination.[48] The problem, as outlined by Daniel Anlezark, was a perception that natural phenomena had an 'inherent supernatural dimension'.[49] The later-medieval shift in attitude to preserving prognostics as useful information which came from the work of Scot, Grosseteste and their contemporaries meant that the brontology textual groupings from the study period became part of a deeper interest in the meaning and power of weather in relation to the universe, time and the human condition. The fact that brontology was included in a manuscript compilation at all around the start of the study period in the thirteenth century came about through favourable enough judgements on the acceptability of prognostics at the University of Paris during the Condemnation of 1277. This was where a large number of philosophical and theological theses were deemed unacceptable to use for teaching by the Bishop of Paris, Stephen Tempier.[50] Worries over what constituted superstition would continue to bubble under the surface and re-emerge in the Condemnation of 1398 with questions about natural

[44] Thorndike (Vol 2., 1923), p. 320.
[45] See Neil Lewis, 'Robert Grosseteste,'in Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2021), https://plato.stanford.edu/archives/fall2021/entries/grosseteste/ [last accessed 8 Jan 2024].
[46] Thorndike (Vol 2., 1923), p. 320.
[47] See Agobard of Lyons, *Liber contra insulsam vulgi opinionem de grandine et tonitruis* in L. Van Acker (ed.) *Corpus Christianorum Continuatio Mediaevalis*, Vol. 52 (Turnhout, Brepols, 1981), passim.
[48] Daniel Anlezark, 'The Anglo-Saxon world view,' in Malcolm Godden and Michael Lapidge (eds.), *The Cambridge Companion to Old English Literature* (Second Edition), (Cambridge, CUP, 2018), pp. 66–81 (p. 68).
[49] Anlezark, 'Anglo-Saxon world view,' p. 67.
[50] Hans Thijssen, 'Condemnation of 1277,' in Edward N. Zalta & Uri Nodelman (eds.), *The Stanford Encyclopedia of Philosophy* (Winter 2023 Edition), https://plato.stanford.edu/archives/win2023/entries/condemnation/ [last accessed 5 Feb 332024].

magic.[51] It is unsurprising, therefore, that there is only one example of a fully thirteenth-century manuscript in this study.[52]

Zambelli explains that it was decided at Paris in 1277 that since the origin of the planetary motions which influenced life on earth was God's will (as Aelfric had argued) this could also be applied to weather events, such as thunder, in line with Isidore of Seville's thinking.[53] As a result of this it became increasingly common through the study period when making a medical diagnosis to allow for cosmic influence on one's physical condition, both current and looking ahead for long-term health conditions and prospects for longevity, doubly so in these cases 'since the will or the healing power of the doctor also depended on it'.[54] This did not dismiss the important Christian tenet of free will, but added an appreciation of *melothesia*[55] (the influences of planets and the Zodiac on the body) to the many interconnected things for consideration when making judgements about causes and nature of illnesses and appropriate treatment.[56] In addition to this, some scholars, such Robert of York, Richard of Wallingford, and John of Ashenden,[57] had a particular interest in weather science per se which went hand-in-hand with brontology. This led to the provision of more than one brontology, and sometimes other weather prognostics, in their work and examples of this (predominantly from fifteenth-century corpus manuscripts) are examined in the descriptive study chapters.

After the arrival of Islamicate medical prognostics in English universities from the thirteenth century onwards (in translation from Arabic to Latin),[58] the dissemination of texts and manuscripts became much more widespread and complicated than early-medieval lines of monastic transmission in which brontology had appeared sporadically.[59]

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[51] See Tracy Adams, Kerryn Olsen, and Michelle A. Smith, 'Thinking About Magic in Medieval and Early Modern Europe,' *Parergon*, Vol. 30, No. 2 (2013), pp. 1–10 (pp. 1–3).

[52] Cambridge, Trinity College MS O.2.45, Chapter 5, p. 181. One other example with a brontology listed in eTKeVK2 (electronic Thorndike and Kibre database, 2013) see p. 3 (above), Oxford, Bodleian Library MS, Canon. Misc. MS 517, is of Italian origin and not included as it does not represent the use of brontology in an English context.

[53] Zambelli, *Speculum Astronomiae*, p. 9.

[54] Ibid., Article 132, p. 11

[55] See Markham J. Geller's detailed account of this from Ptolemy's *Tetrabiblos* II, *Melothesia in Babylonia: Medicine, Magic, and Astrology in the Ancient near East* (Berlin, De Gruyter, 2014), pp. 77–78.

[56] Zambelli, 'Article 162,' *Speculum Astronomiae*, p. 11

[57] See Anne Lawrence-Mathers on popular late-medieval writers on astrometeorology, *Medieval Meteorology: Forecasting the Weather from Aristotle to the Almnanac* (Cambridge University Press, 2020), pp. 159, 169. The latter was also known as *Johannes Eschuid*, the Latinised form of his name, or John Eschenden.

[58] See Frederick Paxton on the addition of Galen's commentary to Hippocrates *Prognosis* by Constantine the African or Gerard of Cremona, *Signa Mortifera*. Death and Prognostication in Early Medieval Monastic Medicine,' *Bulletin of the History of Medicine* (Winter 1993), pp. 632-635.

[59] See Marilena Cesario on London, British Library Cotton MS Titus D.xxvi–xxvii, xxvi, f. 11v–16r from the eleventh century and London, British Library, Cotton MS Vespasian D.xiv, f. 103v from the twelfth century, 'Weather Prognostics in Anglo-Saxon England,' *English Studies*, Vol. 93, Issue 4 (June 2012), pp. 391–426 (pp. 418–419).

Their convoluted routes to the extant compilations of manuscripts in this study explain the additional elements and adaptations found in later brontologies. Equally, though, they may be the result of a significant 'shift in emphasis from source to use' with brontology aimed at specific purposes and professions, as identified by Roy Liuzza in earlier-medieval sources.[60] Tony Hunt has an example of an intrinsically medical use of brontology in corpus manuscript National Library of Scotland, Advocates MS 18.6.9, a herbal and apothecary guide from the earlier fourteenth century.[61] Hunt also offers editions of several other individualised manuscripts in this study which use different methods of observing time for prognostic purposes, as follows: Cambridge, Trinity College MS O.2.45, Oxford, Bodleian Library MSS. Ashmole 345, Rawlinson C.814 and D.939.[62] Thorndike also advocates for a broad medical use of prognostics from as early as the Anglo-Saxon period, citing *Cosmographia* as a source, the twelfth-century work of Bernard Silvestris revised by Albertus Magnus in the thirteenth century. In *Cosmographia*, the physical state of the human body is interpreted through the balance of the four humours, blood, black bile, yellow bile and phlegm, as affected by cosmic activity.[63] By the study period, the integration of Islamicate learning, combined with a popular interest in astrology, resulted in increased use of signs of the Zodiac as time markers for brontology. This was explored by Eric Bryan in his study and edition of the following three fifteenth-century brontology texts in English, all of which are corpus manuscripts: Cambridge, Trinity College MS R.14.52, London, British Library, Sloane MS 636, and New York, Morgan Library MS M.775.[64]

The variety of possible routes to becoming a medic in England in the Late Middle Ages, and the range of material this engendered, is a very plausible explanation for the wider dissemination of brontology texts. But, there is a lack of clarity about these routes in current understanding. However, a glimpse of how this might have come about is found in Christopher Booth's recent article. Although medical practice was controlled by the universities and medical guilds, he identifies a lack of definition, and ultimately an intermingling, of the professional interests of physicians, apothecaries and surgeons at this time.[65] More widely, Luke DeMaitre offers a detailed history of medical learning, especially its textual transmission, including descriptions of the organisation of contents of

[60] R.M. Liuzza, 'What the Thunder Said: Anglo-Saxon Brontologies and the Problem of Sources', *The Review of English Studies,* Vol. 55, No. 218 (2004), pp. 1–23 (pp. 21 – 22).
[61] See Chapter 2, pp. 37–38.
[62] Tony Hunt, *Writing the Future: Prognostic Texts of Medieval England* (Paris, Garnier, 2013), pp. 220–228.
[63] See Richard C. Hoffmann, 'Homo et Natura, Homo in Natura; Ecological Perspectives on the European Middle Ages' in Barbara A. Hanawalt, Lisa J. Kiser and Julie Berger Hochstrasser (eds.) *Engaging with Nature: Essays on the Natural World in Medieval and Early Modern Europe* (Indiana, University of Notre Dame, 2008), p. 11; and Zambelli, *Speculum Astronomiae*, pp. 70 - 72.
[64] Eric Bryan 'Prognostications by Thunder in the Zodiac: MSS Trinity R.14.52, Sloane 636, and PML M.775' *ANQ,* Vol. 19 (2006, online 2010).
[65] Christopher Booth, 'Physician, Apothecary, or Surgeon? The Medieval Roots of Professional Boundaries in Later Medical Practice,' *Midlands Historical Review*, Vol. 2 (2018), pp. 26, 27.

late-medieval medical manuals.[66] He notes that, even in the case of university textbooks, there was an overlap between theory and practice and that compendia were available which set out to cover both.[67] Faith Wallis describes practical medical guides echoing academic discourse in a section on the process of rationalisation of the practices of pharmacy, therapeutics and surgery.[68] Also, as Nancy Siraisi shows, Latin literacy was an important key to gaining access to the written material and by the study period this was not an exclusive skill of the university-educated.[69] Those with an interest in practising medicine who had learned Latin in a monastic environment, at grammar schools, or with personal tutors were able to source medical material, especially in large trading centres or university towns with stationers and bookbinders. Siraisi comments that later, vernacular medical works allowed readers to 'participate in essentially the same system of medical ideas as their Latinate colleagues'[70] but there is no definitive evidence of how this was carried out other than references to apprenticeship. Work on descriptive catalogues for surviving compendia such as guild books would help to trace potential courses of medical study.

It might be thought that the applied contexts of manuscripts with brontology would translate easily into printed media. Print did suit the concise form of prognostication in portable folding almanacs, but the majority of brontologies in this study are associated with scientific and astrological medical contexts which did not go into print with them in almanacs. In her work on the arrival of printed books, Elizabeth Eisenstein describes such scientific and technical manuscripts as being 'a network of handmade artifacts exemplifying myriad nodes of human contact'[71] in their final, complex forms before printing brought about a minimisation, standardisation and, often, abbreviation of material.

The survival of these artefacts, aided by early antiquarians, resulted in many cases in their placement in established libraries of universities and, later, the British Museum (now in the British Library) in the case of the Sloane manuscripts. This tends to make them seem more uniform than they actually are, and although some are relatively formulaic university textbooks, most represent different cultural and textual contexts, as seen in Thomas Allen's sources. Allen ranged widely around Oxford and beyond, acquiring manuscripts from: the

[66] Luke DeMaitre, *Medieval Medicine: The Art of Healing, from Head to Toe* (Praeger, Santa Barbara, California, 2013), pp. 1–33.
[67] Ibid., pp. 30, 31, 33.
[68] Faith Wallis, *Medieval Medicine: A Reader* (Toronto, University of Toronto Press, 2010), p. 179.
[69] Nancy Siraisi, *Medieval and Early Renaissance Medicine: An Introduction to Knowledge and Practice* (London, The University of Chicago Press, 1990), pp. 50–53.
[70] Ibid., p. 52.
[71] Elizabeth Eisenstein, *The printing press as an agent of change: communications and cultural transformations in early modern Europe* (Cambridge, CUP, 1980), p. 6.

medieval (pre-Bodleian) university library, libraries in Oxford houses (private and institutional), Merton College and seven other colleges, Abingdon Abbey, Oseney Abbey, Reading Abbey, the Oxford Franciscans' library, St. Frideswide's Priory (dissolved two years before he was born so kept elsewhere until then), and the tantalising 'decayed libraries far from Oxford'.[72] This also means that even whilst brontology was still being included in a limited number of late manuscript compilations, it was also being conserved in the libraries of scholars and writers with an interest in '*experimenta*,' or practical science and medicine.

Much later, from the late-nineteenth and earlier-twentieth centuries, corpus manuscripts travelled from British libraries and collections to the USA to enter the prized collections of financiers and magnates J.P. Morgan (Senior and Junior), and Henry E. Huntington,[73] who were interested in including English illuminated manuscripts in their collections. Later in the twentieth century one corpus manuscript went to the working collection of Professor Takamiya of Keio University in Japan. There were no restrictions on the exportation activities of the earlier twentieth-century collectors until 1939 and during this period their collections were regularly supplied from English aristocratic libraries in order to raise funds for substantial new death duties.[74] Toshiyuki Takamiya's collection ultimately made the journey to the United States of America too, first on long-term loan to the Beinecke Rare Books and Manuscripts Library at Yale University, now purchased by them. Even as late as 2002, an important illuminated physician's manuscript, London, Wellcome Library MS 8004, which is part of this study corpus. This manuscript was first sold from the Duke of Newcastle's collection at Clumber Park in 1938 (later surfacing in a London sale in 1999) was at serious risk of being sold out of the country and only last-minute intervention by a government minister stopped that process.[75]

Four of the five corpus manuscripts sent abroad are well-written and illustrated or illuminated, so it is unsurprising that collectors and library founders were attracted to them, the fifth, which went to Takamiya's collection is a more workaday example. However, it is important to note that they are not only manuscripts for medieval household entertainment, even when they also contain literary material, but repositories of useful knowledge. The ramifications for this study of these manuscripts being in the United States come from the variable provision of the repositories concerned for overseas scholars. At the Huntington Library, digitisation is

[72] A.G. Watson, 'Thomas Allen,' p. 286.
[73] See Laura Cleaver and Danielle Magnusson on the operations of such collectors, 'American collectors and the trade in medieval illuminated manuscripts in London, 1919–1939: J.P. Morgan Junior, A. Chester Beatty and Bernard Quaritch Ltd.,' in Toby Burrows and Cynthia Johnston (eds.), *Collecting the Past: British Collectors and their Collections from the 18th to the 20th Centuries* (London, Routledge, 2018), pp. 63–78 (p. 63).
[74] Ibid., pp. 65, 69, Abstract, p. 3.
[75] See manuscript description Chapter 4, p. 101.

comprehensive and there are limited opportunities to travel to consult manuscripts in person from funding by library benefactors.[76] The Takamiya manuscript used in this study, now New Haven, Yale University, Beinecke Rare Books and Manuscript Library, Takamiya MS 61, has been digitised by that library. The Morgan Library has focused on visual aspects of manuscripts, for example, fourteen of the richest illustrations from corpus manuscript Morgan 775 have been digitised.[77] In addition to this, original catalogue and bibliographical information for the manuscript on accession to the library are available online.[78] Otherwise, study of Morgan 775 had to depend on the reports of scholars who have been able to consult it in person. The situation is somewhat better for folding manuscript Morgan MS 941, the other Morgan Library study example, as there is a complete set of digital images.

The comparison with consultation of digitised versions and Wellcome 8004 (which narrowly escaped going overseas) can be summed up in the smell of the ink and the feel of the parchment. Although this sounds like a romantic response to manuscript study, the physical handling of a manuscript makes it much easier to discern small clues about its provenance and culture. The depth and quality of the ink mixture and type of parchment all tell their part in its story, informing of things such as the means of the scribe or manuscript commissioner, the time spent on writing and embellishing material, and subsequent use and handling of the manuscript over time. This was not lost on some of the American collectors, according to the comments of bibliographer Luther S. Livingston; 'We value these 'association' books because they bring us, […] into direct communication with the writers. Our hands touch the same covers, our fingers touch the same leaves, our eyes look upon the same printed words […] In the inscriptions in the books and in the manuscripts and autograph letters the great minds of the past come back again.'[79] In terms of this study, since some of these highly valued manuscripts are repositories of brontology, other prognostics and *experimenta*, strict definitions such as 'household miscellany' or 'physician's handbook' can be rather too broad-brush. The focus should be on the 'status and function of a work,' not just the text, as Laura Cleaver states for Norman history books.[80]

[76] The Erika and Kenneth Riley Fund for Medieval Manuscript Research.
[77] See Bibliography, Images, p. 239. [last accessed 27 May 2024].
[78] http://corsair.themorgan.org/msdescr/BBM0775a.pdf [last accessed 24 Feb 2024].
[79] Cited in Danielle Magnusson and Laura Cleaver, 'The Trade in Rare Books and Manuscripts Between Britain and America *c*. 1890–1929,' in Samantha Rayner and Leah Tether (eds.) *Elements in Publishing and Book Culture* (Cambridge, CUP, online July 2022), pp. 1–103 (p. 39), https://sas-space.sas.ac.uk/9718/1/9781009069052book.pdf [last accessed 16 Jan 2024].
[80] Laura Cleaver, 'The circulation of history books in twelfth-century Normandy,' in Cynthia Johnston (ed.) *The Concept of the Book: The production, progression and dissemination of information* (London, Institute of English Studies, School of Advanced Study, University of London, 2019) pp. 57–78 (p. 75).

The late-medieval context of the corpus of manuscripts

Two main aspects of the late-medieval contexts of brontology stand out. The first is the number of manuscripts with brontology and also astronomy, astrology, health regimens, physiognomy, nativity and other prognostics which survived because they appealed to antiquarians and scholars even as they were being written.[81] The second aspect, which runs in parallel, is the comparatively small number of non-professional and personal manuscripts with brontology, given the general increase of such books from the start of the study period.[82] At the same time, brontologies in professional and didactic manuscript contexts are more varied, especially fifteenth-century examples dealing with cosmic influences on health. This may well have been part of a deliberate approach by the collectors to obtain a varied selection of examples. The few instances of non-professional and personal manuscripts with brontology, and any attendant texts such as other prognostics, suggests a lack of a wider scientific interest in these contexts. Therefore, should brontology be considered part of general knowledge, entertainment or something else in these manuscripts?

The non-professional manuscripts in this study range throughout the fifteenth century in date, so were written in parallel with the professional and didactic ones. Several non-professional examples from the earlier fifteenth century, in Chapter Two, had an early life in ecclesiastical households, suggesting prognostics were used differently from weather forecasting contexts applied to agriculture and trade. However, each case is unique and there was usually more than one function in mind, i.e. preparation for saints' feast days or reading 'Occupations of the Months,' relevant if the setting was rural. Occupations of the Months are depictions of suitable seasonal, often agricultural, activities per month.[83] Since people working on a country estate would have shared this knowledge from an early age, it is suggested that the depictions serve a slightly different purpose from a simple guide to when to carry out the activities by linking time-dependent things, i.e. how many hours of daylight available to perform tasks, to the humours of the month (affected by the Zodiac), and ultimately, prognostication. Occupations of the Months also appear carved on medieval fonts in churches,[84] further research into these (where extant) may identify the types of ecclesiastical establishment from which they originated, if not still in situ, where this sort of time-keeping was shown in relation to baptism. It is difficult to determine the direction of transmission of the images, manuscript to sculpture or moulding, or vice versa, but as Lawrence Weaver notes

[81] Chapter 1, pp. 13–14.

[82] See Peter Murray Jones, 'Scientific and Medical Writings' in Nigel Morgan and Rodney M. Thomson (volume eds.), *The Cambridge History of the Book in Britain* (Cambridge University Press, 2019).

[83] See London, British Library, Additional MS 17367, Chapter 5, p. 173, Fig. 31.

[84] For example, Warham All Saints and Burnham Deepdale in Norfolk, J. Lewis André, 'On a Font Bowl with the Labours of the Months,' *The Antiquary*, Vol. 28 (London, Aug 1893), pp. 56–57; Brookland in Kent, Lawrence Weaver, 'Some English Architectural Leadwork. Part IV-Lead Fonts,' *The Burlington Magazine for Connoisseurs*, Vol. 8, No. 34 (Jan 1906), pp. 246–256 (pp. 250–251).

regarding the font at Brookland (which also depicts the signs of the Zodiac), some images had to be repeated to fit the allotted space, suggesting they were copied from a folio.[85] Occupations of the Months are sometimes referred to as 'Labours of the Months,' but in the case of the Brookland font, as Weaver explains, 'The scenes are not all of work,'[86] and this is equally so for the images in manuscripts with brontology.

Linguistic culture

The linguistic culture of this study begins with Latin as there are no surviving vernacular brontologies from the start of the study period in the thirteenth century. The textual contexts of Latin brontologies in English manuscripts differ from earlier-medieval sources such as the guest text in an encyclopaedia described by Chardonnens,[87] or the eleventh-century *De Tonitruis* attributed to Bede.[88] This is because they are integrated into groupings of astrological medical material. There were two main vernaculars in operation in England when this study commences, Middle English (not yet used for brontology) and continuing Anglo-Norman French,[89] the latter was principally for literature and entertainment in earlier manuscripts in this study and never used for brontology. This high medieval form of French had a specialist use for legal matters in England, and although still spoken into the fifteenth century it was being outpaced in popularity by English encouraged by 'the nationalistic strivings of Lancastrian monarchs.[90]

Brontology first moves from Latin into Middle English at the dawn of the fifteenth century in the context of professional and practical texts. However, this should not be taken to mean that there was a general decrease in learned Latin for brontology, or other prognostics in corpus manuscript contexts, but that it was starting to take on the role of a technical language with English used around it for other texts. This in itself is an indication that the manuscripts were definitely English products as well as being in the English language. But, the earlier in the study that evidence of Englishness occurs, the easier it is to prove, as manuscripts were produced for, or by, English churchmen or ecclesiastical establishments and feature English saints, sometimes very local ones, in their calendars. At the same time, saints of interest to the Normans seen in a few manuscripts in this study hint at continuing connections with Normandy.[91] Other important indicators increasing the likelihood of English

[85] Ibid., p. 250.
[86] Ibid., p. 255.
[87] Chardonnens, *Anglo-Saxon Prognostics*, pp. 46–47.
[88] Juste and Chiu, 'The *De Tonitruis*,' p. 97.
[89] Henceforth termed 'English' and 'French' in this study for brevity.
[90] See Pahta and Tavitsainen on the 'widening use of English across registers and genres of writing,' 'Vernacularisation,' pp. 10–11.
[91] See St. Maur in Oxford, Rawlinson D.939, Chapter 2, p. 45 and St. Leger in London, British Library, Additional MS 28725, Chapter 4, pp. 138–139.

production of a manuscript are the use of Anglicana script (which does also extend into northern France)[92] with English dialect terminology.[93] By the end of the study period, however, polyglot manuscripts have emerged, and although using similar combinations of English and Latin they also continue with French, and additionally, probable Flemish. The latter have Germanic vocabulary and come from areas with trading links to western mainland Europe where such languages were used, such as Flanders or the Burgundian Netherlands. For example, the Wound Man in San Marino, Huntington Library MS HM 64[94] (only one of two English examples the rest being German), is an example of such textual transmission. Examples in this corpus which have entire booklets in Germanic vernaculars also beg questions about the identity of the manuscript owners themselves, wherever they were resident, or at least their access to translators. The manuscripts themselves are germane to this study because they show brontology had a place in cosmopolitan manuscripts from trading towns.

Some of the Latin brontologies are applied to computus, the arithmetical and astronomical systems devised for calculating religious feast days, primarily the date of Easter. Therefore, intermittent examples of Latin brontology are found entered into the folios of calendars throughout the study period, often in the corpus manuscripts which originate in monastic institutions. These contexts are another clue to the appeal of brontology in the Late Middle Ages, since calendars organise time and activities brontology can enhance temporal frameworks like months with extra information, not just useful when it happens but influencing the whole year from one event. Striving for accuracy, some study examples had texts reminding people that even if there was more than one thunder event in a year, the second event revoked the first and, it is assumed, any subsequent ones did so too. A wide variety of source material in corpus manuscripts, ranging from ancient authorities to contemporary celebrity doctors of the rich and famous, resulted in fourteen of them containing sixteen Latin brontologies. Two of these also contain English brontologies which are not translations of the Latin but completely different,[95] evincing a multilingual approach. By the fifteenth century, associations with calendars and their canons, or instructions for utilising the calendars, i.e. the best time to take medicine, led to many brontologies appearing in didactic, astrological, medical and prognostic contexts which shift between English and Latin, using verse and other mnemonic devices.

Given the lateness of many manuscripts in this study within the medieval period, it might be assumed that Latin was for learned contexts and English for secular ones, but this would be overly simplistic and incorrect in terms of the study corpus. In the fifteenth century English was becoming accepted as a language of academic discourse,

[92] See Jane Roberts, *Guide to Scripts used in English Writings up to 1500* (London, The British Library, 2005), p. 161.
[93] See reference to the *Linguistic Atlas of Late Mediaeval English*, p. 26.
[94] Chapter 4, p. 157, Fig. 30c.
[95] London, British Library, Sloane MS 989 and Oxford, Bodleian Library MS Ashmole 342, Chapter 3, pp. 85–86, 95.

as shown by Päivi Pahta, Irma Taavitsainen and Claire Jones in the in-depth edited study of late-medieval English medical and scientific writing by Taavitsainen and Pahta.[96] Taavitsainen's examination of these later-medieval texts shows that the English textual forms becoming increasingly common from the late fourteenth century up to 1475 were often the first vernacularisations of learned Latin texts and this certainly applies to this study.[97] This closeness to the sources shows they were being handled by people who were very likely to be scholars, at the least capable translators who understood the material. Simultaneously, as described by Linda Voigts on later-medieval bilingualism and Tony Hunt on multilingualism in medical texts,[98] Latin continued to be used regularly as the main discourse language and for technical terms. It should be noted that of the nine manuscripts from this study found in Rossell Hope Robbins' corpus of medical manuscripts in Middle English only two actually use English for brontology,[99] the others are in Latin within Latin textual groupings. Where texts were intended to be disseminated, rather than kept for personal reference, the benefits of English (i.e. wider public understanding) had to be balanced against the need to access the Latin medical lexicon and the nature of this balance is often vital evidence which points towards professional use. The majority of study examples (particularly the later-fifteenth-century examples in Chapter Four) have texts on both applied astronomy and experimental and practical medicine, which often includes complex astrologically informed recipes for which the term 'herbal' is too basic. Bearing in mind that Chardonnens found the first brontologies in English to have been uniquely early vernacularisations from Latin, stating, 'None of the prognostic genres known in England can be ascribed to a Germanic tradition of superstition: these prognostics are composed either in Latin or are translated directly from continental, Latin sources,'[100] the question which often arose through this study was how Latinate were the texts, not how English.

[96] Päivi Pahta and Irma Taavitsainen, 'Vernacularisation of scientific and medical writing in its sociohistorical context,' in Irma Taavitsainen and Päivi Pahta (eds.), *Medical and Scientific Writing in Late Medieval English* (Cambridge, CUP, 2004), pp. 1–22, passim; Claire Jones, 'Discourse communities and medical texts,' in Taavitsainen and Pahta, *Medical and Scientific* Writing, pp. 23–36, passim; Päivi Pahta, 'Code-switching in medieval medical writing,' in Taavitsainen and Pahta, *Medical and Scientific Writing*, pp. 7–99 (p. 75).
[97] Pahta and Taavitsainen, 'Vernacularisation,' pp. 11–12; also see Teresa Tavormina on a Hippocrates text in Cambridge, Trinity College MS R.14.52, 'The Middle English Letter of Ipocras', *English Studies*, Vol. 88, No. 6 (2008), pp. 632–652 (p. 636).
[98] Linda Voigts, 'What's the Word? Bilingualism in Late Medieval England', *Speculum,* Vol. 71, No. 4 (October 1996), pp. 813-826 (pp. 820–821); Tony Hunt 'Code-switching in medical texts,' in D.A. Trotter (ed.), *Multilingualism in Later Medieval Britain* (Cambridge, D.S. Brewer, 2000), pp. 131–147, passim.
[99] Rossell Hope Robbins, 'Medical Manuscripts in Middle English,' *Speculum*, Vol. 45, No. 3 (Jul. 1970), pp. 393–415 (pp. 414, 415).
[100] Chardonnens, *Anglo-Saxon Prognostics*, p. 2.

Formation of this study

The initial idea for this study was to discover what weather prognostics had survived from the Late Middle Ages and identify their role in English manuscripts, paying attention to language use given the significance of English for prognostics in the earlier Middle Ages. However, it soon became apparent on reading the original texts in context that, in most cases, there was something different about the treatment of brontology from other weather prognostics. Although the majority of brontologies are treated separately from any other weather prognostics, instances do still occur of them grouped together, but, even then a widespread practice of prominent placement as the first prognostic was discovered during the course of this study. This prominence resonates with the earliest manifestations of brontology discussed by Beck (above)[101] and it is easy to see how the incontrovertible drama and definition of thunder events, compared with other types of weather phenomena, would have brought this about. Also, other weather types have distinct problems of definition, i.e. how much sunshine is experienced, or how strong must the wind be, before a prognostication can be achieved. These are subjects of infinite degree in Britain, whereas thunder events might vary in intensity but they are unequivocal.

Moving on from the prominence of brontology itself to the types of manuscripts it was found in, which give the appearance of simply accidents of survival. Förster provides a good starting point to some of the ways this might have happened with two additional examples of brontology to the ones he had earlier edited and studied philologically, which had continued into print in the sixteenth century. He states, '*Zum Beweise, wie zäh sich diese Donnerbücher in der Volks-lieratur gehalten haben*,'[102] that he wanted 'to prove how tenaciously these Thunder Books have remained in popular literature'. This inspired the idea of tenacious, potentially niche, survivals of brontology texts and the search for what lay behind this. As the manuscript corpus was being assembled it became evident that there were collections of manuscripts which had played a role in the continuing survival and use of brontology and that perhaps these survivals were not always purely accidental. One notable cultural influence on survival was the university textbooks collected from the late study period and, in the case of Cambridge, Trinity College MS R.14.52, continuing in use into the late sixteenth or early seventeenth century with the addition of a further brontology by Dr. Furtho.[103] The academic collector Thomas Allen's numerous visits to houses and libraries (both private and institutional) had also increased the chances of secular works ending up in his collection. University knowledge was also found to have travelled text by text with university-trained people to remote contexts such as

[101] Chapter 1, p. 5.
[102] Förster (1912), pp. 289–290.
[103] See Chapter 4, p. 152.

parishes, priories and private homes with tutors. The ecclesiastical contexts did not appear at all straightforward, some colleges (Merton, Oxford, for example) attempted to stop movement of their manuscripts by stipulating that graduates should leave them at the college if they were entering a religious order, potentially resulting in a lot of hasty copying.[104] Because late-medieval brontology in England was not standardised but influenced by several different cultures (intellectual, social, linguistic, and textual), this study adopted the aim of Michael Johnston and Michael Van Dussen to put 'manuscript studies into dialogue with cultural history'.[105] In their work on medieval manuscripts they study the lives of manuscripts and their applications, from inception through various copyings, translations, compilations and reconfigurations. In so doing, they decode the value and meaning of textual contexts from the placement of texts within manuscript compositions in unique, and often final, forms by the fifteenth century. It is a pertinent method for the study of later-medieval thunder prognostics as they are found to be both frequently framed by older material and associated with various modes of scientific learning, including:[106] the regularisation of nature, instructive calendar canons, and didactic and compound prognostic texts.

Johnston and Van Dussen assert that each late-medieval manuscript is absolutely unique and this is certainly the case for the examples in this study.[107] Consequently, firm definitions of all the purposes of corpus manuscript compilations with brontology are extremely elusive. This situation is reflected by Francisco Alonso Almeida in his study of the construction of fifteenth-century English scientific and technical books, in which he makes the important point that compilations are often poorly classified due to the rich diversity of material in them.[108] The problem crystallises around which of the texts the cataloguer should bring to the fore, as they can be very numerous in books which are hundreds of folios long. Almeida proposes instead to regard such compilations as a 'discourse colony'[109] of heterogenous texts working together in a grouping. In the case of the manuscripts in this study this is usually a single textual grouping containing brontology, or possibly a booklet or 'fasicle' of related material.[110]

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[104] Malcolm B. Parkes, **'**Book Provision and Libraries at the Medieval University of Oxford: The Robert F. Metzdorf Memorial Lecture 1987,' *University of Rochester Library Bulletin*, Vol. 40 (1987–1988), https://rbscp.lib.rochester.edu/4038 [last accessed 10 Jan 2024].
[105] Michael Johnston and Michael Van Dussen (eds.), *The Medieval Manuscript Book; Cultural Approaches* (Cambridge, CUP, 2015), p. 2, also note Pascale Bourgain, 'The circulation of texts in manuscript culture' in Johnston and Van Dussen (eds.), *The Medieval Manuscript Book; Cultural Approaches* (Cambridge, CUP, 2015), pp. 140 -159, passim.
[106] See Nancy Siraisi for applications to medical education, *Medieval and Early Renaissance Medicine*, pp. 50–55.
[107] Johnston and Van Dussen, p. 2.
[108] Francisco Alonso Almeida, 'All Gathered Together: On the Construction of Scientific and Technical Books in 15th-century England', *International Journal of English Studies*, Vol. 5, No. 2, pp. 1–25 (pp. 1–2).
[109] Ibid., pp. 2, 6–7.
[110] See Ralph Hanna III on the formation of booklets in manuscripts, 'Booklets in Medieval Manuscripts: Further Considerations,' *Studies in Bibliography*, Vol. 39 (1986), pp. 100–111 (pp. 100–101). For further discussion on booklets: L. Nix, 'Early Medieval Book Design in England,' in Robin Myers and Michael Harris (eds.) *A Millennium of the Book: Production, Design and Illustration in Manuscript and Print*,

It became obvious during the initial examination of corpus manuscripts that such discourse colonies do exist in many of them but not in a static way, such as always appearing with other weather texts. Therefore, each manuscript description in the chapters below is at pains to explain the textual contexts of brontology, and changes to them, over the study period. To fully interpret these groupings, it is vital to understand manuscripts as hand-crafted three-dimensional objects often made of multiple units, very different from continuous lines of typeset text in a printed book. Raymond Clemens and Timothy Graham's authoritative and wide-ranging introduction to manuscript studies was used to interpret and contextualise the individual manuscripts in this study,[111] similarly, the guide edited by Orietta Da Rold and Elaine Treharne.[112] When a manuscript has multiple units this can either suggest they were added over a period of intensive institutional or family use, or by a new owner or later collector.[113] So, in addition to ascertaining the date of writing and any provenance of brontology textual groupings, other booklets in the manuscript needed assessing to understand the placement of brontologies in relation to them. There are many traps for the unwary in this process, however. In particular, it cannot be assumed that because a booklet with a brontology is in the middle of a manuscript it post-dates former ones, or equally, predates following ones as the book may have had a different configuration originally. Analysis of the brontologies' textual groupings utilised the skills of palaeography and close reading of surviving early catalogues for any references to original layouts, and places of manufacture or users. This identified patterns of textual grouping and highlighted the strength of connections to other text (insubstantial in the case of other weather prognostics), as well as the frequency seen in manuscripts with health regimens and brontology together.

The textual groupings in this study are either discrete booklets containing brontology or close arrangements of texts in continuously written manuscripts by one or more scribes. In some corpus manuscripts space was at a premium and very many texts inhabit a little space, so it can be difficult to determine a grouping in these cases. Examples of textual groupings with brontology in corpus manuscripts include: calendar folios, didactic Zodiac guides such as the 'Dispositions of the Twelve Signs,' and health regimens. This is not to say that any other

900–1900 (St. Paul's Bibliographies, Winchester, 1994), pp. 1–21; Pamela Robinson, 'The "Booklet" – a self-contained unit in composite manuscripts,' *Codicologia* 3 (1980), pp. 46–69, and 'The format of books: books, booklets and rolls,' in Nigel J. Morgan and Rodney M. Thomson, *The Cambridge History of the Book in Britain, Volume II* 1100–1400 (Cambridge, CUP, 2008), pp. 41–54 (pp. 50–51); J.P. Gumbert, 'Codicological Units: Towards a Terminology for the Stratigraphy of the Non-Homogenous Codex,' *Segno e testo* 2 (2004), pp. 17–24.

[111] Raymond Clemens and Timothy Graham, *Introduction to Manuscript Studies* (New York, Cornell University Press, 2007), Parts 1 and 2, especially Chapter 8, 'Assessing Manuscript Origin and Provenance,' and Chapter 9, 'Manuscript Description,' pp. 117–134.

[112] Orietta Da Rold and Elaine Treharne (eds.), *The Cambridge Companion to British Medieval Manuscripts* (Cambridge, CUP, 2020), Parts 1 and 2, especially Chapter 1, Richard Beadle and Ralph Hanna, 'Describing and Cataloguing Medieval Manuscripts: A Checklist,' Chapter 2, Donald Scragg, 'Reading a Manuscript Description,' pp. 13–48, Chapter 6, Elaine Treharne and Orietta Da Rold, 'Networks of Writers and Readers,' and Chapter 7, Jane Gilbert and Sara Harris, 'The Written Word: Literacy Across Languages,' pp. 129–178.

[113] See also Beadle and Hanna, 'Describing and Cataloguing,' pp. 28–29.

prognostic and astrological medical texts placed elsewhere in the manuscripts were not used with brontology in practice, but that it was put in specific groupings with texts perceived to be of most relevance to it and vice versa. Analysis of the groupings is designed to reveal the status and function of each brontology in its textual context through its relative prominence and the sort of texts it is placed with. When it is the first text in a grouping it sets out what should be taken notice of when consulting that grouping, be it a calendar or an astrological medical guide. Further, internal evidence, such as didactic incipits, explicits or zodiac references for brontology texts, point towards the preservation of brontology in contexts teaching about prognostics and, in non-professional manuscripts, can represent wider mechanisms of preservation by those emulating university teachers. The next considerations were differences in manuscript quality and materials relating to their age and status, for example, the use of paper as opposed to parchment. Both paper and parchment were used for manuscripts in this study (sometimes both in the same manuscript). Paper is more transitory in nature than parchment, especially in damp environments, which affects its survival. This makes it possible that there were more examples of paper copies of brontology which have not survived, including folding manuscripts. As regards dating paper manuscripts, the first paper mill in England is believed to have been built ca. 1496,[114] whilst imported paper was first used in England long before this. The earliest English paper manuscript is believed to be the Red Register of Lynn ca. 1306.[115] The paper used at this time would have been relatively expensive and not continuously available, due to importation costs and logistics. The examples which survive in this study are of variable quality, especially those predating 1496, but very good in the main. The later-fifteenth-century examples constitute some of the finest manuscripts in this study, indicating that paper was a desirable substance at that time. It seems very likely, therefore, that the choice between parchment or paper was a matter of scribal choice rather than necessity, other than availability.

Regarding the use of other writing supports, the term 'parchment' is used throughout this study in line with current codicological practice to avoid making judgements about which particular species the skin used for folios in this study came from, i.e. vellum from calves, parchment from sheep or goatskin, also deerskin being a further possibility. If the material is of the superior quality associated with vellum this will be noted in the description as 'fine parchment'. These differences in parchment quality are informative about manuscript compilers' intentions for these books, whether constituting lavish, artistic volumes or pared-down, didactic textbooks, for example. However, it was important to keep the nature of the manuscript under scrutiny in mind and not be distracted by its quality. Some corpus manuscripts were made from fine parchment yet contain very similar didactic texts to

[114] Clemens and Graham, *Introduction to Manuscript Studies*, p. 7

[115] Dates are transcribed in R.F. Isaacson (trans.) and Holcombe Ingleby (ed.), *The Red Register of King's Lynn*, Vol. 1 (Thew and Son, King's Lynn, 1919), p. 8, the possibility of trade in paper with mainland Europe is noted in Preface, p. iv.

poorer-quality examples, perhaps simply reflecting the means of the owner in these cases. Durability is also a consideration in this, for example, the appeal of a sturdy parchment volume to well-connected doctors with opportunities to travel with a patron, for employment or further education in another country, or on pilgrimage (personal or providing medical services). This helps to explain the presence of a number of texts relevant to travel in better-quality, practical medical corpus manuscripts. The portability of manuscripts is also highly relevant. Smaller corpus manuscripts which can be suspended from a girdle or belt, or folded to pocket-sized, seem designed for use in the field for acute situations, or whilst travelling. Nevertheless, they still include complex prognostic strands used for longer-term treatment (including brontologies). It was not assumed that very small practical manuscripts must only contain simple information, and results showed they are often multivalent abbreviations of complex material such as astrological charts. Patterns of wear such as rubbing of images shows these aspects were engaged with just as much as the more mundane items of the calendar and Occupations of the Months and so on. Levels of general wear, show how (and how much) they were used, i.e. worn-out attachment loops for thick folding compendia consisting of many folios (termed 'bat books' by J.P. Gumbert'),[116] and degraded images on the front covers of folding manuscripts from being slipped into pockets or cases. This is also found in books described as a 'vade mecum' (or 'go with me'). This term of choice for such manuscripts of earlier cataloguers conjures an image of a practitioner slipping one into their bag before making a house call. When examining them, however, it was borne in mind that other functions were possible and the level of didacticism versus personalisation of texts led to more nuanced identification of some corpus manuscripts as more suited to private tutors or monastic teachers travelling between houses than doctors visiting patients in their homes.

Some of these medium-sized manuscripts resemble textbooks in their didacticism and many obvious learning aids. Therefore, they are called 'textbook manuscripts' for the purposes of this study even if has not been possible to prove they were definitely used in a place of learning as an official primer or reference book and indeed some were personal notes from university lectures rather than material supplied or used by an educator to prepare for or follow up from them. At the opposite end of the scale, the large high-quality volumes produced and commissioned by wealthier individuals or organisations such as guilds or college masters would have been more stationary (even chained to a library desk)[117] because of their value, rarity, the need to keep a copy available for consultation, and also their unwieldiness. They were often kept horizontal in a book press (or chest)[118] when not in use to stop the parchment springing out from its flattened form. When assessing corpus manuscripts as

[116] J.P. Gumbert, *Bat Books: A Catalogue of Folded Manuscripts Containing Almanacs or Other Texts*, *Bibliologia 41* (Turhout, Brepols, 2016), p. 19.
[117] Clemens and Graham, *Introduction to Manuscript Studies*, pp. 59, 60.
[118] Ibid., pp. 57, 58.

potential reference books, the extent to which this characterisation applies depends as much on how it is laid out as on what it contains. In her discussion of (not specifically medieval) encyclopaedic reference books, Katharine Schopflin describes reference books as 'immediately distinguishable from other forms of the book,'[119] due to finding aids such as subheadings to facilitate consultation and make the best use of space. These characteristics occur frequently in study examples, along with a generally larger size for desk use, although sometimes a manuscript is a lot thicker than others due to volume of reference material but no wider or longer. Schopflin goes on to expound the origins of encyclopaedias in medieval *summae*, or 'collections of in-depth learning organised under topic heads,' and *glossae*, which translate 'one vernacular language to another, or which sought to explain the meanings of new concepts'.[120] One of the examples in this study is a self-proclaimed *summa,* John of Ashenden's *Summa de accientibus mundi* (with extensive brontology) and many other corpus manuscripts precede, emulate or disseminate this style of material. The *glossae* texts often crop up in herbals or pharmacological sections of astrological medical manuscripts. It is safe to say that *summa* and *glossa* attributes are certainly found in corpus manuscripts not fully identified as encyclopaedias and this was part of a widespread, wide-ranging didacticism among them. Therefore, the manuscripts selected for this study represent collections of many aspects of professional, educational and scientific information preserved in libraries, but more as many personal and less learned examples as possible were also sought for comparison to obtain as wide a picture as possible of the spread of this text within society.

The most important change found in brontology texts over the study period is the increase in examples using the Zodiac as a prognostic framework. This operates by making predictions from the hearing of thunder during periods when a zodiac constellation has particular influence due to the presence of another planet (including the Moon or Sun). Starting with the Sun, the current planetary influences on the Zodiac are addressed so the period in question is frequently introduced as when 'the Sun is in the sign'. The Sun and Moon were considered planets along with five actual planets: Mercury, Venus, Mars, Jupiter and Saturn, and more than one of them might be influencing a zodiac constellation at any one time. Thunder events stand out because they were both influenced by this planetary dominance at these times, and simultaneously, were portents themselves, potentially several times a year. Roger Beck's definition of such brontologies as omen astrology adds a further layer of detail to the expected fortunes of a zodiac period.[121] This knowledge was suited to astrological medicine because of the belief

[119] Katharine Schopflin, 'The encyclopaedia and the codex: pages, margins and entries,' in Cynthia Johnston (ed.) *The Concept of the Book: The production, progression and dissemination of information* (London, University of London, School of Advanced Study, Institute of English Studies, 2019), pp. 91–106 (p. 91).
[120] Ibid., pp. 93–94, 96.
[121] Beck, *Ancient Astrology*, p. 11.

that since planetary influences directly affected all systems and creatures on earth they had to be considered when determining the type of medical treatment needed, or if it was advisable at all because the patient was beyond hope.

As instances of zodiac brontology increased in the astrological medical and almanac compilations shown in Chapter Four, a mixing of months and zodiac sign periods became more evident, and also with other prognostics in both English and Latin. The character of these textual groupings fits Hilary Carey's description of the English 'later medieval scientific almanac'[122] which is distinct from European types. Although by the early modern period the term 'almanac' was used for general prognostics on weather-related matters, in the study period the notion of it came from calendrical texts which were reformed by 'learned calculators' to create 'a robust working tool for simple lunar, solar, and astrological operations'.[123] This almost always has a medical application in the corpus manuscripts. A few scribes, generally earlier in the period, continue with older forms of weather-based prognostic derived from 'Prophecies of Esdras'[124] texts which cover Christmas or New Year weeks, or liturgical hours. However, apart from one case,[125] these outlying examples are grouped with months brontologies and not independently.

The term 'astrological medicine' is used in this study for the wide approach to diagnosis and prognosis stemming from an understanding of the human body as a miniature and component part of the body of the universe.[126] This is illustrated with several 'Zodiac Man' or 'Vein Man' images in various corpus manuscripts.[127] In his book chapter, 'Medicine's Image,' Jack Hartnell explains how these images 'could aid physicians or surgeons in the accurate timing of their work' by linking 'captions recounting the influence of the planetary movements on medical affairs' to the Zodiac Man's various body parts.[128]

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[122] Hilary Carey, 'What is the Folded Almanac? The Form and Function of a Key Manuscript Source for Astro-medical Practice in Later Medieval England,' *Social History of Medicine*, Vol. 16, No. 3 (2003), pp. 481–509 (p. 484).
[123] Ibid., also see Sigmund Eisner (ed.), *Nicholas of Lynn; Kalendarium* (London, Scolar Press, 1980), p. 7.
[124] Chardonnens, *Anglo-Saxon Prognostics*, p. 493.
[125] London, British Library, Additional MS 27582, Chapter 4, p. 167, a single brontology based on liturgical hours with weather science texts.
[126] See '*melothesia*,' p. 11.
[127] New York, Morgan Library MS M 941, Zodiac Man, Chapter 3, p. 80, Fig. 16, upper four compartments; London, Wellcome Library MS 8004, Vein Man, Chapter 4, p. 105, Fig. 19, Zodiac Man, p. 106, Fig. 20; Cambridge, Trinity College MS O.1.57, Vein Man, Chapter 4, p. 126; San Marino, Huntington Library MS HM 64, *Homo Venarum*, 'Vein Man,' Chapter 4, p. 156, Fig. 30a, *Homo Signorum* 'Man of (Zodiac) Signs,' p. 157, Fig. 30b, 'Wound Man,' p. 157, Fig. 30c.
[128] Jack Hartnell, 'Medicine's Image,' in Colum Hourihane (ed.), *The Routledge Companion to Medieval Iconography* (London, Routledge, 2017a), pp. 322–339 (p. 328).

The corpus of manuscripts

Forty-nine manuscripts and one printed book containing sixty-five brontology texts found in England, Scotland, Wales and The United States (shown below in Table 1)[129] form the corpus of witnesses for this study which made it as full as possible at the time of writing. The vast majority have been physically examined under magnification in their place of curation, the main exceptions being the examples from the United States discussed above.[130] This involved visits to seven repositories across the country, where twenty-two individual collections were searched, full details of which are listed in the bibliography under each corpus manuscript reference. When it was not possible to consult a manuscript in person, or at the request of librarians when material was delicate, the full or partial digitised forms used came from: Cambridge, Trinity College, and University Library (Digital Cambridge); Manchester, Chetham's Library; New York, The Morgan Library & Museum; Oxford, The Bodleian Library; San Marino, The Huntington Library; Longleat House archives; London, The Wellcome Library; and Yale University, Beinecke Rare Book and Manuscript Library. In addition to this, forty-one other contemporary manuscripts were researched in person or digitally for comparison to corpus manuscripts, or to add wider context. Images are fully accredited in the bibliography according to the requirements of the repository concerned.

Two further tables have been created in order to demonstrate the range and variety of brontological material in the manuscripts in this study. They are placed after Chapter Five, acting as a summary to the manuscript descriptions in those chapters. Table Three contains the types of thunder prognostic in each manuscript, with each individual brontology given a number to identify it, bearing in mind the number of brontologies in each manuscript ranges from one to three. Table Four contains samples of brontology over the summer months, from the most complete editions, to show the many ways this information was expressed by the scribes. The summer months were chosen because of the variability of their climate in Britain.

[129] This chapter, p. 28.
[130] This chapter, pp. 14-15.

The Corpus of Manuscripts by Chapter

Chapter Two – fourteenth century
CUL Hh.6.11
Rawlinson C.814
Advocates 18.6.9
John Ashenden *Summa de accientibus mundi*
Egerton 2852
Rawlinson D.939
CUL Dd.6.29
Rawlinson D.238
Ashmole 345
Sloane 2584
Digby 57
Sloane 282

Chapter Three - earlier fifteenth century
Sloane 1609
Egerton 2724
Aberdeen 272
Ashmole 6
Morgan 941
Sloane 636
St. John's K.49
Sloane 989
Digby 95
Bodley 591
Huntington 1336
Ashmole 342

Chapter Four - later fifteenth and sixteenth centuries
Wellcome 8004
Sloane 1315
Trinity O.1.57
Digby 75
Sloane 213
Takamiya 61
Longleat 176
Chetham's Mun.A.4.99
CUL Ff.5.48
Radcliffe Trust e.30
Additional 28725
Sloane 635
Longleat 174
Morgan 775
Trinity R.14.52
Huntington 64
Additional 27582
Digby 88
Gonville & Caius 457/395
Sloane 2270
Additional 17367

Chapter Six - Manuscript Insertions by Date
Trinity O.2.45 (13c)
St. John's E.9 (early 15c)
Ashmole 189 (early 15c)
Lincoln 91 (mid 15c)
Tanner 407 (late 15c)

Table 1

Methodology

This section outlines the manner in which the manuscripts in this study were investigated. The first step to finding as comprehensive a sample of manuscripts as possible was to consult the online electronic database produced from *A Catalogue of Incipits of Mediaeval Scientific Writings in Latin* by Lynn Thorndike and Pearl Kibre, which has been expanded to include English texts from the work of Patricia Deery Kurtz and Linda Ersham Voigts.[131] Once an initial list of manuscripts was found by this means, more intensive investigation was carried out to find others and to begin to classify them by using a range of historic catalogues, for example, the Class Catalogues held in the Manuscript Reading Room at the British Library and M.R. James' descriptive catalogues in both published and unpublished forms (the latter held by Cambridge University Library for Cambridge manuscripts). This exercise highlighted how little secondary material there was on the subject of brontology apart from the small-scale discussions around particular editions and once again, like the manuscripts themselves, how chance the survivals of material were. One rare survival was the handlist of manuscript scholar and palaeographer Dorothea Waley Singer on prognostics at the British Library, a manuscript in its own right from the 1920s which was part of her research for a wide-ranging catalogue of alchemical manuscripts.[132] Singer's handlist was consulted against the British Library catalogues when assembling this study corpus for the sake of completeness and also to better understand categorisation of this material. For example, Singer was researching alchemy so brought those textual aspects to the fore in the list she compiled, but also highlighted other scientific, or quasi-scientific, matters in the texts during this process.

Another useful source was the digitised series of Quarto Catalogues at The Bodleian Library, where descriptions were found of the contents of many corpus manuscripts (apart from the Bodley and Radcliffe Trust collections). They are for broadly textbook-sized books in Bodleian collections, 'quarto' being a traditional book size of 11.25 by 8.75 inches (approximately 286 by 222 mm) derived from the number of times a sheet of paper was folded to make pages, i.e. four in this case. There is considerable variation in what qualifies as 'quarto,' especially between manuscript and print media, so it is safest to assume for this study that these are not the largest books and some of them are quite portable, but they do vary in size. This also means that the 'quarto catalogues' do not only contain 'textbooks'. The earliest are in Latin, both the texts and their descriptions, which gives an insight into the interpretation of Latin brontology. There is also a similar contemporary catalogue for Cambridge University

[131] Lynn Thorndike and Pearl Kibre, *A Catalogue of Incipits of Mediaeval Scientific Writings in Latin* (Cambridge, Massachusetts, Medieval Academy of America, 1963), hosted online as 'eTKeVK2' within the wider database 'IndexCat' by the National Library of Medicine, Bethesda, Maryland, United States.

[132] Anita McConnell, 'Singer (*née* Cohen), Dorothea Waley (1882–1964), ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/74093 [last accessed 20 Jan 2024].

Library.[133] Further to this, apart from the accredited editions, any translations of Latin brontology and textual groupings are my own, as are Middle English versions where necessary, and transcriptions. Transcriptions have been kept as true to the originals as possible to preserve the contemporary medieval expression, with modern punctuation added sparingly to clarify meaning.

Beyond these resources are a number which were utilised to analyse the brontology texts in their contexts. Some pertain to the history and provenance of manuscripts; N.R. Ker's *Medieval Manuscripts in British Libraries*,[134] for example. LALME and the eLALME database shed relevant and useful light on the contexts of manuscript provenances, identifying probable places of production.[135] Other databases supplied information on examples of individual texts, helping to understand the survival of these in different manuscript contexts. IMEV (now also available as DIMEV) and IMEP were used for this,[136] and USTC and EETS gave insight into survivals of study texts into print, which are few.[137] The Middle English Compendium online was used to ascertain the best sense of Middle English words.

Although they have all been categorised as 'later-medieval,' the exact date of many of the manuscripts in this study is uncertain, not least because they might be composed of multiple booklets spanning considerable periods of time, in some cases over a hundred years. Some manuscripts and the individual booklets within them were dated more closely by means of calendrical texts based on nineteen-year cycles which act as a *terminus post quem*, for example, the incipit to Wellcome 8004:

> 'þis calendere was begune in þe ȝere of our Lord Jhsu(s) cryste 1454. þis calender is compyled and mad aftyre dyuers cale(n)ders for 4 cyclysse eu(er)y cycle durynge19 ȝer'[138]

as stated by Nicholas de Lynn in his *Kalendarium*.[139] These are the Metonic cycles, discovered by Athenian astronomer Meton (fl. 432 BCE), in which the Moon returns to its original place after nineteen years and the cycle starts again.[140] In other cases, palaeographical evidence helped define the lifespan of a manuscript, but this tends to be rather broadly defined as changes in writing style were subject to many factors. For example, texts can seem older than their actual age because a scribe has continued using a script from their youth over a period of time

[133] Charles Hardwick and Henry Richards Luard (eds.) *A catalogue of the manuscripts preserved in the library of the University of Cambridge, Edited for the Syndics of the University Press* (Cambridge, CUP, 1856–1867).
[134] Neil R. Ker, *Medieval Manuscripts in British Libraries*, Vols. 1–5 (Oxford, Clarendon, 1969 to 2002).
[135] *A Linguistic Atlas of Late Mediaeval English*; also see Claire Jones on dialectology, 'Discourse communities,' pp. 23–36.
[136] *Index of Middle English Verse*; *Digital Index of Middle English Verse*; *Index of Middle English Prose*.
[137] *Universal Short Title Catalogue*; *Early English Text Society*.
[138] f. 5r.
[139] Eisner, *Kalendarium*, p. 10.
[140] 'Meton,' Simon Hornblower and Antony Spawforth (eds.) *The Oxford Classical Dictionary* (3rd ed.) (Oxford, OUP, 2005, online 2005), https://www.oxfordreference.com/display/10.1093/acref/9780198606413.001.0001/acref-9780198606413-e-4165 [last accessed 26 Jan 2024].

and regional trends and variations also affect the rate of stylistic change. The dating of hands for brontologies and their associated texts for this study was achieved by comparison with the examples given by M. B. Parkes', and Jane Roberts.[141] Further experience in this regard came from studying scientific manuscripts with Charles Burnett of the Warburg Institute, and codicology with James Freeman of Cambridge University Library, at the London International Palaeography School. In some manuscript contexts the date of publication or wider dissemination of one of its constituent texts aids dating as a *terminus post quem*, for example, Henry Daniel's herbals,[142] John Somer's and Nicholas de Lynn's calendars,[143] and John of Burgundy's and Thomas Forestier's anti-plague treatises.[144] This means that copies of these texts (and the ongoing transmission of copies of copies) could be considerably later than their first publication. Therefore, palaeography and, additionally, art historical evidence for dating images by technique, and the clothing and hairstyles depicted come into play to aid with dating. The corpus manuscripts were assigned to the subdivisions of the study period in Table 1 (above) using the most appropriate permutations of techniques for the available evidence.[145]

In the descriptive chapters, Two to Five, the corpus manuscripts are first investigated codicologically, size being the first attribute to be examined with dimensions given as metric measurements in footnotes. The size of manuscript relates to the purpose for which it was intended.[146] Therefore, in each manuscript description there are references to the apparent purpose of the manuscript, ranging through the educational, portable 'vade mecum' medical handbooks, palm or pocket-sized folding manuscripts, to high-quality, library reference volumes. Other physical attributes discussed are the hands used and what they say about the time and place the texts were written, the ink, and the composition of manuscripts, whether written in a single campaign or a collection of booklets of various origins bound together. The latter items may have been compiled into manuscripts contemporaneously, some time later by an early collector of that material, or much later than the study period by a bibliophile collector, so these possibilities needed to be taken into consideration. Fortunately, the brontology textual groupings were not so large that they went over more than one booklet.

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[141] Malcolm B. Parkes, *English Cursive Book Hands 1250-1500* (Oxford, Clarendon Press, 1969); Jane Roberts, *Guide to Scripts used in English Writings up to 1500* (London, The British Library, 2005).
[142] Daniel's text was probably transmitted after 1382, see Sarah Star, 'The Textual Worlds of Henry Daniel,' *Studies in the Age of Chaucer*, Vol.40 (2018), pp. 191–216 (pp. 192–193).
[143] Somer's calendar was produced in 1380, see Linne R. Mooney (ed.), *The Kalendarium of John Somer* (The University of Georgia Press, Athens, 1998), p. 22; Lynn's in 1386, Eisner, ibid.
[144] John of Burgundy's works were produced after 1365, see Lister Matheson, 'John of Burgundy: Treatises on Plague' in Teresa Tavormina (ed.), *Sex Aging &Death in a Medieval Medical Compendium: Trinity College Cambridge MS R.14.52, Its texts, Language, and Scribe*, Vol. 2 (ACMRS, Arizona, Tempe, 2006), pp. 569–606; Forestier's is in Additional 27582, f. 70r, dateable to the late fifteenth century.
[145] This chapter, p. 28, the full form of manuscript name and shelfmark are given in the bibliography and each time they are first mentioned in this thesis.
[146] Discussed by Erik Kwakkel, 'Decoding the material book: cultural residue in medieval manuscripts,' in Johnston and Van Dussen, pp. 60–73 (pp. 70–73).

The textual analysis began by establishing the change from Old English brontology (and Chardonnens' single Anglo-Saxon Latin example)[147] using only temporal frameworks and cardinal directions as markers for the prognostics,[148] to later-medieval brontology in both Latin and English which also uses the periods when the Zodiac signs are visible in the sky. Zodiac-based brontologies are first found with calendars and scientific and medical writings and, later, are even joined to them in examples of compound texts from the turn of the fifteenth century.[149] Once again, it is not only the preservation of texts, but how this was achieved which is germane to this study. The various layouts of such texts, whether tabular, illustrated, or with large margins for notes, are important witnesses to how brontology was regarded, as described by Laura Cleaver for the layouts of illuminated Anglo-Norman history books.[150]

[147] Chardonnens, British Library, Royal MS 2.B.v, also known as the *Regius Psalter*, *Anglo-Saxon Prognostics*, p. 46.
[148] See Chardonnens, *Anglo-Saxon Prognostics*, p. 247, n. 3.
[149] The first study example of this is Sloane 282, Chapter 2, pp. 61–62.
[150] Laura Cleaver, *Illuminated History Books in the Anglo-Norman World, 1066–1272* (Oxford, OUP, 2018).
pp. 56–57.

Chapter Two – Brontology in the Fourteenth Century

Introduction

The twelve fourteenth-century witnesses span the whole of the century. The first manuscript, CUL Hh.6.11, also has some thirteenth-century material. They show a distinct move from relatively sophisticated herbals towards astrological medicine as practised by physicians and recorded in their workbooks and vade mecums or abbreviated into portable, folding manuscripts suitable for travel. This is not to say that all these manuscript forms are not still found in the fifteenth century, but that the weight of evidence for brontology contexts shifting towards astrological medicine begins in the fourteenth century.

Folding manuscripts (rather than folded) is the term used in this study because they are dynamic items which can be folded in different ways to access different pieces of information, as shown in their descriptions (below).

The variety of folding patterns indicate a lack of a standard a method of production, in some cases the nature of the textual material meant ingenious ways were devised to respect and present it. For example, not everything was minimised and abbreviated, large astral and planetary charts, and Zodiac Man diagrams were still possible via full-folio fold-outs, see Oxford, Bodleian Library MS. Rawlinson D.939 (below).[151] Folding manuscripts are thought to be an English innovation and examples from elsewhere are few and far between.[152] They lend themselves to illustration and their defined textual spaces which can be opened out for consultation mean that there is far less room for text than in codices. Despite a temptation to associate them with the unlearned because they are very visual and not totally reliant on reading, and some examples show the mundane pattern of agricultural life in Occupations of the Months images, not all were actually supplied with images, namely London, British Library, Additional MS 28725 and Oxford, Bodleian Library MS. Ashmole 6, which are also much longer.

The Zodiac Man or *Ymago Signorum* was part of John Somer's calendar canons and a common element in folding manuscripts containing brontology.[153] In the *Ymago Signorum*, information on the safe cutting of veins is combined with the body parts affected by the Sun's position in the Zodiac. Increasingly, eclipse tables were provided to determine the effects if the Sun were not visible. John Somer's calendar was produced in 1380 in response to the need for a further instalment to earlier calendars and Nicholas de Lynn's version came out in 1386, for a different patron.[154] They are specifically for use in England (copies often refer to the meridian at Oxford)[155] and cover

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[151] This chapter, p. 43.

[152] See Hilary Carey, 'Astrological Medicine and the Medieval English Folded Almanac,' *Social History of Medicine*, Vol. 17, Issue 3 (Dec., 2004), pp. 345–363 (p. 363).

[153] Mooney (1998), pp. 148–149.

[154] Ibid. pp. 2–3.

[155] See corpus examples, this chapter: Oxford, Bodleian Library MS. Rawlinson D.238, p. 49, Chapter 2: Oxford, Bodleian Library MSS. Digby 57, p. 58, Ashmole 6, p. 73, Chapter 4: London, British Library, Additional MS 28725, p. 139.

four Metonic cycles of nineteen years from 1387 to 1462. One of the users of Somer's calendar is known by name, Lewis of Caerleon, who himself transcribed and corrected the astronomical tables of John Killingworth of Oxford.[156] Caerleon was a well-connected physician who served at the courts of two royal ladies, Queen Elizabeth of York and Lady Margaret, Countess of Richmond, in the later-fifteenth century, ending up in the Tower of London for his affiliations after Richard III came to the throne.[157] Even there, Caerleon continued to work on new astronomical tables having been deprived of his own.[158] Pearl Kibre shows his list of twenty-four compositions on astronomy and mathematics (not hands-on, practical medicine), as well as a considerable number of texts by twelve other writers transcribed or annotated by Caerleon.[159] It is of interest to this study that, despite his status and university connections, there is no record of Caerleon's matriculation at Oxford or Cambridge and this should be borne in mind when considering the status of other doctors associated with the manuscripts in this study.[160] Either records were simply incomplete, did not always survive, or doctors were not necessarily graduates, but conceivably they had learned directly from them.

Cambridge, CUL MS Hh.6.11

This is a textbook manuscript with 71 fine parchment folios.[161] It was constructed from different booklets and subject to a lot of use, giving it an untidy appearance. There are texts dating from the thirteenth century and others from the fourteenth, which include the brontology. The presentation of the textual material varies in quality with several hands at work; most of them are clearly legible although small-scale, which hints at a monastic (parish or scholarly) setting with limited means, suggesting the scribe was trying to conserve writing materials. Nevertheless, the folios are good-quality parchment with embellishment of initials and carets. The main language is Latin, with mixtures of Latin and French for some texts, mostly the thirteenth-century material which is similar to Trinity O.2.45 (see Chapter Five) but more sophisticated.[162]

There are two weather-related texts: the weather prognostics of 'Ezra, told at Christmas' and a brontology,[163] both in Latin, the former with texts from the manor and convent at Gravenhirst, the latter with material about Sulgrave, both properties belonging to Ramsey Abbey. These '*Revelatio Esdrae*' (another term for

[156] Pearl Kibre, 'Lewis of Caerleon, Doctor of Medicine, Astronomer, and Mathematician (d. 1494?),' *Isis*, Vol. 43, No. 2 (University of Chicago Press, Jul 1952), pp. 100–108 (p. 103).
[157] Ibid., pp. 101–102.
[158] Ibid., p. 102.
[159] Ibid., pp. 104–108.
[160] Ibid., p. 103.
[161] Measuring 229 mm by 178 mm.
[162] See Päivi Pahta on code-switching as a sign of facility with the languages, 'Code-switching,' p. 83; also see Trinity O.2.45, Chapter 5, p. 181.
[163] f. 66r.

the prophecies of Ezra) are year prognostics from the weather in Christmas week for the year ahead, sometimes from the first week of the new year, and often with additional weather prognostics.[164] The reason for this variety can be traced back to the Early Middle Ages, when Chardonnens notes some translators rendering the kalends of January as Christmas.[165] Ecclesiastical contexts like Ramsey and Cerne become less common through the study period, unless in older booklets added into composite manuscripts. The general tenor of these examples is the everyday business of an ecclesiastical house, similar to the earlier manuscripts in Chapter Five. The weather prognostics in CUL Hh.6.11 were not grouped together but separated by four texts on estate matters, educational topics and conduct, so were not treated as a unit of weather lore. The intervening texts, in mixed Latin and French, are on the following: tree types, the evils of money and of the royal family, and the construction of a bier for St. Ivo (also known as St. Ives). The brontology is distinctive because it is in learned Latin with long entries per zodiac period and has plenty of exotic or classical references. Therefore, notwithstanding its humble position in the manuscript, the brontology is not country lore from a manor, but most likely derives from Ramsey Abbey itself and material available in the library there.

Oxford, Bodleian Library MS. Rawlinson C.814

This textbook manuscript has 87 parchment folios and dates to the first half of the fourteenth century.[166] It was written in various hands, all characteristic of this period, and it has the oldest herbal and apothecary manuscript in this study. It is an obvious composite book, with different systems of ruling the folios in different parts of the manuscript, so not a standard university volume in the sense of a course textbook for the trivium or quadrivium.[167] The minimal decoration gives it the appearance of a practical manual, as do the modest finding aids of carets and capitulum headings in red. Like the former example, Rawlinson C.814 is a trilingual manuscript, the majority of texts are in French or Latin and a small number are in English, mostly added at the end. The manuscript begins with paramedical material: recipes, reflections on nine archangels, and charms (or short prayers), in all three languages. There are health regimen items such as the text usually accepted in the medieval period as part of a letter from Aristotle to Alexander the Great concerned with achieving, then maintaining, a good state of health,[168] but no astrological texts pertaining to planetary influences. Brontology and health

[164] See Marilina Cesario, 'Weather Prognostics in Anglo-Saxon England', *English Studies* Vol. 93, Issue 4 (June 2012), pp. 391–426 (pp. 391–392).
[165] Chardonnens, *Anglo-Saxon Prognostics*, p. 493.
[166] Measuring 212 mm x 155 mm.
[167] The Trivium was the first level of university study (teaching the academic skills of grammar, logic and rhetoric), followed by the Quadrivium (arithmetic, astronomy, music and geometry).
[168] ff. 28r–33v, also known as the *Secreta Secretorum*, see also Oxford, Bodleian Library MS. Digby 95, Chapter 3, p. 87. For comparison; Elias Ashmole, *Secreta Secretorum: An alchemical Translation of the Second Epistle That King Alexander Sent to His Master Aristotle* (Montana, Whitefish, Kessinger Publishing, 2005) originally from Ashmole's alchemical work *Theatrum Chemicum Brittannicum*, published 1652.

regimens both regard benefits and impediments to health and wellbeing in a monthly timeframe. Urology, the stock-in-trade of professional physicians, does form part of the next treatise which is on wider practical medicine. The urine texts: 'Twenty Colours,' 'Urine that has Great Contents' and '*Ad Cognoscendum Pregnantes*,'[169] are also found in corpus manuscript Cambridge, St. John's College MS K.49,[170] another work of practical medicine written around a century later and Huntington 64 from the late fifteenth century.[171] However, this is the chance similarity of one textual grouping, the brontologies in the two manuscripts bear little resemblance to each other and St. John's K.49 is in English.[172] The fact that the same set of urological texts continued for a century after Rawlinson C.814, in a very similar practical context, shows that there was still a demand for this type of skilled apothecary work, whoever was practising it then. The rest of the texts in Rawlinson C.814 offer practical medical and phlebotomy guidance and medicinal instructions for herbal cures and children's medicine.

The Latin brontology and a wind prognostic form an explicit to the practical medical treatise,[173] providing the reader with an opportunity to think about possible prognoses of ailments discussed in the treatise, fever being the last one in an anti-fever treatment attributed to 'cuntesse Mareschal'.[174] The grouping of brontology with other weather prognostics is not very common in this study, with three examples from the fourteenth century and five from the fifteenth.[175] This sort of grouping was seen in the Early and High Middle Ages and could have medical associations, but not necessarily.[176] The best explanation for the choice of two weather prognostics in Rawlinson C.814 is that the compiler selected a weather prognostic grouping similar to ones from the Early Middle Ages and combined it with medicine to offer prognoses specifically for illnesses, but in this case without reference to planetary influences. So, Rawlinson C.814 is an early example in this study of a popular medical training handbook focused on treatments, using well-known texts and also teaching the urine inspection carried out by physicians, but not closely referencing the astrology which was the province of the physicians. The use of French

[169] 'To know if there is a pregnancy'.
[170] ff. 48r–48v, 50r–51v.
[171] Chapter 4, p. 159.
[172] Rawlinson C.814 is unremarkable, St. John's K.49 is idiosyncratic, with entries on dramatic events presaged by thunder such as ravening beasts (June) and Chaucer (August).
[173] Edition by Hunt (2013), p. 220.
[174] This countess was considered an authority on health but it is difficult to identify her, Margaret, Duchess of Norfolk, who succeeded to the earldom of Norfolk and the office of Earl Marshal in 1338 is one possibility, see Rowena E. Archer, 'Brotherton, (Marshal), Margaret, *suo jure* duchess of Norfolk (c. 1320–1399),' ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/53070 [last accessed 12 November 2023]. Another possibility is a thirteenth-century noblewoman, Isabel Marshal, both of whose husbands were earls making her a countess, see G.E. Cokayne, *The Complete Peerage of England, Scotland, Ireland, Great Britain and the United Kingdom, Extant, Extinct or Dormant* (Stroud, Alan Sutton, 2000), Vol. 2, p. 359, Vol. 3, p. 244.
[175] 14c: London, British Library, Sloane MS 2584, Rawlinson C.814, London, British Library, Egerton MS 2852, 15c: Oxford, Bodleian Library MS. Ashmole 6, Longleat House MS 174, London, British Library, Additional MS 27582, San Marino, Huntington Library, Huntington MS HM 64, Oxford, Bodleian Library MS. Digby 88.
[176] Chardonnens, *Anglo-Saxon Prognostics*, p. 151.

throughout, apart from some technical, Latin texts shows whoever used this manuscript was not an everyday reader of Latin, but knew applied uses,[177] indicating specialist training as a leech or an apothecary. Linguistic choices would have also been partially informed by the availability of the textual material. The complexity of medicinal treatments listed under affected body parts is further evidence this was aimed at medical training, but mainly apothecary skills, not surgery. Even in the section on dentistry the suggested treatments for a range of dental problems are medicines, not extraction. The clear, didactic expression of the material is also redolent of a training course.

National Library of Scotland, Advocates MS 18.6.9 (olim A.6.13)

This manuscript dates from the first half of the fourteenth century and it is the oldest manuscript focused on herbal medicine and apothecary practice in this study. For the purposes of this study, an apothecary text is defined as a text featuring plant or mineral ingredients with information on their preparation and use as medical treatments, rather than just a recipe. Advocates 18.6.9 is a small manuscript with 129 parchment folios, suitable as a portable vade mecum.[178] It is written in bold and clear textura formata book hands with elegant red and blue penflourishing and fine ruling, substantially in French, also Latin for the brontology and professional terminology of the practical medical skills texts, as follow: taking the pulse, Signs of Life and Death (attributed to Galen), and uroscopy.[179] Most of the booklets look commercially produced in their uniformity of script, neat embellishment of initials and headings, and layout. They create a composite medical, herbal guide copied from exemplars. Some booklets are set out in the older, more formal layout of two columns per folio, often to create tables, leaving plenty of space for notetaking which various readers have made use of, suggesting training contexts. There has been cropping of folios, evident in upper and lower margins from f. 49rb, where headings, incipits and explicits have been bisected, making them challenging to read.

The temporal marker for the brontology is the Sun in the signs of the Zodiac. The brontology is placed after a textual grouping focused on the decoction of herbs and concoction of medicines in a specialist medical booklet.[180] In his work on Anglo-Norman medicine, Tony Hunt examines the manuscript's nine books on ailments,[181] grouped by the areas of the body they affect in the manner of Rawlinson C.814 (above).[182] Brontology

[177] See Hunt (2000), pp. 131-147.
[178] the text block measures 148 mm x 94 mm maximum plus slender margins.
[179] ff. 49rb–51rb, 65ra–65rb, 65v–68r.
[180] f. 156r–v, ff. 154v–155r.
[181] Tony Hunt, *Anglo-Norman Medicine: Volume II, Shorter Treatises* (Cambridge, D.S. Brewer, 1997), pp. 131–147 (pp. 131–134).
[182] This chapter, this page, above.

is the only prognostic in Book Nine, which is on conditions affecting the intestines.[183] The other prognostic in the manuscript, on life and death and attributed to Galen, is in Book Two, 'The Eyes'.[184]

The general focus of the manuscript is on medicines and, to support the ailment-body part correlation, there is an extensive glossary of specific herbs and materia medica, with synonyms from Greek to Latin.[185] This considerable store of treatments, cures, and antidotes for poisons (in the *Antidotarium Nicolai* and its tables) gave readers the skills to make up medicines themselves, or offered them a choice of recipes to instruct an apothecary to do so for them. The skill of dosing, or finding the right dose of medicine for each patient, in a text attributed to Walter de Agilon,[186] was vital for safe administration of medicines and their maximum efficacy. The small number of physicians' texts give a medical authority to professional apothecary practice, but given the lack of the humoral texts with which it comes to be associated in the fifteenth century it seems brontology was included as a potential disruptor of treatments, not to achieve a general prognosis for a patient. Finally, despite a clear association with practical, herbal medicine in the last manuscript context this only continues in a small number of later manuscripts in this study.[187] Therefore, it should not be assumed that groupings of herbal lore were the inevitable destination for brontology originating from ecclesiastical miscellanies. Alternative transmission was with medical prognostics in calendar canons, which was the case in Cambridge, CUL MS Dd.6.29 (below) even though it is a largely herbal manuscript.

Oxford, *Summa de accidentibus mundi*[188]

This mid-fourteenth-century work in Latin, by John of Ashenden, is not analysed as a single manuscript context for this study because it was disseminated in several manuscripts, a number of which survive from the late fourteenth to the mid-fifteenth centuries,[189] but not all are complete. Merton College 328 terminates after *Distinctio* 4. The Cambridge manuscript is only the first volume not the complete book and two others are abbreviated copies or edited highlights.[190] This suggests that people were interacting with the manuscript by selecting parts they found useful for copying and adding them to their own manuscript compilations. Also, as it

[183] Ibid., pp. 131, 133; f. 156r–v.
[184] Ibid., p. 132; ff 65ra-rb.
[185] ff. 1ra–1vb, 2r–37v, 38ra–40vb, 40vb–43vb, ff. 69ra–80rb.
[186] f. 59r, De Agilon was a thirteenth-century medical writer who specialised in urinary medicine, menstrual disorders and dosing of medicines, see list of his works, 'Walter Agilon, 13th cent.' in *Medieval Manuscripts in Oxford Libraries*, https://medieval.bodleian.ox.ac.uk/catalog/person_5284076 [last accessed 12 November 2023].
[187] In Chapter 3, St. John's K.49, p. 84, and Digby 95, p. 87; in Chapter 4, Sloane 635, p. 141.
[188] 'Summary of world eventualities'.
[189] In Latin (unless stated otherwise), Bodleian Library MSS; Digby 225, Savile 25, Bodley 714, Bodley 369, Ashmole 396 (in English), Oxford, Merton College Library MS 328, Cambridge, CUL MS Ii.1.27, Cambridge, Trinity College MS O.5.26 (in English), Paris, BnF, Latin 7335, Paris, BnF, nouvelles acquisitions latines 3034, Lyon, Bibliothèque municipale de Lyon 329 (olim Delandine 262), Vatican City, Biblioteca Apostolica Vaticana, Vat.lat.2880.
[190] Bnf 3034 and Lyon 329.

went into print during the study period this increases the difficulty of selecting the most representative copy of the work. Therefore, a good-quality digitised version of the incunable from the University of Bratislava Library was used in order to focus more clearly on the place of the brontology within the textual groupings.[191] The foliation commences with *Distinctio* 1 (page thirteen of the digitisation) as if the pages were manuscript folios recto and verso, i.e. no numbers on the verso.[192] Each *distinctio* is the length of a modern chapter and *capituli* are shorter subsections of them, not chapters in their own right.

Ashenden considers scientific questions, commencing with astrological prognostications and including meteorology and climate science. In the second book, *Distinctio* 7, *Capitulum* 2 is concerned with the effects of thunder, two kinds of lightning and meteors with the incipit *de effectibus tonitrui corruscationis et fulminis*.[193] Hail and lightning are not mentioned in any other brontologies in this study. The *distinctiones* operate as chapters and although '*capitulum*' translates as 'chapter' they are actually smaller subsections of them. After discussing earlier findings of Albertus Magnus that weather phenomena had been studied for the purposes of divination and agriculture in the ancient past, Ashenden offers two brontologies. The first uses the zodiac periods, the second the months of the year, with Ashenden claiming 'Hermes Trismegistos' and 'Leupoldus' as sources, giving full references of the versions of their work to which he had access.[194] The choice of these two figures indicates that Ashenden was arguing for a relationship between weather and astronomy and astrology, at least as something to be taken into consideration. The zodiac-based brontology also has some exotic references, i.e. problems growing wine grapes in valleys in Taurus, creeping creatures in Gemini, and bad oil in Scorpio.[195] In this study, this sort of material often derives from university sources which seems a mixture of post-classical knowledge ultimately derived from the Carolingian world and Islamicate weather texts referencing a warmer climate than Britain's.

The months brontology entries are shorter than the Zodiac ones and quite standard, dealing with abundance of crops, and the political effects of health and food supply problems, with one slightly unusual feature in the July prediction,[196] where apples are mentioned as the fruit predicted to perish that year. The type of fruit is not usually mentioned in this part of the prognostic, but simply called 'crops' or 'fruits,' so this is a small instance of tailoring

[191] With an updated title, John of Ashenden, *Summa astrologiae iudicialis,* Univerzitná knižnica v bratislave (University of Bratislava Library), Item 1, pp. 1–454, http://digitalna.kniznica.info/zoom/68259/view?page=11&p=separate&tool=info&view=0,0,600,673 [last accessed 3 Jun 2024].
[192] The Contents Table, *Tabula huius operis* has no foliation but is on page 11 of the digitisation.
[193] 'On the effects of thunder and lightning,' f. 145r (digitisation p. 299).
[194] See f. 145v, *Hermetica* were philosophical writings supposedly by mythical figure 'Hermes Trismegistos', stemming from Greek culture which included topcis such as astrology and natural science. 'Leupoldus' is Leopold of Austria, thirteenth-century writer of *Compilatio de astrorum scientia*.
[195] f. 145v (digitisation p. 299). See Table 2 for other examples of this, Chapter 4, p. 178.
[196] f. 146r (digitisation p. 301).

the text to the needs of the compiler which becomes increasingly common through the study, in this case it is likely that they lived in an area of orchards and cider-making. The significance of the two brontologies lies in how different the entries are of the ones based on months from those of the zodiac-based versions, sometimes diametrically opposed. For example, since Cancer covers, approximately, the last week of June and the first three of July it equates very roughly to June and July. The thunder prognostic from Cancer is, 'there will be famine among the people and agitation, also locusts will destroy the fruits of the earth,'[197] from June it is 'a supply of grain,'[198] from July, 'a good harvest, except for apples'.[199] The best explanation for these distinctions is that they apply to different climatic regions and, therefore, represent not only different sources, some of them potentially from as far south as North Africa (via Islamicate learning), but that scribes were sharing their individual experiences of thunder and its effects with their audience.

After the brontologies, Ashenden further investigates the mechanism of weather events in another long text in *Capitulae* 3 to 7. This expounds the relationship between thunder, lightning and the activity of the major luminaries, plus planetary conjunctions, oppositions and eclipses. Eclipses were considered for their effects on the weather and wider relationships to things like planetary conjunctions. The use of comparative sources is part of Ashenden's academic methodology. This approach is next seen in this study in the set of urology texts in Rawlinson D.238 (below)[200] and becomes more frequent in later corpus manuscripts in applied prognostics and astrological medicine such as health regimens based on planetary effects on the humours of the body. Ashenden continues to assess the effects of thunder and lightning in *Capitulum 3* where they are examined in association with the major luminaries, their conjunctions and eclipses.[201] This treatment of brontology as an aid to astrological prognostics helps to explain the texts' later popularity in the didactic, medical contexts of the manuscripts in Chapters Three and Four.

London, British Library, Egerton MS 2852

This is a good-quality textbook manuscript from the second half of the fourteenth century.[202] It has 129 parchment folios written in a neat hand using book hand quadrata elements for headings; and various coloured inks for initials, predominantly red and green. It is certainly a candidate for commercial production. The folio edges were treated with gold powder, much of which remains, so originally it must have been applied generously, but this was not necessarily in the Middle Ages. The stamped bindings are medieval, they are similar to an Oxford

[197] '*erit fames hominum et commotio, locuste quoque fructus terrae vastabunt*,' f. 145v (digitisation p. 300).
[198] '*frugum copiam*,' f. 146r (digitisation p. 301).
[199] '*annonae bonum, sed fructus pomorum*,' f. 146r (digitisation p. 301).
[200] Chapter 2, p. 51.
[201] f. 146r (digitisation p. 301).
[202] Measuring 209 mm x 150 mm.

example from the 1470s.[203] They were later preserved and reapplied when the manuscript was rebacked, possibly when acquired by James Johnstone (proprietor of *The Standard* newspaper) in the nineteenth century.[204] French continues to be used, but in Egerton 2852 it is now intermingled with English and Latin.[205] In instructive manuscripts like this one, the use of French relates to the availability of the sources used as much as the linguistic abilities of the compiler, but it also takes for granted that the readers could understand the languages of the chosen texts, otherwise a translation would have been made. Most texts in Egerton 2852 feature the day-to-day skills of practical medicine, the following texts in particular: over two hundred and fifty recipes, miraculous waters, urology, gynaecology, and animal and plant lore, including dyeing. Despite this very practical bent there is also an uncommon, unattributed, scholarly work on magnetism, which the British Library catalogue cites as that of Petrus Peregrinus de Maharncuria,[206] a thirteenth-century, French army engineer, due to similarities with the printed version of his work. The magnetism text also crops up later in this study in Oxford, Bodleian Library MS. Digby 75, with similar instructive texts. An ecclesiastical connection is seen in a text attributed to St. Bernard, towards the end of the manuscript, with directions for performing mass on each day of the week.[207]

A textual grouping of recipes, a health regimen, the earliest example in this study of a Sphere of Life and Death (called *Spera Pintagoria*),[208] and prognostics places brontology (in Latin) first. 'Spheres' were medical prognostics, commonly circular diagrams as the name suggests, which used the letters of a person's name to generate a number, then found in the diagram to determine a binary outcome of survival of their illness, when treatment would be appropriate, or decline, when it would be futile.[209] The 'Sphere' in Egerton 2852 is unusual, neither circular in form or binary in outcome but a developed form of the text, its extended descriptions useful for medical applications like treatments and health regimens. In addition to practical treatments, there is a strong focus on the maintenance of health in Egerton 2852, with three different health regimens supplied, two in Latin and one in English, all carried out with an astrological medical methodology and supported by prognostics.[210]

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[203] see 'Book Bindings,' University of Nottingham, Manuscripts and Special Collections, https://www.nottingham.ac.uk/manuscriptsandspecialcollections/researchguidance/medievalbooks/binding.aspx [last accessed 28 May 2024].

[204] See 'Eg. 2852,' *Catalogue of Additions to the Manuscripts in the British Museum in the years* MDCCCC-MDCCCCV (London, William Clowes and Sons, 1907), p. 395.

[205] See Päivi Pahta and Irma Taavitsainen on multilingualism in scientific and medical manuscripts and the shift towards English from the end of the fourteenth century, 'Vernacularisation of scientific and medical writing in its sociohistorical context,' in Irma Taavitsainen and Päivi Pahta (eds.) *Medical and Scientific Writing in Late Medieval English* (Cambridge, CUP, 2004), pp. 1–22 (pp. 11–12).

[206] Modern-day Maricourt, formerly in Flanders.

[207] f. 115r.

[208] This is an attribution to Pythagoras.

[209] See Joanne Edge, 'Licit medicine or 'Pythagorean necromancy'? The 'Sphere of Life and Death' in late medieval England,' *Historical Research*, Vol. 87, issue 238 (Nov 2014), pp. 611–632 (pp. 612–613).

[210] Applied to bloodletting, ff. 100v–101r.

For example, the brontology incipit, *Ab octo ydus Febr. usque in viii May augentur humores*[211] puts thunder prognostics in the context of humoral activity.

The mass directions beg the question of whether the manuscript compiler had a priestly identity, but since the bulk of the material in the manuscript is so practical this does not suggest a priest who had studied medicine, but a medic who had achieved holy orders during the course of his studies, i.e. at a university. Suffice to say that they could perform a mass if required but their main concerns were practical and scientific. Another hint of an ecclesiastical background comes from a text expounding the influence of the moon on tides and shell growth,[212] because this is presented as a defence of astrology in showing tangible physical evidence of lunar influences in the world.

Oxford, Bodleian Library MS. Rawlinson D.939

This manuscript also dates from the second half of the fourteenth century and it is the earliest example of a folding manuscript in this study. The surviving 'concertina-fold' manuscripts of this type in eTKeVK2 are all English.[213] Carey's study corpus of twenty-nine folding manuscripts (twenty-seven of which are without brontology) are all mid-fifteenth-century, the earliest is ca. 1430.[214] Folding manuscripts with brontology (and other prognostics) start earlier, are richer and more learned in content, and made of better-quality materials than many of Carey's examples. The study folding manuscripts carry on into the fifteenth century, in general as specialist almanacs for physicians. There are also two extensive manuscripts of the 'leper's clapper' type in this study,[215] full of astronomical charts, for suspension from girdles or belts where, once opened, they fanned out like the clappers or rattles carried by lepers to warn people of their presence.[216] The relative earliness of all the study folding manuscripts puts them closer to learned sources. Rawlinson D.939 is formed of six small,[217] parchment folios folded in different ratios to create rectangular panels, or compartments, ranging from one to ten per folio, depending on which parts are unfolded, see Figures One and Two (below) for examples of one compartment and seven compartments.

[211] 'from the eighth day of February until the eighth of May fluids increase', f. 109r.
[212] f. 129r.
[213] Sarah Griffin, Megan C. McNamee and Kathleen Doyle are currently preparing a catalogue of all European concertina-fold almanacs, *Concertina-Fold Almanacs: A Catalogue* [expected completion 2024].
[214] Carey (2003), pp. 505, 507.
[215] Oxford, Bodleian Library MS. Ashmole 6 and London, British Library, Additional MS 28725.
[216] See Alexandre Tur, 'From Computus Material to Preacher's Toolbox: Manufacturing a Bat-Book Almanac in the Fifteenth Century' *Brepols online* (2016), pp. 143–198 (p. 143), https://www.brepolsonline.net/doi/pdf/10.1484/M.ALFA.5.124926 [last accessed 11Dec 2023].
[217] 140 mm x 110 mm.

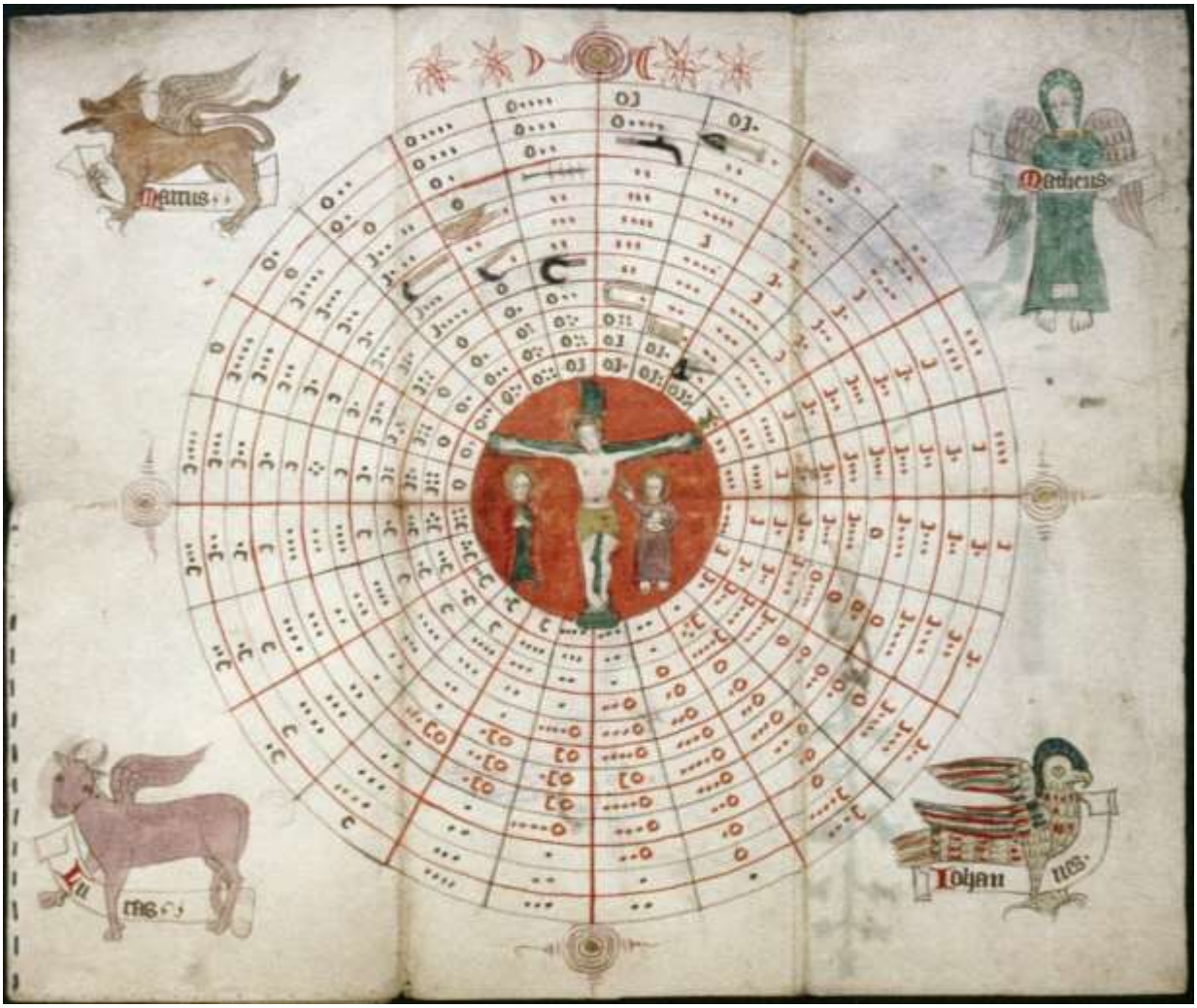

Figure 1 Oxford, Bodleian Library MS. Rawlinson D.939

Figure 2 Oxford, Bodleian Library MS. Rawlinson D.939
Photo: © Bodleian Libraries, University of Oxford CC-BY-NC 4.0

The texts are in Latin and English and include: a calendar of saints' feast days, prognostic from the planetary influences when the Sun is in each sign of the Zodiac,[218] Occupations of the Months text, effects of the seven planets on the body, and brontology, all illustrated using small pictograms. There are several, artistic biblical tableaux in addition to these pictograms. Crucified Christ occupies the centre of a planetary sphere chart on a whole folio divided into the twenty-four hours of the day and night,[219] with symbols of the Four Evangelists at the corners. The pictograms for the brontology portray the effects of the prognostications,[220] for example, in April a group of hooded faces shown in various stages of collapse represent '*mortem iniquorum hominum*,'[221] and in December, an embracing couple represent '*concordiam in populo*'.[222]

[218] Item 2 in the Bodleian catalogue entry, it predicts events when the Sun is in a particular sign of the Zodiac.
[219] Fig. 1, p. 43.
[220] See Hunt's edition of the text (2013), pp. 224–228.
[221] 'death of wicked men,' see Fig. 3, p. 45.
[222] 'peace among the people'.

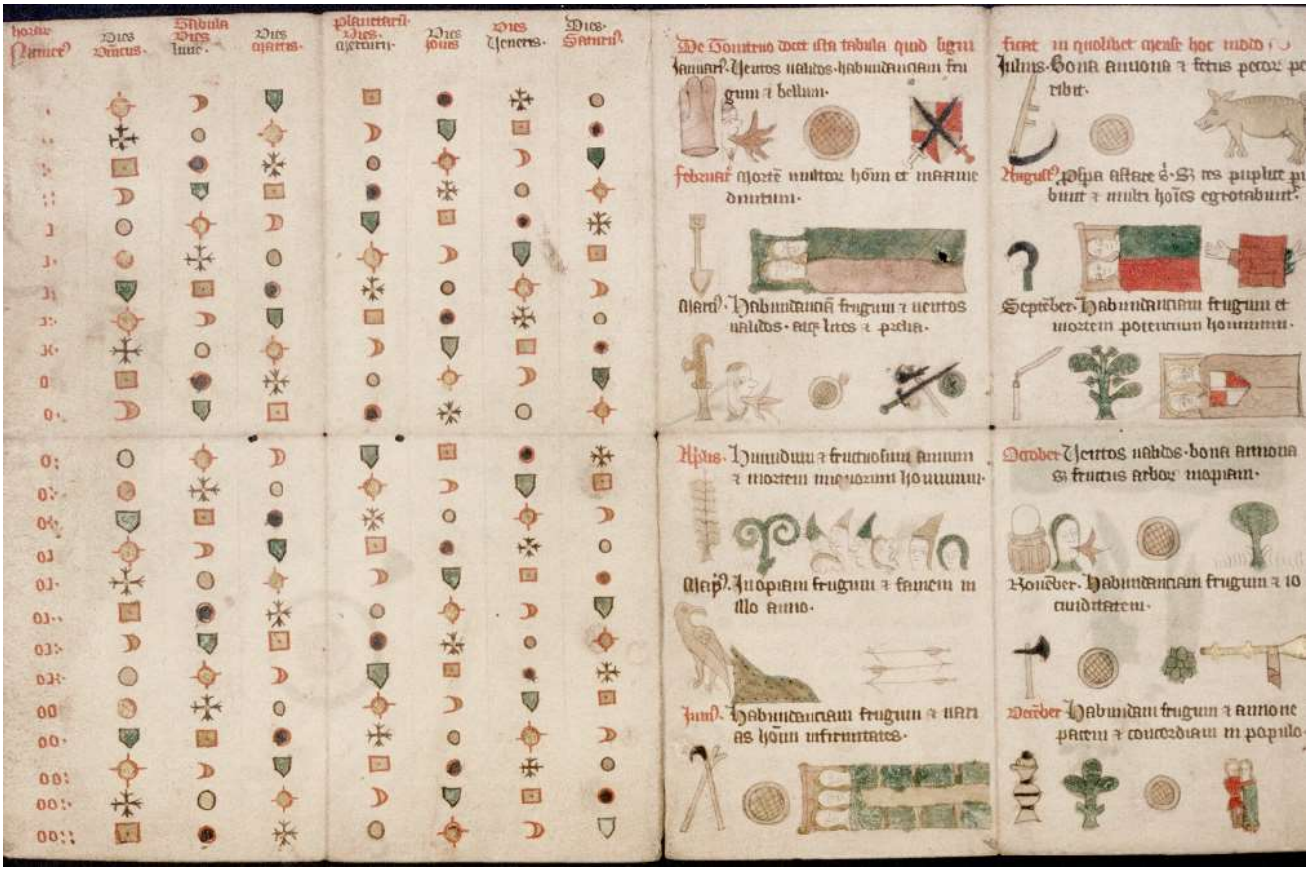

Figure 3 Oxford, Bodleian Library MS. Rawlinson D.939
Photo: © Bodleian Libraries, University of Oxford CC-BY-NC 4.0

These are to be used in conjunction with the symbols of both the Occupations of the Months and the planetary hours chart to the left of the brontology, see the special, forked pruning mitten for January's occupation and spade for February (for preparing the ground for planting) and so on, see Figure 3. This shows, on days when each of the planets are dominant, the hours they are at their strongest and the same for all the other planets, by means of symbols. For example, in the case of the Sun, in the first column, this is the first, eighth, fifteenth and twenty-first hours.

St. Frideswide, the late-medieval patron saint of Oxford, appears in the calendar, indicating an Oxford origin or interest, and also St. Maur, as the first disciple of St. Benedict he represents an affiliation to Benedictinism,[223] raising the question of whether the manuscript was associated with any of the three Benedictine colleges in fifteenth-century Oxford.[224] This is not definite evidence of the manuscript's origin in Oxford, as saints' cults often spread eccentrically, subject to the vagaries of aristocratic or guild patronage and links between religious

[223] St. Maurus, 'Maur' is the French form of the name.
[224] Gloucester College, Durham College or Canterbury College.

houses.[225] The quality of Rawlinson D.939 is quite luxurious, all folios are fully illustrated and gold and silver are widely used for illumination. The precious metals were applied equally to sacred (saints' nimbuses) and mundane images (bedknobs, spades), signifying a secular manuscript in that they were intended to enhance it aesthetically and not only with regard to holy subjects.[226] Although this makes the manuscript seem like a decorative item, a mirror-image (as it was pressed on both sides of the folio as it was closed), brownish-red stain in Section One, recto and a similar, smaller one (Section Three, verso)[227] look very much like imprinted splashes of blood and there are other examples of this in the study.[228] If they are bloodstains, they show the manuscripts were being used for bloodletting, either medically or as an ascetic, monastic practice, or another invasive procedure.

Cambridge, CUL MS Dd.6.29

This manuscript is an example of a small vade mecum,[229] slimmer than Advocates 18.6.9 and with 90 folios. Although most of the manuscript dates to the fifteenth century, the calendar is late-fourteenth century and contemporary with Oxford, Bodleian Library MS, Rawlinson D.238 (below).[230] CUL Dd.6.29 is the earliest example of brontology entered into the calendar folios in this study forming a part of, what the early cataloguer terms, 'an almanack'.[231] In the case of CUL Dd.6.29, this Almanac booklet offers the following useful information for practising astrological medicine; 'columns for 4 cycles of oppositions and conjunctions, also the place of the Sun in the Zodiack, time of rising, &c. for every day. The fly-leaf contains a figure displaying the influences of the signs of the Zodiack on the human body'.[232] As the first thing to be seen on opening, the Zodiac Man seems to be advertising the book as that of a doctor. It includes Latin text on the dangers of opening veins in each area of the body during each zodiac period, whose signs are marked on the body.

[225] See, for example, the rise in popularity and royal patronage of local saint St. John of Beverley, Susan E. Wilson, *The Life and After-Life of St. John of Beverley: The Evolution of the Cult of an Anglo-Saxon Saint* (Aldershot, Ashgate, 2006), pp. 1–2.
[226] e.g. section 1, verso; section 2a, recto; section 4, verso.
[227] The first is on Gabriel's banner, the impression is to the right of the lily plant.
[228] Also found in London, British Library, Egerton MS 2724, and Oxford, Bodleian Library MS. Bodley 591, pp. 68, 86. An investigation has begun by three researchers, Alberto Campagnolo (US Library of Congress, Washington, DC), Erin Connolly (University of Pennsylvania), Heather Wacha (University of Wisconsin), called the 'Library of Stains' project, into technologies for identifying stains on medieval manuscript folios. Their findings are reported in a blog '*Labeculae Vivae*: Stains Alive,' https://labeculaevivae.wordpress.com/about/ [last accessed 11 Dec 2023].
[229] 197 mm x 140 mm
[230] This chapter, p. 49.
[231] Hardwick and Luard, *A catalogue of the manuscripts preserved in the library of the University of Cambridge*, p. 300, Item 346, this refers to ff. 1–13.
[232] Ibid.

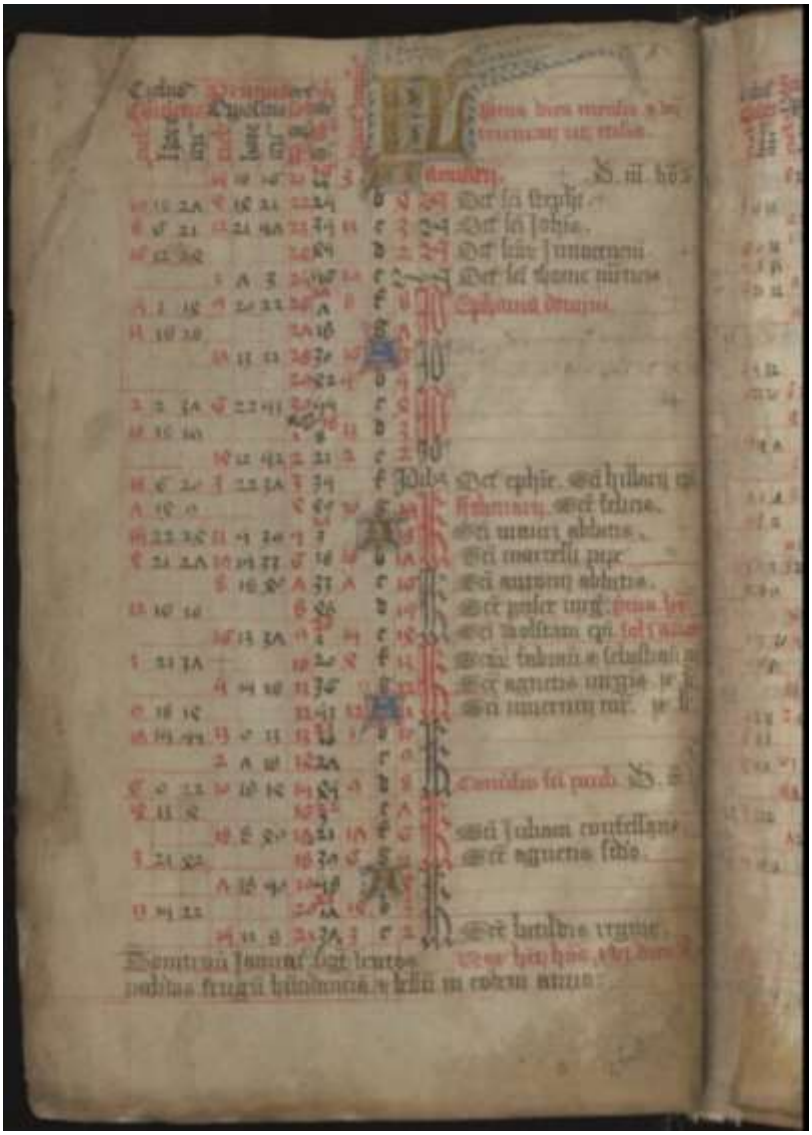

Figure 4 Cambridge University Library MS Dd.6.29, folio 2v

The calendar is well-executed, the 'KL' for 'kalends' for each month and some of the large initials are finished in goldwork and red and blue ink and penflourishing is also employed. The brontology is the second prognostic in the calendar; the first is perilous days in the month (defined by M.R. James as *Versus Egyptiaci*, also known as the 'Egyptian Days'),[233] in red ink at the top of each folio. The brontology is entered at the bottom of the folios in Latin, in black ink in the same hand as the rest of the calendar and tailored to fit over two lines, see Figure 4 (above). The placement of the brontology within the calendar aligns it to the activities of the month, warning of

[233] M.R. James, 'Unpublished description by M.R. James of Cambridge, University Library, MS Dd.6.29 (medical treatises),' University of Cambridge, https://doi.org/10.17863/CAM.68160 [last accessed 25 Feb 2023].

potential problems should there be thunder, whilst noting generally perilous days as outlined in the Egyptian Days.

Although CUL Dd.6.29 and Rawlinson D.238 belong to the fourteenth century, the placing of brontology in calendar folios is not an exclusively early practice in the study, there are two other study examples, one earlier fifteenth century and one later.[234] However, the two earlier examples are evidence of an interweaving of brontology with calendars which may have ensured their survival during church reforms, albeit in a very few cases and unique textual examples at that.[235] In other contemporary manuscripts, the perils in calendars to guard against are not meteorological, but versions of the Egyptian Verses in informing of days affected by planetary influences, most commonly those of the powerful new moon and the advisability of bloodletting. It should be noted that brontology brings a different aspect to prognostication from this; although it is described in this study as a disruptor this is not necessarily in a negative sense, many predicted political success, abundant harvests and good voyages. It was a question of applying what thunder was communicating as an overlay to what had already been predicted for the year by other means.

In terms of use, the grouping of brontology within the calendar means it was not directly linked to medical canons (i.e. as a prognostic aid to treatment) or had a special relationship to the moon. This evidence is echoed by many study contexts where brontology has a closer association with the humours (through the dispositions or complexions of the signs of the Zodiac) than with lunar activity, which are examined through this chapter and the two following. John Somer and Nicholas de Lynn's calendars were produced around the same time as the booklet with brontology in CUL Dd.6.29. However, De Lynn's are simple dominical letters and moveable feasts,[236] unlike Somer's applied ones of moveable feasts, dispositions of the zodiac signs and corresponding influences on people through the humours. Suffice to say that since it is substantially different in content from Rawlinson D.238 there were probably later influences, but even if it was derived from Somer's calendar, CUL Dd.6.29 was not concerned with the dispositions of the signs for medicine when consulting the calendar, other than those the two prognostics could provide. There is no further astrological medicine either, only recipes, several uroscopy texts, and a medical prognostic based on aetiology attributed to Hippocrates (*Ypocras*).[237]

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[234] Aberdeen, Aberdeen University MS 272, Chapter 3, p. 72, and London, British Library, Additional 28725, Chapter 4, p. 137.
[235] See Table 3, pp. 192, 194, 195, 197, 199, 200, 201 for textual differences between the two brontologies.
[236] See Hunt, 'The Dominical letter is used in liturgical calendars to denote the Sundays in a particular year. In accordance with Greco-Roman calculations of the seven possible relationships of the days of the week to the calendar of the year, the letters A-G were allotted to the seven days of any of the 52 seven-day cycles of the full year beginning with January 1. So, the Dominical letter occurs in the first Sunday of the first cycle. Thus, a year that begins on a Monday receives the Dominical letter G on Sunday January 7' (2013), p. 246.
[237] ff. 30r–32v.

Oxford, Bodleian Library MS. Rawlinson D.238

This manuscript is a narrow, pocket-sized volume of the late fourteenth century,[238] with 58 parchment folios. It is a good-quality reference guide written in a bold, Gothic book hand with some Anglicana features, embellished in places with decorative initials and carets in red or blue ink and elaborate rulings. Some of it is missing, as noted by an earlier cataloguer who states on the current folio 58r that there were '66 leaves' at the time of cataloguing. Since folio 58r is the explicit of the whole book, the missing folios must have been taken from an earlier part of the manuscript. Rawlinson D.238 is the second of two early, contemporary examples of manuscripts with brontology written in calendar folios, in this study, see Figure 5 (below).[239] A reference to a feast, '*Dedicacio ecclesie fratrum Couent*'[240] was added to the calendar for October Fourteenth.

The first texts in the manuscript, in Latin, are on the zodiac signs' effects, specifically on the four temperaments of the human body, directing the reader into an exposition of humoral theory.[241] The accompanying planetary influences tables, allowing the reader to look up the effects at a glance, are described as *tabula docens*, or 'teaching tables,' attributed to John Walter of Winchester and based on the meridian at Oxford.[242] Scholarly attributions like this are often just that, an authority handed down from one copier to the next to enhance the status of the text in the reader's eyes, but, at the least, they show the compiler's aspiration to present the material in an educational framework. The brontology text in Rawlinson D.238 is prominently placed as the first piece of text at the top of each month's calendar entry, unlike CUL Dd.6.29 (above).[243] As Figure 6 shows, the brontology is the only prognostic continuing on each folio through the calendar, apart from December which is missing. The calendar is a copy of John Somer's[244] and after this the manuscript compiler moves on to practical, medical matters with two urological treatises,[245] the second attributed to 'Ricardus Anglicus'. The likely candidate for this source was Ricardus, or Richard 'of England' (it is assumed he was so-called when he travelled or worked elsewhere), a medical doctor in holy orders at the end of the twelfth century and the author of a theoretical medical

[238] 175 mm x 120 mm.
[239] This chapter, p. 50, Fig. 5.
[240] 'the Dedication of the Friars' Church at Coventry'.
[241] ff. 1r–1v
[242] f. 2r
[243] This chapter, p. 47, Fig. 4.
[244] ff. 15r–25r.
[245] ff. 29r–40r.

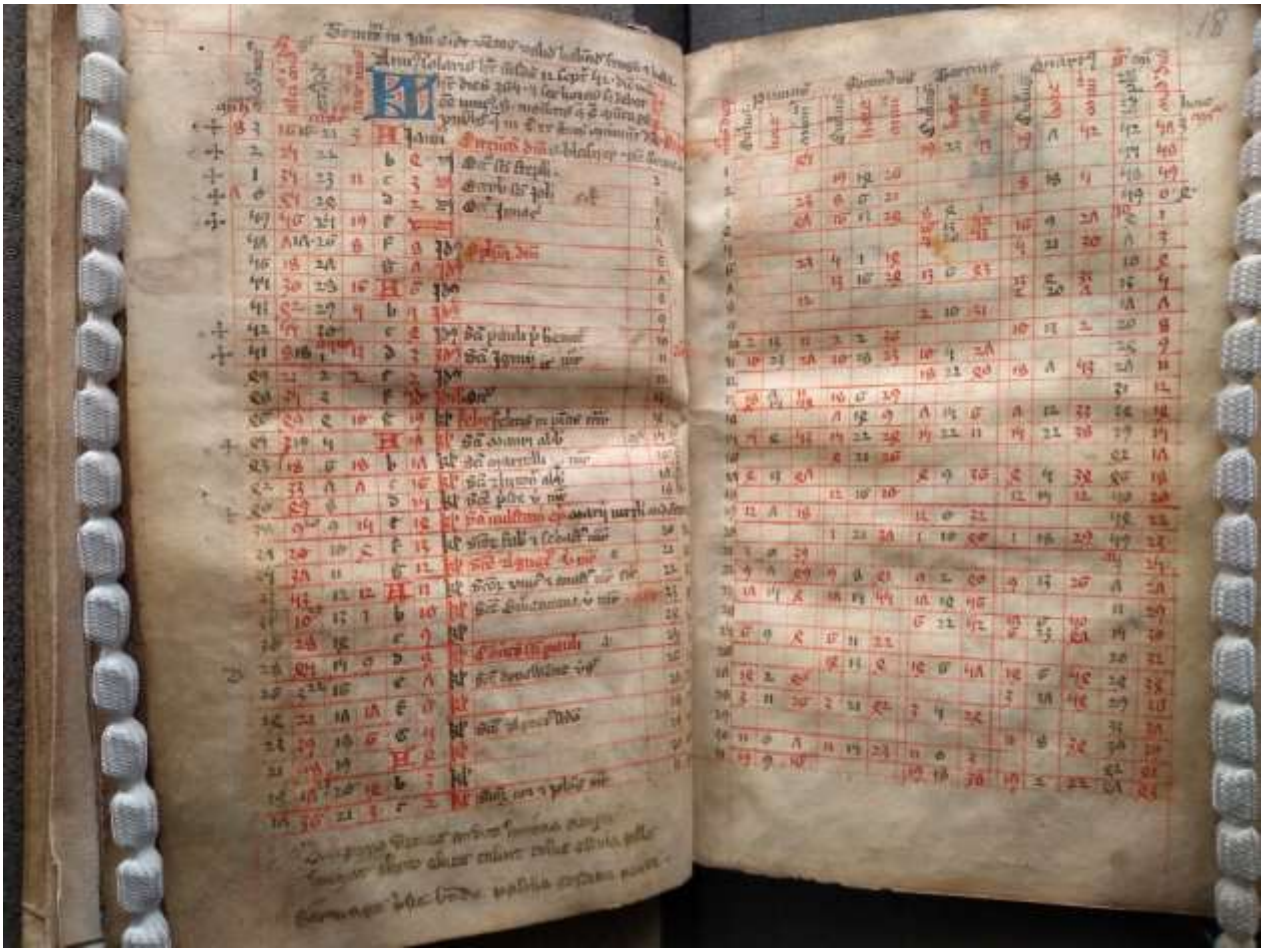

Figure 5, Oxford, Bodleian Library MS. Rawlinson D.238, f. 17v
own photograph with permission of The Bodleian Library

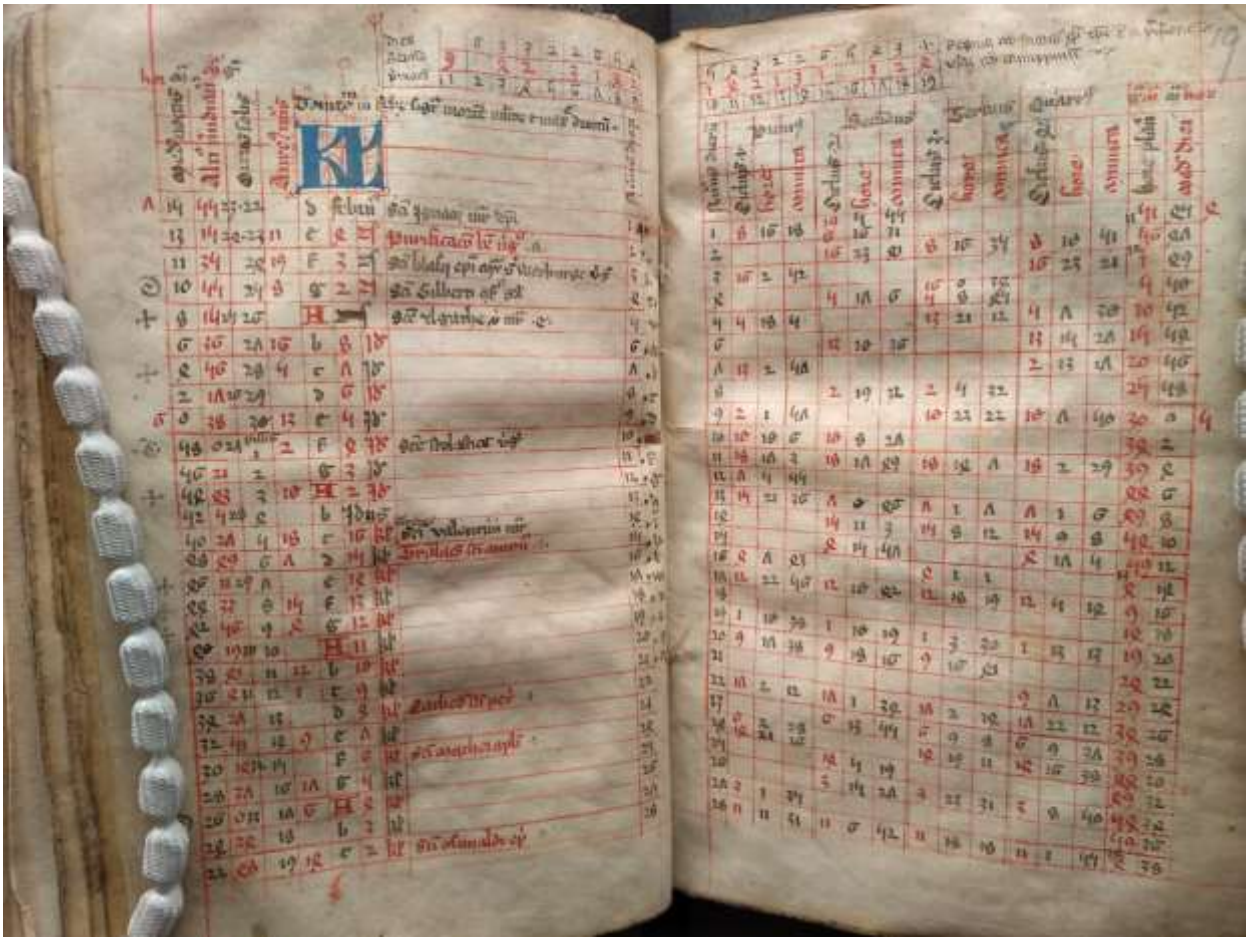

Figure 6 Oxford, Bodleian Library MS. Rawlinson D.238, f. 18v
own photograph with permission of The Bodleian Library

compendium, *Micrologus*.[246] The choice of urology texts indicates a medical education context, where the texts are compared to make teaching points.[247] This is the first instance of a considerable amount of multiple texts appearing throughout the study, including brontologies, see Chart 1 (below) for the relative increase in brontologies and in manuscript witnesses.[248] The next two items in the grouping are didactic, further supporting this sort of educational application: a glossary of words from the books of the Bible, and the preface to a health regimen treatise (attributed to Jacob of Toledo) describing the Sun's movements into zodiac constellations.[249] Jacob of

[246] The author of *Micrologus* is distinguished from Richard of Wendover by Faye Getz, 'Wendover, Richard of (d. 1252)', ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/23521 [last accessed 11 Dec 2023].
[247] ff. 29r–40r, 47r–48v, Carole Rawcliffe describes uroscopy as 'one of the principal diagnostic tools employed by the medieval *medicus*' and a popular and discreet form of examination via a liquid which it was believed could express the balance of all the humours without having to examine the body itself, in *Medicine & Society in Later Medieval England* (Sandpiper, London, 1995), pp. 46, 49.
[248] This chapter, p. 52.
[249] '*Liber de conservacione sanitatis a Ma[gistro] Ja. Tol. compositus*'. Ja'aqõb Ben-Ãšêr (Jacob ben Asher), a scholar also known as Jacob of Toledo, died ca. 1343, wrote principally on rabbinic law earning him the title *Ba'al ha-Turim* (Master of the Columns). The connection to this health regimen text comes from his writing on the works of Moses ben Maimon (aka Maimonides) which included two health

Toledo, like Ricardus Anglicus, is another common name in medieval manuscripts due to the importance of Toledo as a centre of medical learning; this does inject an element of Islamicate learning into the volume.

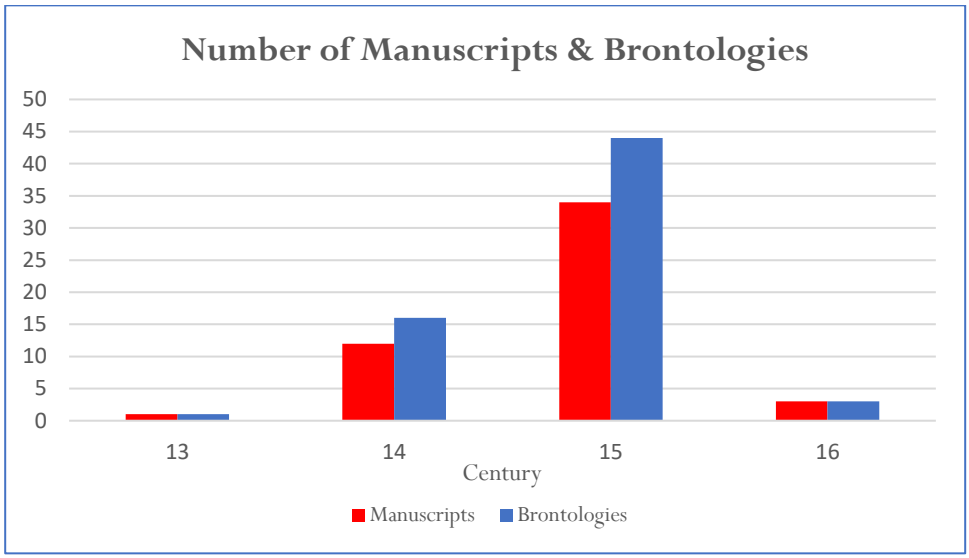

Chart 1 showing the increase in manuscript witnesses over the study period and brontologies, per century.

Once again, as in CUL Dd.6.29 due to its location in the calendar the Rawlinson D.238 brontology does not correspond directly with the didactic parts of the manuscript, but consideration of the Zodiac has crept into the text with the heading *Arias* ('Aries') for March. This shows the brontology being thought of in zodiac periods as well as calendar months. So far in this chapter there has been no strong bias for either choice, it really seems to be a personal, or institutional, preference. The *Tabula docens*[250] accompanying the calendar progresses brontology from a weather, health and politics prediction for a calendar of church events to an application to humoral theory, via the seasonality expounded in that. For example, if a certain illness is predicted in the brontology, the *Tabula* can be consulted for precise information about the bodily humours which will be most affected. If the illness is a cough (often predicted in brontologies from February that year), a practitioner (a medic or an astrologer) could deduce the type of cough due to the type and strength of planetary influences on the bodily humour of phlegm. If the influences are pronounced this will be a productive cough, if not, a dry one and the practitioner could adjust treatment and regimen advice accordingly.

regimens, see Ariel Bar-Sela, Hebbel E. Hoff, Elias Faris, 'Moses Maimonides' Two Treatises on the Regimen of Health: Fī Tadbīr al-Sihhah and Maqālah fi Bayān Ba'd al-A'rād wa-al-Jawāb 'anhā' *Transactions of the American Philosophical Society* (1964), Vol. 54, No. 4, pp. 3–50.

[250] 'teaching table'.

The grouping of texts with the calendar in Rawlinson D.238 was very current, and not only contemporary with, but resembling, that in John Somer's calendar of 1380: calendar, moveable feasts, and dispositions (of the zodiac signs and then, correspondingly, of people) caused by planetary influences on the humours, for example, *De aspectibus planetarum*.[251] As the only prognostic in the manuscript, apart from the simple St. Paul's Day weather prediction,[252] the brontology in Rawlinson D.238 is defining a place in a system of prognosis, unlike early-medieval prognostic sections, or collections. Since St. Paul represents changeability, due to his religious conversion on the road to Damascus, his feast is at the beginning of the new year, setting the tone for the year ahead. Despite both being concerned with the weather, the Saint Paul's Day prognostic is seldom found with brontologies, there are only three other examples in the study corpus. This suggests it was a hanger-on from settings where there was a particular Pauline tradition or connection, organised with other weather texts within such manuscripts. Rawlinson D.238 is a more theoretical book than CUL Dd.6.29, with plenty of astrological medical reference texts possibly stemming from an origin in a Franciscan teaching environment, if the prominent church dedication in the calendar relates to this. These are consolidated in the health regimen at the end of the manuscript,[253] taking the reader forward to not only the treatment of ailments, but the maintenance of health. This shows that just because brontology is used in a calendar it is not always in the same way, but relates to individual organisation of medical craft and practice. It is also important to remember that in the case of these two manuscripts, the associated texts are contemporaneous in Rawlinson D.238, but much of the non-astrological, practical medical material in CUL Dd.6.29 is from at least a decade or two later.

Oxford, Bodleian Library MS. Ashmole 345

This is another example of a small, late-fourteenth century manuscript vade mecum, marginally bigger than Rawlinson D.238,[254] with 80 parchment folios and a sixteenth-century printed book of the work of *Doctoris Magistri Raymundi Lull*.[255] It was once part of Digby's collection, then acquired by Elias Ashmole.[256] There is modest decoration of rubrication and rectangular frames for the text blocks. Three main hands are present.[257] The second part of the book, which culminates with the brontology textual grouping (in Latin), cites *flores*

[251] f. 29r

[252] f. 46r, the prognostic was from the day celebrating the Conversion of St. Paul (25th January), it also appears in Sloane 2584, Bodley 591 and Longleat 176, where it directly precedes the brontology.

[253] ff. 49r–58r.

[254] 180 mm x 130 mm.

[255] f. 1r, it was printed in London in 1514, edited by Berardi de Lavinbeta, '*In Artibus in Theologia magistrum*' (f. 32v). Ramon Llull from Majorca wrote a philosophical work, '*Art*,' of which this is the abbreviated version of 1308, see Anthony Bonner, *The Art and Logic of Ramon Llull: A User's Guide* (Leiden, Brill, 2007), pp. 9, 121–122.

[256] Digby's name is on f. 1r.

[257] To f. 38v, then to f. 69v, from f. 69v to f. 80v.

Albumazar de eclectioni(bus)[258] and the final part of the book is on astrological medicine. The textual focus is learned astrology and planetary influences, especially the brontology textual grouping made up of the following:

- *De speris (partibus anni et complexionibus)*, f. 63v
- *Disticha quatuor*, f. 64r
- *De signis in quibus dominantur*, f. 64r
- *De effectu et effic(ac)ia planetarum. Materia huius libelli est effectus et efficacia lune et aliorum planetarum*, ff. 64r – 64v
- *Quid planete agant in climatibus signorum*, ff. 64v-65r
- *Prognostica de annona*, ff. 65r-65v
- *Signa temporum ·i· serenitatis et tempestatis sumuntur a sole et luna*, f. 66r
- **De significationibus tonitrui*, f. 66v
- *Quid faces ardentes significant in celo*, ff. 67r
- *Quatuor venti*, f. 67v
- *Supputaciones kalendarum sive prognostica secundum*, f. 68r
- *Prognostica secundum literas dominicales*, f. 68v
- *Supputatio per diem natalem Domini*, f. 69r
- *Prognostica per ventum*, f. 69r

My translation:

- On the Sphere (part years and complexions)
- Four distiches
- On the signs in which they (the planets) dominate
- On the effects and efficacy of the planets. The subject of this book is the effects and efficacy of the Moon and the other planets
- What a planet does to the climates of the signs
- Food prognostic
- The signs of seasons, 1. Calm and storm come from the Sun and Moon
- On the signs of thunder
- What the burning lights in heaven mean
- The four winds
- According to calendrical or prognostic calculations
- Prognosis according to dominical letters
- Calculation of the Nativity of The Lord
- Prognosis by the wind.

[258] f. 47r, 'the flowers (or blossoming, i.e. of thought) of Albumazar on elections'. Abū Maʿshar Jaʿfar ibn Muḥammad ibn ʿUmar al-Balkhī (Latin version 'Albumazar' and similar) was an astrologer working in Baghdad in the ninth century, see James Herschel Holden (ed. and trans.), '*Liber Florum*,' in *Five Medieval Astrologers: An Astrological Miscellany* (Arizona, Tempe, American Federation of Astrologers, 2008), pp. 13–66.

As in other manuscripts in this study,[259] the wind prognostic is late in the grouping and therefore does not relate to *De significationibus tonitrui*, consisting of three Latin brontologies which have been edited by Tony Hunt.[260] The first of these is by the months, the second by hours of the day, standard and non-standard, i.e. it includes '*Si cantu galli*,' 'if (it thunders) at cock-crow' (dawn). Cardinal directions are included in the final two entries of the second brontology:

> '*Si hora nona ab aquilone vel a summo celi tonaverit…*'[261]
>
> '*Si hora decima ab oriente tonaverit…*'[262]

also, the first two, and fourth, entries of the third brontology which is another months-based one:

> '*Si tonaverit mense januarii ab occidente, pruritus hominem; si a meridie, clades erit in vulgo; si ab aquilone grandines erunt et auferunt fructus terre*,'[263]
>
> '*Si mense februario ab occidente, lues et clades hominum*,'[264] '*Si in aprili a meridie, naves in mari periclitabuntur, belue maris ad terram deicientur*.'[265]

This is an early form of the compounding of brontology with other prognostic material which becomes more prevalent by the end of the fourteenth and into the fifteenth century.

London, British Library, Sloane MS 2584

This is a small,[266] well-composed, varied composite manuscript of one hundred and 117 parchment folios from the fourteenth and fifteenth centuries. It is very portable and suitable as a vade mecum and the texts are on medicine and related subjects, with a large number of recipes, like Egerton 2852.[267] It would be easy for the user to search up references, unlike some of the personal workbooks in this study,[268] as there is very clear ruling and layout and the quality of execution of the textura book hand script is high. The ink used is very dark in general, a sign of good quality, and there is rubrication of headings as a finding aid. Folio 1 is very rubbed, in contrast to the rest, causing loss of colour of the ink and clarity of the letters. It is presumed that this is because there was no hard cover and the book was kept in a pocket or travelling slipcase, further supporting the case for a vade mecum. It is

[259] Such separation is seen in, this chapter: London, British Library, Sloane MS 2584, p. 57, London, British Library, Sloane MS 282, p. 61, and Chapter 3, Oxford, Bodleian Library MS. Ashmole 6, pp. 74–75, all of which also have large groupings of learned texts.
[260] Hunt (2013), pp. 222–224.
[261] 'If at the ninth hour it thunders from the North, or high in the sky…'.
[262] 'If at the tenth hour it thunders from the East…'.
[263] 'If it thunders in the month of January from the West, men will itch; if from the South, there will be a general disaster; if from the North, there will be hail which will destroy the fruits of the earth'.
[264] 'If (it thunders) in the month of February from the West, woe and disaster on men.'.
[265] 'If (it thunders) in April from the South, ships at sea will be endangered, beasts of the sea (whales) will be cast on to land.'.
[266] 155 mm x 115 mm.
[267] This chapter, p. 41.
[268] Cambridge, St. John's College MS K.49, for example.

a practical and didactic, pocket-sized manuscript written predominantly in English, with a months brontology placed shortly before technical, astrological medical texts and a travel prognostic based on zodiac periods.[269] This grouping includes an unusual experimental text (experimental in the sense of practically applied) on medicinal uses of snakeskin which seems to have been circulating where compilers had access to university material. This text was noted in three English manuscripts, and thirteen from mainland Europe by J. Johnsson early last century.[270] In the course of this current study four other, later English examples were found,[271] representing a significant, if niche, survival of the text within late-medieval astrological medical manuscripts. The example in Sloane 2584 specifies that the treatment is for ear disease, the snake in question is an adder, and the skin should be soaked in oil to make the medicine.[272]

The British Library catalogue states that Sloane 2584 belonged to the Guide family, but does not provide any further information on them, listing the languages it is written in as English, Latin, Dutch, German and French. The term composite is used because the manuscript was put together from thirteen, separate booklets, but there is continuity of hands between them so this is material from just a few scribes accumulated into one book. This implies continuity in a communal setting, such as a monastery or college, or alternatively, part-by-part acquisition from a commercial workshop (known as the *pecia* system).[273] The situation was not straightforward, however, some groups in religious orders were involved in commercial book production as scribes and illuminators as well as producing their own manuscripts.[274] As in Egerton 2852, some of the recipes in Sloane 2584 relate to other skills than medicine and apothecary, for example, the manufacture of esoteric substances for painting and gilding, transcribed by George Henslow at the end of the nineteenth century.[275] A reference to the terminology used in some of these texts, deriving from Fratre Galfridus (or 'Brother Geoffrey'), is found in Albert Way's edited

[269] ff. 33r–33v.
[270] J.W.S. Johnsson, *Bulletin de la Société Française D'Histoire de la Médecine*, Vol. XII, Paris, 1913, pp. 257—267, they are termed '*Les Experimenta Duodecim Johannes Paulini*' after the purported author. One of Johnsson's examples is Cambridge, Trinity College MS O.1.57, listed by its former catalogue number, MS 1081.
[271] Chapter 4: Sloane 1315, p. 125; Cambridge, Trinity College O.1.57, p. 127; New Haven, Yale University, Beinecke Rare Books and Manuscript Library, Takamiya MS 61, p. 130; San Marino, Huntington Library; Huntington MS HM 64, p. 160.
[272] f. 37v.
[273] See Lucien Reynhout, 'Stages in Manuscript Production,' in Frank T. Coulson and Robert G. Babcock (eds.), *The Oxford Handbook of Latin Palaeography* (Oxford, OUP 2020) pp. 581–610 (p. 593); also described by Richard H. and Mary A. Rouse, *Manuscripts and their Makers: Commercial Book Producers in Medieval Paris, 1200–1500* (Turnhout, Brepols, 2000), see Vol. I, Chapter 3; and Frank Soetermeer in the case of medieval legal texts, 'Between Codicology and Legal History: Pecia Manuscripts of Legal Texts,' *Manuscripta* (2005), pp. 1–21 (pp. 1–3).
[274] Jonathan J.G. Alexander, *Medieval Illuminators and Their Methods of Work* (London, Yale University Press, 1992), p. 20.
[275] George Henslow, *Medical Works of the Fourteenth Century: Together with a list of plants recorded in contemporary writings, with their identifications* (London, Chapman and Hall,1899), pp. 123-131, the following folios from Sloane 2584, ff. 5r, 6r, 13v, 14r, 25r, 27r, 72r, 89r, 90r, 161r, 178r, 180r.

reprint of Geoffrey's 1440 Anglo-Latin lexicon from the mid-nineteenth century.[276] The large quantity of medicinal recipes in the manuscript also follows the practical, instructional style of craft skills texts, in providing directions on how to make and use the ingredients.[277] The potential for a closeness or overlapping of professions, i.e. physician and apothecary, apothecary and artist, even horse veterinary surgeon also arises from these didactic compilations and this is the start of several further polymath manuscripts from the fifteenth century in this study.[278]

There are three weather prognostics in Sloane 2584: Saint Paul's Day, brontology with exotic items, and a wind prognostic from the days of Christmas in a separate booklet following medicinal and travel texts. One of these is a charm against cramp attributed to 'Miastre Ion Cattesdene,' identified by Lea Olsan as the physician John Gaddesden, author of the fourteenth-century *Rosa Anglica,* the first medical textbook in English.[279] The other texts include medically focused prognostics, as follows: prognostic for a person falling sick on the first day of a month, nativity, and the 'incorruptible body' prognostic.[280] the latter is an unusual prognostic, little seen in this study, but noted by Chardonnens in an example from the Early Middle Ages.[281] The Sloane 2584 version states that there are three days and three nights in the year when a person conceived at those times will remain incorruptible after death and not rot in the ground.[282] These prognostics were much referred-to, as the extent of wear on the ink testifies, especially the bottom right corner of folio 30r which is the prognostic for a person falling sick on the first day of the month.

Oxford, Bodleian Library MS. Digby 57

This is a composite textbook manuscript from the end of the fourteenth century, resembling Egerton 2852 in size and Rawlinson D.238 in content.[283] It has 201 parchment folios of varying quality and thicknesses, some of it very stiff, pricking is very evident, ruling less so, but now so close to the edges it looks as if the book was cropped to fit a new binding at some point, most probably before 1634 when it was acquired by the Bodleian Library. Since it

[276] For example, Galfridus on: making white lead, brasil (a paint colour), and clarre (a wine and honey beverage), ff. 3, 6, 173, Albert Way (ed.), *Promptorium Parvulorum Sive Clericorum, Lexicon Anglo-Latinum Princeps: Auctore Fratre Galfrido Grammatico Dicto E Predicatoribus Lenne Episcopi, Northfolciensi, A.D. Circa 1440, Olim e Prelis Pynsonianis Editum, Nunc Ab Integro, Commentariolis Subjectis, Ad Fidem Codicum Recensuit Albertus Way; Tomus Alter* (London, Camden Society, 1843), pp. 38, 47, 79.
[277] ff. 87r-89v, 101r-101v
[278] The treatise on horses, ff. 102r – 117v, was the subject of Ann Charlotte Svinhufvud's doctoral thesis, 'A late Middle English treatise on horses: ed. From British Library ms. Sloane 2584 ff. 102 - 117b'*, Stockholm Studies in English* (University of Stockholm, 1978).
[279] ff. 30r-39v, Lea T. Olsan, 'Latin Charms of Medieval England: Verbal Healing in a Christian Oral Tradition,' *Oral Tradition* Vol. 7, No. 1 (1992), pp. 116-142 (p. 127); also Tony Hunt, *Popular Medicine in Thirteenth-century England*: *Introduction and Texts* (Cambridge, Boydell and Brewer, 1989), p. 348.
[280] ff. 30r–30v.
[281] Chardonnens, *Anglo-Saxon Prognostics*, p. 6.
[282] f. 30v.
[283] 207mm x 152 mm, this chapter, pp. 40, 49, 51.

had changed hands several times before that, rebinding could have been carried out on any of those occasions. Two former owners are listed in the manuscript prior to its arrival at Exeter College, Oxford in 1468.[284] This would have been either directly into the college library or a private book collection of its Rector, Master Philips, whose name appears next in Digby 57. Later, in the late sixteenth or early seventeenth century, it went into Thomas Allen's collection, which was bequeathed to Kenelm Digby who donated it to the Bodleian Library. One booklet is slightly narrower (by 10 mm) but since the following booklet is in the same hand it seems this was an issue of the availability of parchment stocks when the manuscript was being written. There are very similar, clear, bold hybrid book hands indicating a house style and the Oxford meridian is used for calculating planetary movements, as in Rawlinson D.238. Large initials are modestly embellished with red and blue ink through much of the book and there is judicious use of red for tables and highlighting.

The brontology textual grouping is a treatise on Claudius Ptolemy's work on planetary movements, the *Almagest*.[285] The two Latin brontologies are based on the Zodiac and the months and placed almost at the end of the grouping.[286] They are idiosyncratic in content, abbreviation forms and terminology but clearly written in the house style of this manuscript, suggesting these variations were local ones. A further accompanying text explains medicinal dosing according to planetary influences.[287] The three folios following that were cut out, but it has not been possible to find out why. One possibility is that they contained further prognostics which had become unacceptable, such as the different kinds of life and death prognoses. A replacement booklet was provided which is mostly blank,[288] only containing two notes.

London, British Library, Sloane MS 282

This manuscript is dateable to the end of the fourteenth century. It is a little larger than the other astrological medical manuscripts in this study and 239 fine, parchment folios written in a well-formed hand, with fine ruling.[289] All initials are in vivid red and blue ink, burnished gold is used for major ones and headings and incipits are rubricated. This quality signifies that the manuscript was intended for display in a library, most probably consulted upon a lectern, rather than a collection of personal notes often handled by the owner. A Latin text on extinguishing the libido, attributed to St. Laurence, points towards a celibate, ecclesiastical environment,[290] but is

[284] 'M… Jolyffe' and 'M. J. Selde', ff. 179r the 'M's probably stand for 'Magistro' (university Master) as that is the designation for the next owner, Philips.
[285] ff. 176v–178v.
[286] ff. 178r–178v.
[287] f. 179r.
[288] ff. 193r–201r.
[289] 275 mm x 215 mm
[290] f. 80r, in the same textual grouping as the brontology.

also applicable to later university scholars in holy orders,[291] however unrealistic. Despite its good looks, Sloane 282 is a practical medical and herbal guide with many similarities to Rawlinson C.814 and Advocates 18.6.9, but with the addition of a calendar text, dated 1380, early in the manuscript, dedicated to Joan, Princess of Wales,[292] which is a copy of John Somer's.[293] A textual grouping early in the manuscript, headed *Schema astrologico-medicum*,[294] defines the astrological medicine which is at the heart of this compilation. Using an unusually detailed Zodiac Man the *Schema* demonstrates which parts of the body are affected by the cosmos during the zodiac sign periods, shown in Figure 7 (below).[295] This Zodiac Man is only the second in this study; the first (in CUL Dd.6.29)[296] is simpler, showing the relationship between the parts of the body and the Zodiac and focusing on bloodletting.

[291] See Gadi Algazi, 'Scholars in Households: Refiguring the Learned Habitus 1480–1550,' *Science in Context*, Vol. 16, 1/2 (CUP, 2003), pp. 9–42 (p. 9).
[292] ff. 5r–17v.
[293] Mooney (1998), p. 48.
[294] 'Medical astrological scheme,' f. 18r.
[295] Chapter 2, p. 60, Fig. 7.
[296] This chapter, p. 46.

Figure 7 (c) The British Library Board, Sloane MS 282, f. 18r.

The Zodiac Man in Sloane 282 is standing on the dark-coloured Earth surrounded by seven concentric zones, or 'spheres' if one imagines them as nesting, three-dimensional globes. Also, the four elements are integral to this scheme, earth is an element, the next elemental sphere is labelled *aqua* (water) followed by *ajer* (air) and *ignis* (fire). Beyond that, planets can be seen moving into the signs of the zodiac in the *celu(m) stellaru(m)*,[297] above which is the *celu(m) cristallinu(m)*,[298] and, finally, *celu(m) emperu(m) ubi do(min)us Ihe(su) Xp(is)t est*.[299] The significant aspect of the diagram as an astrological medical tool is the way the cosmic influences emanating from the spheres touch the Man directly. By checking planetary tables in the manuscript, the user can see at a glance which planet might be generating influences at a given time. This visual reference to the way the body is influenced by the cosmos was used to both diagnose the ailments which might occur from the current balance of humours in the body, and to make a prognosis of the longer-term effects of this.

Sloane 282 goes beyond the above three manuscripts in academic content and learned attributions with sizeable treatises, still on medical practice but enriched with a theoretical background, for example:

- Aegidius Corboliensis on urology[300]
- Abū Bakr al-Rāzī,[301] *Liber II*, translated into Latin by Gerard of Cremona[302]
- Peter of Spain, on designing treatments from herbs and *materia medica* for ailments affecting specific parts of the body[303]
- a *herbarum* and *specierum* of Johannes de Toledo[304]
- synonyms of herb names from Latin to English by John Braye[305]

The brontology (in Latin) is part of a *tractatulus* (or textual grouping), on the prolonging or curtailing of illnesses according to the condition of the humours and other catalysts, primarily taking into account the phases of the moon and the seasons. The text heading states *De duodecim signis duodecim mensum, et de tonitruis in eisdem signis contingentibus*.[306] The incipit further explains *In Mense Januarii sol dicitur in aquario*, to be understood as 'during January when the sun is said to be in Aquarius,' i.e. not the whole calendar month but part of it and part of the following month corresponding to the visibility of the constellation of Aquarius in the sky. This is an early

[297] 'starry sky,' or heavens.
[298] 'the crystal-clear sky'.
[299] 'the Kingdom of Heaven where Lord Jesus Christ is'.
[300] ff. 19v–46v, Aegidius Corboliensis, also known as Giles de Corbeil.
[301] ff. 58r–80v, Samir S. Amr and Abdulghani Tbakhi, 'Abu Bakr Muhammad Ibn Zakariya Al Razi (Rhazes): Philosopher, Physician and Alchemist,' *Annals of Saudi Medicine*, July–August, Vol. 27, No. 4 (2007), pp. 305–307.
[302] Also known as Gerardus of Sabbioneta, Lombardy.
[303] ff. 87v–106r, attributed to Peter of Spain fl. mid-thirteenth century. A person of this name became Pope John XXI but it is impossible to be sure it was him since it is a common name.
[304] f. 181r, probably the same person as Johannes Hispalensis, see Richard Gottheil and Meyer Kayserling, 'Jannes Hispalensis,' *Jewish Encyclopaedia*, https://www.jewishencyclopedia.com/articles/8726-johannes-hispalensis [last accessed 15 Dec. 2023].
[305] ff. 181v–184v, a physician to Edward III, fl. fourteenth century.
[306] 'On the twelve signs, the twelve months and of thunder influencing each of these signs,' f. 80v.

example of the conflation of (or at least correspondence between) zodiac periods and months which continues to crop up throughout the study.

Prognostics from wind and sunshine events during the twelve days of Christmas attributed to the 'Prophet Esdras' are also present at the end of this grouping. This is for the same reason as brontology, to take into account the unpredictable effects of weather contingencies, but these prognostics forecast the whole year from just one week during the Christmas period. Such grouping of brontology with other weather prognostics is not very common in this study, there are the five examples from the fourteenth century (including Sloane 282) and four from the fifteenth. There is no real pattern to them, some are placed in relation to the brontology because the compiler had an interest in weather, others are grouped with general Christmas week prognostics for the whole year ahead in the manner of the *Revelatio Esdrae*. It seems that, unlike brontology, these prognostics lost currency in the later Middle Ages, with fewer examples appearing in a larger number of corpus manuscripts by the fifteenth century. Also, compilers began to show preferences for one type over another and not use them as a package of texts: Egerton 2852 only has a sunshine prognostic in addition to its brontology and Ashmole 6 only a wind prognostic. Further evidence that this was a niche, or antiquated, consideration comes from just seven other manuscripts from the same period with these weather prognostics (though without brontology) found in eTKeVK2.[307]

The Peter of Spain text (above) on treatments for individual bodily conditions, accompanied by brontology and a regimen for the preservation of health (attributed to Arnaldus de Villa Nova),[308] focuses on prevention, rather than cure, by keeping the humours in balance to avoid the need for treatment.[309] This suggests disturbances in the weather were heeded whilst considering longer-term effects on humoral balance. The brontology also has the text on the procedure if thunder is heard more than once in a year, seen infrequently with other study examples (including Ashenden's *Summa*), often from ecclesiastical contexts. The second thundering text is first seen in *De Tonitruis*,[310] an older brontological treatise written in the eleventh century by a scribe once thought to be Bede now known as 'pseudo-Bede'.[311] Further to the placement of the Sloane 282 brontology with specific ailments and a health regimen, its most important feature is the combining of prognostics within one compound text, first noted in Ashmole 345 (above).[312] Having them all to hand in one text offers an efficient astrological medical consultation based on the 'Twelve signs,' as seen in the excerpts for January and February (below):

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[307] 14c: Cambridge, Trinity College MS R.7.23, 15c: London, British Library, Egerton MS 1995, Aberdeen, Aberdeen University MS 123.
[308] Also spelt 'Arnau de Vilanova'.
[309] ff. 107r–123r.
[310] 'On Thunder'.
[311] See Juste and Chiu, 'The *De Tonitruis*,' pp. 97–98.
[312] This chapter, p. 55.

'*De duodecim signis duodecim mensum, et de tonitruo in eisdem signis contingentibus.*

In mense Januarii sol dicitur in aquario quiritur tunc maxime habundant ague cum moratur in isto signo . Si tonitru(um) sit in hoc signo . magne pluvie erunt per loca . et terror erit filiis ho(min)im . Venti . eo anno gen(er)abu(n)t tussi(m) et scabiem et una p(er)s hominu(m) incipiet contendere et illa conte(n)cio magna erit in seculo.

In mense Februarii sol d(icitur) in piscib(us) . quiritur piscis est humidus et frigidus nature . ita illud temp(us) quo sol moratur in illo signo. Si tonitruum sit in hoc signo. Gelu et siccitas erit i(n) terra . et ho(m)i(n)es eru(n)t egroti(s) et no(n) morient(ur) . fructus quae t(er)re siccabitur et divicie eru(n)t in p(o)p(u)lo . et vinu(m) habu(n)dabit.'

My translation :

'On the twelve signs, twelve months and of thunder in these same signs.

In the month of January, the sun is said to be in Aquarius because it abounds most when it stays in this sign. If it thunders in this sign there will be great rains everywhere and there will be fear for the sons of man. That year the wind will cause the cough and the scab and one of the peoples will start a conflict and that conflict will be great throughout the century.

In the month of February, the sun is said to be in Pisces, because Pisces is moist and cold by nature so is the time when the sun dwells in that sign. If it thunders in this sign there will be frost and drought in the land and men will become sick but not die, tree fruits will shrivel, and there will be division among the people and an abundance of wine'.

In creating this, the compiler has joined together information on the following: the predominant zodiac sign in the calendar month, a humoral zodiac prognostic (or eventualities likely to happen because of the nature of the sign), and a brontology which includes more weather prediction than normal. This comes to be further developed in the polylingual textual contexts of the fifteenth century.

Brontology has no special status or use in the first two manuscripts in this chapter, other than something to be considered when thunder arose and general answers about the future or bloodletting advice were sought. The significance of these rare contexts is that brontology survived in them through times of reform when there was suspicion of prognosticatory material.[313] CUL Hh.6.11 has a particularly long, learned, Latin brontology referencing exotic items unlike any others. A few decades later, but still before the middle of the fourteenth century, brontology has emerged in a practical medical treatise in Rawlinson C.814, a medical herbal manual. This transmission coincided with the extension and popularisation of

[313] See Chapter 1, pp. 10–11.

textual groupings on planetary influences on earth which note other phenomena like extreme weather or eclipses, like those of John of Ashenden, disseminated soon after completion in the fourteenth century. Latin is used for brontology in predominantly French vernacular contexts, indicating it was regarded as technical, rather than a *parole* or instructive tale which would have been rendered in French. Also, Latin texts, including brontology, are included in textual groupings with English versions for comparison, only rarely as direct translations.

The humours are expounded in detail in these contexts as they were subject to different cosmic influences at different times and an understanding of this was a necessary part of astrological medical practice. In this process, brontology was regarded as a potential disruptor of expected influences before they could come to fruition. Applications to matters such as giving the correct dose of medicine to a patient are starting to appear in corpus manuscripts, as in Digby 57,[314] all within the context of planetary influences and phenomena which could affect them in turn, namely thunder in this case. Grouping with other weather signs is not a significant continuing transmission of brontology but it does crop up from time to time in the manuscripts in this study, testament to a wide variety of available sources at the time. There are just three manuscripts in this chapter with such groupings, as follow:

- Rawlinson C.814, a consideration within a medical guide focusing on treatments
- Sloane 2584, with travel information and travel medicine
- Sloane 282, a compound prognostic text where several extra weather references have been incorporated.

The next manuscripts in this chapter, still only from first half of the fourteenth century, depart from straightforward, non-astrological associations of brontology to herbal treatments as seen in Rawlinson C.814 to the following items: astrological medical models of the Sphere of Life and Death in Egerton 2852 and a planetary sphere in Rawlinson D.939. The late-fourteenth-century calendar contexts for brontology of CUL Dd.6.29 and Rawlinson D.238 have associated canons in the didactic style of university textbooks. Brontology is prominently placed in the calendars themselves to consult as necessary for its unpredictable effects, not calculable like moveable feasts or even eclipses, yet with reassuringly knowable consequences.

The Chapter Two manuscripts do not look like the workbooks used by medical practitioners with public practices but are on the model of university textbooks, good quality, neatly ruled and written in clear hands with attention to ruling and finding aids, usually on fine parchment. Even the folding Rawlinson D.939 is still physically sound, not through little use but the quality of the materials used. However, it is difficult to make judgements about

[314] This chapter, p. 58.

whether the owners of these manuscripts actually engaged in medical practice at the sickbed or their role was more advisory, discussing and teaching about astrological medical matters. The potential bloodstains in portable Rawlinson D.939 suggest that it did do duty in such a practical situation. Folding manuscripts like this should not be considered basic because they are short and abbreviated. Rawlinson D.939 represents the rare survival of a new type which retains calendar information whilst also offering astrological medical advice, not seen again in this study until the early fifteenth century. Since the majority of folding manuscripts surviving from this period do not have a brontology, it seems that a small number of practitioners, or educated lay people, made a choice to add one to their own portable reference guide, suggesting they had encountered it during their education or training and saw value in having it to hand. This textual combination continues to emerge intermittently throughout the study period.

Chapter Three – Brontology in the Earlier Fifteenth Century

Introduction

The eleven corpus manuscripts dating from the first half of the fifteenth century might be expected to be broadly similar to those of the thirteenth and fourteenth centuries since there is a lot of common subject matter and continuity of brontology texts. However, the cases of brontology in calendars in Chapter Two are a reminder that sometimes similarity between manuscripts is only on the surface. Although both those manuscripts place brontology within the calendar, their overall tenor is learned in one case and more experiential in the other and this would surely have affected the use of the brontology. Aberdeen 272, a further example of brontology in a calendar in this chapter, is found in a book of hours, a very different manuscript from both of the former contexts. A brief overview of the manuscripts in this chapter reveals greater portability with a number of folding manuscripts appearing and a much greater interest in health regimens. Other books have many texts of learned origin but their descriptions (below) show more signs of practical application. Importantly, the types of learned texts selected are not just the old favourites derived from the works of Galen and Hippocrates, but the new thinking of scholars like John of Ashenden and Henry Daniel is also displayed. Daniel was a prominent Dominican writer of the late fourteenth century and an editor of natural science material from a variety of sources, much of it in English and very well-crafted. Herbal works like Daniel's are based on astrological medicine and the versions of his texts in corpus manuscripts often feature aspects of the weather.

London, British Library, Sloane MS 1609

This medical handbook is dateable to the turn of the fifteenth century.[315] It has 57 folios which are mostly paper,[316] written in scholarly secretary hands with minimal Anglicana quadrata features, in both English and Latin. There is evidence it was used in Ipswich in the fifteenth century.[317] The manuscript contains an eclectic grouping of prognostics in a popular compilation called a *Wise Book* which follows a calendar with texts on the elements,[318] humours, and perilous days, including both the Dream of Daniel and the Dream of Esdras.[319] In this study, the Dream of Daniel is only found in Trinity O.1.57, a later manuscript.[320]

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[315] Measuring 220 mm x 184 mm.
[316] Also, one parchment folio, ff. 4r–4v and a parchment booklet, ff. 5r–11v.
[317] Edward J.L. Scott, 'Bestman (John), Prior of Holy Trinity, Ipswich. Presentation of two monks to the Bishop of Norwich for admission to the Subdiaconate, 1453. Lat. 1609, f. 57 b,' *Index to the Sloane Manuscripts in the British Museum* (London, British Museum, 1904), p. 54.
[318] eTKeVK2 has one example of this from the fourteenth century, thirty from the fifteenth (which includes the other examples in this study) and two from the sixteenth century. The other study examples: Oxford, Bodleian Library MS. Ashmole 189, ff. 1r–67r, Oxford, Bodleian Library MS. Radcliffe e30, f. 40r, London, British Library, Sloane MS 636, ff. 163r–168r, and Oxford, Bodleian Library MS. Digby 88, ff. 34r–37r.
[319] *Wise Book*, ff. 11r–27r.
[320] ff. 118v–123v.

It addresses mental health to the extent of attempting to understand the subconscious mind through dream interpretation, thereby adding a more holistic dimension to the health regimen which follows. Outside this study, a few more English manuscripts with Dream of Daniel texts are listed in eTKeVK2: seven from the thirteenth century, five from the fourteenth century, and eight examples from the fifteenth century, so, not a very popular text. There are more examples of the Dream of Esdras than the Dream of Daniel in this study, but they tend to be in the earlier compilations. The picture for the Dream of Esdras is similar to the Dream of Daniel outside this study, but this time only one English example each from the thirteenth and fourteenth centuries, and seven from the fifteenth, are found in eTKeVK2.

Within the Sloane 1609 health regimen text, other textual items speak of an interest in the mind and body working together, for example, emotional control as the key to a good demeanour in 'flee anger wrath and envy'.[321] Also, recipe texts, placed with the *Wise Book* are based on humoral medicine and offer medicines and treatments to supplement health regimen advice. There is also a learned herbal, *De virtutibus herbarum*.[322] The main approach taken from astrological medicine in Sloane 1609 is a consideration of the humours,[323] otherwise there is little in the way of technical, astrological material, only rules for safe bloodletting as part of the calendar canons.[324]

The brontology textual grouping is also bound up in the balance of bodily humours addressed in the health regimen including:[325] the hours of the day when planetary influences are experienced,[326] complexions,[327] and seasonal effects.[328] One reason to place a complexions text with a brontology would be to know if thunder events would disrupt the expected pattern of planetary influences on individuals' health in any way, which is a cross-referencing of prognostics. Further unlucky days, caused by planetary influences are listed after the brontology, which is in English.[329]

Consequently, as in the case of Egerton 2852 (in the last chapter)[330] the application of astrological medical theory informs practical methods, but success ultimately depends on the abilities, education and interests of the practitioners involved. Sloane 1609 does not seem to have been in the possession of a medical

[321] ff. 49v–51r.
[322] ff. 37r–40v.
[323] *De complexionibus*, f. 53v.
[324] f. 3v.
[325] ff. 48v–51r.
[326] ff. 51v–53r.
[327] f. 51r.
[328] ff. 53r–54r.
[329] ff. 49–52.
[330] Chapter 2, p. 41.

practitioner of any kind, certainly later in its history when notes by and for Ipswich churchmen were entered during the mid-fifteenth century.[331] The balance of material defines it as an ecclesiastical household book, where preventative and remedial medicine of a broad kind were practised using prognostics as part of the method. Household miscellanies have been defined as collections of widely ranging but useful knowledge for non-experts on matters of health, etiquette, pre-university education, plus bible stories, moralising tales and simply entertaining tales and verse.[332] Where the compiler had a textual scheme in mind, or was focusing on a specific area of knowledge such as astrological medicine, the term anthology is also useful.[333] In keeping with the other corpus manuscripts, household books in this study tend to be robust items of good quality once belonging to persons of some means, but there is a caveat in this as poorer quality books representing further parts of society might have also have existed but did not survive. However, since this evidence is absent the current picture has to be derived from those that do and their often-complex textual groupings provide good evidence that, even if that had been the case, they would probably still have been at the outer edges of a rippling-out of information from learned sources.

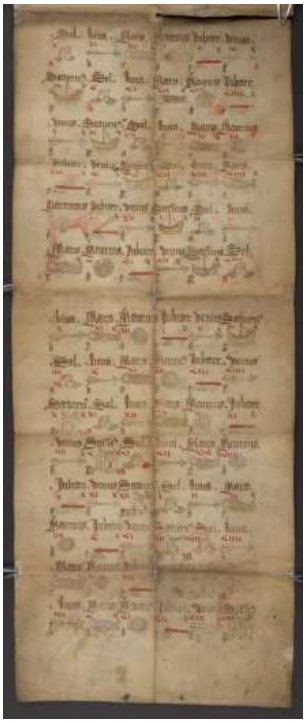
London, British Library, Egerton MS 2724

This folding manuscript from the turn of the fifteenth century was created from a former roll manuscript, separated into three long strips of parchment sewn end to end and refolded into eleven sections. Ten of them are refolded to form four panels each,[334] whilst the eleventh was given ten panels.[335] The manuscript is very small,[336] fitting into the palm of the hand. It has become very worn due to the folding and unfolding required to open and close it and this has affected the colours used for the numerous illustrations, and some of the writing has completely worn away.[337] In these cases, ghosts, or impressions have been left which are paler than the surrounding parchment due to the acidic nature of the ink. It is sometimes possible to read them with care.

[331] This chapter, p. 66, fn. 317.
[332] Julia Boffey's comments on these distinctions in her study of a literary household book mentioning the combination of texts in corpus manuscript Oxford, Bodleian Library MS. Bodley 591 (see Chapter 3, p. 88), 'Bodleian Library, MS Arch. Selden. B. 24 and definitions of the 'household book,' in A.S.G. Edwards, Vincent Gillespie and Ralph Hanna (eds.), *The English Medieval Book: Studies in Memory of Jeremy Griffiths* (London, British Library, 2000), pp. 125–134 (pp. 125, 126, 132).
[333] See Seth Lerer on the similarities and differences of miscellanies and anthologies, 'Bibliographical theory and the textuality of the codex: towards a history of the premodern book' in Johnston and Van Dussen, pp. 17–33 (p. 21).
[334] See Figure 9.
[335] See Figure 8c.
[336] 90 mm x 90 mm, folded.
[337] For example, the whole second passage on folio 4v, the entry for February, compartment 4 in Fig. 9, this chapter, p. 70, below.

Figure 8a cover
London, British Library MS Egerton 2724,

8b spine



8c folio unfolded, folio 11r

The illustrations in Egerton 2724 comprise the following items:

- heads and busts of saints in a calendar of feasts and dominical letters
- 'Occupations of the Months', full portraits of figures engaged in these occupations with relevant seasonal backgrounds
- charts of the hours of the day, with sun symbols in gold and zodiac figures in the centre
- dominical letters prognostic in pictograms of various figures: monarchs, plague victims and other concepts, e.g. fruitful trees
- Tableaux of the brontology prognostications (and health regimen advice) for each month with rare representations of thunder events themselves
- Zodiac Man, surrounded by sun symbols, in gold, contains figures representing the zodiac constellations
- Image of God holding the crucified Christ within a chart of moon phases and planets
- Solar and lunar eclipse charts with miniatures of the figures representing zodiac signs and figures carrying out Occupations of the Month

Figure 9, British Library MS Egerton 2724, folio 4v, two brontology and health regimen illustrations and an ink-bitten page, folio 5r, text for January and February.

The brontology, in English, is presented as part of a health regimen text based on the months of the year,[338] each entry illustrated by a competently drawn tableaux, in several colours.[339] Each of the images has a deep, decorative, upper register of four, grey, four-lobed shapes infilled with red on grounds of blue sky apparently representing thunder clouds and so drawing attention to the brontological aspects of the health regimen,[340] with text on the right. Latin and English use in Egerton 2724 is approximately equal, with the religious subjects and saints' names in Latin. The detailed imagery of the Occupations of the Months text is close to that in Morgan 941 (below) and Additional 17367,[341] although the latter is from a century later it is very much in keeping with this style. Despite these similarities, the focus on medical application is greater in Egerton 2724 than these other examples.

Saints and seasonal activities are depicted in a similar way to Rawlinson D.939, but unlike that context there is a Zodiac Man.[342] Elsewhere, signs of the Zodiac are framed by large symbols for the Sun, Moon and stars intended to alert the reader to their influences on the periods of the signs of the Zodiac.[343] There are several other prognostics in addition to essential information on planetary influences for medical diagnosis, i.e. which are the humours affected.[344] Egerton 2724 is both illustrated and illuminated, like Rawlinson D.939, although less gold was used and that was reserved for dominical letters, saints' nimbuses, crowns and mitres, depictions of the Sun, Moon and stars[345] (in this case, other planets) in the Occupations of the Months text, Zodiac Man, and a planetary influences on the Zodiac prognostic. The calendar points towards a Norwich origin, as an image of a church is accompanied by the rubricated text declaring a relevant feast '*dedicacio Norwyc(ensis ecelesiæ)*'.[346] St. Edmund's feast is also rubricated, St. Edmund being significant as a martyr and former ruler of East Anglia in the ninth century. There is also a potential bloodstain in the brontology very similar to those in Rawlinson D.939 and Oxford, Bodleian Library MS. Bodley 591 (below).[347]

[338] ff. 4v–9v.
[339] Some care has been taken with the drawing, for example, the saints' features, f.1r are tinted and show various expressions.
[340] There is similar detail in New York, Morgan Library MS M 941, this chapter, p. 77, Fig. 13.
[341] Chapter 3, p. 77, Chapter 4, p. 173.
[342] f. 6r.
[343] f. 8r.
[344] Lunary, nativity, planetary influences on the Zodiac, New Year week.
[345] Sometimes called this because they shine like stars in the night sky, reflecting the Sun.
[346] 'The dedication of the church at Norwich'.
[347] f. 5v, see Chapter 3, pp. 46, 89.

Aberdeen, Aberdeen University MS 272

This small,[348] portable, illuminated book of hours with a calendar, dating from the early fifteenth century and the only example of one in the study. It consists of 131 parchment folios written in Latin and English. The brontology, in English, is situated at the foot of each ostentatiously illuminated calendar folio. One of the saints in the calendar, St. Radegund, is associated with the College of the Blessed Mary, Saint John the Evangelist and the glorious Virgin Saint Radegund at Cambridge (now Jesus College). However, this joint dedication did not happen until 1496, much later than the approximate date of production of the manuscript in the first half of the fifteenth century. At this time, she was venerated at the Benedictine nunnery of St. Mary and St. Radegund in Cambridge. Again, this is not proof of a Cambridge origin, as St. Radegund was venerated in various southern English settings in addition to Cambridge: parishes, chapels, an abbey, and the church she founded in Poitiers, France where her shrine is kept today. The very good quality of the manuscript suggests that any connection to the Benedictine nunnery which bore her name would be to a churchwoman with means (or who received valuable gifts from her family), perhaps the Prioress. However, the fine quality of pigments and gold alluded to in M.R. James' catalogue description was arguably too luxurious for a religious.[349] Alternatively, Aberdeen 272 was perhaps a victim of the convent's fluctuating fortunes when refounded as a university college by the Bishop of Ely and sold to an affluent townsperson.

The brontology is the only prognostic, otherwise the manuscript addresses the calendar, prayers, religious reflections, and health advice. Given that the brontology is the only text in English, it is possible it was a later addition, perhaps added when it changed hands. Its purpose in this manuscript can be summarised as providing weather-based predictions on a monthly timescale, conveniently placed in the calendar and relatable to the schedule of saints' feast days. It would have been useful for both the Church, for religious processions, or guilds, for mystery plays, in knowing what might disrupt both the practicalities of arranging often large-scale public events and the tenor of the proceedings, were any political or health problems expected at a given time, should thunder be heard.

[348] 185 mm x 127 mm.

[349] M.R. James, '272 Horae,' *A Catalogue of the Medieval Manuscripts in the University Library, Aberdeen* (Cambridge, CUP, first published 1932, digitally printed 2011), pp. 95–96.

Oxford, Bodleian Library MS. Ashmole 6

This is an early fifteenth-century folding manuscript, dating post 1411 from the eclipse table, with a Calder Abbey (Cumbria) origin.[350] It is small and portable,[351] but longer and narrower than Rawlinson D.939 and suitable for suspension from a belt or bag, see Figure 10 (below), like Additional 28725.[352] Ashmole 6 is encased in an

Figure 10 Bodleian Library MS. Ashmole 6
own image with permission of The Bodleian Library

original, sturdy leather binding with a loop for the attachment. Like Additional 28725 it has calendar tables, neatly drawn in red and black, noting solar and lunar conjunctions and planetary oppositions, in addition to saints' feasts. Once again, the eclipse table uses the Oxford meridian, indicating either that the manuscript was produced there or the texts copied into it were derived from the University. Like Rawlinson D.238,[353] Ashmole 6 is significant to this study because of the prominent placement of the brontology (in Latin) as the first item on opening each folio. The other manuscripts with examples of brontology on calendar folios all place it at the foot of the folios, although in the main texts and not as addenda.

[350] See J.P. Gumbert, *Bat Books*, p. 146.
[351] 160 mm long by 67 mm, including the attachment loop.
[352] Chapter 4, p. 138, Fig. 27.
[353] Chapter 2, p. 50, Fig. 5.

Figure 11, Bodleian Library MS. Ashmole 6, 'January'
own image with permission of The Bodleian Library

On opening by unfolding folios from the cover in the same way as a modern map, the prominent brontology entries are placed above entries for a prognostic on planetary influences on the Zodiac, bloodletting and medical canons. There are thirteen folios folded lengthways and then into three to create six compartments, see in Fig.11 (above). The script is a clear and well-formed hybrid secretary with a *semi-quadrata* book hand used for the headings and mostly Latin throughout, other than a very few additional notes in English. The ink is quite light, with vivid red initials indicative, in this study, of a professional or educational reference book, rather than display. The subject matter agrees with this, consisting of the following practical and professional astrological medical texts and prognostics: astronomical tables, dominical letters guide, planetary influences on the Zodiac prognostic, geomancy, lunar prognostic, bloodletting indicating a surgical application in citing larger affected areas of the body in addition to the locations of the veins, and a wind prognostic. The level of astrological medicine offered here

was discussed by Carey in her later article on twenty-nine folding almanacs, where she selects Ashmole 6 as a rare example in which the 'lords of the houses'[354] are established from planetary longitudes, giving a practitioner insight into which planet was most visible in the sky against the zodiac constellation period in question. This knowledge of planetary influences on an illness during a zodiac period enabled practitioners to understand the interplay of a number of factors when determining prognosis and treatment and planetary influences and they are echoed in the prognostics in the calendar. Most of Carey's study corpus is not part of this study as they do not contain brontology, apart from Ashmole 6 and Additional 28725. However, the same, detailed, theoretical astrological medical information for physicians discussed by Carey is also found in the earlier, illustrated, concertina-fold

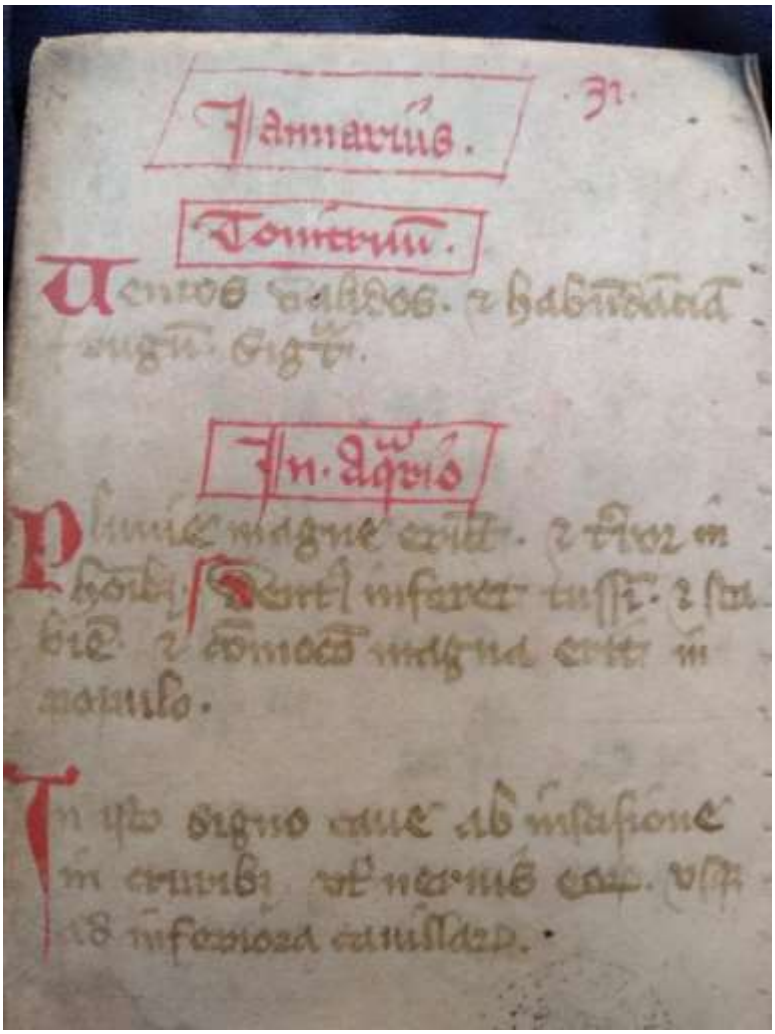


Figure 12, Bodleian Library MS. Ashmole 6, 'Januarius'
own image with permission of The Bodleian Library

[354] Hilary Carey, 'Astrological Medicine,' pp. 345–363.

manuscripts with brontology in this study. Ashmole 6 is the only folding manuscript in this study with a weather prognostic further to the brontology. It should be noted, though, that the two weather prognostics are treated very differently. The compiler has placed brontology as the first item to be considered in a prognostic package, see Figure 12 (above), followed by predictions for the period of Aquarius which can be construed as 'triggered if it thunders' since that is the first consideration, then advice on bloodletting or making incisions into the body at that time.[355] The wind prognostic is added to the end flyleaf, although the scribe has attempted to give it some authority by packaging it as the weather science of 'expert philosophers'.[356] The lack of images, taken into account with the depth of material, shows the owner's familiarity with it, making it unlikely that Ashmole 6 was a vade mecum for medical training but a quick reference guide for a qualified physician.

New York, Morgan Library, Morgan MS M.941

This folding manuscript is dated after 1434 because of the date of the Battle of Roosebeke which is the last item listed in the historical section.[357] It is a little larger than Rawlinson D.939 and Egerton 2724.[358] Like Egerton 2724, it is made from three parchment folios formerly joined end to beginning in a roll manuscript, now refolded into twelve compartments written on both recto and verso.[359] The quality of the manuscript is poorer than Rawlinson D.939, the images are sketchy with minimal delineation, infilled with thin colour washes and little shading or gold embellishment. The scribe has used a moderately formal book hand with the more personalised, curving aspects of secretary.

The months brontology, in English, is a major component of the manuscript, arranged along the length of the opened-out verso faces of all three folios. Unlike the pictograms used in other folding manuscripts, the brontology illustrations are detailed tableaux. Tendrils of disturbed, grey cloud representing thunder events themselves appear in the top register of each scene. For example, in February, a bed-bound patient is shown with a fashionably dressed physician who is examining a flask of urine, see Fig. 13 (below).[360] The prognostication is as follows;

[355] See Hunt's edition of the Ashmole 6 brontology and comparison with Rawlinson D.939 (2013), pp. 224–228.
[356] '*sunt quidam Philosophi ventorum et temporum periti*,' Ashmole 6, end flyleaf.
[357] Eustace F. Bosanquet, *English Printed Almanacks and Prognostications. A Bibliographical History to the Year 1600*, Illustrated Monographs, No. 17 (London, 1917), pp. 3, 15.
[358] Chapter 2, p. 42, this chapter, p. 68, the folded size of Morgan 941 is 132 mm x 132 mm.
[359] See this chapter, p. 80, Fig. 16.
[360] This chapter, p. 77.

> 'In þe moneþe of Februarie: if þ(er) be þundu(re) it bitokeneþ deeþ of many men and of meost riche men: bi soris,'[361]

the patient is to be interpreted as one of these rich men, affluent enough to afford a physician.

Figure 13, 'Ffebruarie,' Morgan Library MS M.941, f. 1r, post 1434
https://ica.themorgan.org/manuscript/page/1/145540

As in Rawlinson D.939,[362] a small extra image above the patient refers to the Occupation of the Month, here it is the spade used in February. Medical practice is evident from a Vein Man diagram,[363] showing parts of the body it is safe to bleed from or perform surgery on when the Sun is in the zodiac signs. Although the Vein Man himself is simply drawn, there is more information than usual for such diagrams in this image; in addition to major veins supplying the limbs, the locations of several minor ones are shown by short lines. This is accompanied by an illustrated planetary influences chart ordered by the months, featuring the head of Christ in front of a cross in the centre, where Rawlinson D.939 shows the full-length crucified Christ.[364] The Occupations of the Month are also

[361] 'In the month of February, if there be thunder it betokenth death of many men and mostly of rich men, by sores' (in other brontologies this is an illness called 'scab').
[362] See Chapter 2, p. 45, Fig. 3.
[363] f. 1v.
[364] see this chapter, p. 80, Fig. 16 - f. 2v, compartments 5–8.

included in this chart, with the activities in question marked by appropriate symbols, for example, the special pruning mitten in January. Like Rawlinson D.939, there are numerous pictograms of people and objects in the main text and the prognostic texts. For example, the outcomes of the dominical letters prognostic are shown below (Figure 14) as clasped hands for betrothal or a trade deal when the letter is an 'a' and the Sun is dominant, arrows for conflict when the letter is a 'b' and so on, meaning that those activities are favourable in the relevant year.

Figure 14, Morgan Library MS M.941, f. 3v, post 1434
https://ica.themorgan.org/manuscript/page/6/145540

Figure 15, Morgan Library MS M.941, folio 1v
https://ica.themorgan.org/manuscript/page/2/145540

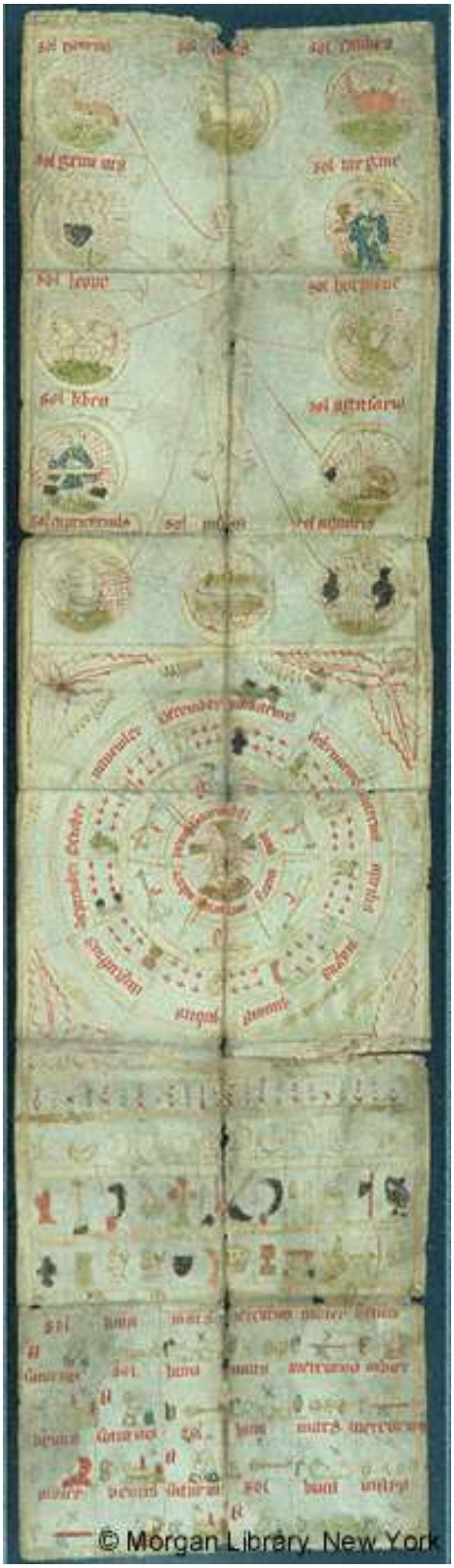


Figure 16, Morgan Library MS M.941, f. 2v
https://ica.themorgan.org/manuscript/page/4/145540

Although it is logical to think that such pictograms were designed for the illiterate, the names of the ruling planets for these years are also listed for the periods in question, so the pictograms serve as an abbreviated aide memoire for a practitioner which could be shared with their client or patient during consultation. There are also other aspects of dominical letters prognostics incorporated into the calendar, linked to specific saints, for example, the entry for December, see Figure 15 (above),[365] where among others the Nativity of Christ is linked to letter 'b' and St. Thomas Becket to letter 'f'. Dominical letters also appear within one of the spheres of the circular months of the year diagram along with the Zodiac and planets, Figure 16, middle four compartments (above). This folio, 2v, also shows Christ in front of his cross in the centre of the spheres, a Zodiac Man in the top four sections, and a lunary below the chart.

London, British Library, Sloane MS 636

This is a textbook manuscript dating post 1436 as its calendar tables (attributed to Nicholas de Lynn) commence then.[366] These were truncated for the purposes of this manuscript, the earlier years being redundant when it was written, De Lynn's full calendar tables commencing in 1387.[367] Sloane 636 is written entirely in fifteenth-century secretary hand, by more than one person, on 162 paper folios.[368] Like St. John's K.49 (below) and Sloane 635,[369] it is so worn it now requires archival supports. It has many didactic astrological and prognostic texts in several, plain secretary hands with little embellishment, but lacking a house style which would indicate compilation in one place as seen in Bodley 591 (below)[370] and a few other corpus manuscripts, mostly later examples.[371] The differences in dimension in the Sloane 636 booklets are a further sign that the manuscript was composed from several sources. A substantial number of the many texts are scientific and in Latin, twenty-seven are in English, sixteen of which are prognostications.[372] A large number of astrological texts give the manuscript a definite theoretical character, reinforced by a paucity of overtly practical medical texts, although some treatments, such as recipes, are included. Sloane 636 is not only a textbook of standard scholarly texts, but also contains contemporary, fifteenth-century scholarship such as treatises of Pierre d'Ailly on combining astrological science and theology.[373]

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[365] This chapter, p. 79, Fig. 15.
[366] f. 2v.
[367] Eisner, *Kalendarium*, p. 10. There are no extant manuscripts which contain the full version, all have been adapted in some way, ibid., pp. 9–10.
[368] 230 mm x 185 mm.
[369] This chapter, p. 84; Chapter 4, p. 141.
[370] This chapter, p. 88.
[371] Chapter 4: Cambridge, Trinity College MS O.1.57, p. 125, London, British Library, Sloane MS 213, pp. 128–29, Longleat House MS 176, p. 131, Chapter 5: Cambridge, Trinity College MS O.2.45, p. 181.
[372] See Bryan, 'Prognostications by Thunder,' p. 17.
[373] ff. 2v, 3r – 4r, 10r – 11r.

The texts in the brontology grouping are in a booklet twelve millimetres shorter than its neighbours,[374] alternating between English and Latin, with Latin headings. It was probably acquired from elsewhere and inserted into the manuscript, but is contemporary and not sufficiently different from the rest of the material to discuss in Chapter Five with the definite insertions into manuscripts. There is a lunary in English, followed by an in-depth treatment on lunar eclipses attributed to *Messahalla*, naming *Johanne Hispalensi* as the translator from Arabic to Latin.[375] The brontology itself, in English, is acephalous and based on the Zodiac, but with only three entries, Sagittarius, Aquarius and Pisces. It is idiosyncratic in other ways too: the commentary or rubric is placed at the end instead of as an incipit and Sagittarius is wrongly placed before Aquarius instead of the expected Capricorn. The latter error also occurs in corpus manuscript Morgan 775,[376] from the second half of the fifteenth century, but the reasons for this may be different. Given the technical and academic nature of the material in Sloane 636, it is unlikely that the scribe simply did not know the order of the zodiac signs, but that these three had been selected for personal reasons, or to make a teaching point. In the case of Morgan 775, on the other hand, it seems much more likely that it was copied into this luxurious miscellany, either from Sloane 636 itself, or a source close to it, as bona fide astrological medicine. There is no doubt that material in Sloane 636 was intended for teaching, rather than notes taken from a lecture taught by someone else, as there are a number of didactic phrases and teaching maxims, for example this introduction to astrological medicine;

> 'þe must be sure that þe know your sign ascending or else this craft prevaileth not'.[377]

The textual grouping of the short brontology contains both astrological theory and texts for practical application: the dispositions of planets as they affect the individual, the mechanism by which planetary influences occur, and (not common in manuscripts in this study) of the safe administration of medicines. Was the brontology intended to be part of this learning package? Despite its brevity, the brontology was chosen for inclusion and is not an addition, it is in the main hand within the body of the text and the fact that it is in English relates to the availability of scribal sources. Bryan has identified this brontology as a close translation from Latin similar to the second one in Trinity MS R.14.52, another manuscript with learned texts, from later in this study.[378] The entries that we have in Sloane 636 certainly have the same meanings but are not slavish copies, the scribe has used their own terminology, for example, there is dread and 'gastness'[379] in Trinity R.14.52 and great dread in Sloane 636.

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[374] ff. 70r–70v.
[375] ff. 74r–76r, probably John of Toledo, aka Johannes Hispalensis, see p. 61, fn. 304.
[376] Chapter 4, p. 147.
[377] f. 24r.
[378] Chapter 4, pp. 150–151.
[379] 'fear'.

The brontology is followed by this rubric, similar to teaching texts where the first part is an example, although this particular example is usually presented before brontology;[380]

> 'In what signe ev(er) the sonne be, yef hit þonder by day or by nyghte, as it is notefied hit shall(e) be sothe as bytokene þ(at) God hath ordeyned but he may do his wyll. But hit so be <þat> hit þondre in þe next signe of þe sonne aft(er), þen þe þondre of þe furst sygne leseth his strengthe and the secunde þondre holdeth his strenthe. And þus hit fareth in eu(ery) signe'.[381]

The real focus of the booklet is not astrological medicine, however, but weather, with several Latin texts on weather science following the brontology, including these examples:

- *De pronosticand aere mutacionem*
- *De pluvia fulgem ponituo et vento domar*
- *De hora pluvie et ventorum caboris et frigoribus domar*
- *De pluvie hora*
- *De aere qualitate per singlos annos Alkyndus*[382]

The astrological medicine also includes: letters attributed to Messahla on astronomy and astrology, the effects of the Zodiac on the weather, and medical recipes in relation to the weather. Health concerns continue in the next text on plague and the humours, also attributed to Alkindus.[383] The brontology is closely grouped with the weather texts, resulting in a treatise in Latin on exploring humoral theory and weather, further illustrated by brontology and sixteen verse couplets, all in English, on favourable weather conditions for travel.[384] The placing of *De pestilencia et guerra* with brontology is apposite as it resonates with some of its predictions. The earlier work of John of Ashenden in which he also absorbed brontology into weather science offers two such brontologies for comparison.[385]

Cambridge, St. John's College MS K.49

This is a medical handbook of 84 folios from the first half of the fifteenth century, continuously written on thin paper.[386] The heading *kalendarium medicinarium* <*de modo ope*> describes it as a medical calendar 'of useful

[380] It is part of the Pseudo-Bede *De Tonitruis*, see pp. 59–60.
[381] from ff. 70r – 70v, Bryan, 'Prognostications by Thunder,' p. 20.
[382] 'On weather prognostics; On calming rain, lightning and settling the wind; On calming spells of rain, strong winds and cold; On rainy spells; Alkyndus on air quality over the years,' ff. 78r, 79v, 80r, 80v, 81r.
[383] ff. 82r, 84v–86r.
[384] f. 103r.
[385] See Chapter 2, pp. 39–40.
[386] Measuring 212 mm x 170 mm.

methods,' with the abbreviation expanded after M.R. James from the St. John's College catalogue.[387] Its original cover of limp, but thick and very uneven leather, strongly resembles that of New York, Yale University, Beinecke Rare Books and Manuscript Library, Takamiya MS 61 (below).[388] The cover of St. John's K.49 was recently removed for rebinding, making it possible to examine the five gatherings separately.[389] It appears to be very much a personal compendium and notebook, based on seasonality. The fragile medium was subject to considerable wear which has led to some folios needing mounting on archival supports. The hand is bold and current, with elaborations to the headings and red ink for carets and subheadings. An owner's inscription at the very end of the manuscript states *hugo freis clericus est proprietarius huis libri Anno domini 1438*,[390] who was probably its first (or a very early) owner. There were no further textual additions after this.

After several urology texts,[391] the brontology textual grouping begins with a health regimen specialising in diets for currently sick or recuperating people. The pedagogic '*nunc*' ('now') is a frequent starting point for incipits, for example, *Nunc de uirtuibus rose marine iam declaramus*,[392] a similar Henry Daniel text is also seen in Oxford, Bodleian Library MS. Digby 95 (below).[393] The brontology, in English, follows the health regimen and uses the months of the year as a framework for prognostication, ending with a Latin explicit seeking divine support in academic endeavours; *Quod nobis contedat qui vunt et regnat per omnia sclorem sclorum. Amen*.[394] A prognostic from the day of the week Christmas Day falls on follows the brontology, after that there is a grouping of practical, non-medical recipes concerned with hygiene and therefore, indirectly, wellbeing and the maintenance of health, these include:

- a fly deterrent using onion juice and holy water
- method for making vinegar
- mouse and rat deterrent using oatmeal and quicklime

[387] M.R. James, 'Medica, MRJ number 269, College classmark K.49' (St. John's College Library and Archives), https://www.joh.cam.ac.uk/library/special_collections/manuscripts/medieval_manuscripts/medman/K_49.htm [last accessed 15 Dec 2023].
[388] Chapter 4, p. 129.
[389] James, fn. 387 (above), stated that there were six gatherings, this shows the difficulty in determining the quantity of gatherings when a manuscript is examined bound, factors such as very tight binding or the addition and removal of folios can blur the perception of a manuscript's actual composition.
[390] 'Hugo Freis, Clerk, is the owner of this book, in the Year of Our Lord 1438,' f. 84v.
[391] ff. 48r–48v, 50r–51v, see also Rawlinson C.814, Chapter 2, p. 36, and Huntington 64, Chapter 4, p. 160.
[392] 'Let us now state the virtues of rosemary,' f. 57v.
[393] This chapter, pp. 87–88.
[394] 'That he who lives and reigns in all things, scholar of scholars, shall contest for us, Amen,' f. 60r.

If the household in which these were used was that of priestly owner Hugo Freis, a fly deterrent using holy water was an unusual choice. Two further, health-regimen-style recipes are not simply lists of ingredients but show that humoral theory was being taken into account to formulate treatments;[395]

> 'For to dystroye colour (choler) yn somer, take and use colde thyngis as'…

then a long list of suitable herbs, in mixed Latin and English, finishing with:

- 'And use this (these) herbys yn podage (pottage) þu soud and drynke a lytell wyne but þu delay (dilute) it with water of borage, hertystongs or the juse of orenges.'
- 'For to dystroye floume (phlegm) yn wynter, that commyth of colde and moystenes and it ys cause of menye sekenys and therefore use for to dystroye fleum yn wynter these surups (syrups)…'[396]

The use of orange juice in combating choler speaks of the range of goods available in the merchant communities in large trading centres. Some of the brontology entries support such a provenance: January is concerned with the safety of seagoing (floods and wrecks), February refers to the death of merchants and mariners that year, and the entry for June forecasts much going (travelling) on the sea.[397] This need not conflict with a priest as owner, since a secular priest employed in a well-off household could keep a general book of knowledge there. In the context of this manuscript, the function of the brontology and Christmas Day prognostic is to inform the health regimen; one could follow its guidance, then check if any other effects might be expected over the monthly brontology cycle or the yearly one of the Christmas Day prognostic.

London, British Library, Sloane MS 989

Sloane 989 is a small, portable volume from the first half of the fifteenth century, with 136 folios of a good-quality parchment and written in a decorative book hand without illustration.[398] It is a reference work with almost none of the additional notes seen in contemporary manuscripts from professional or educational settings.[399] The texts selected for the compilation are two Governal of Health treatises, in English, and include several prognostics. 'Governals' are guides to achieving, then maintaining health, with very similar content to health regimens. The first of the Sloane 989 governals, attributed to John de Bordeue, 'for a frende that he had,' takes up most of the manuscript.[400] John of Bordeue is actually 'John of Burgundy,' a physician from Liège writing in

[395] Some of the Middle English terms are rendered into their modern forms for clarity and placed in brackets.
[396] f. 52v.
[397] ff. 59v, 60r.
[398] Measuring 100 mm x 85 mm
[399] There are some in later hands corresponding to a seventeenth-century owner, Elizabeth Toms.
[400] ff. 2r–134r.

the mid-fourteenth century on epidemics.[401] His work on plague was known in mainland Europe but had the greatest popularity in England, where it survived in five languages, all spoken to an extent in England, apart from possibly Dutch (but merchants may have understood it as a trading language), in many manuscript witnesses.[402] The only two Latin texts in Sloane 989 are found within the first governal: the medical reference treatise '*Versus de Scola Salerni*'[403] and one of two months brontologies, the other being in English. This manuscript is the earliest of three in the study with Christmas brontologies and, like the other examples, it is grouped with other brontologies, in this case by the months, one in Latin and one in English. The second governal is attributed to John Lydgate whose eclectic work (much of it in verse) covers history, philosophy, plays, romances and more.[404] The candidate for this Governal of Health would be his 'Secret of Secrets' treatise attributed to Aristotle, believed to be Lydgate's last work as he died in 1451.[405] There is a possibility that Lydgate was the author of the second governal as the completion of the manuscript is close in time to the completion of the original treatise, but textual concordance was not found between the texts, suggesting that the Sloane 989 Governal was written in his style but features different material.

Although towards the end of the manuscript,[406] the brontology textual grouping is immersed in didactic medical and anatomical texts, as follow: [407] two physiognomies, four bloodletting guides, a lunary, and application to medical care of the effects of planetary movements through the Zodiac. This approach resembles the medical canons of earlier, calendrical manuscripts based on those in De Lynn's calendar. There is a definite belt and braces feel to this medical guide. Its Christmas brontology harks back to older sources, yet other versions are available to the reader and the incorporation of brontology with anatomy, and medical care in the Governal, is much more contemporary.

Oxford, Bodleian Library MS. Digby 95

This is a partial textbook manuscript formed of three parts,[408] with a total of 209 folios. The earlier folios are parchment and the later ones are paper. Manuscripts from the Digby collection had a later Oxford life at the

[401] *De epidemia,* ca. 1365, for example.
[402] Latin, English, French, Dutch, Hebrew, Lister Matheson has written on the dissemination of one of John of Burgundy's works on plague to more than a hundred manuscripts, '*Médecin sans Frontières?*: The European Dissemination of John of Burgundy's Plague Treatise,' *ANQ*, Vol. 18, No. 1 (August 2010), pp. 19–30 (pp. 21, 23).
[403] 'Verses from the School of Salerno,' f. 34v.
[404] ff. 134r–136v.
[405] see Robert Steele, *Lydgate and Burgh's Secrees of old Philisoffres: A Version of the 'Secreta Secretorum'* (London, Kegan Paul, Trench, Tubner and Co, 1894); also, see Rawlinson C.814, Chapter 2, p. 35.
[406] ff. 131v–132r.
[407] Note Luis García-Ballester on medical teaching at Salerno, 'Introduction: Practical medicine from Salerno to the Black Death' in Luis García-Ballester, Roger French, Jon Arrizabalaga, and Andrew Cunningham (eds.), *Practical Medicine from Salerno to the Black Death* (Cambridge University Press, 1994), pp. 1–29 (pp. 13–14).
[408] Measuring 215 mm x 150 mm.

Bodleian Library, where he sent them in the first half of the seventeenth century. Their earlier Oxford life was as part of Thomas Allen's curation of astrological and scientific material of interest to himself.[409] The first part is late-fourteenth-century and contains astrological, medical and prognosticatory texts, a lunary, and a health regimen in Latin taking planetary influences into account for medical consultation, as follows:

- *Liber derivationum (Tractatus de fortuna)* (nativities)[410]
- the relationship of the four elements to the four humours
- the *secreta secretorum* of Philippus Tripolitanus (with a physiognomy section attributed to Roger Bacon)[411]
- chiromancy[412]

Medieval physiognomy was a prognostic method which was part of astrological medicine because it was thought that a person's appearance and demeanour could be known from birth according to planetary influences on the Zodiac at that time. The newborn's character is predicted from the physical characteristics it was assumed they would have, for example, if born under Pisces they were expected to be graceful and plump.[413] In addition to this, discussions on this topic could benefit those planning a family, insofar as anyone could control the time of their child's birth.

The second part of the manuscript is fifteenth-century, it is described as the Second Book from Salerno and deals with herbal medicine, written by Henry Daniel. It has an internal date of 1338 which is when the text was sent to England by the Countess of Hermand for her daughter, Philippa of Hainault, Queen consort of Edward III, as explained in the Latin incipit.[414] The incipit also states that the text was translated into English by an Englishman and a Salerno attribution gives further authority to the work. The two brontologies, in Latin, are in this part of the manuscript, one using the zodiac periods, the other the liturgical hours. Only two other manuscripts in this study (Longleat House MS 174 and Additional 27582)[415] have a liturgical hours brontology and both are in later collections of prognostics applied to health regimens and weather science. The placing of brontology with this sort of material shows an interest in the significance of thunder events in the context of herbal lore. Unlike most of Daniel's herbal treatise, the brontology is retained in Latin and given his ability in both Latin and English,[416] he used this as an appropriate choice for this textual grouping. An educational aspect to the manuscript is seen

[409] See Chapter 1, pp. 13–14 for the range of repositories Allen collected from.
[410] 'Book of Derivations (Treatise on Fortune)'.
[411] A version of the *Secreta secretorum* or 'Letter from Aristotle to Alexander'. This is a full translation of the text from Arabic to Latin, ca. 1230, by the translator Philip of Tripoli.
[412] The art of telling the future from the lines on a person's hand.
[413] See Chetham's A.4.99, f. 29r (column b), Chapter 4, p. 121, Fig. 24.
[414] f. 96r.
[415] Chapter 4, pp. 144, 167.
[416] Star, 'The Textual Worlds of Henry Daniel,' p. 194.

in the English teaching text employing verse on humoral medicine and health regimens, 'The Donet of Fesike,'[417] placed immediately after the brontologies.

The third part of the manuscript is mid-fifteenth-century and mostly in English. It continues with the same kind of practical, astrological medical and prognostic texts as those in the first part of Digby 95, but interspersed with practical, herbal cures arranged by ailment, humoral medicine and urology seen in earlier manuscripts Rawlinson C.814 and Advocates 18.6.9. This later material extends the scope of the manuscript into the textual stock-in-trade of the professional physician.

Oxford, Bodleian Library MS. Bodley 591

This example of an astrological medical handbook comes from the middle of the fifteenth century. It is close in size to Wellcome 8004,[418] and has 163 paper folios arranged in eight main booklets, with an extra, sixteenth-century herbal glossary booklet at the back. Apart from the glossary, the texts are written in one main hand and flow continuously from one booklet to another in the style of a compendium of knowledge. The slightly truncated look of some of the letters and relatively light ink suggests a professional or educational context, where shortcuts in letter formation occurred during rapid note-taking and economies were made with ink supplies. Anglicana forms of the late fourteenth century are used to embellish this cursive script, giving it a rather old-fashioned appearance. This suggests the work of an older scribe, or that a conservative house style was in use where it was made which was probably an academic setting, less likely to be a guild library because texts were added to guild books over time,[419] whereas these booklets were written consecutively. The manuscript certainly had a lot of use over the years and now needs to be supported on archival mounts, or two stubs of parchment which hold each folio between them in the book. Several of the initial folios of each booklet are showing damage, so it seems they circulated independently before they were bound into their current form.

Bodley 591 has almost no illustrations, just a sketch of the lower half of a body next to large-scale drawings of an instrument called a clyster invented by the surgeon John of Arderne for treating disorders of the anus and rectum.[420] Despite a variety of phlebotomy texts, there are no Vein Man or Zodiac Man diagrams, so, it must be assumed that either these written instructions were considered sufficient, or readers had access to illustrations elsewhere. The level of astrological medicine offered in Bodley 591 is high. The zeniths of planets are calculated

[417] 'The Gift of Medicine'.
[418] Measuring 215 mm x 153 mm, Wellcome 8004 is 214 mm x 153 mm
[419] See London, British Library, Egerton MS 2572, also known as *The Guild Book of the Barbers and Surgeons of York*, which begins with an astrological medical section dating to 1486.
[420] f. 44r, this device was designed to operate on anal fistulae, a common ailment among men at a time when horse-riding was a regular mode of transport and warfare, but difficult to treat.

as well as moon phases in order to assess the progress of an illness. The zenith is when a planet is directly above an observer on earth, providing them with a precise location to assess which apparent influences were active. If the possible bloodstains on folios 1r to 6v are real, this shows the manuscript originally used for day-to-day medical practice involving bloodletting or surgical interventions. The text up to folio 5r is damaged and lacks a heading. After this it becomes readable and the incipit takes the reader into the world of medical training;

> 'Master I pray the that ȝe tell me now of hurtynge and of the medcen(ne) that bethe good þerfor'.[421]

The answering text is addressed to 'brother,' potentially either a monk or a member of a craft guild, defining 'hurting' in a broader sense than immediate pain from injuries or disease;

> 'Broþe in many man(er)rs men(n) bethe hurt and in diu(er)s plac(es) and som(e) beþ olde hurt(es) and som new and ryght as the hurtyng(s) be dyu(er)s so þey haþ diu(er)se medcens'.[422]

The broader approach is also reflected in a health regimen.[423] The additional glossary of plant names at the back of Bodley 591, translating Latin to English, shows the ongoing life of the manuscript shifting from specialist medicine to apothecary practice.[424] The text which follows expounds types of injuries and their treatment in Latin terms, for example, the internal linings of the skull and the brain, '*dura mater*' and '*pia mater*'.[425] This list is not compatible with modern knowledge as there is a further lining, but could be the state of knowledge at the time rather than an incomplete version. Apothecary medicines as treatment for all the conditions discussed here are prevalent in this part of the manuscript. This is developed further with the later addition of the glossary which represents a move to Latin for specialist uses beyond the fifteenth century when fewer people would have been able to make their own translations.

The brontology (in English) was made into a continuous, compound text with three other prognostics which is part of a wider grouping with seven further prognostics and three major medical texts. The first of the prognostics in the compound text, the 'Day of St. Paul's conversion' prognostic (for the Twenty-fifth of January) is first found in this study in Rawlinson D.238 from the late fourteenth century,[426] noting the weather for the entire year from its effects on that feast day. The full compound text with brontology in Bodley 591 shows the

[421] f. 5r.
[422] Ibid.
[423] ff. 15v–24r.
[424] f. 160r.
[425] f. 5r.
[426] Chapter 2, p. 53.

predicted characters of newborns against, firstly, the effects of thunder during that month and then the influence of the Sun:

Her(re) is a good rewle for the convercion of Seynte poule

If Seynte poules day be fayre and clere it is tokyn of good tyme of the ȝe(re). If hit snowe or rayne It is tocken of derthe. If it be wynde it is tocken of Batayles. If it **f. 39r** be clowde al bests shall perishe and this is of an olde custom among peopill in olde dayes take for a trouthe.

Quando natus est in Aquario nechligens erit

If it thonder in Jenyve(re) and be gret wynde it betotocknethe (sic) plente of frute and bateyles in that ȝere comyng.

sol in Aquario In this synge take þy jorney and it shall t(ur)ne the to profetes

Qui natus est in pissibus graciosus erit

If it thond(er) in february it betockenythe dethe of men and Namly ryche men.

Sol in pissibus. In this synge go nat for thou shalte go powre and com(m)e powre

Quando natus est in Ariete decrepi erit et graciam habebit

If it thond(er) in Marche and be grete wynde it betockenythe plente of frute in that ȝere stryves and bataylls among all pepill.

Sol in Ariete. In this syngne go þy jornay

Qui natus est in tauro graciam habebit in omni bestia

If it thond(er) in Ap(ri)ll it is tocken of mery ȝere of all thyngs but dethe of weckid men(n) it is synge.
Sol in tauro. In this syngne abiede for if thow go it shalle harme the

Quando natus est in geminis paper et debilis erit

If it thond(er) in Maye it is token of scarcenes of frute and honger(re) to be in that ȝer(re) comyng.

Sol in geminis. In this syngne go thy jorney for thow fynde A frende

Quando natus est in cancro debilis erit graciam et peradisum habebit

If it thonder in Jun(n)e riche and powre shalbe mad euy(n)e riche treys and woodis shall periche.

Sol in cancro. In this syngne dought þe nat to take thy Jorney

Qui natus est in Leone audax erit

If hit thonder in Julij it shalbe a good ȝere and the ofspryng of bestis shall p(er)iche.

Sol in leone. In this syngne thow **f. 39v** thou (sic) shalte nat moche be gladits[427] noþ(er) moche be grevid

Qui natus est in Virgine et s(er)re erit

If hit thonder in Auguste it is syngne of welthe but many Men(n) in that ȝere shalbe sicke.

Sol in Virgine. In the singne abide for if thou go þou meyste be grevid

Qui natus est in libra t(rad)itor erit et mala morte morietur

If it thond(er) in Septe(m)b(er) it betocknethe plente of frute and Dethe of bests in that ȝere.

Sol in libra. In this syngne if Thou go thou shalte fynde thyn(n) enmy

Qui natus est in Sorpione multas tribulaciones feret

If it thond(er) in October it is syngne of gret wynde and to be A Plentyu(us) ȝere and to be nedy of fruyt.

Sol in Scorpione In this syngne if thou go thou schalt geet þi selfe harme

Qui natus est in Sagittario audax et iracondus erit

If it thond(er) in Novemb(er) it be toekenythe plente of all thynge

Sol in sagittario. In this syngne go forthe for þ(a)t þu covetest Thow shalte fynde

Qui natus est in capricornio diues et Amabilis erit

If it thond(er) in December it is syngne of A plentyuos ȝere and It schalbe pece and Acorde Amonge All folke.

Sol in Capricornio In that synge go nat for hit shall t(ur)ne þe to no p(ro)sp(er)ite[428]

My translation of the nativities:

'He who is born when it is Aquarius will be careless

He who is born in Pisces will be graceful

He who is born when it is Aries will be delicate and have grace

He who is born in Taurus of all creatures will have grace

He who is born when it is Gemini will be poor and weak

He who is born when it is Cancer will be weak, have grace and make losses (in life)

He who is born in Leo will be bold

He who is born in Virgo will be serene

He who is born in Libra will be a traitor and will die a bad death

[427] 'gladdened'.
[428] f. 39r.

He who is born in Scorpio will bear many tribulations

He who is born in Sagittarius will be bold and passionate

He who is born in Capricorn will be long-lived and likeable'.

The following prognostics in the wider Bodley 591 grouping are applicable to medicine: a lunary, a birth prognostic, or nativity, perilous days, months, bloodletting and Sphere of Life and Death.[429] The three medical texts offer the following areas of medical practice: diagnosis, the four humours humans are composed of and their effects on health, urology, and the effects of the weather on health in four regions of the world.[430] This description, based on the humoral balance of the earth's regions, is similar to the thirteenth-century treatise *De impressionibus aeris siue de prognosticatione* attributed to Robert Grosseteste.[431] A text on medical diagnosis aimed at professionals, or would-be professionals, is one of three medical texts located prior to the brontology and based on the time the patient fell ill.

> 'Also if thou wolte be a kynde sorgeon(n) oþ(er) a Fesicyon(n) þu moste aske a man(n) þat is hurte oþ(ert) Ytake w(i)t(h) any evyll(es) thus:- What day the man take his euyll as he sopposythe and what tide of the day tell me now…'.[432]

Once the day of the onset of illness has been established, the following factors were to be assessed:

- under what planet they were injured or fell ill
- where the moon was in its cycle when this occurred
- whether it was an 'evil' or perilous day, according to the calendar
- whether the planetary dispositions were good or bad at the time
- finer explanation of dispositions of the planets in relation to their zeniths
- further information from the humours affected by the moon specifically, including its effect on the weather

Then, once the procedure of consultation and diagnosis is complete, favourable days for blood-letting according to the lunar cycle are ascertained should it be deemed necessary for the patient in question. The next course of action is to prescribe a monthly health regimen of the correct food and drink to benefit the patient during

[429] ff. 38v–39v.
[430] ff. 37r, 40r.
[431] 'On weather and on prognostication,' in Oxford, Bodleian Library MSS. Bodley 464 (early fourteenth century), Digby 48 (later fifteenth century), Savile 25 (composite of different dates).
[432] f. 12v.

recovery and in the long term.[433] Following these practical approaches there is a return to theory through a passage attributed to Hippocrates to reinforce the importance of astronomical knowledge for medical practice;

> 'Ipocras that is best of lechis seythe that þ(er) is no leche but he can þe science of Ast(ro)nomy and if he can(n)ott þ(at) scyenece he is A blynde man(n) seckyng his wey w(i)t(h) a staffe wavyng hedyr and thed(er) lycke a foole unkowyng what he dothe and þ(e) for þ(is) sholde no man(ner) put hime selfe in the handys of hi(m) in as moche as he is no parfyte leche nor he des(er)ue not to be namyde a leche.'[434]

The next textual groupings suggest a general practice, starting with a Latin text on children's health, *De pueris sanandibus*, which notes the prevalent humours at the time of year a child is born, then suggests suitable medicine for any subsequent illnesses. A phlebotomy text accompanying this expanded nativity details the effects of cutting particular veins, including the unusual problem of opening 'a veyne und(er) eyþ(er) of þe arme-pitt(s) mak(eth) a man(n) to dey lawghyng.'[435] This is followed by texts on finding moveable feasts in the calendar and weather science,[436] culminating in a long passage on the 'diu(er)ise and me(ur)velus effect(s)'of thunder.[437] Compared with the earlier compound text in Sloane 282, the provision of children's medicine defines practice in family health or care of young people in educational establishments. Used with the nativity, now part of the compound text with brontology, this extends prognosis of their prospects in life into their first month.

California, San Marino, Huntington Library MS HM 1336

This is a manuscript from the middle of the fifteenth century. It is a textbook of 36 parchment folios written in a bold, hybrid Anglicana script, with elegant embellishments inked in red and black.[438] It is unusually slim compared with most manuscripts in this study, which normally have over a hundred folios sometimes many more than that.[439] An unusual feature is the naming in the colophon of its scribe, Simon Wysbech, and the owner who commissioned it, Robert Taylor of Boxford.[440] This gives a clarity to the scope of the book as a collection of texts in English chosen by an individual for their own needs and perhaps because of this it never accrued the booklets of circulating texts added to manuscripts from university and medical training contexts. This clarity is not found in the majority of corpus manuscripts, which are often compilations of varied groupings of texts by several compilers, one notable exception being late-medieval, London, Wellcome Library MS 8004, also completed in

[433] f. 15v.
[434] f. 16v.
[435] f. 37v.
[436] f. 42v.
[437] ff. 39v, 40r.
[438] Measuring 219 mm x 145 mm.
[439] Nine manuscripts in this study have over two hundred folios and one has over three hundred.
[440] f. 36r.

a single campaign.[441] Simon Wysbech was not an employee at a commercial stationer's workshop, but (as the colophon states) a student of canon law at Cambridge with a sideline in writing books, presumably to supplement his funds. This detail speaks of the variety of literate, and in this case definitely Latinate, people involved in such work in the fifteenth century. It is not known whether this was something he did more than once, but his remark just before the colophon about a scribe requiring a drink after his labours is resonant of a regular scribe's humour.[442]

The manuscript begins with a Latin to English herbal glossary,[443] otherwise all texts are in English. Although modest in length now, Huntington 1336 was shorter still when first compiled, then shortly after a herbal booklet ending with a text on the physical indications of life and death was added to the middle of the original herbal and prognostic treatise.[444] Although the hand is slightly different and the ink fainter, the remarkably similar palaeographic features to those of Simon Wysbech's work strongly suggest it is contemporary, or near-contemporary to the rest of the manuscript. The original treatise continues after this with the following items:

- brontology, in English
- a New Year Day's prognostic, each of the days of the week described in turn as falling on 'kalendes of Ianeuere' or the first day of the month.[445]
- good days to let blood, including a minor prognostic from the prophylactic practice of bleeding on St. Lambert's Day (17th September) to ward off the 'falling evil'.
- A list of thirty-two perilous days in the year and predictions of ill fortune.

The reader can apply the 'good gouernanse' 'quod Symon'[446] regarding the following health regimen, suitably forewarned by the prognostics.

Oxford, Bodleian Library MS, Ashmole 342

This manuscript is from the fifteenth century and the size of a pocket notebook, or vade mecum, made of six booklets with a total of 154 parchment folios over six booklets. The first two booklets are fourteenth-century, the third, fourth and fifth are fifteenth, and the sixth is thirteenth-century. It is a true composite manuscript of many individual texts by many scribe/compilers in generally well-formed secretary hands in Latin, French,

[441] See Chapter 4, p. 100.
[442] f. 36r, '*Nunc scripsi totum pro christo da michi potum*,' 'for Christ's sake give me a drink now I have written all this'.
[443] ff. 1r–2v.
[444] The original text runs from ff. 2v–18v, then ff. 19r–28v, also on herbal recipes, were inserted and the original text resumes from ff. 29r–34v.
[445] f. 35r
[446] f. 36r

macaronic (mixtures of languages)[447] and English and the Latin sections are ruled. Neil Ker identified a later ecclesiastical provenance of Bermondsey Abbey, a Cluniac house, from the inscription '*Libellus dompni Iohannis ..d... monachi sancti salutoris de Bermondsi iuxta London*'[448] at the end of the third booklet.[449] Although, he notes that the manuscript or just the booklet itself might have belonged to that person and not necessarily the abbey. There are two fifteenth-century brontologies, differing in content, the first in the third booklet, the second in the fifth. The first is in Latin and uses the zodiac time periods,[450] the second is in English and uses the months.[451]

The first booklet has a pro-Crusade text and pilgrimage guide in French,[452] two French prognostics on which days of the week New Year's Day and Christmas Day fall,[453] several calendar tables and tables of Albedacus. This person was apparently an astronomer once working in former Persia, the cataloguer William Black notes the tables 'consist of 30 oriental words' heading short sentences, [454] following the incipit *dilecto regi Persarum vates Albedacus salutes majores*.[455] There are also two *tractatus de spatula* texts with complex origins, for comparison. The first is claimed to be by Ablaudius Babilonius from among the most ancient Greek volumes, the second from Abdalaben Zeleman's book on 'the spatula,'[456] or spatulamancy. This was predictions made from the condition of animals' shoulder blades after death. The scribe has noted '*Hugonis*,' as the translator of the first text and this person was subsequently identified as Hugo Sanctelliensis (Santalla, Spain) by Charles Haskins.[457] This Hugo was one of the scholars directly involved in the translation and transmission of Islamicate knowledge in the twelfth century.

The French prognostics also occur (in English translation) in another fifteenth-century corpus manuscript, Oxford, Bodleian Library, Ashmole MS 189.[458] The second booklet in this manuscript is composed of astronomical tables, which were a means of knowing the movements of the sun, moon and planets in relation to the fixed stars. Fixed stars are distant in relation to the much more visible sun, moon and planets and seem not to move. The third booklet's index shows that originally it contained much more astronomical material but this has

[447] Usually Latin and English, sometimes French and English or all three.
[448] 'The booklet of Dominus John <?padre of the> monks of St. Saviour's, Bermondsey, near London,' f. 85r.
[449] Neil Ker, *Medieval Libraries of Great Britain 3,* http://mlgb3.bodleian.ox.ac.uk/mlgb/book/424/ [last accessed 24 Feb 2024].
[450] ff. 88v - 90r.
[451] f. 134r.
[452] ff. 1r - 6v.
[453] ff. 25v, 28r - 29v, see Tony Hunt, 'Les Pronostics En Anglo-Normand Méthodes et Documents' in Richard Trachsler (dir.) *Moult obscures paroles: Études sur la prophétie médiévale* (Paris, l'Université Paris-Sorbonne, 2007), pp. 29–50 (p. 35, fnn. 19, 20).
[454] William Black, *Ashmole Catalogue*, 'No. 342,' cols. 239–245 (col. 240).
[455] Ibid., 'Best greetings to the beloved King of the Persians from the Seer Albedacus'.
[456] Ibid.
[457] Charles H. Haskins, 'The Translations of Hugo Sanctelliensis,' *The Romanic Review*, Vol. 2, No. 1 (January–March, 1911), pp. 1–15 (pp. 1–2, 14–15).
[458] Chapter 5, p. 186.

since been removed.[459] Some astronomical tables and texts on the qualities,[460] or dispositions, of the signs of the Zodiac do survive early in the booklet, however. Prior to the brontology there are two herbal texts, a short triple glossary of medical terms from English to French to Latin,[461] mnemonic verse on the order of the signs of the Zodiac, and several didactic and moralising texts attributed to clerics, three examples as follow:

- 'Fr. K. De Lincoln et Fratrem Martinum De Lenne,' *Expositiones istius sententiae, Minus scio quod per confessionem scio*.[462]
- 'Fr. Adam De Lacu, *ubicunque est actus moralis et delectacio morosa*.[463]
- '*Bernardus*' (Bernard of Clairvaux) attributed for *Si ex contemptu sciens et deliberans sponte in verba prorupero*.[464]

These texts offer insight into the construction of this part of the manuscript from the lecture notes of various student priests on confession, morals, and the tempering of speech. After the brontology there is a very ecclesiastical advocation of the rewards of regular payment of tithes, '*nota quod quadrupliciter remuneratur a Deo qui fideliter dat decimas*'.[465] It is notable that brontology appears to have been grouped with useful texts for life as a priest, but still retains a zodiac framework in the form of short, didactic zodiac-based texts in verse which follow the brontology.[466] The mnemonic and pedagogic qualities of their rhyming couplet form have been investigated by L.M. Eldredge.[467] There are more astrological texts in the fourth booklet, for example, planetary tables, in English and Latin. The fifth booklet is mostly in English and consists of the brontology and a number of texts related to astrological medicine:[468]

- the four humours
- effects of the moon on earth
- perilous days, especially for bloodletting
- brontology
- four seasons, in Latin
- propitious times for bloodletting, in Latin
- phlebotomy treatise, attributed to *Magistrum* Evesham, in English, Latin and French.[469]

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[459] f. 85r.
[460] ff. 70r–81v.
[461] ff. 85v–86r.
[462] 'Expound this sentence; I know less than what I know through confession,' f. 87r.
[463] 'Wherever there is moral action there is serious pleasure,' ff. 87v–88r.
[464] 'If out of contempt I knowingly and deliberately rush spontaneously into speech,' f. 90v.
[465] 'He who faithfully pays tithes will be rewarded by God fourfold', f. 90v.
[466] ff. 90v–92v.
[467] L.M. Eldredge, 'Four mnemonic distichs in Bodleian Library MS. Ashmole 342', *Wurzburger Medizinhistorische Mitteilungen*, Vol. 10 (January 1992), pp. 175 – 180, passim.
[468] f. 134r.
[469] ff. 115r–126v.

The fifth booklet has a more practical medical tenor, and starts with a text explaining the working of the four humours in the human body, next there is a lunary similarly explaining the effects of the moon on it. Following this, there are Latin headings and incipits for six English prognostic texts on bloodletting (the brontology is between the first and second of these) and two on favourable and unfavourable days for activities and a lunar calendar. This number of examples of the same text goes beyond including a second version for comparison and it seems more likely that this part of the manuscript at least is a teacher's manual, which might also apply to the lecture notes in the third booklet. There is no sense of a dedicated prognostic section due the mixing of prognostics and medical diagnosis texts. The sixth booklet returns the reader to the arena of astronomical knowledge by teaching about computus and the calendar in relation to the Zodiac.[470]

The first booklet in Ashmole 342 indicates part of the manuscript originating in an affluent household, then institutional and educational aspects are presented in the further booklets, including training for the priesthood and astrological medical knowledge. The resultant compilation is germane to medical practice with training responsibilities, with two very different brontologies playing their part in this: one in a priest's handbook with short, mnemonic verse on the Zodiac, the other, part of the process of preparation for safe bloodletting or surgery.

Sloane 1609, the earliest manuscript in this chapter, does bring the study into the fifteenth century in the same scholarly style of the university-derived compilations from Chapter Two and, in this example, has evidence of ecclesiastical ownership. Although not all fifteenth-century manuscript owners would have been professional physicians, some of the texts included are now arising from their education and training. Also, preventative medicine starts to feature more prominently in these compilations in addition to proactive treatment. Preventative medicine according to the seasons becomes reinforced in health regimens by acknowledging the effects of dispositions of signs of the Zodiac and weather on health in a kind of circular argument. Brontology forewarns of the exacerbation or reduction of seasonal and planetary-originated problems through wide-ranging effects on the health of individuals, groups, and food and political security if there is thunder.

The four manuscripts following Sloane 1609 in date are all small, personalised, portable books: three are folding manuscripts (one of them learned) and the fourth is a book of hours. They give an impression of

[470] William Black, *Ashmole Catalogue*, 'No. 342,' col. 242.

people using astrological medical methods and prognostics on the move, such as travelling scholars and priests, medical practitioners, or merchants. The first of these manuscripts, Egerton 2724, is written in similar amounts of Latin and English, with no obvious reasons for the choice other than they were copied in those languages, implying the scribe/compiler was equally at home with both. Although the concise texts in these manuscripts are abbreviated, they are surprisingly detailed. This format it suited to quick reference whilst travelling, when only certain parts of the manuscript need be opened at a time. The references are largely aimed at maintaining health and preventing illness. However, the evidence of similar potential bloodstains to Rawlinson D.939 also speaks of practical health maintenance measures taken at some point. In Egerton 2724, the brontology is prominently placed with a health regimen. The brontology is overarching in Morgan 941, listing ruling planets for activities with a detailed planetary influences chart to consult at different points in the manuscript once opened out. The medical Vein Man diagram shows more than just bloodletting, also the major and minor veins in specific areas of the body for surgery or other interventions. Ashmole 6 is similarly focused on planetary influences, specifically as they affect the progression of illnesses, and its lack of illustration and depth of knowledge identifies it as a professional guide. Its main feature is that it deals with the long-term conditions treated by a physician rather than the emergency interventions of a surgeon.

These ways of making knowledge portable were not exclusively fifteenth-century concepts, as Rawlinson D.939 testifies, but the majority of the study examples are from the fifteenth century. This could simply be a chance survival since overall numbers are small, but there are quite a few more folding manuscripts extant without brontology.[471] The examples with it are a rather niche category into which it had spread through a holistic approach to health which regarded the effects of thunder. The quality of the texts is such they could well have come from a doctor, surgeon, guild or social group with workbooks or training manuals, folding manuscript versions of these for use when travelling.

Another aspect of earlier fifteenth century brontology use is the wider scientific interest in weather seen in Sloane 636, which resembles Sloane 1609 on first inspection, but goes beyond the fundamental astrological medicine of the *Wise Book* with meteorologically focused texts for health and travel, including brontology, all in Latin. At the same time, practical aspects of medicine and health care feature to a greater extent in this chapter than in Chapter Two, for example, St. John's K.49, a medical and apothecary manual with training aspects. In this manuscript, brontology is placed with a health regimen,

[471] See Carey, p.31.

as in Sloane 1609 and Bodley 591, and also offers weather science texts. The brontology textual grouping in Bodley 591 deals with calendar consultation and the wider effects of thunder in the manner of weather enquiries attributed to Robert Grosseteste.

Health regimens per se were an extremely popular form in the fifteenth century, hundreds of examples are found in eTKeVK2,[472] all the more sought after because there was a lack of qualified doctors even for those who could afford them. Very small numbers graduated with a medical degree during the study period,[473] but there were other ways to learn about and practice medicine which involved a licensing system. At Oxford, arts graduates were allowed to practice medicine after studying it for four years and taking an examination, for non-graduates this was extended to eight years.[474] In general though, self-help was a popular choice, Huntington 1336 uses the term 'good governance' (of health) for its health regimen material, hinting at an audience used to governing things, such as merchants and officials like aldermen who thought it natural to apply these principles to their own health and wellbeing. In the pedagogic manuscript CUL Ff.5.48 this terminology also covers good behaviour or self-control.[475] Sloane 989 is another small, portable book almost entirely consisting of health regimen material with three brontologies as part of the offering. Another significant feature of earlier-fifteenth-century manuscripts is a pronounced strand of herbal medicine applying astrological medical principles to holistic remedies. They are of generally high quality and can be used in the wider context of health regimens, like brontology. They also tend to be didactic, with multiples of the same text provided, as in Sloane 989. The didactic use of verse and a desire to compare texts may be what led to the creation of compound texts with brontology first seen in Sloane 282 at the cusp of the fourteenth and fifteenth centuries, Bodley 591 and further examples in the later fifteenth century. In the next chapter, this form of grouping is seen continuing into the later fifteenth century and developing in complexity and technicality from earlier iterations.

[472] Two hundred and ninety-one in English for the fifteenth century alone.
[473] Peregrine Hordern, 'Medieval Medicine,' in Mark Jackson (ed.), *The Oxford Handbook of the History of Medicine* (2011; online edn, Oxford Academic, 18 Sept. 2012), pp. 40–59 (p.42), https://doi.org/10.1093/oxfordhb/9780199546497.001.0001 [last accessed 29 Nov. 2023].
[474] Vern L. Bullough, 'Medical Study at Mediaeval Oxford,' *Speculum*, Vol. 36, No. 4 (Nov, 1961) pp. 600–612 (p. 606).
[475] Chapter 4, p. 134.

Chapter Four - Later Fifteenth Century and Early Sixteenth Century Brontology

Introduction

The key enquiry in this chapter is whether the manuscripts in this study from the later fifteenth century have the same character as those from the earlier part of the century. In particular, did the didacticism of tone which was more prevalent in the Chapter Three manuscripts than those in Chapter Two continue and to what extent? So far, the manuscript witnesses have shown the practical medical texts often grouped with brontology, such as herbals and health regimens, becoming more focused on astrological medicine. Therefore, since this new focus often utilises several, comparative texts for consultation, examples of weightier, desk-bound manuscripts become more common at this time, but practical medicine still features as an adjunct. Also, more brontologies survive in more manuscripts from the later fifteenth century (shown in Chart 1)[476] so this period does represent the apogee of their use. Quantity does not necessarily mean quality, however, and greater popularity could mean a less specialist use. Therefore, it is very important to this study to establish exactly how the texts are handled within their groupings, how prominently they are placed, the way any sort of integration with other material occurs and what languages were employed, particularly the quality of any translations.

Later fifteenth century

London, Wellcome Library MS 8004

This substantial manuscript has 100 fine parchment folios.[477] Many of the embellishments at the top edges of folios have been spoiled by cropping to fit a later binding,[478] but otherwise, it is in very good condition and appears complete. Prick marks are still visible at the right edge of most folios, indicating the original layout despite the cropping. The manuscript was written in a single, well-formed, mixed-secretary hand closely resembling that of corpus manuscript Trinity O.1.57,[479] also a mid-fifteenth-century manuscript compilation, with a similar style of illumination. The embellishment of the large book hand initials in Wellcome 8004 is elegant and floriate with numerous areas of gold illumination, executed with the flair of a professional scribe or artist. Professional illumination need not mean the manuscript as a whole was commercially produced, as the embellishment alone could have been commissioned from a workshop, but the overall uniformity and neatness of the scheme convinces that this was the case here. The wealth of the

[476] Chapter 1, p. 52.
[477] Measuring 214 mm x 153 mm now, trimming during rebinding has reduced all folio edges by 2 mm.
[478] Nb, there is a problem with the current foliation due to the missing corner of f. 40r. One editor has foliated the manuscript without it, whilst another included it resulting in a discrepancy of one folio in some sources. This study follows the numbering at the bottom of the folios (which includes f. 40r) therefore references may appear to be one folio in advance of that used in some of the sources.
[479] This chapter, p. 125.

person or organisation who commissioned Wellcome 8004 is not in doubt, in addition to the initials, the finely drawn illustrations use several pigments and are illuminated with gold and silver. A lack of marginal annotations also indicates Wellcome 8004 was not engaged with as a working manuscript but may have been used for reference or to be read from at a lectern.

The two brontologies are in English, in separate groupings in this manuscript and written by different scribes.[480] The first is based on the periods of the signs of the Zodiac intercalated with planetary information,[481] other prognostics, biblical events occurring in zodiac periods and bloodletting advice. The second is based on calendar months. This is the third manuscript in this study with brontology placed as part of a compound text and it is more elaborate still than the two earlier examples (Bodley 591 and Sloane 282). The Zodiac Man and Vein Man images are large and lavish, and even practical reference tables and charts have gold illumination.[482] A Sphere of Pythagoras diagram produced elsewhere was cut and pasted into the manuscript but in the same hand as the rest,[483] so this was a matter of expediency where the scribe/compiler might have copied it in situ from a manuscript in a library. The majority of the texts are in English, with a few Latin technical terms and headings and the calendar is the only fully Latin text. The fact that the manuscript is in English yet deals with learned astrological medicine led to Baroness Blackstone's judgement that it is of national importance.[484] This came about when it was about to be sold out of the country and her intervention resulted in its acquisition by the Wellcome Library.[485] A codicological, palaeographic and linguistic description of the manuscript has been produced by Carolina Pérez Guillén, identifying both northern and southern English verb forms which support the case for an origin in the English Midlands.[486] In addition to this, a comparison of a group of Eastern English decorated manuscripts with history texts (including Wellcome 8004) was carried out by James Simpson and Sarah Peverley who found close similarities between them in foliage decoration and details of human figures.[487] Therefore, if the Eastern Midlands is the most likely place of production for Wellcome 8004, affluent

[480] ff. 36r–41v, 70r–70v.
[481] ff. 34v–41v.
[482] Lunary ff. 18v, 19r, 29r, uroscopy 58v.
[483] ff. 28v–29r.
[484] Baroness Blackstone was Arts Minister in 2002.
[485] Lara Artemis and Tony Bish 'Preservation ethics and practical digitization; A case study on the possible preservation issues surrounding the preparation for digitization of an English fifteenth-century physician's handbook,' in Gillian Fellows-Jensen and Peter Springborg (eds.), *Care and conservation of manuscripts 9; Proceedings of the ninth international seminar held at the University of Copenhagen 14th-15th April 2005* (University of Copenhagen, 2006), pp. 49–58.
[486] Carolina Pérez Guillén, 'London, Wellcome Library, MS 8004: A Description,' *Publicaciones Didácticas* No. 82 (May 2017), pp. 139–152 (p. 151), https://publicacionesdidacticas.com/hemeroteca/pd_082_may.pdf [last accessed 28 Jan 2024].
[487] James Simpson, Sarah Peverley (eds.), 'Introduction' ('Decoration' and fn. 68), *Hardyng's Chronicle: Edited from British Library MS Lansdowne 204* (Kalamazoo, Medieval Institute Publications, 2015), https://d.lib.rochester.edu/teams/publication/simpson-pevereley-hardyng-chronicle [last accessed 17 December 2023].

towns like Thetford, Northampton, Norwich or Kings Lynn are credible contenders, especially noting similarities between the Wellcome 8004 hands and text and those of Trinity O.1.57 which has Northamptonshire provenance.

The calendar (commencing in 1454) is of interest to this study as it focuses on prognostication from the outset, see incipit;

> 'þis calender is compyled and mad aftyre dyvers cale(n)ders for 4 syctysse ev(ri)y sycts durynge 19 ȝer. And as for þe begyn(n)ge of þis calendere is to have a varyd knawlege qwat ev(ri)y þinge be-tokyns'[488]

In her article on astrological medicine and almanacs, Carey comments that this calendar resembles the continuation of John Somer's calendar, dated 1387–1462 in London, British Library, Harley MS 937, which was written in English.[489] The Wellcome 8004 compiler himself claims to have amalgamated several calendars, which would therefore have included Somer's. Given the wide-ranging and eclectic nature of the other texts in the manuscript, there is every reason to suppose that he was in a position to do that. The Wellcome 8004 texts are, in fact, more sophisticated than Somer's, with additional texts to his on planetary positions and astrological houses, enabling the preparation of 'more complex astro-medical assessments'.[490] The calendar also offers clues as to the possible location and owner of the manuscript in the inclusion of the feasts of St. Hugh of Lincoln (his Translation), and SS.Crispin and Crispinian.[491] St. Hugh's feast does not necessarily fix the manuscript's origin to Lincoln as he was very active in the wider diocese during his life, this included Oxford where he founded several churches. The inclusion of SS. Crispin and Crispinian's feast strengthens the probability of a town origin and an owner involved in a craft guild as they were patron saints of cobblers, curriers, tanners, leather workers, lacemakers (and other intricate crafts). The incipit to the calendar informs the reader that the following information can be found within:

- the number of days in a month
- the number of hours and minutes of the day from sunrise to sunset
- primes according to the cycles of the dominical letters
- nones, ides, kalends and saints' feasts
- hours and minutes of the planets and degrees of the sun
- the conjunctions of the sun and moon
- a dominical letters prognostic

[488] ff. 5r–17v.
[489] Carey (2004), p. 349.
[490] Ibid.
[491] 16th November and 25th October, respectively.

- dignities or worthiness of planets
- solar and lunar eclipses
- a planetary table of conjunction of zodiac sign periods and degrees of the moon each day
- 'diverse matters' from times when the moon shines, as shown in the tables

The list ends with the following statement; 'Compiled and drawn after the consate (conceit) and the devise of' (an image of a red dragon). Smudging and darkening on the folio looks as if the name of a person or organisation giving their consent had been erased along with the dragon's wings, perhaps due to a change of ownership, see Figure 17 (below).

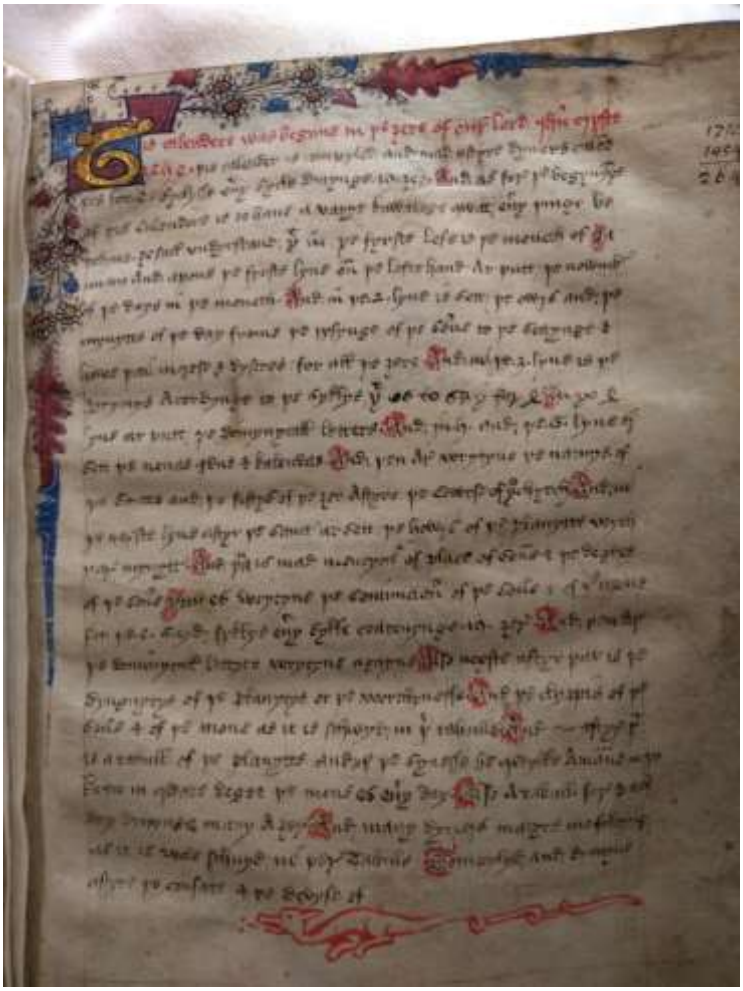

Figure 17 Wellcome Library, Wellcome MS 8004, f. 5r, de-winged red dragon
own photograph with permission of The Wellcome Library

The red dragon is a well-known emblem of Wales and the Tudor family, but in an English manuscript context this would be expected to refer to the Tudors through the rise of Henry VII. However, his reign was much later than the production of Wellcome 8004.[492] An image of a dragon per se could relate to a religious or craft guild with a saintly patron such as St. George, St. Margaret of Antioch, or St. Michael the Archangel, all famous dragon-slayers. In Norwich, one of the contenders for the manuscript's place of production, a similarly sinuous beast, albeit green, is carved into the roof beams of the probable hall of the Guild of St. George, Figure 18 (below).[493] It had been hidden by reconfiguration of the floors for a long period and only recently came to light when the building was repurposed as the National Centre for Writing. The Norwich Guild of St. George, founded 1385, was not a craft guild linked to a specific trade, but a civic guild where men of means engaged in local politics.[494] It was incorporated into the city government in 1452,[495] just before the manuscript was produced. Kings Lynn (then known as just Lynn), another possible place of the manuscript's production, also had a Guild of St. George from ca. 1376 with substantial guild hall from 1420.[496]

Figure 18 – Spandrel panel from Dragon Hall, Norwich

[492] 1485 to 1509.
[493] Dragon Hall Volunteers, *Dragon Hall Heritage Documents* (Norwich), p. 8, https://www.dragonhallnorwich.org.uk/pdfs/a-detailed-guide-to-dragon-hall.pdf [last accessed 12 Feb 2024].
[494] Muriel McClendon, 'A Moveable Feast: St. George's Day Celebrations and Religious Change in Early Modern England,' *Journal of British Studies*, Vol. 38, No. 1 (Jan. 1999), pp. 1–27 (pp. 11–12).
[495] Ibid., p. 12.
[496] National Trust, 'The history of St. George's Guild Hall,' https://www.nationaltrust.org.uk/visit/norfolk/st-georges-guildhall/the-history-of-st-georges-guildhall [last accessed 12 Feb 2024].

Because of the nature of this guild as originally religious, then civic, the manuscript's possible guild affiliation does not help to identify it as belonging to a particular craft group, like surgeons for example. It might explain why the manuscript is so luxurious however, giving insight into the sort of material such a guild might have in its library. Ultimately, however, caution dictates that the dragon affiliation may relate to the calendar section only by way of ownership, in that the scribe was acknowledging a guild, or other group or society as the source of that particular piece of information.

Figure 19 Wellcome Library, Wellcome MS 8004, Vein Man, f. 18r.

In addition to the clear explanations of the advisability of opening veins and their specific and longer-term effects,[497] the wider textual grouping of the Wellcome 8004 Vein Man consists of medical prognostic texts, with two diagrams following the image: 'Sphere of Life and Death' and *Spera pictagore*.[498] These include instructions and tables to find the ruling planets for each hour of the day. Next, *Declaraciones abbatis Sancti Albani super Kalendarium Regin*, originally written by Richard of Wallingford in the fourteenth century. This treatise teaches about astrological medical applications of the calendar, linking prognostics to the calendar at various times shown, such as feasts, resulting in effects on quaternities (or groups of four), for example, natural elements, bodily humours, and cardinal directions. [499]

Figure 20 Wellcome Library, Wellcome MS 8004, Zodiac Man, f. 39r.
Image licence: CC BY-NC 4.0 DEED

[497] f. 18r.
[498] 'Sphere of Pythagoras,' ff. 18v–19r.
[499] ff. 31v–34r, see Linda Voigts, 'The *Declaracions* of Richard of Wallingford: A case study of a Middle English astrological treatise,' in Taavitsainen and Pahta, *Medical and Scientific Writing*, pp. 197–208 (p. 198), and J.D. North on Wallingford's career and scientific interests, 'Wallingford, Richard (c. 1292–1336)', ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/23525 [last accessed 19 Dec 2023].

The first brontology is central to the whole textual grouping, after the entry for Virgo and before Libra, there is a full-folio Zodiac Man, see Figure 20 (above).[500] The image has a red background within a formal frame of blue and gold, although it is more diagrammatic in style than the earlier Vein Man, see Figure 19 (above).[501] Many applied medical texts are found in between the first and second brontologies, including a long, illuminated uroscopy treatise and a dietary with text for a Zodiac Man, attributed to Ptolemy, but this time without an image.[502] The uroscopy text on the methodology of urine examination includes a detailed and decorative chart of urine flasks known as 'jordans,' similar to the urine hue chart of North African physician Isaac Israeli ben Solomon in his work *Liber urinarum*.[503] The intensive examination of urine, or uroscopy was popularised by Constantine the African, Bernard de Gordon, and Gilles de Corbeil as a means of understanding the distillation of humours in the body in order to balance them and it was a trademark of medieval physicians.[504] The medieval dietary deals with wide human interaction with the world, the Latin term *dietarium* meaning a 'way of living or thinking'. In modern times this has conflated to matters of the diet only but the medieval form was akin to the health regimen and included what we now think of as mental health.[505]

The second brontology is preceded by a New Year's Day prognostic and followed by a name prognostic (or onomancy). In onomancy, binary results of contentious or doubtful events are determined from a person's name, similar to the operation of The Sphere, but without diagrams.[506] The table of planetary dignities which follows this provides a quick reference point if the reader needs to be reminded of relevant planetary influences, with an alternative dietary if necessary. The text which follows this is a long account of a pilgrimage to Jerusalem with detailed instructions for those planning such a journey. Therefore, these prognostics allow for informed decisions on necessary matters for such an undertaking, i.e. whether to go, when to go, how to prepare.[507] The pilgrimage text is important in itself, giving personal accounts

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[500] This chapter, p. 106, Fig. 20.
[501] This chapter, p. 105, Fig. 19.
[502] ff. 58v–65r, 73r.
[503] 'The Book of Urines' Ben Solomon lived from the mid-ninth to mid-tenth century, see J. A. Armstrong, 'Urinalysis in Western culture: A brief history,' *Kidney International*, Vol. 71, No. 5 (March, 2007), pp. 384–387; also, Garabed Eknoyan, 'Looking at the Urine: The Renaissance of an Unbroken Tradition,' *American Journal of Kidney Diseases* Vol. 49, No. 6 (June, 2007), pp. 865–872. Additionally, see Teresa Tavormina, 'The Twenty-Jordan Series: An Illustrated Middle English Uroscopy Text,' *ANQ*, Vol. 18 No. 3 (2005) pp. 43-67.
[504] Note where it is used to depict a physician in Morgan 941, Chapter 3, p. 77, Fig. 13.
[505] f. 84v–85v, see Jake Walsh Morrissey on dietary matters, 'To Al Indifferent: The Virtues of Lydgate's 'Dietary,' *Medium Aevum*, Vol. 84, No. 2 (2015), pp. 258–278 (p. 259).
[506] ff. 68v–71r.
[507] ff. 75r–83r, this has been edited and translated by Francis Davey, *Richard of Lincoln: A Medieval Doctor Travels to Jerusalem* (Exeter, Azure Publications, 2013).

of side-pilgrimages from the main journey to Jerusalem with a medical preoccupation which have never been found anywhere else. Although the use of the first person in this text is not certain proof that the scribe of the Wellcome 8004 text undertook the journey himself, this uniqueness is strong evidence that at least parts of it were novel deviations from the usual routes.[508]

The brontologies themselves concur in standard matters of prediction: great winds during the year if it thunders in January, March, or October, plenty of corn that year (equating to 'fruit' or 'crops' in the first brontology) if thunder comes in January, March, or November. However, the radical differences in June, July, August, and December means they had different sources. The entries from the first brontology are more contemporary in style than the second, which has one of the classical-sounding entries about beasts in the woods (shown in Table 2, below):[509]

- June – (first brontology) abundant fruit, diverse sickness (Second brontology) many men living in the woods, lions and wolves and tree throws[510]
- July – (first) a reasonable year (second) little corn
- August – (first) publications need to be finished, many will fall sick (second) wealth, prosperity
- December – (first) finish projects (second) plenty of corn and wheat, peace and rest.[511]

Since they only partially correspond to each other this allows them to be used in a discretionary way, with a choice of predictions which made sense with other prognostics also being consulted. The first and second brontologies (below) are my own full transcriptions. First Wellcome 8004 brontology, in compound text:

f. 37r

'Aquaryus and hys propertes

Aquarius is a syne in þe qwylke þe sone is in Janyuer and in þat moneth ar ·7· parlose dayes, þe ·1·2·4·5·6·15·19. And if <u>thonur</u> be hard(e) in þat moneth it Betokyns gret wynd mykyll frute and batell

Aquarius is hote and moyste sanguyne and of þe Ayr it is gud to byg castyls or howces and to wed and **f. 37v** latt blod and all þinge to do þat þow will laste longe it is ill to do medcyne to þe legge frome þe knese to the a(n)nkyle qwene þe mone reyns in hyme, the sone rense in hym from þe ·3· idus of Janevyr to þe ·4· idus of feuer ȝer it is ill to begyne schorte way or any þinge to do þat þu wold wer sone enddyd.

[508] See Davey, pp. 40–41.
[509] Table 2, 'Exotic items in brontology entries', this chapter, p. 178.
[510] This term refers to trees uprooted and blown over by strong winds.
[511] ff. 38v (70r), 38v–39r (70r), 39v (70r), 40v–41r (70v).

Pyssys Be war þat þu be no3te kyttd in þe thy3ghe or in þe synows of þem unto þe lawiste part of þe ankylls.

Piscis es a syne þe qwylke þe sonne is in feuer3er for þene ar gedyrd to gedyr mych rayne and many tempests and in þat moneth ar ·3· parluse days ·16·17·18· and the sone is sayd in þe fyfth for Jonas þe p(ro)fett was in þe se in þe wombe of a qwalle ·3· days and ·3· ny3tys and qwo so is bor(n)ne in þat syne he sall have gud grace and if any thonur be hard in þat moneth it betokyns of many men(n) and namly of rych mene gret seknesse and Pisces is cold and moyste flumatyke and of þe watyr it is gud to wed A wyfe and to trete frendys to chafyr w(i)t(h) money and all þing to done þat on(n) wat(er) or w(i)t(h) watyr is done. It is gud to tak a jorney be watyr and namly northward it is gud to by possessions and to make marchandysse and all þinge þat longthe to doubelyn(n)ge. It is ill to do medcyne to the feete or ow3te to do w(i)t(h) fyr or Any þing þat w(i)t(h) fyr is done. The sone rayns in hyme fro þe ·4· idus of fevyr3er unto þe ·4· idus of march.

Be þe(n) war of hurtynge of þe fete norr be kytt in þe feet **f. 38r** nor in þe extremyttys of þeme.

ys syne Aryes

Aries is a syne in þe qwylke þe sone is in marche and it is sayd in ariete for Abraham mayd hys offerynge of a rame for hys sone Isaac. And qwo so is borne in þat syne he sall be dredfull, bott he sall have grace if any thonur be hard in þat moneth it be tokynse grete plente of frute and gret wynd and stryfe amonge þe pepull and in þat moneth ar ·3· p(er)lus days ·15·16·18·

Aries is a syne hote and dry and coloryke and of þe fyr it is gud to be gyne a way into þe este in marchandysse and to latt blod on(n) þe armys. And to do þat þu will sone have done. And he þat þe(n) takys a jo(ur)ney wel and sone he sall end it. It is ill to do medsyne to þe hed nor to wed nor to entyr in to a howce nor no þinge to do þat þu wold longe laste and a byd. Þe sone reyns in hyme from þe ·4· idus of marche to þe laste idus ofof (sic) aprill.

Be war of kyttynge on(n) þe hed or in þe face and kytt no3te þe principall vayne.

ys syne taurus

Taurus es syne in þe qwylke þe sone is in Aprill and it is sayd in Tauro for Jacob worstyld i(n) Bedleme wyth an(n) Aungell as a bull. And qwo so is born(n)e in þ(a)t syne schall haue grace in bestys. If thonur be hard in þ(a)t moneth it betokyns and mery and a frutfull 3er and deth of wykyd pepull and in þat moneth ar ·2· perylous days 7·11· **T**aurus is a signe cold and drye malencoly and of þe eryth it is gud to

sawe and sett vynesse and trese for þai sall sone growe and longe laste. It is gud to byge an(n) howce or A castyll or to wed and all warkys to begyn(n)e þat þu will have longe lastynge and to be stabull. It is ill to do medcyne to þe neke or to þe throte or to sett a batell or begyne A jo(ur)ney

The sone rense in hym frome þe laste idus of ap(ri)le unto þe ·3· idus of may.

Be war of cuttyngys in in (sic) þe neke or in þe throte nor cutt þe vayne in þo(se) places.

ys syne of Gemynys and ys Virtus

Geminis is a syne þe qwylke þe sone is in may for þenne it dowbuls þe hyȝte of þe moneth be for. The son(n)e is sayd in geminis for Adam and Eve war mad both of on(n)e body. And who so is Born(n)e in þat moneth, he sall be ryȝte por and wake and lyfe in mykull tribulacio(n)ne. And if it thonur in moneth, it betokyns scarsnesse of frutys and of hun(n)gur in þe same ȝer. And in þat moneth ar ·4· parloys days ·6·15·16·18· Geminis is a syne host (sic), moyste and sanguyne and of þe Ayr it is gud to make a cordemen(n)t be twysse en*n*imys or to go to batell, or to take medcyne

or to far forth be watyr. It is ill to do medcyn(n)e to þe armys or to take any jorney for ofte tymys for oft tyms (sic) it is rejornyd and þe purpose turnyd. Þe sone renyth in hyme frome þe ·3· idus of may unto laste idus of Junii. Be war of cuttynge in þe schowldurs or in þe arms nor in þe handys nor apon(n) no vayne in þe placys.

ys syne of cancer

Cancer is a syne in þe qwilke þe sone is in June for a crab arsward beste and so þe sone is in þat moneth, in þe fyrste parte of it also myche as he may he ascendys. in þe end of þe moneth he is goynge arsward he turnys hym*m* selfe. The sone is sayd in þe kankyr for Job wasse full of cankes. And qwo so is borne in þat syne he sall be dredful bott he sall be a gud mane. If thonor be hard in þ(a)t moneth it betokyns abowndaunce of frute and dyverse seknesse and þer ar two days of p(er)ill þ(er)in ·16·17 Cancer is a syne cold and moyste flumatyke and meveabull of þe watyr and it is callyd þe howce of þe mone. It is gud to take away northward or to sett batell to fygte and all þinge to done þ(a)t wi)t(h) watyr es done and it is gud to take medcyne to þe breste or to byge a howce

or possession(n)s to take and the sone rence in hym frome þe laste idus of June unto þe laste idus of July.

Be war of cuttynge in þe breste or in þe rybysse and of hurtynge of þe stomake and of þe lungys nor kytt þe small pype nor þe vayne þat is dyrecte to þe splene.

ys syne of Leo ys propertes

Leo is a syne in þe qwilke þe sone is i(n) July for os þe lyone es moste fervente beste of all bestys in natur so þe son(n)e in þat moneth es moste **f. 39r** farvent in hys heete. The sone is sayd in þe lyone for Danyel þe p(ro)fyte was putt in þe lake of lyons. Who so is borne in þat syne he sall be hardy and lychyrus and if it thonor in þ(a)t moneth it betokyns a resenabull ȝer Bott frute of bestys sall pariche and þ(er) ar ·2· days of p(er)ill ·15·19· Leo is a syne hote and drye coleryke and of þe <Ayr> it is gud to speke to lyngthe and to potestate and to do all þinge þat is done w(i)t(h) fyr. It is gud to sett a castell or a howce or to chafyr w(i)t() gold or Any þinge of ȝalowe colour it is (sic) is ill to begyne A longe warke or to cleyth þe in a new cloyth for þow sall be stryky(n) þer in or ellys take seknesse þer in. It is ill to do medcyne to þe herte or þe lyuer or to þe stomake or forto take a drynke for þu sall caste it upe agayne w(i)t(h) blod. The sone rence in hyme frome þe laste idus of July unto þe ·18· k(a)l(ends). Of Septembr(e).

Be war of cutty(n)ge in þe synns or hurtynge of þe syd(s) and of bones nor kytt in þe bak be opynynge of vayns nor be any ventusynge.

ys syne of Vyrgo and ys godnys

Virgo is a syne in þe whylke þe sone is in August(e) for as a maydyne is baryne so es þe sone in þat parte of ȝodiake for he brynges furth no frute bott makys þem rype. **T**he sone is sayd i(n) þe v(ir)gynn for Mary in hyr chyldynge was borne a virgyne and who so es borne in þat syne he sall be wise and w(i)t(h) owtyne gylte blamyd*e*. **A**nd if thonur in þ(a)t moneth **f. 40r** Zodiac man.

A lower piece of the folio is missing, there may have been a weakness in the parchment which has some blemishes there, but only a small part of the frame is missing. On the other side, f. 40v, the first half of the last line of text is lost.

f. 40v

(continuation of text from f. 39v) in þat moneth it betokns þinge publysted to be broȝt to end bott many sall wax seke. And (per) ar ·2· p(er)lyus days ·19·20· Virgo is a syne cold dry malecoly and

of þe erth it is gud to sawe and sett and to thwyt[512] and hew and all þinge to don(n) þat w(i)t(h) erth is done or on(n)e erth is wroȝte. And qwene þe mone is in þies syn(n)s Geminis.Virgo.Saturnus and Pisces,

[512] 'whittle,' or carve.

it is gud to do all þinge þat þu wold haue increse. It is gud to wedd a womane þat is corrupte.[513] And ill to wed A virgyn(n)e for sche sall be barane or few chyldyr haue. It is ill to take a jorney in to þe north orto do medcyne to þe wombe or to þe inwardys. The sone rence in hyme from þe ·18· kal. Of September(e) to þe ·17· kl. Of octobur(e). Be war þat þer be no wounds kuttyd in þe wombe nor in prevy placys wythin furth for sych is no3t ly3tly curabul.

ys syne of Libra

Libra is a syne in þe qwilke þe sone is in Septembr(e) for þen(n) þe days and þe ny3tys ar both equipolent. The sone is sayd in Libra for Judas Scarioth purposyd hys cownsell to betray criste gods sone of hevyne. And qwo so is borne in þat syne sall be avyll doar and a traytor and he sall dy An(n) ill dede, bott it be lettyd be þe natur of hys planett or by the mone. **A**nd if it <u>thonur</u> in þat moneth it betokyns abundance of frute and sleynge of gret…

<u>Damaged folio</u> – possibly 3 words missing <þ(er)> ar ·2· days of parill ·18·17· Libra as a syne moueable hote and moyste sanguyne and of þe Ayr. It is gud to take a jo(ur)ney astword in marchandise it kis gud to latt blod and all þinge to do þat þu will sone haue e(n)nd bott it is ill to do medcyne to þe bledyr or to þe arse, and to þe p(ri)uytys of mane and womane and to do all þinge þ*a*t of þe erth is done or w(i)t(h) þe erth is done and the sone raynce in hyme frome þe ·17· kal. of

Octobr(e) to þe laste idus of october.

Be war þat none vayne be kytt in þe navill nor in þe lauer parte of þe wombe nor opyne þe vayne in þe bake nor put any ventusynge.

ys syne of Sorpyo and ys prop(er)teys

Scorpes is a syne in þe qwilke þe sone es in Octobyr(e) for as þe Scorpion(ne) is a serpente sodanly sinyt and w(i)t(h) hyse tale so doth tempastys and cold in þ(a)t moneth The sone is sayd þe Scorpion(ne) for þe chyldyr of isr(r)el passyd thru3e þe red see. And qwo so is borne in þat syne sall sovyre many t(ri)bulacions and dyssatys. And if þ(er) be <u>thonor</u> in þat moneth it betokyns gret wynd and frute of trese sall p(er)iche þ(er) ar ·2· days of p(er)ill ·6·7·

[513] As in the opposite of a virgin, 'Namoore may maydenhede be restored.. neuere shal it be that she nas corrupt,' ca. 1390, Geoffrey Chaucer, 'Parson's Prologue and Tale,' (exclusive of the Retraction), *Canterbury Tales*, I.872, in J.M. Manly and E. Rickert (eds.), *The Text of the Canterbury Tales* (University of Chicago Press, 1940), Vol. 4, pp. 361–476, Vol. 8, pp. 177–545.

Scorpion(n) is A syne cold and moyste flumatyke and of þe watyr. I can(n)e nott se qwatt is gud þen(n) to begyne for þe mone is þen(n) unhappy bott neuyr þe lesse it is þen(n) to take medcyne bott luke þu take take (sic) no jorney be wat(er) nor be lande nor clyme no trese nor hyllys nor do no medcyne to þe p(ri)uyts. The sone raynce in hyme frome þe laste idus of octobr*e* unto þe ·18· kal. of novembyr.

Be war of cuttynge of þe testyculys and of þe arse. And of þe bladdyr and of hurtynge of þe marwe nor cutt þe p(ri)vytys of mane nor womane.

Sagyttarius

Sagittarius is a syne in þe qwilke þe sone is in novembr(e) for as a schoter schotys soþanly hys Arusse so doth þe sone in þis moneth grete tempests. The sone is sayd in Sagittario for David faugth w(i)t(h) Goly. And qwo so is borne in þat moneth (scored through) syne he sall be hardy and lixherto(us) and if it thonur in þat moneth it betokyns aboundance of frute and a mery ȝer. And þ(er) ar ·2· days of p*er*ill ·25·27·

Sagittarius is a syne hote and dry coleryke and of þe fyr. It is gud to make cordmente be twyse foyse and gud to latt blod and to bath. And to take a jorney i(n) m(ar)cha(n)dise estword*s* bott it is ill to take a way norward*s*. It is gud to wirke all þinge þat is done w(i)t(h) fyr. And it is ill to do medcyne to þe theyȝs or to drawe blod ou(v) þem.

Þe son(n) rense in hyme frome þe ·18· kal. Of nouembr*e* to þe laste idus of Decembr(e).

Be warr of cuttynge of theys or of fyngyrs nor cutt fowlnes or spottys or any sup(er)fluyte growynge in manyss body.

ys syne of capricornyus

Capricorn(us) is a syne in qwilke þe son(n)e is in Decembr(e) for as þe gate is a stynkand beste so is þis tyme stynkand. The sone is sayd in capricornus for Esau be venacion loste hys fadyr blyssynge. And qwo so is borne in þat syne schall be rych and wele luffyd. And if it thonor in þat moneth it betokyns Aboundaunce of frute, pese and concord. And þer ar ·3· dase **f. 41r** of p(er)ill ·6·8·17· **C**ap(ri)corne is cold and dry male(n)coly and of þe erth it is gud to sawe and sett and all þinge to do þat wyth erth is don(n)e and it si good to take A wey sowthward in marchandyse and all þinge to done þat þu wold sone haue endyd. It is ill to tak A wey northward or to wed a wyfe or to do any thynge wyth fyr to latt blod to take drynk(s), or to do medcynto þe knese. **T**he sone rence in hyme frome þe last idus of decembr*e* to þe ·3· idus of janyuer(e).

Be war(e) þat þu be noȝte kyttyd in þe knese and be war of cyttynge of sy(n)noue(s) and vaynes in þise placese'.

A summary of the items covered in this text:

- when the sun is in the sign and what weather may be expected at this time
- moralising reference to biblical event believed to have happened at that time
- perilous days in that period
- the brontology
- the complexion, or humoral disposition, of the sign
- commercial and practical concerns pertaining to this
- the suitability of the sign for bloodletting with warnings of inappropriate phlebotomy according to the dispositions of the sign and the Zodiac Man.

The items in the first brontology wider textual grouping:[514]

- equatory table, for calculating the ruling planets at any hour, used for horoscopes when the time of birth is known
- table of the countenance (or disposition) of the sun's movements from 1386 to 1469
- lunar eclipse tables
- ruling planets table
- gradient of the moon table
- ruling planets at every hour, attributed to Richard of Wallingford
- planetary dignities, stating when within a zodiac period planets will become powerful
- planetary exaltation and triplicity, in which signs of the Zodiac planets were believed to be most potent, and which combinations of planets affected the four elements of fire, earth, air and water
- theory of Fours (or quaternities): the elements, cardinal directions and humours relating to each zodiac sign
- brontology intercalated with the 'the exposition of þe 12 synys' and Zodiac Man

Second brontology

f. 70r

'This chapitur nexst feloynge declars qwat thunder(re) Betokyns in eu(er)y moneth of þe ȝer

Thundyr in Janiver be(to)kyns grete wynd*s* in þ(a)t same ȝer plente of corn(n)e and p(er)aventur batell

[514] ff. 24v–27v, 28r, 29r, 30r, 31r, 31v, 32r, 32v, 36r–41r.

Thund(er) in fever3er sygnifice þ(a)t many me(n)ne sall dy and namly ryche men(ne) sall dy and þat w(i)t(h) grete seknys

Thundur in marche sygnifice þ(a)t same 3er grete wynd*s* plente of corne debate emonge þe pepull

Thund(ur) in Aprile significe þ(a)t 3er scarsnesse of corne derth and grett hungur

*The entry for May is missing but there is no space to accommodate it so it must have been missed

Thund(ur) in June sygnifice þer sall be þ(a)t 3er many Wood(s) men(n)e and þere sall be throwe a wynd*s* þ(a)t þai(s) take as a seknesse bar þe hed and also g(e)t wodues sall go of lyons and wolfes and odyr arowfull bestys

Thundur in July significe þ*a*t 3er sall be lytyll corn(e) and bestis sall periche and fayle

Thund(ur) in Auguste betokyns welth and p(ro)sp(er)ite w(i)t(h) in þe reme of all maner of þinge bott many men(n)e

Thund(ur) in Septemb(er) significe sall be secke gret wynd*s* plente of corne stryvynge mych amonge þe pepull and(e) mykyll en(n)vy

Thund(ur) in octobur significe gret wynd(s) scarsnesse of corne and lytyll frute on(n) trese

f. 40v

Thund(ur) in Nove(m)mbr(e) sygnifyce all þing(s) to be frutfull and mery and also plente of corne

Thund(er) in Decembr(e) signyfice plente of corne mych qwete pese and reste emonge þe pepule'.

Other texts grouped with the second brontology:

- explanation of how the body is influenced by zodiac signs during their ascendancy, attributed to Ptolemy's *Almagest*
- table of planetary dignities[515]

The knowledge embodied in Wellcome 8004 was composed in a considered and detailed way, with an educational outlook and ease of reference. The array of texts demonstrates a strong grasp of the astrological medicine of the day, often in a form of English very close to Latin originals, showing they were recent, faithful translations.[516] Differences in brontology presentation should be noted as integral to their intended purpose. The first is

[515] ff. 67v–68r, 73r.
[516] See Voigts, 'The *Declaracions,*' p. 205, this chapter, p. 106.

positioned in a compound prognostic including nativity and medical prognostic elements referring to issues of bodily health and their treatment, fortified by biblical lore. The second brontology is grouped with more general prognostics, equally encompassing health matters but also a wider application to issues of success and wellbeing, such as travel, business and politics.

Manchester, Chetham's Library Mun.A.4.99

This manuscript dates to the second half of the fifteenth century.[517] It is not very large,[518] therefore suitable as a vade mecum, but squarer than other corpus manuscripts which allows it to accommodate a large number of astrological tables.[519] It has 32 parchment folios, written in a bold and well-spaced Anglicana hand, with initials in red and blue ink, entire paragraphs in red, and generally rich embellishment. English and Latin are used freely together. Faith Wallis has found an earlier example of a manuscript with this format, Oxford, Bodleian Library MS. Savile 39 (ca. 1436) (this example lacks a brontology), which she interprets as a codex version of a folded manuscript. Savile 39 has a similar volvelle to Chetham's Mun.A.4.99 which show the longitude and phases of the Moon. Volvelles are circular charts with pointers which serve as quick references for planetary movements. It is not suggested here that manuscripts like this were a development from folding ones as they were coincident, but rather that it was a matter of horses for courses. If a portable manuscript was required for travel a folding one could be produced from the textual material usually used in a workshop or study, but abbreviated and some of it turned into images. Chetham's A.4.99 and Savile 39 were hybrids in this sense. They offered more information than the smaller folding manuscripts (apart from Ashmole 6 and Additional 28725, the two unusual professional examples,) and performative and display elements such as large, colourful images decorated with precious metals and bold labelling.[520] The increased space in Chetham's A.4.99 compared with the folding format, allows for a geater selection of astrological medical texts including volvelles, and diagrams such as eclipse charts. The most common type is marked out in degrees to locate the position of the sun or moon in the sky. Chetham's A.4.99 has a number of different and unusual types, including:

- a multi-pointer version showing the positions of all the planets in the sky, relative to each other, see Figure 21 (below),

[517] The eclipse tables, ff. 24r–24, date from 1330 to 1462.
[518] 186 mm x 188 mm.
[519] Faith Wallis, 'Medicine in Medieval Calendar Manuscripts', in Margaret Schleissner (ed.), *Manuscript Sources of Medieval Medicine. A Book of Essays* (New York, Routledge, 1995), pp. 105–143 (pp. 119–120).
[520] Zodiac Man diagrams: Savile 39, f. 7r; Chetham's A.4.99, f. 21v.

Figure 21, Chetham's Library MS Mun.A.4.99, f. 2r
https://luna.manchester.ac.uk/luna/servlet/s/o32tu8

– one with two pointers showing the times of day planets are visible to determine which quaternities out of dispositions, temperatures, and influence of the Four Evangelists are dominant within each hour, for example, John covers the hours from 12 am to 6 am, see Figure 22 (below)

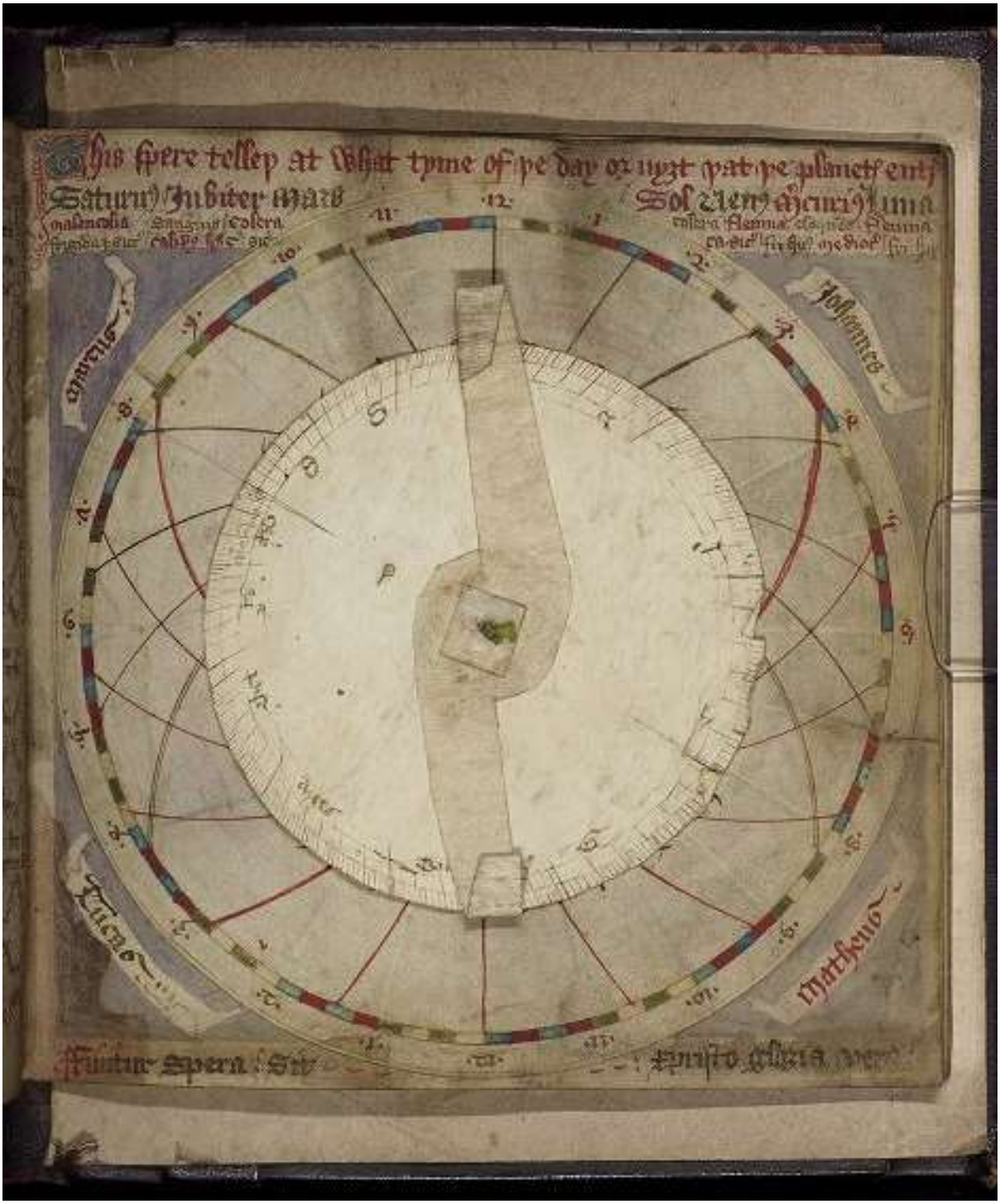

Figure 22, Chetham's Library MS Mun.A.4.99, f. 17r
https://luna.manchester.ac.uk/luna/servlet/s/5o283s

– a diagram of parts of the sky where planetary trajectories are seen at dawn or dusk in relation to fixed stars, see Figure 23 (below)

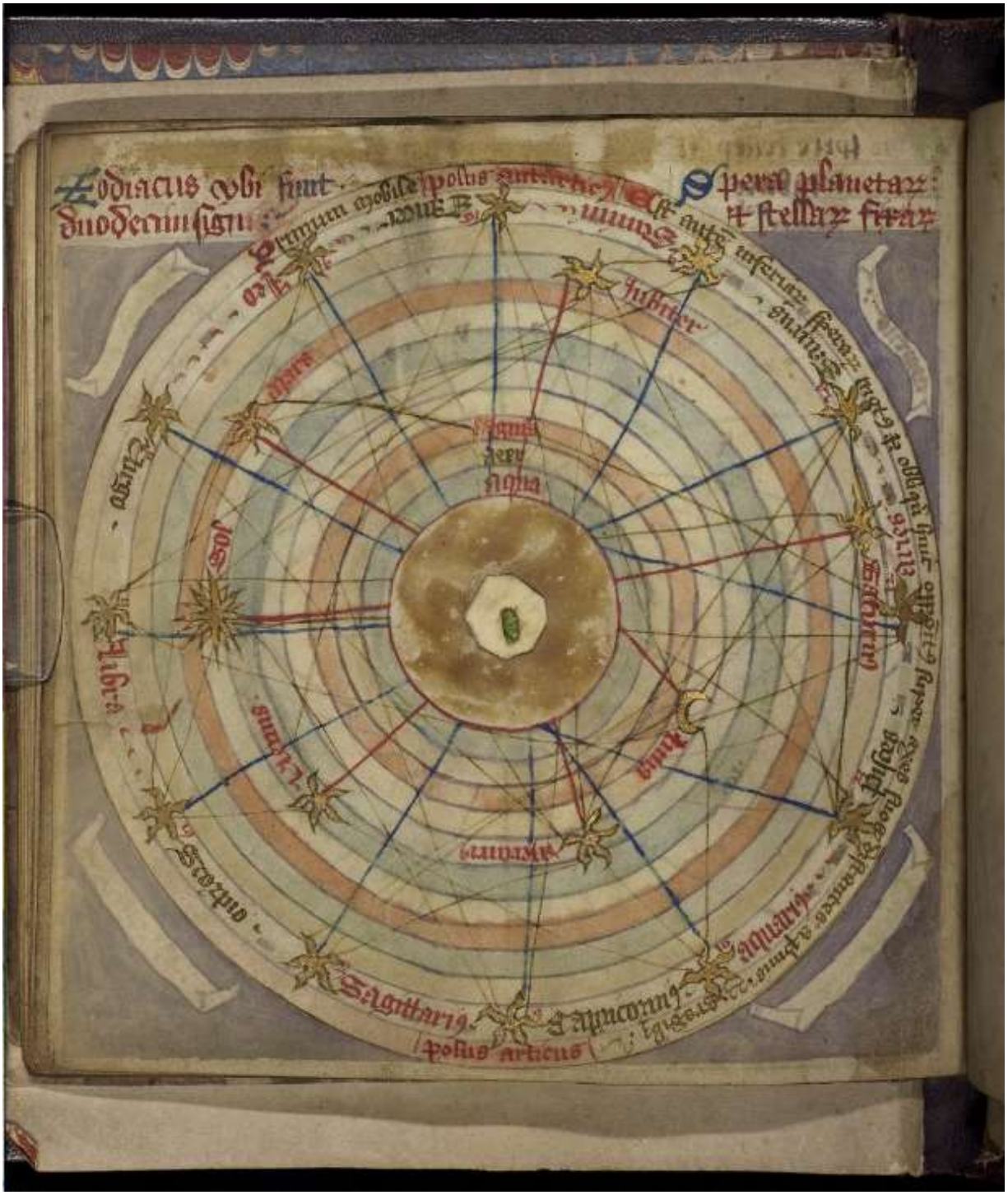

Figure 23 Chetham's Library MS Mun.A.4.99, f. 17v
https://luna.manchester.ac.uk/luna/servlet/s/j43k0h

The manuscript contains few practical, medical texts, no uroscopy or advice on making up medicines, but brief health regimen items are intercalated into the compound text with brontology. They are couched in the terminology of humoral theory in considering the effects on the body of planetary influences on the Zodiac. The zodiac prognostic incorporated within this, from when the sun appears in the zodiac sign, has very few variations from the example in Rawlinson D.939, a folding manuscript potentially a hundred years older than Chetham's A.4.99.

The compound text contains two brontologies, the first in Latin, the second in English. The main details of the English brontology correspond to the Latin one, but the text diverges with the addition of further prognostication. If the English version is a translation of the Latin, and it is close in vocabulary and meaning, the scribe interacted with the text by adding information germane to his practice. For example: for January, the English brontology has the additional detail that the people at war that year are those who live 'under the star,' in February; the additional English prognostic is 'a good year to sow,' and in December, gratitude to God comes to the fore when benefits that month are bestowed 'through the grace of our Lord'.[521] The English brontology is also in rhyming couplets closely similar to its contemporary in CUL Ff.5.48 (below),[522] a pedagogic manuscript with associations to parish priests.[523] Chetham's A.4.99 is suitable for shared use as a reference manual in a physician's guild, an affluent town guild, or the training of an individual apprentice in a successful medical practice. These two examples demonstrate how similar brontology was applied in different contexts in the mid-fifteenth century whilst posing further questions about transmission, i.e. what were the common sources of material for compilations by priests, tutors, or medics? Was it simply a sharing of texts from university contexts? The charitable motives of monastic scholars offer another explanation, whereby material was made accessible to non-university-trained doctors for the greater good.[524]

Images of the first four months of the year in the compound text with two brontologies are shown below, with an example transcription for January and February.

[521] ff. 29r, 31v.
[522] This chapter, p. 134.
[523] DIMEV 6477 (1).
[524] See Faye Marie Getz, 'Charity, Translation, and the Language of Medical Learning in Medieval England,' *Bulletin of the History of Medicine*, Volume 64, No. 1 (Spring, 1990), pp. 1–17 (pp. 16–17).

Figure 24 Chetham's Library MS Mun.A.4.99, f. 29r, *Januar(ia)* and *Februar(ri)a* in compound text
https://luna.manchester.ac.uk/luna/servlet/s/kwm6im

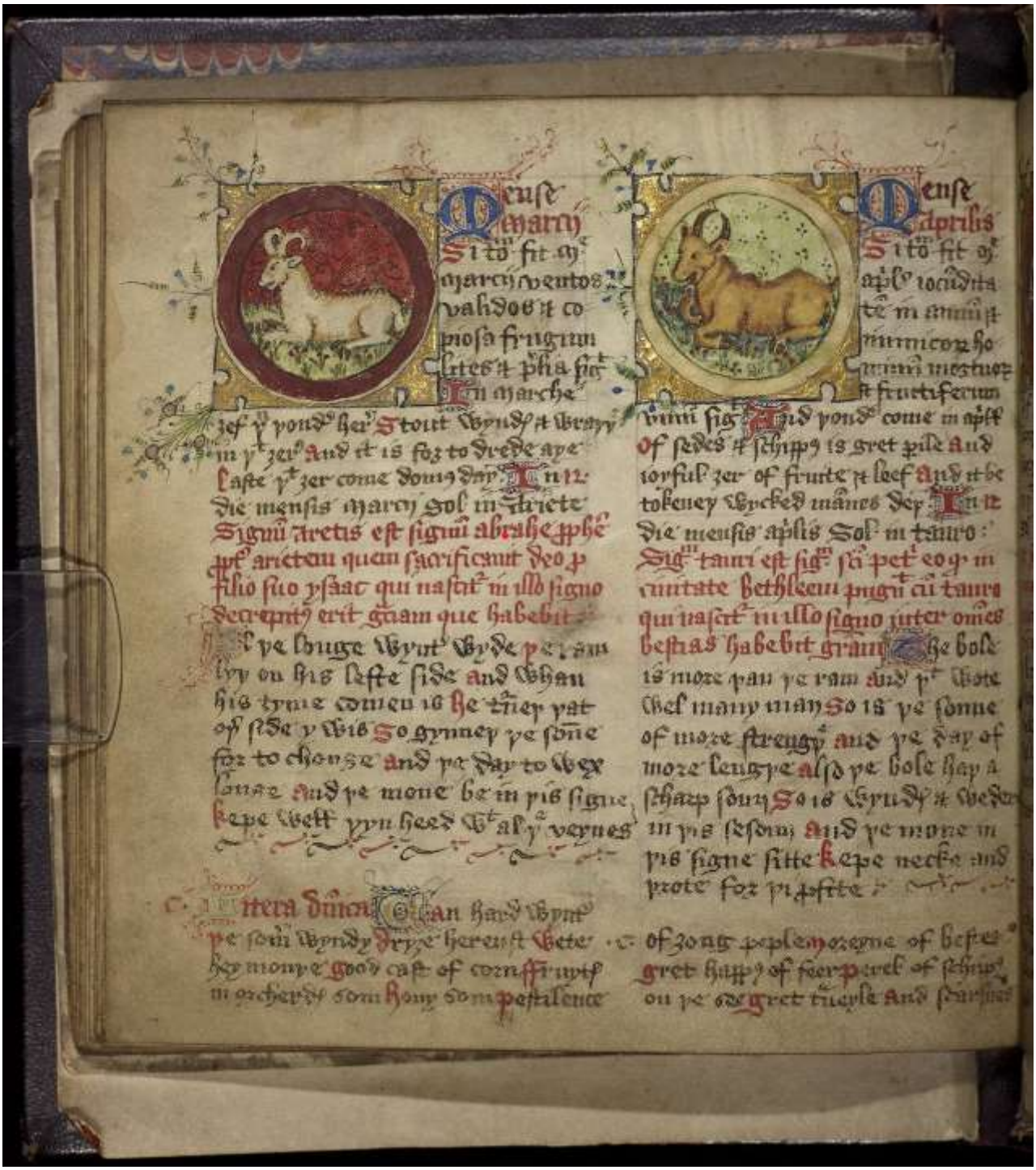

Figure 25 Chetham's Library MS Mun.A.4.99, f. 29, *Marcii* and *Aprilis*
https://luna.manchester.ac.uk/luna/servlet/s/914w75

Transcription of entries for January and February:

'*Hic incipiunt Tonitrua mensium et signo(rum) solis et Lune*
Mense Januari(us)
Si tonitruu(m) sit mense Janu(ri) vent(os) valid(os) habund(um) frug(um)
Whan þond(er) comeþ in janu(ri) þou schalt haue þ(a)t ilke ȝer grete wi(n)ds moche fruit and gret werre of folk þ(a)t liuen und(er) sterre. *In 11 die me(n)sis Januar(i) Sol in aquario. Signu(m) aq(ua)rii est signu(m) iordains fluuii in quo (Christ)us ȝ(us) fuit. Qui nascit(ur) in illo signo necgligens erit*. The Sonne is her(e) in þis signe kinde seson to snewe frese and reyne as þe pottes tu(rn)e upso doun so chongeþ þe wederes in vis sesou(n) and þe mone be in þis signe kepe þou wel þy schankes tweyne.
Hic incipiunt septem anni l(ett)ram dominicalem a, b, c, d, e, f, g
a - a warm wynter and esye som(er) stormy plente of whete and good cast of corn þat ȝer plente of fruyts hony but som deþ of ȝong peple moreyne of bestes and many þefes fiȝtynge of peloures and a cord of kynges.
Mense Februar(ius)
Si tonit(ruum) sit mense Febru(ri) mortem multor(um) and maxime divitum significat
Here is now anoþ(er) wonder. In febru(ri) whan þu herest þond(er) it betokeneth of riche me(n) lidginge lowe and a gode ȝer for to sowe. *In 10 die mensis Februar(i) Sol in piscibus. Signu(m) piscis est sig(num) Jone p(ro)phe(te) qui fuit in ventre cuiusdam piscis i(n) cete. Qui nascit(ur) in illo signo g(ra)ciosus erit et gross(us).*
All þe fissches ben in her kynde to lyue in wat(er) in riȝt mynde so is þe sonne in þis tyme þe kynde sesou(n) for to reyne and wete and moyste for to be as ben þe fissches in her degres so is þe sonne in her signe for to snewe and to reyne and ȝif þe mone in þis signe be kepe wel þi feet þ rede þe
Litera d(omi)nica B wynter comune somer wete dere whete gret liȝings good wynȝer deþ of kyngs deþ of qeen gret bateyle of knyȝts many foule blasts many wydewes and wryngy(gn)s of ha(n)ds'.[525]

My translation of the Latin text:

'Here begins the Thunders of the month and the signs from the Sun and Moon. The Month of January, if it thunders in January there will be strong winds and abundant grain. In 11 days in the month of January the Sun is in Aquarius. The sign of Aquarius is the sign of the River Jordan in which Christ was baptised. He who is born in that sign will be careless. Here begin the Sunday letters for seven years, a, b, c, d, e, f, g. The Month of February, if it thunders in February it signifies many deaths especially of the rich. In 10

[525] f. 29r.

days in the month of February the Sun is in Pisces. The sign of Pisces is the sign of the Prophet Jonah who was in the stomach of a certain fish (in a whale). He who is born in that sign will be gracious and plump. Sunday letter B,'

Chetham's A.4.99 is therefore best summarised as a convenient, didactic, astrological medical guide akin to portable, folding manuscripts but applying prognostics more deeply to health and wellbeing after consulting wider astrological indicators or, in other words, an upgrade.

London, British Library, Sloane MS 1315

This is a composite manuscript from the mid-fifteenth century, similar in size to a textbook but a little wider than usual to accommodate a booklet of similar astrological tables, lunaries and diagrams to those in Chetham's A.4.99.[526] It has 152 paper folios of good quality and several similar hands. The calendar dates to the late fourteenth century and, during the mid-fifteenth century, the brontology was entered at the bottom of each month's folio, recto and verso in Latin and entirely rubricated, apart from January and July and an incomplete entry for May. This lack of care is also found in an odd mistake in the June entry which should read that men will perish '*in silvia*', or 'in the forest,' if there is thunder, which is written as '*in lingua*', or 'in the language,' the long 's' mistaken for an 'l' and the 'lvi' becoming 'gu'.[527] There are other peculiar phrases which indicate this was either an idiosyncratic version or had come from a rare source not transmitted in the other study brontologies: in the February prediction, '*tesanorum querendes*' ('complaints about taxes'), in April ships will perish, in September, '*omsionem potentum*', or the rather Machiavellian 'elimination of the powerful'. These entries seem cursory in comparison with the three earlier manuscripts with brontology in calendar folios, but nevertheless, they are applied to seasonal issues and detailed in parts.

On the whole, Sloane 1315 has a household character, beginning with a tongue-in-cheek verse on the duties and characters of servants, and presenting useful texts for medical herbal practice. However, the inclusion of astrological tables, especially the ruling planets table, means that it was possible to interpret them, and the brontology, within the parameters of humoral theory to a greater extent than earlier examples like Aberdeen 272 if the reader had the knowledge to do so.[528] For example, correct medicinal dosing according to planetary influences.[529] There is no doubt that these were taken seriously in Sloane 1315, representing 'deep-seated patterns of thought' described by Peter Brown in relation to the 'The Seven Planets' treatise which follows the calendar

[526] ff. 23v–27r.
[527] f. 19v.
[528] Chapter 3, p. 72.
[529] f. 68r.

with brontology and planetary activity tables.[530] There is also the unusual text on the properties of snakeskin which goes beyond a basic medical recipe collection in the complexity of its ingredients.[531]

Cambridge, Trinity College MS O.1.57

This is a small, portable fifteenth-century volume of 101 parchment folios.[532] It is a reference work written in many hands which contains calendar texts, astrological medicine, prognostics, paint colours, herbals, Zodiac Man and Vein Man among many other texts. In her doctoral thesis, Laura Mitchell described the hands as belonging to the Haldenby family, and members of their household, from Isham in Northamptonshire.[533] Although numerous, the hands are really uniform in style so this is literally a house style where scribes were making copies of practical scientific texts in both the original Latin and English translations. In general, most texts are in Latin with only the treatment part of medical proceedings in English. The embellishment is in the popular style of contemporary, commercially produced manuscripts. The range of astrological medicine and herbal medicine on offer, illustrated with practical diagrams of Zodiac Man, Vein Man and syphons (for making medicines or alchemy)[534] leads to the strong possibility that one of the Haldenbys was a doctor specialising in herbal medicine, or practising as one. The Vein Man, for example, is very detailed, six venipuncture sites are shown on the right arm and nine on the head, face and neck, listing benefits to different parts of the body and their conditions. This diagram is signed 'Wodeman ad Haledenby,' indicating that one of the Haldenbys had commissioned it from a medical expert or a scribe experienced in medical illustration.

[530] ff. 3r–36v, see Peter Brown, 'The Seven Planets,' in Lister M. Matheson (ed.) *Popular and Practical Science of Medieval England* (East Lansing, Colleagues Press, 1994), pp. 3–22. The treatise is also presented in verse in Rawlinson D.939, f. 3.
[531] ff. 116v–118r.
[532] Measuring 178 mm x 140 mm.
[533] Laura Theresa Mitchell, *Cultural Uses of Magic in Fifteenth-Century England*, electronic copy PhD thesis (University of Toronto, Centre for Medieval Studies, 2011), pp. 96, 102–103, https://tspace.library.utoronto.ca/bitstream/1807/31869/1/Mitchell_Laura_T_201111_PhD_thesis.pdf [last accessed 30 Dec 2023].
[534] ff. 10v, 16v, 81r–84v.

Figure 26 Cambridge, Wren Digital Library, Trinity College MS O.1.57, f. 16v, Vein Man diagram

The brontology textual grouping, *Alfraganus*, *De signis tonitruum*,[535] is written in Latin in a single, modestly embellished, well-spaced hand in keeping with the general, reference style of the manuscript, rather than personal notes as seen in doctor's workbooks.[536] This was originally an educational grouping which included two mathematical treatises and a Sphere of Life and Death,[537] but examination revealed that these are now missing,[538] leaving the brontology as the sole prognostic in the following grouping:

- *De Serpentino Corio*, on the (medicinal properties) of snakeskin, attributed to *Johannes Paulus*, 'written in Alexandria'[539]
- herbal texts
- veterinary medicine
- applied recipes for medical prescriptions

The supposed brontology source of Alfraganus[540] is a fundamental treatise on stellar astronomy and planetary paths called *Almagest,* although it was in fact a ninth-century summary of the earlier work of Ptolemy by this name.[541] Despite this, no planetary tables or charts survive in this textual grouping, although there are some elsewhere in the manuscript. Therefore, it seems that the original larger grouping was from a version of *Almagest* and the reference to it had remained in the incipit.

The brontology itself starts with the passage instructing the reader to regard the second thundering should there be more than one a year. In practice, this means that in a year where there were several thunder events the brontology would have to have been regularly consulted for updates. Each entry commences with the zodiac period as follows, *si in aquario id est Januarius*. The meaning must be 'if the sun is in Aquarius' and the scribe/compiler was so familiar with the concept that 'if in Aquarius' suffices. The following text on *betonica* (betony or common hedgenettle) is not just a recipe but a whole treatise on its virtues which is the opening text for a detailed herbal.[542] In this setting, brontology sets the scene for the herbal knowledge to follow by warning of possible effects on both growing herbs and in treating illnesses with them.

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[535] 'Alfraganus on the signs of thunder'.
[536] ff. 69r–80v, Mitchell, *Cultural Uses of Magic*, p. 259.
[537] Detailed by Mitchell, *Cultural Uses of Magic*, pp. 102–103.
[538] The foliation leaps from f. 39r to f. 69r with a clearly visible gap between the booklets.
[539] f. 69r.
[540] See Yavuz Unat on the early-medieval astronomer working in the mid-ninth century, Abû'l Abbas Ahmad b. Muhammad b. Kathîr al-Farghânî al Hâsîb (also known as Al-Farghani in western form and 'Alfraganus' in manuscript examples), 'Alfraganus and the Elements of Astronomy,' *Foundation for Science, Technology and Civilisation* (2007), pp. 1–15 (pp. 2–3), https://muslimheritage.com/uploads/Alfraganus2.pdf [last accessed 19 December 2023].
[541] See Unat on Alafrangus' work on the elements of astronomy, 'Alfraganus,' pp. 3–4.
[542] ff. 70v–71v. Betony had long had a special place in herbals, a text on its virtues is also the first item in the much earlier *The Old English Herbarium*, see Anne Van Arsdall, *Medieval Herbal Remedies: The Old English Herbarium and Anglo-saxon Medicine* (London, Routledge, 2002), pp. 99–101.

Oxford, Bodleian Library MS. Digby 75

This is a fifteenth-century medical handbook compiled from three separate booklets (the first and third are paper and the second is parchment) consisting of 243 folios in total,[543] all in different hands. The majority of texts are in Latin and theoretical and some of the practical medical texts are in English. The first booklet has a practical medical treatise based on Ptolemy's *Centiloquium* and a herbal, *De Virtutibus Herbarum*.[544] The second booklet is a parchment vade mecum wrapped in its own, original protective cover made from a single large folio, showing it had a separate existence before this compilation. It commences with a theological treatise on caring for the deserving poor, Thomas of Wilton's *De ualidis mendicantibus*'. The rest of the booklet is on astrological medicine with a clerical twist, there are texts on: physiognomy, the 'Dream of Esdras,' nativity, dispositions, the relationship of the four seasons to the four humours (with a diagram), eclipses, brontology (in Latin) and planetary dispositions affecting both the body and soul, attributed to Walter Mapp.[545] This grouping of prognostics combines theological guidance with practical medicine (headed '*experimenta*'). The third booklet deals with education for the priesthood: *Manuale Sacerdotis* by John Mirk, and Sacerdotum Speculum.[546]

The composition of this book is holistic and priestly, medical knowledge covers not just planetary influences on the body but on the soul as well, suiting a cleric with medical training, perhaps responsible for, or involved with, a hospital (in the medieval sense of a place where the general poor were cared for as well as the acutely or chronically sick). The brontology in Digby 75 was part of a collection of prognostics for enriching humoral medicine. Its position after eclipses and prior to the body and soul text relates to its capacity to disrupt the known effects of the humours, like eclipses, but they can be planned for, whereas thunder cannot because of its unpredictability.

London, British Library, Sloane MS 213

This manuscript of specialist medical texts was compiled over a long period of time and finished in the later fifteenth century. It is a little larger than most study examples, suitable for reference in a library, or for reading from a lectern.[547] It has 161 parchment folios, written in multiple, clear, scholarly hands. A 'house style' of double columns is followed through most of the manuscript indicating that it was in the same setting (such as a priory or abbey school, or a college) for a considerable amount of time.[548] English, French, and Latin are all in use

[543] Measuring 207 mm x 156 mm.
[544] ff. 1r–161v; ff. 121r–161v.
[545] ff. 126r–128v, 129r–131r, 131v–132r. Mapp is known as the author of *De nugis curialium*, a long, twelfth-century anthology which describes the founding of holy and knightly Orders in the first book.
[546] ff. 162r–243v, 'Priests' Manual'; 'Mirror for Priests'
[547] 288 mm x 238 mm.
[548] The British Library catalogue states the tenth to eighteenth centuries, texts listed here are from the thirteenth to the fifteenth.

for numerous texts, predominantly astrological, prognostic and medical. Certain booklets are impressive to look at, for example, Macer's herbal has elaborate, inhabited initials in red, blue and green ink, embellished with penflourishing, with half-column-height spaces left for illustration which did not ultimately materialise. [549] Although the larger illustrations are lacking, the creatures and plants referred to in the text inhabit the initials of the named ingredients, creating a miniature, pictorial herbal and bestiary. Wear and dirt on folio edges, and numerous manicules added into the margins by readers marking out items of interest,[550] are evidence that the manuscript was consulted multiple times, indicating an educational setting. The medical specialisms include practical apothecary skills and fertility.[551]

The brontology, in English, is the first item in a fifteenth-century textual grouping described as 'an astrological treatise, teaching'[552] in the index. Each text in the treatise has its own brief incipit setting out what it is going to deliver in a very pedagogic way, for example:

- 'þis next chapter suynge declares what menes ilke thondere in þe ȝere'[553]
- 'howe the seven planetes are frendes and enemyes'.[554]

The brontology is the first of several more prognostics: New Year's Day, evil and forbidden days, a lunary, followed by a health regimen with physiognomy attributed to Claudius Ptolemy. In this case, the inclusion of the brontology might be via a version of, or texts from, *Almagest*.[555] A textual grouping of prognostics like this resembles a teaching collection where the various types could be compared.

New Haven, Yale University, Beinecke Rare Books and Manuscript Library, Takamiya MS 61
This book, dating between 1450 and 1475, is a medical manuscript, similar in size to examples of textbooks in this study, and with 83 paper folios.[556] It looks like the plain workbook of a medical practitioner in a contemporary limp (i.e. not boarded), but very sturdy, leather cover, closely resembling the slightly earlier example of St. John's K.49.[557] Like Trinity O.1.57, Digby 75 and Sloane 213,[558] Takamiya 61 is a compilation of texts in several hands. Older parts of the book are mostly in Latin and a French vernacular, with English in later parts along with

[549] The names of the intended subjects stand alone in these spaces, for example,'*De papvere*' and '*De Cipero*', ff. 5r, 17v
[550] ff. 5r–17v, e.g. f. 107v.
[551] Macer's herbal, *Albuzali*'s herbal, ff. 51v–63r, fertility treatise, ff. 138r–159r, see Catherine Rider on this notable example, 'Men's Responses to infertility in Late Medieval England,' in *The Palgrave Handbook of Infertility in History: Approaches, Contexts and Perspectives*, Gayle Davis and Tracey Loughran (eds.) (London, Macmillan, 2017), pp. 273–290 (p. 278).
[552] ff. 111v–120r.
[553] f. 111v.
[554] f. 114r.
[555] See other examples: Chapter 2, p. 58, Chapter 4, pp. 115, 127.
[556] Measuring 200 mm x 150 mm.
[557] Chapter 3, p. 84.
[558] This chapter, pp. 125, 128.

Latin terminology for scientific or medical topics. Several texts are offered in pairs: two on the properties of the four humours, two herbals, two apothecaries and two health regimens. One of them, *Regimen div(er)sa de sanitatis*,[559] is actually a professional-looking apothecary's guide on extensive uses of herbs and materia medica, rather than a health regimen which that title usually implies. One of the materia medica is snakeskin, as described above.[560] Other texts are aids for general astrological medicine: bloodletting, a Sphere, physiognomy, and onomancy. Verse is employed to expound various medical and scientific subjects in a didactic tone seen elsewhere in the study in books of an educational character which are not necessarily university textbooks. For example: verses from Salerno in Sloane 989, Henry Daniel's herbal texts in Digby 95, a short health regimen in Cambridge, CUL MS Ff.5.48, and an astronomical text on the Fifteen Fixed Stars in *Confessio Amantis* in Longleat 174 (below).[561]

The incipit to the Takamiya 61 brontology (in English), 'Whan þonder,'[562] is distinguished from the rest of the continuously written text on the folio by a tiny paraph two words from the end of line fourteen. The two preceding texts on this folio, 'Fforto destrie scabbe'[563] and 'Ffor stechis,'[564] belonged to the earlier apothecary treatise. A Sphere diagram with detailed instructions follows the brontology. It could be informed by the future events and potential disruptions revealed in the brontology. Most other textual groupings with brontology contain humoral texts capable of injecting degrees of subtlety into the prognostic process. The Takamiya 61 brontology is also useful in conjunction with the second health regimen text in the manuscript, attributed to Galen, which follows the Sphere.[565] The health regimen incipit gives some insight into the intended approach, not just what to consume but how;

> 'This Galyon þe leche techith all man(er) of men and wymen how þat þey shull use her(re) metis and her(re) drynkis in all monthis of þe yer(re)…'[566]

It goes on to combine knowledge of perilous days in each month with appropriate foods and drinks, or fasts (abstinence from food for a period of time) to ameliorate any dangers. Brontology is part of the scene-setting for this, offering warnings of health-related problems through the remaining year if thunder occurred, for example,

[559] 'Various rules for health'.
[560] Chapter 2, p. 56.
[561] Chapter 3, pp. 86 (footnote 403), 87, Chapter 4, pp. 134, 143.
[562] f. 30v, line 14.
[563] 'To destroy scab', pustular diseases like smallpox, for example.
[564] Stomach cramps.
[565] ff. 31v–32r.
[566] f. 31v.

in February, debilitation of the wealthy that year, in April, death of wicked men, in May, hunger, and in August, much sickness.[567]

Warminster, Longleat House MS 176

This manuscript is from the second half of the fifteenth century and similar in size to other textbook manuscripts,[568] with 134 paper folios. These are neatly ruled and continuously written over gatherings of folios by a few scribe/compilers in a bold and current house style, with carefully crafted *quadrata* elements. Conceivably, the differences in the hands are slight enough for this to have been the work of one person over the course of a career and this does not rule out guild book contexts, with one person such as a guild master responsible for maintaining the book. Most texts in Longleat 176 are in English, apart from a nativity prognostic and the incipit to the months prognostic which are in Latin and intercalated with the brontology.[569] The full-folio Zodiac Man and Vein Man are boldly illustrated in red and black ink. Although these zodiac images are simplistic compared with Wellcome 8004, the scribe gave the zodiac personifications expressive human faces to impart various characters for teaching about planetary influences on the body during the zodiac periods, a roaring Leo the lion in the Man's chest and serene Virgo at his midriff. The explicit focuses the reader on noting the passage of the moon through the zodiac periods as it was of central importance when considering bloodletting, making incisions or other medical procedures pertaining to fluids.

Like Wellcome 8004, the Vein Man lists the effects of opening certain veins on medical conditions and the functioning of parts of the body. Unusually, though, there are no corresponding pointers to those areas on the Vein Man diagram, so it appears the reader was expected to know where to look, or that students or apprentices were being tested when consulting it. The compound text with brontology is grouped with two medical prognostics (from the day of the month on which illness first occurred, and perilous days) and a St. Paul's Day prognostic.[570] The compound text is virtually identical to Bodley 591, apart from the following small differences: 'quando' is used instead of 'qui' for the Aquarius, Aries, Gemini, Cancer nativities, 'profits' instead of 'prosperity' in Aquarius. Also, Longleat 176 has an extra word ('right') emphasising the potential danger in the Taurus travel prognostic. Further texts which can be used with brontology and other prognostics to calculate moveable feasts and the position of the sun and moon in the sky are available in the grouping directly following the second brontology.

[567] f. 30v.
[568] 225 mm x 155 mm.
[569] For discussion of neutrality of language choice, see Voigts (1996), p. 821.
[570] See Chapter 2, p. 53, fn. 252 for other St. Paul's Day prognostics.

Cambridge, CUL MS Ff.5.48

This manuscript is from the second half of the fifteenth century and the size of a textbook,[571] with 132 paper folios.[572] It was composed by two main compilers, not put together from a number of separately written treatises in booklet form like a number of the older manuscripts in this study,[573] nor completed in a single campaign like Huntington 1336 (above) and Wellcome 8004.[574] Thomas Ohlgren has assessed CUL Ff.5.48 as the earliest known witness of a poem on Robin Hood, maintaining that the first of its compilers was not a professional because the folios are unruled.[575] Nevertheless, they are embellished with pen sketches and similar book hand headings, and also rubricated initials similar to those in Huntington 1336 but a little less formal.[576] This was either an institutional style followed by scribes like student Simon Wysbech, in Huntington 1336, or a commercial style popularised by publishers of the day but personalised in these manuscripts. All texts are in English apart from an uncommon Latin prognostic which is part of the brontology textual grouping.[577]

The possible identity of one of the CUL Ff.5.48 compilers is the subject of debate by Sarah McLoughlin in her PhD thesis.[578] This debate stems from earlier scholars' attribution of the whole manuscript to a Benedictine priest named Gilbert Pilkington from a colophon appended to the CUL Ff.5.48 *Northern Passion* text as follows;

> *Explicit Passio Domini Nostri Ihesu Christi Quod Dominus Gilbertus Pylkyngton … Amen*.[579]

McLoughlin posits the following arguments: that Pilkington could have been the author of a substantial part of the manuscript containing the *Passion*, the author of smaller parts of the manuscript (but still including the *Passion*), or a scribe who copied the *Passion* complete with the colophon from the exemplar which attributes Pilkington.[580] McLoughlin believes the weight of evidence supports the latter characterisation, further describing such a scribe as a 'slavish copyist'[581] based on similar inclusions of names in other CUL Ff.5.48 texts in their hand. However,

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[571] 210 mm x 150 mm.
[572] See Sarah Annette McLoughlin for discussion of the dating evidence, *Gender and Transgression in the Late Medieval English Household*, electronic copy PhD Thesis (York, University of York, September 2011), p. 115, https://etheses.whiterose.ac.uk/2075/1/SMcLthesiscorrected.pdf [last accessed 12 Nov 2023].
[573] For example, Chapter 2: CUL Hh.6.11, p. 34, Advocates 18.6.9, p. 37, Sloane 2584, p. 56, Chapter 3: Sloane 636, pp. 81–82.
[574] Chapter 3, pp. 93–94.
[575] Thomas H. Ohlgren, *Robin Hood: The Early Poems, 1465–1560; Texts, Contexts, and Ideology.* (Newark, University of Delaware Press, 2007), p. 29.
[576] Chapter 3, p. 93.
[577] *Contra Fures et Latrones*, a rare prognostic 'against thieves and robbers,' i.e. enabling their detection, f. 9v, and a prognostic for the year ahead from the day of the week on which Christmas Day falls (similar to a dominical letters prognostic), f. 65v.
[578] McLoughlin, *Gender and Transgression*, pp. 121–123.
[579] '(Here) ends the Passion of Our Lord Jesus Christ according to Dom. Gilbert Pylkyngton…Amen,' f. 43r.
[580] McLoughlin, *Gender and Transgression*, pp. 121–122.
[581] Ibid., p. 122.

the scribe may have intended these inclusions as attributions, especially if the text were to be used for teaching. For the purposes of this study, suffice to say that the first compiler probably started the book during their time as a student when they were open to similar scribal influences as Wysbech, therefore the balance of evidence is in favour of a university style and active textual compilation rather than unthinking copying throughout.

The manuscript commences with John Mirk's *Instructions for the Parish Priest*,[582] also found in later corpus manuscript, Oxford, Bodleian Library MS. Digby 75.[583] The procedures for pastoral care, moralising tales and hymns also found in CUL Ff.5.48 sound suitable for a parish priest,[584] but a wider application is suggested by the inclusion of secular songs and poems.[585] To cast light on how such compilations came about, Ohlgren cites Vincent Gillespie's study of vernacular books with pastoral material distributed by archdeacons to priests who had not been educated at university.[586] The texts were provided as separate booklets and arranged by the priests into compilations to suit themselves, increasingly in English as the Middle Ages progressed, with additional popular tales and verse circulating at the time. These stories had the potential to serve as homilies, or instructional sermons. After initial distribution, convocations were later held where the priests were examined on the texts and corrections and updates applied. Some contexts for priests' ownership and use of such manuscripts include: serving as household confessors and tutors, or responsible for a parish, involving caring for their own household of servants and relatives, and possibly running a local primary-level school. The use of headings as finding aids in CUL Ff.5.48 does suggest pedagogic use, rather than as a personal notebook which might be expected to have side-headings and marginalia.

The sole Latin prognostic is also of interest in this regard. The use of Latin seems to fit the argument that it could have originated in archdeacon-approved compilations of material for parish priests, but thief detection is an unusual subject for an ecclesiastical context and, at one point, this text must have been considered dubious as it was crossed out. Elsewhere Latin is used for colophons and incipits, with the body of the texts in English, for example:

[582] ff. 2r–8r, John Mirk (aka Myrc), fl. mid 12c, see Edward Peacock (ed.), *Instructions for Parish Priests. By John Myrc: Edited from Cotton MS Claudius A.II*, Preface v–xi (London, *EETS*, 1868).
[583] This chapter, p. 128.
[584] For example, f. 43r, 66r–69r.
[585] For example, f. 116r–132v.
[586] Ohlgren, *Robin Hood*, p. 40, cites Vincent Gillespie, 'Vernacular Books of Religion,' in Jeremy Griffiths and Derek Pearsall (eds.), *Book Production and Publishing in Britain, 1375–1475* (Cambridge, CUP, 1989), pp. 317–344 (p. 317).

a. *'De pronosticationibus tonitruu(m) secu(n)du(m) cursum in mensuu(m)'*[587]

b. '*Sequitur de confortaco(n)e stom(a)chi*'[588]

The likelihood, then, is that the Latin text was picked up as the compilers brought the manuscript into being and they and their potential readers understood the language sufficiently well to keep it as it was found. The use of Latin for headings, etcetera is slightly different, here Latinity was assumed by the compilers or they would have made translations, which they probably did with the main texts. Leaving the headings in Latin was perhaps intended to give them a scientific distinction, noting that b) comes from a medical grouping.

Continuing in a pedagogic style, the brontology textual grouping begins with a brief, quasi-medical regimen in mnemonic, alphabetical verse form, here called 'The 'ABC of Aristotle',[589] followed by the rhyming brontology, then the Latin prognostic to identify a thief. Although the latter is lightly crossed out, this is no hindrance to reading the text, implying that the censor did not intend to expunge it but to express disapproval.[590] 'The 'ABC of Aristotle' is much smaller and simpler than other health regimens in this study and although the title sounds juvenile to modern ears and aimed at the young learner this did not necessarily mean very young children, but relates to the fundamentals of the Aristotle regimen.[591] However, the text does depart substantially from the other study health regimens in the type of advice on offer, only referring to humoral theory in a tenuous way in terminology resonant of the classroom. For example, the reader is told that too much 'iangelinge' ('jabbering') can cause one to overheat.[592] If this text does ultimately derive from astrological medical health regimens like Aristotle's *Letter to Alexander*, it had now become part of the territory of the health of the soul in the sense that good behaviour and consideration for others are beneficial to the wellbeing of both the protagonist and their community. The textual form of the brontology is unusual, only seen in one other study example, Manchester, Chetham's Library MS Mun.A.4.99 from the later fifteenth century (see above),[593] where it is part of a compound text. It combines the names of the months and '*Sol in…* (each zodiac sign)' on one line.

[587] 'On prognostication from second thundering in the months,' f. 8v.
[588] 'The following is on strengthening of the stomach' f. 10v.
[589] Also seen in Sloane 989, Chapter 3, p. 86.
[590] Gillespie, 'Vernacular Books,' p.317.
[591] ff. 8v–10v, see Martha Rust on historic and later medieval use of the form of text, "The 'ABC of Aristotle," in Daniel T. Kline, *Medieval Literature for Children* (New York, Routledge, 2003), pp. 63–78 (pp. 64–65).
[592] Ibid., p. 74.
[593] This chapter, pp. 121–122, Figs. 24, 25.

Oxford, Bodleian Library MS. Radcliffe e.30

This is a composite, medical manuscript from the second half of the fifteenth century. [594] It is relatively short in length, having only 56 parchment folios comprising two booklets, like Huntington 1336, in this case separated by a longer period of time. They are carefully ruled and continuously written, in English, in a neat secretary script with Anglicana features, similar to Huntington 1336 which has a university connection through its scribe.[595] The overall appearance of Radcliffe e.30 is a working manual that is suitable for teaching, with large, clear diagrams, tables, and chapter headings in red ink. The first booklet, a Governal of Health[596] with two brontologies is datable to the latter half of the fifteenth century and similar in length to Huntington 1336. The second booklet, a *Wise Book*,[597] dates to the early sixteenth century. There are thirty fifteenth-century manuscript contexts for *Wise Books* in eTKeVK2 but only two other full examples in this study, so brontology was not a natural companion to it.[598] However Radcliffe e30 does represent continuity of the association of the texts, being several decades younger than the other two examples. This version also develops from the earlier straightforward *Wise Book* contexts by morphing into a health regimen where health is managed according to the disposition of the astrological house a person was born under.

In the first booklet, the material for calculating planetary movements includes a much-worn diagram of fifteen concentric circles.[599] The text on them is very difficult to read, but appears to call each of them '*celum*', or 'heaven', which would refer to individual cosmic spheres housing elements, planets and stars. The movements of the distant stars (on one of the spheres) were consulted in addition to the planetary influences already affecting the Earth, as outlined in Ptolemy's *Quadripartitus*.[600] This extra layer of information for prognostication distinguishes the booklet from a household book of general knowledge. Both brontologies are in English and part of the same textual grouping, which culminates with 'For kno(w)lege of the Impressions co(n)sideryng the weþeryngs.'[601] A close form of this text is also found in Longleat 176, 'For Knowledge of the impressions co(n)cerni(n)g the Wed(er)ynge(s).' [602] Their incipits are compared below:

[594] Measuring 225 mm x 162 mm.
[595] Chapter 3, p. 93.
[596] ff. 1r–40v.
[597] ff. 41r–56v.
[598] See also Sloane 1609, ff. 11r–27r, Chapter 3, p. 66; Ashmole 189, ff. 1r–67v, Chapter 5, p. 185.
[599] f. 40v, see also the Sloane 282 concentric circles, Chapter 2, p. 60, Fig. 7.
[600] See Lawrence-Mathers (2020) on how this was applied to practical matters such as weather forecasting, pp. 76–77, 178.
[601] f. 40r.
[602] ff. 123r–125v.

Radcliffe e30

'First it is to knowe that þe eyer is devidid into iii p(ro)p(er)t(ie)s or regyones of div(er)s disposicions and q(ua)lit(ie)s. The first þ(er) of is called the region wher all man(er) of bestes beþ(e) abidyng that is to say the p(ro)p(er)te of the eyre unto þe erthe joyned.'[603]

Longleat 176

'First it ys to know that the eyer ys devyded in thre p(ro)p(er)tys or regyons of dyv(er)se dysposycion(s) and qualiteyes. The fyrst ther of ys calyd the regyon wher yn all man(er) of bestys bethe abydyng that ys to sey þe p(ro)p(er)te of þe eyer un to þe erthe ioined.'[604]

The first Radcliffe e30 brontology uses months as a framework, the second uses the days of Christmas to be consulted within the following grouping: Dispositions of the Twelve Signs, perilous days, Christmas week dominical letters prognostic, physiognomy, and onomancy. Although it is the brontology which is based on weather, the dominical letters prognostic focuses much more on weather forecasting;

'Nou hit ys to knowe also þe weders þat dyvers yeres haf dyvers disposicions þat ertake by yule daye yf yule fal on dyvers letters after olde bokes and old doctours'. [605]

Longleat 174 and Sloane 989, the other corpus manuscripts which use the Days of Christmas as a temporal marker for brontology, also have multiple brontologies, in these cases three each. It is as if the Days of Christmas brontology was no longer considered adequate by itself (as it treats the whole year with one prediction) and needed to be supplemented with further prognostics. The similarities to Huntington 1336, a general guide to current astrological medicine for the non-specialist, strongly suggest a similar provenance in a university town for Radcliffe e30 and that there was a market for this sort of concise manual which constitutes a medical almanac to use in practice or training. This also included an interest in the wider science of weather and its application to health, as in Longleat 176.

London, British Library, Additional MS 28725

This small manuscript dates from the second half of the fifteenth century. It is similar in structure and folding pattern to Ashmole 6, designed for attachment to a belt or bag, but longer and narrower. Each of its seven folios

[603] f. 40r.
[604] f. 123r.
[605] f. 38r.

are folded into eight compartments, see Figure 28 (below)[606] and it can be opened out like a map and read whilst still hanging from a belt. It is written in a professional-looking book hand featuring the neat diamond shapes of a *quadrata* script and all the texts in Additional 28725 are in Latin. Gold has been skilfully applied to major and minor initials, notably the impressive, finely burnished 'KL' of 'kalends' in the calendar, [607] and red and blue ink for pen-flourishes. An early (possibly the first) owner of the manuscript, Bartholomew Yate, a wool merchant of the Staple of Calais, was someone who could certainly afford this quality. It is important to consider the range of connections of people in the well-to-do and educated milieu of merchants, which facilitated access to a variety of informative texts from Church and University works. This is illustrated by Yate's case, as his brother Peter was an Oxford-educated priest who could have obtained textual material for Additional 28725 from there or, even the manuscript itself. Similar complex astrological medical texts are found in another late-medieval corpus manuscript, Trinity R.14.52,[608] which was also compiled in a merchant environment. Additional 28725 commences with calendar texts where the Latin brontology is entered as a single line at the foot of each month's entry, as in Aberdeen 272 and Sloane 1315 from earlier in the fifteenth century, but below another line on the

[606] Measuring 175 mm x 35 mm at the attachment point, see this chapter, p. 138, Fig. 27, below, unfortunately this image is not clear, but it has not been possible to replace it due to the cyber attack on the British Library.
[607] ff. 2r–5v.
[608] This chapter, pp. 150–151.

Figure 27, London, British Library, Additional MS 28725, cover

saints and martyrs in the calendar.[609] CUL Dd.6.29 and Rawlinson D.238,[610] the other two manuscripts in this study which present brontology in this way are both much earlier and they position the brontology at the top of the calendar folios where it is more prominent. In Additional 28725, St. Leger and St. Frideswide are notable entries for October with St. Frideswide indicating possible production of the manuscript in Oxford, like Rawlinson D.939.[611] This concurs with the Yate family Oxford connection of a relative educated there. St. Leger, a seventh-century Bishop of Autun, has a connection to Benedictines, as he was an early proponent of the order,

[609] See this chapter, p. 140, Fig. 28.
[610] Chapter 2, p. 47, 50, Figs. 4, 5.
[611] Chapter 2, p. 45.

and also merchants, who traditionally returned to London on his feast day after spending the summer travelling and trading.

The order of texts follows those in Rawlinson D.939: calendar texts, planetary conjunctions and oppositions, humoral astrological medicine, and an eclipse table using the Oxford meridian.[612] Additional 28725 offers a technical approach to planetary movements and eclipses with an exposition of their mechanics.[613] Like thunder, eclipses are disruptors of prognoses which should be considered for their effects on weather, and health through the bodily humours. After the calendar, the manuscript focus is a large quantity of astrological texts and medical applications, including Zodiac Man and Vein Man diagrams, to a greater extent than any of the other manuscripts with brontology in the calendars. The placement of the brontology in the calendar means it can be applied with any of the above texts as an aspect of monthly prognostication. In contrast, the Ashmole 6 brontology is only linked to a prognostic from the dispositions of the sign in connection to detailed surgical advice. In January for example, the reader is urged to avoid making incisions into the legs or their nerves down to the extremities.[614] This makes it more likely that the owner of Additional 28725 was a physician, or engaging in that sort of humoral astrological medicine, as opposed to a surgeon.

[612] ff. 1v–6v.
[613] f. 1v, ff.6r–6v.
[614] See Chapter 3, p. 75, Fig. 12.

Figure 28, London, British Library MS Additional 28725, f. 4v
Image licence: CC BY-NC 4.0 DEED

London, British Library, Sloane MS 635

This is a longer book than other textbook manuscript examples in this study, with 216 paper folios.[615] The main hand is a bold, broad, sprawling secretary with headings in a well-executed book hand using *quadrata* elements for initials and vowels, rubrication and embellishment of all initials with penflourishing forming extended paraphs. The unusually narrow format leaves very little space to interact with the texts through marginal comments or notes, giving it the appearance of a quick-reference guide rather than a personal workbook. It was certainly well-used, most folios are now detaching from the spine and have been placed on archival supports like Sloane 636, St. John's K.49 and Bodley 591.[616] Prior to this, it was heavily trimmed at the top and bottom on more than one occasion, presumably to tidy up the effects of wear. The texts in this manuscript are from a wide span of dates,[617] whilst the brontology is later-fifteenth-century.

The first text in the manuscript is the brontology, in Latin, which uses the Sun in the zodiac signs as its framework. Although incomplete (there are entries from January to August only), the text does not seem to be an abbreviated copy since care has been taken to produce fancy headings. The missing months were probably victims of earlier heavy cropping of the manuscript as a whole. The brontology begins a grouping of lunary texts specifying the effects of the Moon on earth, similar to San Marino, Huntington Library, Huntington MS HM 64 and other corpus manuscripts in pertaining to bloodletting.[618] Bloodletting is a particular interest in Sloane 635, two different texts on the subject offer trainee practitioners of astrological medicine an opportunity to exercise professional judgement on the relative advisability of letting blood on different days of the month. The first is attributed to Boethius, the second has a religious attribution, to John the Apostle, 'learned from the mouth of Christ,'[619] perhaps evidence of an ecclesiastical medical origin for this part of the manuscript at least. Apart from this grouping, Sloane 635 consists mainly of two further, extensive treatises, one on herbs and *materia medica* and one on uroscopy in Latin, English and an unidentified Germanic vernacular similar to Flemish.[620] In this part of the manuscript, numerous recipes teach the professional apothecary skills needed to produce medicines, such as 'decoction'.[621] The eclectic nature of this material and the range of sources indicates the manuscript was compiled somewhere with access to medical training texts, potentially through a guild or a religious establishment, and

[615] Measuring 257 mm x 123 mm.
[616] Chapter 3, pp. 81, 84, 88.
[617] There are items from the thirteenth century through to the seventeenth century.
[618] ff. 1r–9r, see Irma Taavitsainen (also Sloane 1315, ff. 49r–64v, Oxford, Bodleian Library Ashmole MS 189, ff. 212r–215v, 218r–218v, Oxford, Bodleian Library MS. Digby 88, ff. 64r–75r, Huntington 64, ff. 83v–95r) who also mentions corpus manuscripts Digby 95, Sloane 213 and Longleat 176, 'The Identification of Middle English Lunary MSS,' *Neuphilologische Mitteilungen*, Vol. 88, No. 1 (1987), pp. 18–26 (pp. 22–23).
[619] ff. 9r, 10v.
[620] ff. 23r–34v, 35r–69v, 88r–92v.
[621] f. 85v.

textual material acquired from travelling merchants or migrants in a large town or city. The clerical roles and connections of Oxford-trained doctors (as examined by Philip Stell in the context of York)[622] are germane to this. The purpose of the manuscript as a whole is a guide to practical medicine and the production of medicines, but the placement of the brontology first prepares practitioners for adjusting their diagnoses if it thunders, before considering appropriate medicines to treat a condition.

Warminster, Longleat House MS 174

This composite manuscript is dated post 1484 from its calendar tables and the date its incunable section was printed. Longleat 174 is the largest volume in the study,[623] with 218 mostly paper manuscript folios and ninety-two further pages of the incunable.[624] Kate Harris postulates that the elements of the manuscript had been brought together in their current form shortly after 1484 as the latest manuscript item, an index of recipes relating to material in the incunable, coincides with it.[625] The majority of its seven booklets were professionally produced and the scripts are generally formal. Harris suggests that they were treated as individual books by the 'very first generation of users,'[626] prior to their compilation into the current manuscript ca. 1484. Most texts are in English, with some technical, astrological medical items in Latin and a Latin to English herb glossary.[627] The range of texts for education, entertainment and information could lead to a definition of Longleat 174 as a household miscellany, but that categorisation would be misleadingly simple.[628] In her article on the Gower verse in Longleat 174, Harris notes that many scribes were involved with the manuscript throughout its production and there is considerable evidence of adjustment by 'addition and correction'[629] by them and later readers. These multiple influences give Longleat 174 a unique tenor which Harris terms 'an amalgam of the professional and the amateur'.[630] Taking this into account, and given the scribal habit of grouping practical and scientific texts together, Longleat 174 also serves as a reference work and aid to applied studies (of herbal medicine and antidotes,

[622] For example, John Arundel, M.D. and Thomas Wilton, D.M., see Philip Stell, *Medical Practice in Medieval York*, *Borthwick Paper No. 90* (York, University of York, 1996), p. 3.
[623] 315 mm x 230 mm.
[624] ff. 2r–9r are parchment.
[625] Kate Harris, 'The Longleat House Extracted Manuscript of Gower's *Confessio Amantis*,' in A.J. Minnis (ed.), *Middle English Poetry: Texts and Traditions* (York Medieval Press, 2001), pp. 77–90 (p. 78).
[626] Harris, 'The Longleat House Extracted Manuscript,' p. 83.
[627] ff. 42r–77v.
[628] Other material ranges from antidotes, ff. 15r–29v, 'The Marvelous and Soothfast Cunning of Astrology,' ff. 84r–89v, a comparison on weights and measures in other countries, ff. 124r–124v, to many detailed herbal texts (for example ff. 130r–134r, 153r–158r), and an extract of Gower's *Confessio Amantis*, ff. 159r–160r.
[629] Harris, 'The Longleat House Extracted Manuscript,' p. 77.
[630] Ibid., p. 78.

for example). Evidence of a priest as owner shortly after its presumed completion indicates compilation in a place of learning, and in this case, one where medical training took place.[631]

There are three brontologies, in English, not grouped with any of the stories and proverbs but with other prognostics in astrological medical contexts. These are: Christmas sunshine, a lunary, nativity, New Year's Day, and letters of a psalter. The latter prognostic is a very uncommon example of bibliomancy, or prediction from a holy book, and the only one in this study. The scribe instructs the reader to open a psalter 'as it will fall abroad by himself'[632] and has a divinatory tone, in the undesirable superstitious sense. Presumably, this was deemed an acceptable practice in this case because the vehicle for the prognostication, the psalter, is a book of holy writings, therefore the predictions would be an expression of divine will. However, this may not have been the case elsewhere as its transmission was very marginal. There are only four other examples of it in eTKeVK2, all fifteenth-century and placed with dream prognostics. One of these is in Latin, in a French manuscript,[633] the other three are written in English, in English manuscripts. Florin Filimon also found the text in Greek, in Late Byzantine manuscripts from the same period, and in these cases, in conjunction with Bible prognostics.[634] Apart from Longleat 174, the other English examples have likely university provenances, so the Longleat 174 scribe in question probably obtained their copy from such a source.

The brontologies are authenticated with attributions, not to named scholars or doctors, but as follows; 'Tokenes of thundir as the Jewes seyn and therto accordes grete clerkes of Astronomy'.[635] Apart from the brontologies all differing from each other and therefore potentially used for comparison in teaching, there is further evidence of an educational purpose in some of the astrological medical material. Harris describes Gower's extract on the Fifteen Fixed Stars in Longleat 174 as not being 'in the *Confessio* as a story collection but as a repository of scientific knowledge'.[636] The Gower text presents a major tenet of astrological medicine in poetic form; i.e. that the nature of life on earth (the Microcosm) is related to the cosmos (the Macrocosm) through the influence of cosmic bodies, such as the Fixed Stars, Sun and Moon.[637] This was originally the same part of the manuscript

[631] Harris, *Confessio Amantis*, pp. 81, 87.
[632] f. 93r.
[633] Bibliothèque nationale de France, Latin MS 7349, ff. 45v–51r.
[634] See Florin Filimon, 'The Prediction Method by means of The Holy Gospel and the Psalter: A Late Byzantine Case of a reassigned Geomantic Text,' in Paul Magdalino and Andrei Timotin (eds.), *Savoirs prédictifs et techniques divinatoires de l'Antiquité tardive à Byzance* (Seyssel, La Pomme d'Or, 2019), pp. 235–304 (pp. 235, 276, 283, 284).
[635] f. 81v.
[636] Harris, *Confessio Amantis*, p. 77.
[637] Ibid, p. 78.

where the incunable was placed, and also the brontology,[638] but the former is now at the end of the book. The incunable contains the following pharmacological works: Nicholas Salernitanus' antidotes, Mesue the younger's *Grabadia*, and Abulcasis' *Liber servitoris*.[639] This incunable also fits Charles Thompson's description of a nearly contemporary 'pharmacopoeia' in a 1498 incunable authored by the 'College of Florence.'[640] The original placement of the incunable immediately prior to the brontology booklet (Harris' third section consisting of only one quire, or gathering of folios, which she terms Qvii)[641] provides strong evidence that Qvii is also post 1484. The implications for this study are that brontological methods were still being used in this manuscript in a clearly professional context late in the fifteenth century.

The brontology methods are the months, liturgical hours, and the Days of Christmas. Both Christmas and liturgical hours brontologies are rare in the study. There are just two other study examples of liturgical hours as a method,[642] the earlier predating the later by approximately a hundred years, and two other using Christmas,[643] all in different manuscripts. The Longleat 174 liturgical hours brontology has unusual entries for the hour of sunrise and the eleventh hour only found elsewhere in the Additional 27582 version which is its close contemporary and has a similar wider interest in weather:

> 'If it salle <thunder> at sonne rysyng it tokens þe turnyng of Sarezons and payveens to c<hri>ston faith'.
>
> 'If it salle at ix hour it tokens for doyng or grete hyndryng of the reame or grete occupacions of dedes of armes in the reame'.
>
> 'If it thundir the x hour in the est it tokens falling of divers citees and for to be overcomen with divers men for synne'[644]

This would have been of obvious interest to merchants, well-to-do pilgrims, and politicians engaged in diplomacy. There are references to seasonal agricultural activity and practical predictions for seafarers of a great tempest at sea in entries for the seventh, eighth hours and eleventh hours,[645] the rest of the prognostications are political,

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[638] It was printed in 1484 and given its original positioning can be used to date the manuscript, in addition to annals up to 1484, see Harris, *Confessio Amanti*s, pp.78, 85.

[639] Mesue the Younger (Yahyā ibn Masawaih al-Mardini) from Mardin (formerly in Upper Mespotamia) was the tenth-century author of a pharmacopia, see George Sarton, *Introduction to the History of Science: From Homer to Omar Khayyam*. Vol. 1 (Florida, Malabar, R. E. Krieger, 1975), p. 574; Albucasis (Abu Al-Qasim Khalaf Ibn Al-Abbas Al-Zahrawi) was a contemporary of Mesue who lived in Cordova, described as a pharmacist-surgeon who taught how to make both simple and compound drugs, and was involved in designing surgical implements, see M.A. Elgohary, 'Al-Zahrawi: The Father of Modern Surgery,' *Annals of Pediatric Surgery*, Vol. 2, No. 2 (2006), pp. 82-87. https://lankahealthtamil.com/wp-content/uploads/2018/08/review-article-of-Zahravi.pdf [last accessed 16 Feb 2024].

[640] C.J.S. Thompson, *The Mystery and Art of the Apothecary* (London, John Lane, 1929), pp. 136–137.

[641] ff. 81r–83r.

[642] Digby 95, Chapter 3, p. 87, London, British Library MS Additional 27582, this chapter, p. 167.

[643] Sloane 989, Chapter 3, p. 86, Radcliffe e.30, this chapter, p. 136.

[644] f. 82r.

[645] ff. 81v, 82r.

including threat of war from aliens in the land.[646] Some of the hours are repeated or termed differently i.e. 'the seventh hour after midnight,' but nevertheless offer different predictions. The entry for the tenth hour is also the only reference to cardinal directions in the Longleat 174 brontologies, so it is not part of cardinal directions brontology derived from the eleventh-century pseudo-Bede *De Tonitruis*, but simply a geopolitical detail of the direction of the threat akin to Ashmole 345.[647]

The Christmas brontology is largely concerned with the weather and accompanied by a sunshine prognostic, also based on the days of Christmas. The other two Christmas-period brontologies in the study are also in groupings of multiple brontologies with varying predictions, Sloane 989 has three and Radcliffe e30, two. Unlike Longleat 174, the six other sunshine prognostics in this study (which are not found in the latter two manuscripts),[648] only use the Christmas method for that, not for brontology. It seems that Christmas weather prognostics were probably grouped together in Longleat 174 because of associative attraction. Christmas week prognostication was generally becoming an outmoded form by the later Middle Ages, less useful for astrological medicine which relies on monthly information on the seasonal changes in humours in relation to the phases of the moon and wider planetary activity. Brontologies by months (or approximately month-long zodiac periods) could better regulate the year for medical and astrological practice. In addition to weather prognostics, the compiler of Longleat 174 also showed an interest in weather science by including the text on the operation of the rainbow couched in the humoral terms of quaternities, also useful in addition to the sunshine prognostics;

> 'Hit is forto wite that the reynbow hath iiii colours after the iiii elementes'.[649]

Evidence of a setting in a merchant household comes from business texts written in the same hand as astrological obstetric and gynaecological material, noted by Monica Green in her study of the latter.[650] Longleat 174, therefore, has connections to educated men of affairs, merchants and priests who were acquiring a store of current prognosticatory knowledge, most likely in a large urban centre where these groups would come into contact with each other.

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[646] Also in the eleventh hour.
[647] Chapter 2, p. 55.
[648] Egerton 2852, ff. 191r–193r, Sloane 2584, f. 35v, Sloane 282, ff. 87r–87v, Additional MS 27582, f. 266v, Oxford, Bodleian Library MS. Digby 88, f. 40r.
[649] f. 81v.
[650] Monica Green, 'Obstetrical and Gynecological Texts in Middle English', *Studies in the Age of Chaucer*, Volume 14 (1992), pp. 53–88, https://doi.org/10.1353/sac.1992.0002 [last accessed 12 November 2023].
pp. 53–88 (p. 78).

New York, Morgan Library MS M.775

This is a lavish volume, predating 1486 as it was commissioned by Sir John Astley of Melton Constable in Norfolk who died that year, but postdating 1461, which was when he was made a knight.[651] It is similar in size to other textbook manuscripts in the study,[652] but (like Sloane 635) a lot thicker, with 320 parchment folios written in even Anglicana hands. Andrew Taylor comments on the similarity of Morgan 775 to the slightly later *Grete Booke* of Sir John Paston (ca. 1468).[653] Taylor postulates that Morgan 775 was probably compiled to publicise Astley's knightly career and lending it to a junior knight (as Paston was at that time) for copying from was part of this self-publicity.[654] In the sixteenth century, Morgan 775 circulated in royal circles through Sir Henry de Grey, an heir of Sir John Astley who gave it to Prince Edward, Prince of Wales (the future Edward VI) to whom he was related through his wife Frances (the niece of Henry VIII) who served at the Prince's court.[655] It is a household miscellany, but since it came from an aristocratic household the general items for education and edification are aimed at a noble reader, for example: the 'Abilment for the Justus of the Pees' (jousting protocol), instructions for arming a knight, and sailing directions for the circumnavigation of 'England'.[656] Although rather martial, there are also plenty of texts for entertainment in this manuscript (or at least learning whilst being entertained), such as the *Épître d'Othéa* (Epistle of Othea - to Hector),[657] also known as 'The Boke of Knyghthode', moralising, allegorical stories about the Trojans by Christine de Pizan, translated into English by Stephen Scrope.[658] In addition to this material there is also an extensive, illuminated health regimen, in English, attributed to John Lydgate and Benedict Burgh.[659]

[651] See Harold Arthur for biographical details of Sir John Astley, 'On a MS. Collection of Ordinances of Chivalry of the Fieenth Century, Belonging to Lord Hastings', *Archaeologia*, Series 2, Vol. 57, No. 1 (1900), pp. 29–70 (pp. 32–33).
[652] 247 mm x 172 mm.
[653] London, British Library, Lansdowne MS 285. Andrew Taylor, 'The Chivalric Miscellany: Classifying John Paston's 'Grete Booke'' in Margaret Connolly and Raluca Radulescu (eds.) *Insular Books: Vernacular Manuscript Miscellanies in Late Medieval Britain* (Oxford, OUP, Proceedings of the British Academy, 2015), pp. 144–157 (pp. 148–149).
[654] Taylor, 'The Chivalric Miscellany,' pp. 149–150.
[655] Morgan 775 is in Prince Edward's personal binding, see the original Morgan Library catalogue entry after their acquisition of it in 1931, http://corsair.themorgan.org/msdescr/BBM0775a.pdf [last accessed 21 December 2023].
[656] ff. 3r–4r, 122v–123v, 133r–138v - this would be Britain, unless it describes a horseshoe-shaped course from the northeast coast to the northwest including the Welsh coast but excluding Scottish shores.
[657] DIMEV 4390 (3).
[658] Scrope (born 1397) had access to de Pizan's work through his stepfather John Fastolf who acquired it from his employer, the Duke of Bedford, see Jonathan Hughes, 'Scrope, Stephen (1397–1472)', ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/66283 [last accessed 12 Nov 2023].
[659] ff. 130r–195r. Lydgate died in 1451, Burgh, who completed the work after Lydgate's death, died in 1483, see Steele, '*Secreta Secretorum*,' passim.

The brontology, in English, is in a further textual grouping near the end of the manuscript but it is not addenda,[660] rather, it resembles Ashenden's version from the *Summa*.[661] The grouping comprises astrological medical texts as follows: a calendar, a brontology, a lunar prognostic, detailed dispositions of people according to the dispositions of each planet,[662] astronomical tables and diagrams of planets and their humours, and a Zodiac Man.[663] The calendar is in Latin, the other texts in English. The brontology is based on the Sun in the zodiac sign, as follows, 'when it thundreth in Aries that is to say when the sun is in Aries'.[664] In order to be accurate about when this was happening in relation to the months of the year, a wheel diagram was provided which shows the correlation of these time frameworks.[665] The scribe made a mistake in the order of the signs in the brontology, wrongly placing Sagittarius before Aquarius instead of Capricorn, which is unusual in an otherwise high-quality manuscript like this produced in a commercial workshop. It is assumed that the cause was that professional scribes were less familiar with the zodiac order than the students, scholars, medics or patrons who compiled their own manuscripts. The Zodiac Man is a practical diagram, well-proportioned and skilfully drawn, but without the zodiac imagery most other examples have, just understated labels giving the signs' names on the parts of the body they were thought to influence. The fact that astrological medicine and brontology had a place in this manuscript indicates that they were part of up-to-date and desirable knowledge circulating at the time, whether the intention was for the manuscript readers to consult them themselves or for their doctors to do so.

Cambridge, Trinity College MS R.14.52

This manuscript is larger and thicker than many manuscripts in this study,[666] with 275 paper folios. It was dated to the late fifteenth century by M.R. James and the final texts are attributed to Master Rogier Necton,[667] an Oxford physician with court connections who died in 1484, but is referred to here as still living.[668] The hands are clear and fluid and the texts are neatly positioned on faintly ruled lines with gold to embellish details, red and blue ink for initials and regular red carets, suggesting that it was professionally produced. The main hand is a fluid, right-slanting Anglicana with formal *textura semiquadrata* book-hand headings. Later manuscripts often show this very slight inclination to the right which echoes contemporary humanist scripts used in mainland Europe and implies that it was fashionable, or that a particular scribe had overseas connections perhaps through education

[660] ff. 139r–195r, it is missing the first folio, so seemingly not written for this manuscript but included from another source.
[661] See Curt F. Bühler's edition of the brontology in 'Astrological Prognostications in MS. 775 of the Pierpont Morgan Library,' *Modern Language Notes*, Vol. 56, No. 5 (John Hopkins University Press, May 1941), pp. 351–355 (pp. 352–353).
[662] Bühler, 'Astrological Prognostications,' pp. 354–355.
[663] ff. 280v–292r.
[664] f. 280v.
[665] f. 290v.
[666] 290 mm x 225 mm.
[667] ff. 264v–270r.
[668] Linne R. Mooney, 'A Middle English text on the seven liberal arts,' *Speculum*, Vol. 68, No. 4 (1993), pp. 1027–1052, p. 1029.

or trade. It has one hundred and eleven substantial treatises neatly positioned in single columns, with visible areas of clear prick marks on the majority of folios corresponding to the faintly ruled lines. A layout of wide margins allows for interaction with the folios, such as subheadings or notes. Also, several blank folios placed between major textual groupings allow notes or material not available at the time of the manuscript's production to be added, most of these are filled with later hands. One of them, a former owner in the late sixteenth and early seventeenth centuries, John Furtho, MA, MD, physician, Fellow of Trinity College and also Senior Bursar, had bequeathed Trinity R.14.52 to the College.[669] Even though it was old by then he refers to it in his will as one of his 'best books'.[670] The manuscript is the subject of a far-reaching edited work on its texts, language and scribe, in two volumes.[671] Although this does not relate directly to the history of the brontologies per se it is valuable in understanding their textual groupings within the manuscript.

Figure 29, Cambridge, Trinity College MS R.14.52, f. 1r
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[669] f.52v; a typed copy of an extract of Furtho's will (proven 1633), on one flyleaf, describes him as a 'Doctor of Physicke' or Physician in modern terms.
[670] Furtho explains that, as he believed the college had no copies of the books, he gives permission for suitably qualified and interested fellows of the college to make copies.
[671] M. Teresa Tavormina (ed.), *Sex Aging&Death in a Medieval Medical Compendium: Trinity College Cambridge MS R.14.52, Its texts, Language, and Scribe*, Vols. 1 & 2 (ACMRS, Arizona, Tempe, 2006).

The earliest evidence of ownership is the elaborate red and green monogram of John Vale at the top of folio 1r, shown in Figure 29 (above). Vale was secretary and man of affairs for Sir Thomas Cook in the later fifteenth century. Cook was a member of the Draper's Company and Mayor of London 1462–63.[672] It has been suggested by Juhani Norri in a recent article that a person of Cook's stature must have been the owner of the manuscript, but there is no physical evidence, whereas Vale's monogram is highly visible on the first folio.[673] Norri's suggestion stems from Linne Mooney's assertion that a set of manuscripts attributed to the 'Hammond Scribe'[674] (which includes Trinity R.14.52) were commissioned as the private library of 'a member of London's fifteenth-century merchant class'.[675] Both Mooney and Norri aver that this person was Cook. However, Vale himself was also a member of this part of society albeit a junior one at this time and he did own other manuscripts.[676] A recent article on Vale by Joe Stadolnik gives further insight into this social milieu.[677] Stadolnik observes that 'On the whole, Vale's books changed hands among readers affiliated with the City's prestigious livery companies the drapers, mercers, and haberdashers, tracing out a network of literary exchange that mapped onto and across those of mercantile activity'.[678] Vale was bequeathed another book, a psalter, from John Multon the stationer in 1475.[679] Multon and Vale knew each other well through the mutual patronage of Cook and their place of birth.[680] Importantly, Vale compiled a fourth manuscript himself, reflecting his cosmopolitan life, consisting of letters by notable persons of his day, London chronicles and political texts.[681] This shows he was in possession of the skills to undertake a manuscript compilation, irrespective of who actually copied the texts and there is no reason to suppose that Cook did not advise his assistant in such matters. Also, Vale's was not an

[672] Linne R. Mooney, 'More Manuscripts Written by a Chaucer Scribe', *The Chaucer Review*, Vol. 30, No. 4 (1996), pp. 401–407 (pp. 404, 407, n. 14).
[673] Juhani Norri, 'Translation from Latin and French as a Source of New Medical Terms in Late Medieval England', *Romance Philology*, Vol. 71 (Fall 2017), pp. 563–622, p. 568.
[674] The 'Hammond Scribe' was first identified by Eleanor Hammond earlier last century, see 'A Scribe of Chaucer,' *Modern Philology* 27 (1929), pp. 27–33. Fifteen fifteenth-century manuscripts (including Trinity R.14.52) have now been found featuring his work, see Mooney (1993), pp. 1027–1028, fn. 7.
[675] Mooney, 'The Scribe', in M. Teresa Tavormina (ed.) *Sex Aging &Death in a Medieval Medical Compendium: Trinity College Cambridge MS R.14.52, Its texts, Language, and Scribe,* Vol. 1 (ACMRS, Arizona, Tempe, 2006), pp. 55–64 (p. 60).
[676] Mooney, 'More Manuscripts Written by a Chaucer Scribe', *The Chaucer Review*, Vol. 30, No. 4 (1996), pp. 401–407 (p. 405)
[677] Joe Stadolnik, 'An Expatriate London Scribe? John Vale in Portugal', *Journal of the Early Book Society* (2018), pp. 1–8 (pp. 1–2).
[678] Stadolnik, 'An Expatriate,' pp. 5, 8 (n. 33).
[679] Ibid., p. 2.
[680] See Lister M. Matheson, 'Essex/Suffolk scribes and their language in fifteenth-century London,' in Marina Dossena, Richard Dury and Maurizio Gotti (eds.), *English Historical Linguistics 2006; Volume III: Geo-Historical Variation in English* (Amsterdam, John Benjamins B.V, 2008), pp. 45–66 (p. 51); also, Mooney (2006), pp. 56–57.
[681] London, British Library Additional MS 48301A, see Stadolnik, 'An Expatriate,' p. 5.

isolated case,[682] the embroiderer Thomas Carleton, also a guild craftsman, was another example of someone who compiled his own manuscript, bequeathing it to the London Guildhall in his case.[683]

The manuscript as a whole has a very large number of varied and very rare texts, from theoretical medicine suitable for university medical training, an almanac, to an eclectic range of craft skills, including 'nat clad special sciences,' an unusual text on the following seven areas of practical craft which resonates in style with the seven liberal arts: tilieng (tilling, or agriculture), venery, phisik, theatrik, lanyfice, armery, navigacioun'.[684] Mooney likens this to similar material in *Didascalicon*, a twelfth-century encyclopaedic work by Hugh of St. Victor.[685] Some of the Trinity R.14.52 crafts represent the interests of merchant communities; 'lanyfice', for example, is a specialised term (explained within the text) for wool-work. It is the only example listed in the online Middle English Dictionary and it may have been a localised term or trade jargon derived from Anglo-Norman '*laine*' for 'wool'. The interest in theatrics also links to the mystery and passion plays enacted by craft guilds,[686] some of which were elaborately stage-managed productions. Another rare text, which was inserted into the manuscript, is on solmisation or the attribution of syllables to musical notes. It consists of diagrams of two left hands, the palms facing the reader, on which a number of lines represent the mnemonic process for remembering sequences of sounds.[687] The *De spermate* ('On Sperm') text is the only known vernacular example.[688]

These are not isolated examples, Patricia Kurtz and Linda Voigts note that fifty-four of the Trinity R.14.52 texts do not survive in any other contexts,[689] indicating they were unusual even at the time of publication, so the compiler must have had a wide range of contacts.[690] A good example of this is a text of John of Harlebeke, *De spera solida*,[691] an idiosyncratic textual arrangement written in the early fourteenth century, then translated into English in the fifteenth century and interpolated with an unattributed version of Chaucer's *Treatise on the*

[682] See Caroline M. Barron for other examples, 'What did medieval London merchants read?' in Martin Allen and Matthew Davies (eds.), *Medieval Merchants and Money: Essays in Honour of James L. Bolton* (University of London Press, 2016), pp. 43–70 (pp. 45–46).
[683] Barron, 'What did medieval London merchants read?' pp. 45–46.
[684] f. 253.
[685]Mooney (1993), pp. 1030, 1034. See Jerome Taylor (ed. and trans.), *The Didascalicon of Hugh of St. Victor: A Medieval Guide to The Arts* (New York, Columbia University Press, 1961), p. 75; Mooney (1993), pp. 1027, 1030.
[686] See Mooney (1993), p. 1035.
[687] ff. 256ar–256bv.
[688] f. 28, Päiva Pahta, 'Medieval Embryology in the Vernacular: The Case of '*De Spermate*," *Mémoires de la Société Néophilologique de Helsinki*, Vol. 53 (1998).
[689] Patricia Deery Kurtz and Linda Ehrsam Voigts, 'Contents, Unique Treatises and Related Manuscripts,' in M. Teresa Tavormina (ed.), *Sex, Aging and Death in a Medieval Medical Compendium; Trinity College Cambridge MS R.14.52, Its Texts, Language, and Scribe*, Vol. 1 (Arizona, Tempe, Arizona Center for Medieval and Renaissance Studies, 2006), pp. 19–54 (p. 39).
[690] Kurtz and Voigts, 'Contents,' p. 39.
[691] 'On the solid sphere,' or 'On the physical sphere'.

Astrolabe.[692] Elly Dekker has investigated Harlebeke, about whom very little was known, and found that he was Flemish, trained as a priest and astronomer and was working as a physician in Paris from the second half of the thirteenth century.[693] The first translation of *De spera solida* was from Latin into German in the fifteenth century, and subsequently into English.[694] Edgar Laird states that this transmission in translation should in no way be considered a means of simplifying or popularising the science, but of broadening it as it allows for clever syntheses with English texts according to needs or interest,[695] representative of a 'broad scientific culture' in English, where various combinations could be created according to necessity or interest.[696] Winston Black states that the total amount of one hundred and eleven texts in Trinity R.14.52 is both impressive and comparable with late-medieval medical encyclopaedias.[697] Some of the texts should have been illustrated but these visual aids were never included. In the case of the astrological gynaecology text, [698] Green notes empty space where the manuscript analogues have images and this was also the case with plague and Sphere texts.[699]

The contents table is in the main hand and lists two booklets as being from another source, now part of the compilation although separately foliated.[700] This table caters for the non-specialist by providing many clearly expressed incipits with detailed descriptions of items available in the manuscript. Most texts deal with the fundamentals of medical training, both theoretical and practical. The first is a treatise attributed to Roger Bacon combining texts on the span of human life: gerontology, the maintenance of health and prolongation of life,[701] *De spermate* on the theory of human conception and development in the womb.[702] Next, the *Liber cerebri* ('Book of the Brain'), just the incipit is in Latin, the text is in English and continues the investigations into the workings of the brain expounded in the above gerontology text.[703] This is followed by a practical guide to phlebotomy *Liber fleobotomie* ('Book of Phlebotomy'), where there are detailed descriptions not just of where to cut veins but the specific effects of opening certain ones. Next, reproductive anatomy, physiology and health in *Liber creatoris*

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[692] ff. 231v–234r, see Winston Black for further description of the text, 'The Quadrivium and Natural Sciences,' in Rita Copeland (ed.) *The Oxford History of Classical Reception in English Literature: Volume 1: 800–1558* (Oxford, OUP, 2016), pp. 77–94 (p. 82); and Edgar S. Laird for the 'making a sphere' text, 'Texts Concerning Scientific Instruments' in Tavormina (ed.) *Sex, Aging and Death,* Vol. 2, pp. 607-680.
[693] Elly Dekker, *Illustrating the Phaenomena: Celestial Cartography in Antiquity and the Middle Ages* (OUP, 2013), p. 341.
[694]On *De spera solida*, Dekker, *Illustrating the Phaenomena*, p. 341, cites Kathrin Chlench, *Johannes von Gmunden deutsch. Der Wiener Codex 3055. Deutsche Texte des Corpus astronomicum aus dem Umkreis von Johannes von Gmunden* (Vienna, 2007), pp. 59–60 (pp. 53–57).
[695] Laird, 'A Previously Unnoticed Manuscript of Chaucer's Treatise on the Astrolabe', *The Chaucer Review*, Vol. 34, No. 4 (2000), pp. 410–415 (p. 411)
[696] Ibid.
[697] Winston Black, 'The Quadrivium,' pp. 77– 78.
[698] ff. 124v–126r.
[699] Green (1992), p. 81.
[700] ff. 256ar–256bv.
[701] ff. 1r–28a.
[702] f. 28.
[703] ff. 40v–44v.

('Book of the Creator').[704] The text after this is described by the compiler as a health regimen, again attributed to Roger Bacon in a long incipit,[705] advising on the maintenance of health and wellbeing, not just treatment when a person is ill. The last item in the grouping is a text, in Latin, on the treatment of fevers.[706]

The next grouping begins with a treatise on the theory of prognostics attributed to 'Bartilmew' (Bartholmeus Anglicus) from *De proprietatibus rerum*, as translated by John of Trevisa.[707] This foundation text on medical prognosis cites Galen and Hippocrates as practical medicine authorities and provides the knowledge to interpret prognostic texts such as nativities and brontology. Winston Black notes that this is the first known substantial commentary of *De proprietatibus* translated into English which incorporates extensive excerpts from Galen.[708] The first brontology, in English and based on the months of the year, was entered into this part of the manuscript in the late sixteenth or early seventeenth century at the very end of a small textual grouping in Furtho's hand, evidence that it still had value for some scholars even at this late date.[709] A number of theoretical medical texts in the original hand follow, such as *De mulieribus*,[710] a long treatise on aspects of women's health in relation to the four elements, This was part of a study of obstetrical and gynaecological texts by Monica Green.[711] Furtho had picked up this theme and included a text on breast cancer in his grouping.[712]

Quaternity texts detail groups of four things, usually the four elements and the four humours, and they occur frequently in manuscripts in this study. This example investigates the relationships of the four elements to the four human complexions, the seasons of the year and the hours of the day, for example, stating that sanguinity is dominant from four until nine in the morning.[713] These concepts are explained as complex processes in which, ultimately, the elements interacted with the human mind. [714] The next text explains planetary influences on zodiac signs in general, and lunar influences on sickness and life and death in particular, attributed to Hippocrates as translated by Avicenna.[715]

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[704] ff. 44v–46r; ff. 46v–50r.
[705] ff. 56v–61r.
[706] f. 61v.
[707] ff. 62r–63r, 'On the properties of things', see Laurel Means, "Ffor as moche as yche man may not haue þe astrolabe:" Popular Middle English Variations on the Computus,' *Speculum*, Vol. 67, No. 3 (Jul 1992), pp. 595–623 (pp. 598–599).
[708] See Winston Black, 'The Quadrivium,' p. 78.
[709] ff. 105r–105v.
[710] f. 107r.
[711] Green (1992), pp. 61, 81.
[712] f. 106v.
[713] f. 139r.
[714] ff. 107r-135v, 139r.
[715] ff. 139v–142v, 143r–145r.

There is a move from medical theory to practice in the next grouping, commencing with a long version of the 'John a Burdewe' plague text,[716] and seven varieties of medical treatment for different conditions, e.g. ointments, inhalations, with Latin incipits. [717] After this applied knowledge the compiler returns to theory with a treatise on the observation of religion as the founding principle of medicine citing important figures in the history of medicine, with a Latin incipit,[718] just the sort of text one would expect in an undergraduate medical manual. The final texts in this grouping are practical, the first is a urinary treatise, with large diagrams of twenty urine flasks in the same style as Huntington 64, where gold is used for the first two shades of urine.[719] The second is a further plague treatise, purporting to be from 'the grettest doctours of phisic amonges the univ*er*sites of cristendom in the tyme of Seynt Thomas of Canterbury,'[720] and citing the dietary, bloodletting and urinary treaments of 'Doctor Solemyne'.[721]

The second brontology, also in English but based on the Zodiac, occurs towards the end of the manuscript grouped with didactic cosmological texts on planetary influences at birth, attributed to Raby Moyses,[722] one of which visualises the earth as 'round as a tennis ball'.[723] The brontology itself commences with the passage on regarding the second occurrence of thunder in a year, also seen in other manuscripts in this study. The potentially classical and mediterranean context of some of the predictions mark out the exemplar as an earlier university text, similar to Ashenden's sources for the *Summa*.[724] There is a strong possibility, therefore, that this complex material was intended for teaching in university. In his 2010 article on three brontologies,[725] Eric Bryan demonstrated that Trinity R.14.52 is the closest to Ashenden's original Latin *Summa*.[726] Also, Linda Voigts notes, in her article on bilingualism in English manuscripts,[727] that the scribe/compilers' ability with Latin enabled them to move easily between Latin and English as the need arose.[728] The phraseology of the referencing in Trinity R.14.52 bears this out, for example:

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[716] John of Burgundy, see Sloane 989, Chapter 3, pp. 85–86; also, Lister M. Matheson, '*Médecin sans Frontières*?: The European Dissemination of John of Burgundy's Plague Treatise', *ANQ*, Vol. 18, No. 1 (2005), pp. 19–30.
[717] ff. 156v–158r.
[718] ff. 159v–169v, Aristotle, Avicenna, Johannes of Isagoge, Constantine and 'Bartilmew' (Bartolomeus Anglicus).
[719] ff. 173av–173er, also see California, San Marino, Huntington Library MS HM 64, this chapter, p. 160.
[720] This was mid-twelfth century.
[721] ff. 174r–175v.
[722] Known as Moses Maimonides, see T.M. Rudavsky, *Maimonides* (Singapore, Wiley-Blackwell, 2010), p. 10.
[723] f. 261r.
[724] Chapter 2, p. 39, also see Table 2, Chapter 4, p. 178 for the other examples.
[725] Bryan, 'Prognostications by Thunder,' pp. 17, 18.
[726] Ibid., ff. 260v–261v.
[727] Voigts (1996), p. 817.
[728] Ibid., see ff. 161r, 161v.

- 'As Avicen saith in the first booke in the first chapitre'
- 'this saith Johannes of Isagoge in the first chapiter and Constantyne in the first booke the iiij chapitre'.[729]

Teresa Tavormina notes Mooney's hypothesis that the Trinity R.14.52 compiler was emulating 'grete bokes' of history and literature commissioned by the gentry, but with a scientific and medical focus. She goes on to describe the Trinity R.14.52 compilation as a 'boldly conceived project in its own right, with its breadth of content, its translations of substantial academic medical treatises, and its plans for illustrations to several of its texts'.[730] In later work, she examined the process of compilation of Trinity R.14.52 which resulted in one of the clearest and most comprehensive English versions of the 'Letter to Ipocras'.[731] Other texts, such as Bacon's specialist treatise on the processes of ageing, also offer highly technical discourses.[732]

In summary, brontology in Trinity R.14.52 has two different existences as the first brontology was not the initial one, but edited into a suitable space in the manuscript by John Furtho in the late sixteenth or early seventeenth century whilst writing on practical medicine. It is noteworthy that his textual grouping engages with the other original texts surrounding it (and does not simply use up space in a random way) although his brontology is less scientific in that it is less concerned with astrology. The second brontology is in keeping with earlier, learned astrological material similar in nature to John of Ashenden's and, for at least a hundred years, was the only brontology in the manuscript. It also gives a glimpse into brontology application, stating as the explicit 'therefor in these chapitres canonized tymes and temp(or)al mutaciouns or chaunges most to be considered'.[733] The clarity of referencing of the learned texts must surely indicate a course of study, whilst the presence of many highly esoteric texts seems to represent a compilation of quite personalised research. Also, the care with which the separate contents table was written suggests that it had arrived in a library during the fifteenth century, prior to Furtho's ownership. Vale as the original owner, and Furtho the last one prior to the manuscript entering Trinity College library, points to a two-way street between academia and readers and thinkers in large centres like London or the university cities.[734] Therefore, the first library context is likely to have been in the merchant world, a private library of Thomas Cook's household, or perhaps his guild (the Drapers), or the overarching London Guildhall where Thomas Carleton deposited his manuscript. There was even limited public library provision in

[729] f. 161r.
[730] Tavormina (2006), Vol. 1, Preface, xix.
[731] Tavormina, 'The Middle English *Letter of Ipocras*', *English Studies*, Vol. 88, No. 6 (2008), pp. 632–652 (p. 636, 639), see f. 81r.
[732] f. 9r.
[733] f. 261r.
[734] Mooney suggests the author came from Merton College, Oxford or Peterhouse, Cambridge (1993), p. 1036.

one part of London along with merchants' guild and private libraries,[735] at the parish church of St. James Garlickhithe,[736] one of the starting points of the pilgrimage to St. James, Compostela.

California, San Marino, Huntington Library MS HM 64 (olim Phillips MS 6883)

This is a late-fifteenth manuscript, datable post-1485 because of a reference to King Henry VII '*post conquestum*'[737] in the original hand. Other dating evidence is found in the calendar in feast days of St. Frideswide, St. Etheldreda, and The Visitation of Mary, which were not instituted in the liturgical calendar until 1480.[738] Huntington 64 is one of the larger works in the study and not easily portable.[739] It is relatively substantial, consisting of 197 paper folios. The main hand is a neat, mixed secretary with a slight forward slant (similar to Trinity R.14.52, above)[740] and a *Textura formata* book hand for headings and rubrics. Some words and headings are highlighted with a thin, yellow paint wash in much the same way as modern highlighters are used. The texts are in well-spaced double columns, without marginal notes and there are didactic, full-folio diagrams and tables resembling Sloane 213.[741] A note inside the cover, in a later hand, states 'Dr. Dee's Philosophy; A Philosophical Work of the Fifteenth Century.' John Dee (1527–1608), an astrologer and advisor to Queen Elizabeth I, owned an extensive library which included many scientific and alchemical works.[742] Huntington 64 does not appear in any of the surviving catalogues of this library, but it is of interest to this study that it was thought sufficiently learned by earlier cataloguers to have belonged to Dee,[743] and has the appearance of a desk-based reference and teaching guide.

The first text is a Latin calendar with a planetary table showing the dominant planets on each weekday. The planets are of great significance in the following three diagrams of the male human body.[744] The first, *Homo Venarum*, a Vein Man in English with Latin medical terms, is surrounded by fifteen roundels, each describing two veins, one in black ink, the other in red ink with a further treatise on veins,[745] Figure 30a (below). Although the diagram is schematic, the texts on the effects of opening veins are of equal substance to those in Wellcome 8004 and expounded in a similar didactic manner to university-derived planetary tables and texts in Trinity R.14.52. The second diagram, *Homo Signorum* ('Man of Signs,' otherwise 'Zodiac Man') has zodiac signs written

[735] See Barron for the personal libraries of a number of craftsmen, 'What did medieval London merchants read?' pp. 60–62.
[736] Ibid., p. 61.
[737] f. 72r.
[738] See calendar, ff. 2r–7v.
[739] Measuring 307 mm x 215 mm.
[740] This chapter, p. 147.
[741] This chapter, p. 129.
[742] Huntington 64 was acquired in 1927 from the Phillips collection in England by the Huntington Library, San Marino, California.
[743] See Seymour De Ricci, *Census of Medieval and Renaissance Manuscripts in the United States and Canada*, Vol I (New York, H.W. Wilson, 1935–1940), p. 48.
[744] ff. 1v–8v, 9r, 12v, 14r.
[745] ff. 9r–10v.

on his body parts. Further passages warn of the dangers of making incisions into these at certain times, very similar to Somer's canon table *Ymago Signorum*.[746] The next folio has a table providing further references of the body parts affected when the sun is visible in the zodiac signs, in Latin, the parts themselves in French in a column headed 'Partes' in English. The third 'Man' diagram is untitled, it depicts wounds on his body, each linked

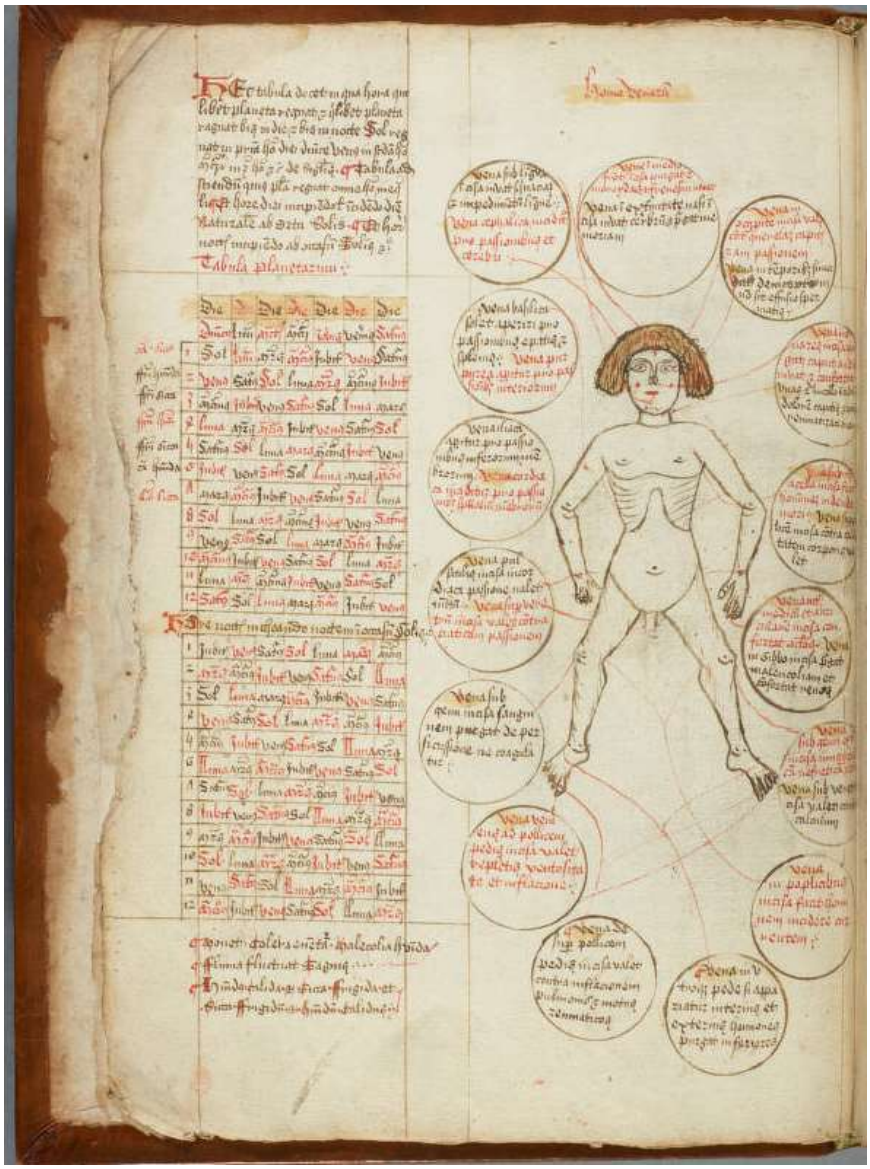

Figure 30a MS HM 64 *Homo Venarum*, f. 9r,
The Huntington Library, San Marino, California.

[746] Mooney (1998), p. 149.

30b MS HM 64 *Homo Signorum*, f. 12v,
The Huntington Library, San Marino, California,

30c MS HM 64 *Wound Man,* f. 14r,
The Huntington Library, San Marino, California.

to planets shown as twelve large, pointed stars with human faces. There are the usual five planets (plus Sun and Moon), but some are shown more than once, governing more than one part of the body. This diagram is a rare and unusual insight into a world of specialist, applied surgical medicine which regards planetary influences, not found in any other manuscripts in this study.

Only one other English example of a Wound Man was discovered outside this study, London, Wellcome Library MS 290 which is from the late fifteenth century, slightly later in date than Huntington 64.[747] In a similar fashion, contemporary examples from Germany show weapons,[748] animals, plants and stones alongside the injuries they caused on the figure of a man with treatment notes,[749] but they all lack the astrological associations of Huntington 64. Following the Wound Man, a short English text demonstrates a pedagogic origin by explaining the meanings of satire, comedy, tragedy and demagogy and their role in oratory, or the oral delivery of knowledge. Practical medicine is also taught in Huntington 64 through two detailed Sphere diagrams with explanations, a Sphere of Apuleius and *Spera Apuleus Platonic*, in Latin and English with a Latin incipit. The double authority implied by the addition of 'Platonic' to the 'Sphere of Apuleius' is unusual and seems meant to guide the reader to sources.[750] These texts teach how to perform an assessment of a patient's chances of survival and suggest taking their pulse to monitor progress.[751] This was a concept of Islamicate medicine deriving from Galen and the main method of contact English physicians had with their patients' bodies,[752] other than inspecting their urine.[753] The pulse text is only seen in one other corpus manuscript, Advocates 18.6.9,[754] the oldest herbal and apothecary manuscript, in a similar grouping with a Sphere text very likely to be university-derived.

The intricacies of astrological medicine are the next subject, via a series of maps showing the structure of the world and the cosmos all on one folio, as follows:

[747] 'Wound Man,' f. 53v, see Jack Hartnell, 'Wording the Wound Man', *British Art Studies*, Issue 6 (2017b), https://doi.org/10.17658/issn.2058-5462/issue-06/jhartnell [last accessed 12 Nov 2023].
[748] For example, London, Wellcome Library MS 49 (1420-1430), f. 35r, ibid.
[749] Hartnell cites the work of Southern German surgeon Ortolf von Baierland, ca. 1400, for this imagery (2017a), p. 326.
[750] The other study example of this is in Digby 88, f. 15r, from the end of the fifteenth century, see this chapter, p. 169; also, Edge's description of naming practices for the Sphere, 'Licit medicine or 'Pythagorean necromancy',' p. 614.
[751] ff. 14va, 14vb.
[752] Siraisi, *Medieval and Early Renaissance Medicine*, pp. 125–127.
[753] ff. 16rb–16v.
[754] Chapter 2, p. 37.

- 'T-O' map[755]
- the universe depicted as sixteen nesting spheres (or zones) topped by '*Sedes dei*' (the seat of God)[756]
- two birds'-eye views showing the mechanism of solar eclipses.[757]

This is all in preparation for a text in Latin on the influence of the lunar orbit on the human constitution and an extensive health regimen, also in Latin and attributed to Galen. This health regimen offers medicinal recipes for specific ailments, in English, a plague treatise and *Trotula minor de ornatu*,[758] both in Latin, and several urology texts in English grouped with a long, Latin incipit.[759] The Trotula text on women's health and wellbeing is a rare inclusion in the corpus manuscripts. Many further practical applications of humoral theory follow (always taking planetary dispositions into account):[760] recipes, treatments, a dietary attributed to Hippocrates, and the third part of the legend of St. Michael from *The South England Legendary*, in verse.[761] The latter is not a divergence into hagiography, but weather science and prognostication, termed 'a vehicle for scientific digressions'[762] by Carl Horstmann in his 1901 edition of the work.[763] For example, the four elements and how they relate to the production of thunder and other weather phenomena.[764]

Further on in the manuscript, the following unusual items are grouped with a medical dictionary in Latin called *Quid pro quo*:[765] a 'Salve for Mankind' (a set of petitions to St. Susan for ten separate conditions),[766] and *De corio serpentis* (as discussed above in several other manuscripts in this study).[767] The St. Susan text is unique in this study. A woman named Susanna is described in the New Testament of the Bible as one of a number of people ministering to Jesus' needs whilst he travelled and ministered to others.[768] Further to this, Green has identified a spiritual

[755] This style of map is in Isidore's *On the Nature of Things*, Chapter 48(47) 'The Parts of the Earth,' Kendall and Wallis (2016), pp. 15–176, and see 'Commentary,' pp. 251–253.
[756] See also Radcliffe e30, this chapter, p. 135, which has fifteen spheres, the sixteenth one in Huntington 64 serves to show God's seat above all.
[757] f. 17r.
[758] 'The lesser Trotula on dress,' ff. 28v–34r.
[759] ff. 17v, 18r–26r, 28v, 39r–47v, see William Wilson 'Catalogue of Latin and Vernacular Alchemical Manuscripts in the United States and Canada', *Osiris* 6 (1939) pp. 408-418 (pp. 408, 413).
[760] ff. 53rb–63ra.
[761] ff. 72v–79r.
[762] Just the third part of the St. Michael legend is also found in London, British Library, Harley MS 2277, ca. 1300.
[763] Carl Horstmann (ed.), *The Early South-English Legendary: or, Lives of Saints. I. Ms. Laud, 108 in the Bodleian Library* (London, EETS, 1887), Chapter 45, 'Miȝhel,' online: *Corpus of Middle English Prose and Verse*, p. 300, https://quod.lib.umich.edu/c/cme/AHA2708.0001.001/1:3.36?rgn=div2;view=fulltext [last accessed 1st Jan 2024].
[764] ff. 74v–75r.
[765] ff. 113v–120r, 125r–143r, 145r–146r, 147r.
[766] ff. 140ra–141va.
[767] Sloane 2584, Chapter 2, p. 56; this chapter: Sloane 1315, p. 125, Trinity O.1.57, p. 127, Takamiya 61, p. 130.
[768] *The Latin Vulgate Bible*, Luke (8: 1–3), https://vulgate.org/ [last accessed 1st Jan 2024].

regimen around the saint regarding childbirth, but also as a general protection from peril.[769] In *De corio serpentis* there are twelve eclectic experiments attributed to 'Alconus,' for example, putting powdered snakeskin in an enemy's bedstraw will cause them 'to flee'.[770] As in Trinity O.1.57, *De corio* is here grouped with university-derived uroscopy texts. The Huntington 64 examples are as follow: 'Twenty Colours', 'Urine that has Great Contents' and *Ad Cognoscendum Pregnantes*.[771] These particular urine texts were also found earlier in the study in fourteenth-century textbook Rawlinson C.814 and St. John's K.49, a medical manual from the earlier fifteenth century.[772] Two health regimens are supplied in Huntington 64, with the following incipits, the second is the compound text with brontology and mist prognostic:[773]

- *Galieni medici Regimen Sanitatis feliciter*[774]
- 'Here sayeth Galianus the goode leche that was of metis and dryngkis to use in tyme of the yere in every monythe to take and ete and in tyme of bloode letynge'

The second health regimen lays out rules for healthy living as an elaborate, unified, treatment-focused plan, based on the influences of the moon as it passes through the sky, the brontology and the mist prognostic. The latter two prognostics highlight any potential disruptions to this, and specifically refer to travel plans.[775] Irma Taavitsainen calls such a grouping a 'collective lunary'[776] and similar ones are found in twelve other manuscripts in this study (often more than one version), entitled either *Storia Lune*,[777] or 'The Thyrtty days of the Mone'.[778] Much learned information was imparted, mostly in English, before the brontology and mist prognostic texts were worked into a seasonal health regimen framework.

[769] Monica Greeen, "Masses in Rememberance of 'Seynt Susanne': A Fifteenth-century Spiritual Regimen," *Notes and Queries*, Vol. 50, No. 4 (Dec 2003), pp. 380–384.
[770] f. 143ra.
[771] 'To know if there is a pregnancy'.
[772] Rawlinson C.814, Chapter 2, p. 36, St. John's K.49, Chapter 3, p. 84.
[773] ff. 18r–21v, 79v–83r.
[774] 'Galenic doctors' fortunate health regimen'.
[775] f. 81v.
[776] Irma Taavitsainen, 'The Identification of Middle English Lunary MSS,' *Neuphilologische Mitteilungen*, Vol. 88, No. 1 (1987), pp. 18–26 (p. 22).
[777] Chapter 3: Sloane 989 (ff. 55v–71v), p. 86, Digby 95 (ff. 94r–95r), p. 87, Chapter 4: Digby 88 (ff. 62r–62v), p. 169, Chapter 5: Ashmole 189 (also has special medical lunaries, ff. 29r–32v, ff. 67v, 68r–68v, ff. ff. 84r–86r, 212r-v, 213v, 214r-215v), p. 185.
[778] Chapter 2: Sloane 282 (f. 82v), p. 61, Chapter 3: Bodley 591 (ff. 13v–15v, ff. 24r–26r, 38r–38v - a duplicate text of the first), pp. 89, 92, this chapter: Sloane 1315 (ff. 24v–27v, 28r, 29r, 30r, 31r, 31v, 32r, 32v, 67v–68r, 73r), p. 124, Sloane 213 (ff. 113r–115r), p. 129, Longleat 176 (ff. 39v– 41r), p. 131, Sloane 635 (ff. 1r–9r), p. 141, Trinity R.14.52 (ff. 141v–142v), p. 152, Gonville & Caius (ff. 79r–83r), p. 170, also see Taavitsainen (1987), p. 19.

Huntington 64 compound text with brontology:

f. 79v 'Here saythe Galian(us) the goode leche that was of metis and dryngkis to use in tyme of the yere in every monythe to take and ete and in tyme of Bloode Letynge etc.[779]

Aquari(us)

In the monythe of Janyver whyte wynes dryngke and blode letynge forbeere then in all thynge for grete parell ther(re) is in the 7the daye of the same monythe the 1(the), 2(de),

Tonit(ri)a Nebulosus 3(de), 4(the), 5(the), 10the, 15the and the 19(t)he. Grete wyndis and moche frute and many floodis and grete batellis and a goode corne yere. And if hit myste in that monythe that yere Swynge[780] after schall be a grete rayne and pepull schall ben a gaste of wyndes and

It(em) Folkis schall have the cowghe and moche Debate schall be in the worlde that yere. *Si luna fu(er)it in Aquario ire viam tuam ne dubites quia in veines proficium etcetera*.[781]

Pissis

In the monythe of Februarii potage of malowes ete ye not ne no porge for they be than all venym. Furste in the vayne of the thombe late ther bloode 2 dayes ther(re) be of parell the

Tonit(ri)a Nebulosus 16 and the 19 daye etcetera. Moche folke schall dye in the morayne and grete dissesse of sikenys. And if hit myste when the sonne is in that syngne þe schall have grete froste and

grete dowte in erthe and that yere frute schall fayle all save only wyne schall grete plente be and men schall dye that yere moste etcetera. *Si luna fuerit in Pissibus si pau(per)eas pauper non revinies etcetera*.[782]

Aries In the monythe of Marche ette ffigis and rayssonys[783] and swete metis and dryngkis and hote metis and dryngkis use and lete the bloode on the right arme on the 5the daye or on the 7the or in the 17the for in daye is goode for all man(er) fevers. But blede not on the 1(the) ne on the 15, 16, 17 and on the 18the daye for they bethe p(er)illus.

Tonit(ri)a Grete wyndis and moche striffe and grete flodis and risynge of the comonys and a goode

Nebulos(us) corne yere. And if hit miste when the sonne is in this signe þe schall have grete plente of grasse and of all maner of herbis and sickenys of messellis and have grete angwisshe and many fowre ffetid bestis schall be gevyn that yere. *Si luna fuerit in Ariete et iternice peris cito bene comptetis.*[784]

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[779] The text passages of this compound text have been made to fit the thesis pages as they were in quite narrow columns in the manuscript source which are difficult to follow in transcription.
[780] Suing (following).
[781] 'If the Moon is in Aquarius, do not hesitate to go your way because you will be successful and so on'.
[782] 'If the Moon is in Pisces, if you are poor you will not return poor and so on'.
[783] Raisins.
[784] 'If the Moon is in Aries and you prepare well you will have a pleasant trip'.

Aprell Taurus

In the monythe of Aprell blede upon the Lifte Arme on the 3de, 10, 15 Daye and thon schalt have no grete ache ne lese thy sight that yere. Ete fresshe flesshe and also hoote metis. And blede not on the 7the, 8, 10 ne on the 20t(he) Daye. And who letithe hym blode in the 11 daye on the Lifte Arme he schall have no sickenys in þowre hedde and

Tonit(ri)a *Si luna fu(er)it in Tauro et Iter inceperis damp* **f. 80r** *in pacieris*.[785] And if thonder in this signe þe

Nebulosus schall have Joye of all þowre Ennemys and moche frute. And if hit miste when the sonne is in the Signe aforesayd þe schall have plente of Corne But in the vale hit schall fayle swyne and b estis they schall be many in the feelde that yere. In the monythe of Maye Erlye Arise and hoote metis and dryngkis use hedde ne feete of no beste ete not whiles that may Lastithe. And Lete the blode on the 1(the) or in the 18. On whiche Arme that þe will or in the 27 or 28 daye And hit schall helpe moche Ayenste all man(er) of evillis but beware that thou Bleede not in the 3de, 6 or in the 24 Daye. Also ther(re) be 4 ferefull dayes ther(re) be of parell the 7, 14, 16, 19 Daye. But lete the bloode in the 4, 5, 6 daye in the endyng of maye in þoure Armys As aforesayde and hit schall helpe þou from many man(er)

Tonitria evilllis in that yere. And if hit Thonder in this monythe þe schall have moche frute and

Nebulosus grete sickenys and grete hongur in Londe. And if hit miste when the sonne is in that signe þe schall have grete plente of Rayne and hayle and whete and herbis ther(re) schall be Inowe and fewe Lambe and manye wormys and wilde bestis. *Si luna fuerit in Geminis tunc preparaberis iter et homines quasi Amicos in venies*.[786]

Canc(er)

In the monythe of June Every daye dryngke a drawght of coolde wate fastynge and Rewell the by myssior(es)[787] of thy mete and Dryngke and ete often Lettuse and Sawge And if thou have nede to bleede Bleede on the 28 Daye for yt is goode, but beware that thou Blede not

Tonitria on the 7 ne on the 16 Daye. And if hit thonder in this monythe þe schall have litill frute

Nebulo(sus) and honger that yere and many woode bestis and wilde floodis. And if hit miste when the Sonne is in that signe ther(re) schall be Derthe and hu(n)ger and debate amonges men sleynge eche other and that yere schall be grete plente of ffrutes of trees. *Si luna fu(er)it in Cancro Ire non dubites si via fuerit breuis*.[788]

Leo In the monythe of Julle kepe the ffro Lechery for then thy brayne and thy vaynes bethe

[785] 'If the Moon is in Taurus when you begin your journey you will be disappointed with the deal'.
[786] 'If the Moon is in Gemini and you are prepared the people you meet will become friends'.
[787] Messes, mixtures.
[788] 'If the Moon is in Cancer do not doubt that the journey will be short'.

Tonit(ri)a opyn. And blede not on the 13 ne on the 15 ne on the 19 ne on 22t(he) Daye. And if hit thonder in that signe þe schall have moche frute and honger Amonge Bestis. And if hit

Nebulosus miste in this signe þe scahll have batell and manslawght(er) by Avene kyngs and Realmes and bytell scahll be dyre at the bygynnyng of the yere and that yere at the laste ende many men schall be slayne. *Si luna fuerit in Leone nec multu(m) letaberis nec tristaberis*.[789]

V(ir)go In the monythe of Auguste wortis ne malowes use not in potage hote metes **f. 80v** and dringkis use and good Spicere and dryngke no colde Dryngkis Ne blede not for 2 dayes there be of parell that is the 19 and the 20t(he) daye ne on the 1(the) on the 2(de) ne on the 30t(he)

Tonit(ri)a Daye. And if hit thonder in this monythe þe schall have moche pepull uecke[790] and febull

Nebulosus of sickenys and manye by hestes made of pilgremage. And if hit miste in this Signe that yere schall Bestis Lie Awayte to slee[791] pepull and fowre footid bestis schall dye that yere. *Si luna fuerit in V(ir)gine p(ro)gere nou quia infortimu(m) pacieris*.[792]

Libra In the monythe of September All the frutes that ben Ripe ben goode for to ete and blode letyng use and whose let(te) hym blode in the 17 Daye that yere he schall have no dowte of the Droppesy ne of the ffeveris ne of the palsy ne of the ffallyng evill withe owte dowte.

Tonitria And if hit thondur in this Monythe þe schall have moche frute and mony men schall be

Nebulosus slayne and lordis scahll be Itakein here strengthe and Idoo[793] to dethe. And if hit miste in this signe that yere schall be grete dryves[794] in valies and in the yeris ende schall bee grete Rayne and bitayle schall be dyre. *Si luna fuerit in Libra iter dubites quia Amicos invenies*.[795]

Scorpio In the monythe of October dryngke muste[796] and swete wyne for that is good to use and for

Tonit(ri)a nede þe may blede But the 6the daye is of parell. And if hit Thonder in that signe þe schall

Nebulosus have grete wyndis and litill frute on trees and many grete floodis. And if hit myste in this signe there schall be fewe grapis and bestis schalle dye and wemen schall be delyverid of childe arther tyme com and that yere þe shall have grete wyndis. *Si luna fu(er)it in Scopione dolebis vel peritebis si iter p(ro)rexeris*.[797]

Sagittarius In the monythe of November beware of thes dayes of parell the 15 and the 19 loke thou com in no Bathe for then is thy blode Igaderid.[798] Goode hit is on the hedde vayne to be

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[789] 'If the Moon is in Leo, you will neither be much gladdened nor saddened'.
[790] Weak.
[791] Slay.
[792] 'If the Moon is in Virgo, proceed now because it will become difficult'.
[793] Done.
[794] Droves.
[795] 'If the Moon is in Libra do not hesitate to travel because you will find friends'.
[796] Must (grape juice prior to fermentation).
[797] 'If the Moon is in Scorpio you will suffer or perish if you go on a journey'.
[798] A-gathered (collected).

Tonitria aventid a litill or Garsid[799] ffor then be all the humers quicke.[800] And if hit Thonder in that

Nebulosus monythe þe scahll have moche frute and moche myrthe in Londe and a goode corne yere. And if hit miste in this signe that yere schall be all Rayne and the ffloweris and the frutis scahll fall from tress and kyngis sarvantis schull debate and fight that. *Si luna fuerit in sagittario Iter tun(c) parsite quia quod in bono vis veniet tibi*.[801]

Cap(ri)cornus In the monythe of Dissember hoote metis ete and forbere þowe the cawle worte.[802] Whoso suche liffe ledithe of his Lyffe he may be seckur. Blede thou maye ffor nede but 2

Tonitria dayes ther(re) be of parell the 16tene and the 17 Dayes. And if hit Thonder in this

Nebulosus monythe þe schall havemoche frute and pesse in Londe. And if hit myste in this signe moche folke schall **f. 81r** be distolerid[803] and A grete pestelence ov(er) all placis. *Si luna fuerit in Capricornis ad propositu(r) tun(c) Ire noli.*[804]

This ben the tokenes that schall fall of all the mistis and the thonderynge and when to take þowre Journaye and und(er) what signe that comythe in all the yere as men fynde in Bookes wreten and fownde by wise clerkis to teche men that ben not connynge and for to make hem wise to doo ther(re) after all the yere folwynge'.

This breaks down to the following items noted per month:

- recommended foods and drinks
- whether bloodletting is advisable
- which days are perilous
- what effects can be expected if thunder occurs
- effects if mist occurs
- effects when the Moon is in the sign (in Latin), indicating two or three days which are optimal for travel

Despite many medical connections in the manuscripts as a whole, bloodletting advice is not very common in the compound texts in the study, the only other is in Wellcome 8004. This suggests that this fundamental procedure for illness and the maintenance of health was not a major concern of those who compiled compound texts, making it much more likely that they were physicians or astrologers. The mist prognostic is very rare, there are no other instances of it in eTKeVK2.[805] Since mist is again addressed in the St. Michael excerpt from the 'Legendary,'

[799] grazed or lightly cut.
[800] alive, lively.
[801] 'If the Moon is in Sagittarius share your journey and what you want in goods will come to you'.
[802] colewort, similar vegetable leaf to kale.
[803] dispersed, disturbed.
[804] 'If the Moon is in Capricorn then do not go to your intended destination'.
[805] Only one reference was found during this study, in that example the times of day are used as a framework not months as in Huntington 64, Edward Robertson, 'Arab Weather Prognostics,' *The Journal of the Royal Asiatic Society of Great Britain and Ireland*, No. 2 (Apr. 1930), pp. 377–389 (p. 377, 385).

it must be assumed that it was of special interest to this manuscript compiler, possibly because they were in a setting where it was common (for example, riverside, marshland or coast).

These varied texts make up a didactic handbook covering several fields of medical knowledge and specialisms, including: apothecary practice, gynaecology, ophthalmology, herbal preparation, surgery, and equine veterinary medicine, with a strong astrological medical foundation throughout. The prominence of Latin in the linguistic make-up of the texts shows that, even this late in the study period, the scribe/compiler was sufficiently Latinate to interpret many professional, university-derived texts on medicine and medical education.[806] The seamless flow of texts from Latin to English, the use of a form of macaronic or mixed language, and small amounts of untranslated French, supports the argument that they were able to move easily between the languages.[807] The French is used for the names of months, so it is assumed that since it is much less used at this time it had not been altered because the words were quite similar in French and English. Also, although some of the Latin university texts were translated into English it is important not to read too much into this as a sign of limited education as this process was certainly going on within universities themselves at this time.[808]

The merging of skills texts into a multifarious and widely informed practice in Huntington 64 was also going on elsewhere within late-medieval medical practice, education, and research. For example, the material in Huntington 64, Wellcome 8004, and Trinity R.14.52 can be compared with the work of John Argentine, a university-trained doctor, royal physician and Provost of King's College, Cambridge.[809] He wrote a very similar manuscript,[810] also a source of *De corio serpentis*,[811] which was only found in very few contexts other than the study examples from this time.[812] Magister John Cokkes was another contemporary physician with a mixed medical and pharmacological interest.[813] His experimental recipes, at least one 'proved uppon hymselffe,' are recorded in

[806] See Siraisi on types of medical education, *Medieval and Early Renaissance Medicine*, pp. 50–55.
[807] See Pahta (2004) on multilingualism in medieval England generally and scientific and medical writing in particular, pp. 74–75.
[808] See, for example, Sarah Star on Henry Daniel's translations and original uses of English, 'Henry Daniel, Medieval English Medicine, and Linguistic Innovation: A Lexicographic Study of Huntington MS HM 505,' *Huntington Library* Quarterly, Vol. 81, No. 1 (Spring 2018), pp. 63–105 (pp. 64–65, 69).
[809] Peter Murray Jones, 'Argentine, John (c. 1443–1508),' ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/642 [last accessed 2 Jan 2024].
[810] Oxford, Bodleian Library MS. Ashmole 1437.
[811] ff. 3v–4r, also this chapter, pp. 125, 127, 130, 160.
[812] From eTKe2, in England: Cambridge, Magdalene College MS Pepys 1236 (15c) ff. 89r–89v, in Germany: Bayerische Staatsbibliothek Codex Latinus Monacensis 206, f. 350r.
[813] Peter Murray Jones, 'Cokkys, John (d. 1475),' ODNB (23 Sep 2004), https://doi.org/10.1093/ref:odnb/45761 [last accessed 2 Jan 2024].

learned medical works in both English and Latin.[814] Although the term '*experimenta*' was used to mean 'practically applied,' it could also refer to novel scientific experimentation as we understand it today.

London, British Library, Additional MS 27582

This large,[815] well-produced, practical manuscript is dateable to the end of the fifteenth century. It was provided with finely tooled leather boards displaying numerous small heads in roundels (potentially the authors of the texts or personifications of virtues) at this time, or shortly after. There are 267 folios, alternating Latin and English in a competent and fluid fashion. The manuscript folios are parchment. Initials are embellished with hand-coloured initials and there is also an incunable, *Lumen apothecariorum* (attributed to Quiricus de Augustis de Terthona),[816] embellished in the same way on paper folios.[817] This incunable is positioned at the centre of the manuscript, implying that it was part of the original compilation rather than added at the back which could have been done much later. C.J.S. Thompson, a medical historian from the earlier twentieth century, dates the original *Lumen* to the fourteenth century, stating it was first printed in 1492 in Turin.[818]

By 1523, Additional 27582 had already been in the possession of at least one churchman, a chantry priest at Exeter Cathedral named Richard Smyzth and later that year he gave it to another, Arnulph Ap-Rice, Subprior of St. John's, Exeter.[819] Also, the inclusion of Thomas Forestier's prophylactic plague health regimen text dedicated to Henry VII (whose reign began in 1485) provides another piece of dating evidence.[820] Additional 27582 deals with practical medical knowledge and has two health regimens and prominent texts on herbal and apothecary skills. The incunable has notable texts on the new pharmaceutical technology of pill-making, and one of the earliest known recipes for marzipan.[821] Although the latter sounds frivolous, sweet foods were considered part of the medicine chest in the Middle Ages,[822] at the least as vehicles for administering medicines but would have been for better-off clients as they were expensive.

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[814] Faye Marie Getz (ed.), for example, Oxford, Bodleian Library MS. Ashmole 1432, *Healing and Society in Medieval England*: *A Middle English Translation of the Pharmaceutical Writings of Gilbertus Anglicus* (Madison, University of Wisconsin Press, 1991), 'Introduction', p. xvii.
[815] 480 mm x 300 mm.
[816] Tortona, Italy.
[817] ff. 81r–120r.
[818] C.J.S. Thompson, '*Lumen Apothicario*,' *The Mystery and Art of the Apothecary* (London, Bodley Head, 1929), pp. 127–128.
[819] St. John's was a priory hospital used as the cathedral library in the seventeenth century, which may have facilitated the survival of this book, see Sam Smiles, 'Data, Documentation and Display in Eighteenth–Century Investigations of Exeter Cathedral,' *Art History*, Vol. 25, Issue 4 (Sep 2002), pp. 500–519 (p. 505).
[820] ff. 70v–77r.
[821] ff. 81r–120r.
[822] See Emilia Henderson on London, British Library Sloane MS 1621 as an earlier source of Islamicate knowledge on the therapeutic effects of sugar, 'A spoonful of sugar,' British Library, *Medieval Manuscripts* blog, https://blogs.bl.uk/digitisedmanuscripts/2018/11/a-spoonful-of-sugar.html [last accessed 3 Jan 2024].

The brontology, in Latin and English, is based on liturgical hours, with the same element of cardinal directions for the tenth hour as Longleat 174.[823] Additional 27582 is unique in the study as the only liturgical hours brontology without any additional forms of brontology. It is situated at the end of the manuscript, which could mean it had been included after the original campaign of layout and compilation, and is therefore of less significance to the manuscript as a whole. However, in this case, its placement is immediately after two health regimens as part of a grouping of astrological medical and weather prognostic texts on thunder, wind or sunshine and the sighting of a rainbow during Christmas week, not to be confused with the rainbow science text in Longleat 174 (above).[824] One of the health regimens, the *Liber de conseruatione Juuentuti*,[825] is attributed to Albertus Magnus, the other quotes Galen;

> '*Ut autem dicit Galienus mirabilis est scienta regiminis sanitatis*,'[826]

Therefore, this placement of prognostics serves as a final check and a balance on the advisability of carrying out the advice of the health regimens.

Oxford, Bodleian Library MS. Digby 88

This astrological medical manuscript dates to the end of the fifteenth century and it comprises 98 parchment folios.[827] Although not always perfectly neat, the small number of different hands are bold and stylish, with flourishes to the descenders and good use of red ink to highlight the initials and headings. There is a noticeable slight forward slant as seen in other later fifteenth century manuscript contexts. The first texts are theological and pertain to priesthood.[828] The manuscript also contains numerous prognostic and astrological medical texts, in both Latin and English, including the following: a health regimen, John Somer's calendar with nativity prognostic, a Sphere of Life and Death, a compass diagram with the names of the winds in Latin known as a compass rose, chiromancy, and physiognomy.[829] The brontology grouping comprises the following texts, mostly in Latin:

- physiognomy prognostic with rhyming verse on humours
- *dominacions of the xii signes* (zodiac signs' influence on specific body parts)
- Vein Man
- *De complexionibus signorum*

[823] f. 267r, see this chapter, p. 145.
[824] f. 81v, this chapter, p. 145.
[825] 'Book of conservation of youth', ff. 259r–265v.
[826] 'But, as Galen says, knowledge of the government of health is admirable,' ff. 255r–258v.
[827] Measuring 214 mm x 143 mm.
[828] ff. 1r–24v, 27v, 28r.
[829] further prognostics elsewhere in the manuscript: New Years' Day, in English, ff. 25r–26r, lunary, in Latin, ff. 30v–31r, chiromancy, in English, for women and men, ff. 44r–45v, the day Christmas Day falls, in English, ff. 75v–76v, nativities, in English, ff. 77r, and in Latin ff. 88r–91r, 91v, Zodiac, in Latin, f. 78v.

- A didactic text on the relationship of the seven planets to the four elements of the universe[830]
- two brontologies
- two Christmas Day prognostics, one from sunshine on Christmas Day.

In this grouping, brontology serves to inform astrological medicine, one of the brontologies uses months and one the Zodiac, an arrangement seen before in this study in the didactic and professional contexts of Ashmole 6 and Ashenden's *Summa*.[831] The immediate focus of cosmic consultation in the manuscript appears to be the phases of the moon. There is only a Vein Man image displaying the veins it is safe to cut when the Moon is waning, no Zodiac Man necessary for an astrological medical approach. However, returning for a moment to scrutinise the preceding text, 'The d(omi)nacions of þe xii signes,'[832] reveals that this is actually the text for Zodiac Man, showing the zodiac signs each body part relates to:

> 'Aries yn the hedde
> Taurus in þe necke and þe throte
> Gemini in þe shuldres, armys and handys
> Cancer yn þe breste and þe longus
> Leo yn þe herte and þe stomake
> Virgo yn þe wombe þe lyver and þe gutte
> Libra yn þe lyndes and þe vesise[833]
> Scorpio yn þe a pvy me(m)bre, þe tayl yende
> Sagittari(us) yn þe thyes
> Capricorn(us) yn þe kneys and þe hamys[834]
> Aquari(us) þe calfys of þe leggs and þe leggs
> Pisses þe feete and þe p(er)tyes'.[835]

This implies the reader was familiar with the Zodiac Man image and only needed the text to mentally set the scene, whereas the location of veins offered by the Vein Man was more precise. Practical skills texts (woodwork, ploughing, land measurement, fishing) and Occupations of the Months after the prognostics and at the end of

[830] Also found in Sloane 213, this chapter, p. 129.
[831] See Ashenden, *Summa*, Chapter 2, pp. 39–40.
[832] f. 29v.
[833] 'Loins, bladder'.
[834] 'Upper thigh'.
[835] 'Toes'.

the manuscript suggest an ecclesiastical estate origin, supported by the above priestly texts.[836] An extract from Walter of Henley's work on the agricultural management of a manor also points towards this,[837] and from another direction, 'St. Gregory's Trental,'[838] a devotional text associated with crusaders, known in England and France, so possibly a Knights Templar or Hospitaller estate. The latter text, otherwise unknown in this study, links the spiritual pollution of the everyday sinner to what was considered the besmirching of the Holy Land by the opponents of the Crusaders.[839] Crusaders were also associated with this text in other contexts as the organised form of Knights Templar or Hospitaller devotion and so, feasibly, the estate in question could have been one of theirs.[840] The Trental fell out of favour in the fifteenth century,[841] evinced in Digby 88 by its thorough crossing-out, which does not however make it anywhere near unreadable.[842]

In the final textual grouping of the *Storia Lune* (verse lunary previously discussed) the reader is returned to popular astrological medicine.[843] The Digby 88 *Storia Lune* describes in detail the nature of days of the month as caused by planetary influences, and extrapolates associations with figures from the Bible, i.e. on the day associated with Jonah the reader is told to be as patient as he was when he endured three days in the belly of the whale.[844] In and amongst these texts there is an evident strand of interest in weather per se, seen in two versions of 'Diverse tokens of the weather' texts,[845] in addition to the three weather prognostics. Max Förster cites this text as a late attributor of Esdras compared with the Old English ones he had studied previously.[846] However, this textual attribution is only partial and the texts themselves are grouped with astrological medical prognostics, *Sphaera Apuleii Platonici de vita et de morte*,[847] and 'complexions, significations, dignities, terms, aspects' of the Seven Planets.[848]

[836] ff. 78r, 80r, 89r–91r, 97v, 29r, 62v, weights and measures ff. 43r, 61v, 88v.
[837] ff. 42–43, the only text in the manuscript specifically on agriculture.
[838] A trental is a set of thirty masses to be said for one deceased person, who could choose the theme.
[839] See Penny J. Cole, 'Purgatory and Crusade in St. Gregory's Trental,' *The International History Review*, Vol. 17, No. 4 (Nov, 1995), pp. 713–725) pp. 714–715 (p. 717).
[840] See Cole on the Carew family and their missal, 'Purgatory and Crusade,' pp. 723, 724.
[841] See Eamon Duffy, *The Stripping of the Altars: Traditional Religion in England, 1400-1580* (New Haven, Yale University Press, 1992) pp. 371–376.
[842] f. 39r.
[843] ff. 49r–64v.
[844] Jonas (2: 1–3), *Latin Vulgate Bible*, https://vulgate.org/ [last accessed 7 Jan 2024].
[845] ff. 12r–13v, 25r.
[846] Förster (1903), p. 347.
[847] 'Platonic Sphere of Apuleius on life and death, see also Huntington 64 for another example of a 'Platonic' Sphere, this chapter, p. 158.
[848] ff. 15r, 16r–23r, 26v.

Early sixteenth century

Cambridge, Gonville & Caius College MS 457/395 (olim 457)

This manuscript is from the turn of the sixteenth century and has 86 very fragile paper folios written in several hands. It is larger than a vade mecum[849] and suitable for use at a desk or lectern. In 1849, it was recorded in the Gonville & Caius College library catalogue that it was in poor condition and bound in old wooden boards with leather fastenings.[850] At some stage after this cataloguing it was trimmed to fit a new College binding. There is an ownership inscription of 'Henri Goode' on the first folio and a partially legible reference to him belonging to a 'new hospital' in Latin.[851] The manuscript is largely on astrological medicine in English, with extensive practical skills texts, for example: herbal recipes, health regimens, urology, anatomy, and ophthalmology. One set of recipes attributed to Galen demonstrates an interface between surgery and apothecary practice, offering ointments for 'a syrugien' to use.[852] Perilous days texts are attributed to Bede and 'astronomers and astrologers'.[853] Medical rules by 'astronomys' (astronomers) in Gonville & Caius 457/395 are cited by Taavitsainen in relation to zodiacal lunaries;[854]

> 'Hyt ys forbode by astronomys to all maner folk that þey lett hm no blode ne take no drynkys, and also good itt ys þan to a<b>sten from women. And þus schulde wyse lechis knowe and kepe and teche oþer men.'[855]

Here the scribe defines leeches as the keepers and disseminators of the knowledge of astronomers.[856]

The brontology textual grouping is made up of the following mixture of prognostics and astrological medicine:

- *De canicularibus diebus*[857]
- *De complexionibus*
- *De Phisionoma*
- brontology

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[849] 285 mm x 195 mm.

[850] J.J. Smith, '457,' *A Catalogue of the Manuscripts in the Library of Gonville and Caius College, Cambridge* (Cambridge, J. Deighton and MacMillan and Co., 1849), pp. 217–218.

[851] Ibid., p. 218.

[852] ff. 44r–44v, 46r–46v, 55r–55v, 57v–60v, 61v–62v the latter attributed to 'Whyston', 75r–75v, 76r.

[853] ff. 13r, 50v, 51r, 79r.

[854] Taavitsainen, 'A Zodiacal Lunary for Medical Professionals,' in Lister M. Matheson (ed.) *Popular and Practical Science of Medieval England* (East Lansing, Colleagues Press, 1994), pp. 283–300 (pp. 297–298).

[855] f. 46r.

[856] this text is also in Sloane 213 in the brontology textual grouping, ff. 111v–112r.

[857] 'On the Dog Days' (days associated with lethargy, ill fortune and thunder over a period during July and August after the rising of the Dog Star, Sirius).

- *De regimine planetarum, signorum*[858]
- a 'book of astronomy and philosphy'
- 'the soothfast cunning of astrology'
- a New Year's Day prognostic
- Christmas week prognostic

The separation of the brontology from the New Year's and Christmas prognostics is clear evidence that it was used with the prognostic and diagnostic package of texts with Latin incipits and English text. The whole textual grouping is in preparation for making judgements from the next grouping, *De Urinis*. This text instructs on finding physical evidence of the state of the humours in the body by examining urine. This particular combination of texts aligns with Nicholas of Lynn's medical canons,[859] reinforcing the idea of seasonal brontology as a go-to text for medical applications, but once again in a rather niche context, this time that of someone involved with a hospital (probably in Cambridge) and this location does seem germane to the transmission of learned texts to the manuscript.

London, British Library, Sloane MS 2270

This is another large reference book,[860] of 384 paper folios. It belonged to John Eamys, a doctor working in the earlier sixteenth century, taking the study period up to 1530. It supplies extensive information for his professional practice, but was far too big to carry with him. The neat, current and relatively elaborate hand includes book hand and embellished elements drawing attention to headings and finding aids such as punctums and carets, in red and green ink. The lines are very even and although there is no evidence of ruling, Eamys' neat, current script carefully follows the noticeable horizontal ridges in the type of paper he used by way of a line guide. Although the hand changes through the manuscript, there is enough similarity to put this down to the effects of ageing, or ill health, on Eamys through his life, indicating that he worked on it for a considerable period, culminating in 1530. This is borne out by the volume of practical applications, recipes and treatments added over such a period of time. Sloane 2270 begins with a contents table organised by ailment, with appropriate treatments noted in brief.[861] The skills of urology, physiognomy and making medicines were of particular interest to Eamys. The brontology, in English, is entitled 'Declaratione of thonnder'.[862] It was placed early in the manuscript, grouped with Eamys' own astronomy guide, further prognostics, and a health regimen. The grouping has

[858] 'On Complexions; On Physiognomy; On the signs governing planets'.
[859] Eisner (1980), pp. 22–28.
[860] 305 mm x 205 mm.
[861] f. 1v.
[862] f. 5r.

acquired four, grotesque marginal images of heads blowing puffs of wind around it, which represent winds coming from the four cardinal directions. The health regimen text, which begins near the bottom of the same folio, is a rather puritanical version concerned with mental and physical health through moderating the intake of rich food and drink and control of the emotions. The other items in the grouping as a whole give an insight into Eamys' professional modus operandi:

- lunary
- planetary influences experienced by people
- planetary dispositions
- the Four Elements
- the Eighteen Urines
- physiognomy, with a brand label or copyright logo stating 'John Eamys'
- the uses of betony

The real difference between Eamys' methods and those of the writers of earlier manuscripts in this study is a greater focus on medicines as the first line of treatment, which is also a development in the several corpus manuscripts where it is difficult to identify the extent to which the compiler was a doctor or an apothecary.[863] Although this is largely a fifteenth-century phenomenon, it does start as early as the fourteenth century, with Advocates 18.6.9, in notably didactic contexts. Eamys himself showcases this when he advertises his, 'goode and approvyd medysynse'.[864] Nevertheless, as in the vast majority of the earlier manuscripts in this study, the brontology textual grouping continues to set the scene for the later practices in Sloane 2270 by putting the planetary influences in mind, including any potential disruption to them from thunder.

London, British library, Additional MS 17367

This is a rare example of a well-made, folding manuscript with brontology from the sixteenth century, a time when brontology was also appearing in print.[865] The unfinished reign of Edward the Sixth is the last item in the 'Reigns of Kings' text, dating it to the middle of the sixteenth century.[866] All texts are written in English in a bold, neat book hand, with initials and whole passages in red ink, and gold used to illuminate saints' nimbuses in the calendar of their feasts. The manuscript was created in a similar way to the other small, folding manuscripts in this study by folding and refolding parchment in the manner of a concertina to make a pocket reference guide.[867]

[863] Chapter 2: Advocates 18.6.9, p. 37, Sloane 2584, p. 56, Chapter 3: St. John's K.49, p. 85, Bodley 591, p. 89, Chapter 4: Sloane 213, p. 129, Takamiya 61, p. 130, Sloane 635, p. 141, Huntington 64, pp. 158, 159, Gonville & Caius 457/395 p. 170.
[864] f. 14r.
[865] Phebe Jensen notes mid-sixteenth-century print editions of brontology in *Astrology, Almanacs, and the Early Modern English Calendar* (Abingdon, Routledge, 2021), p. 30.
[866] Post-1547, but before his death in 1553.
[867] Measuring 105 x 98 mm, see also: Rawlinson D.939, Chapter 2, p. 42; Egerton 2724, Chapter 3 pp. 68–69 and Morgan 941, p. 76.

Although the portrayals of figures, furnishings and dress are relatively simplistic, shading and tinting has been used as an attempt at a more realistic appearance. The inclusion of St. Swithin in the July calendar entry might mean a Winchester origin (where he was patron saint), but this is not definite proof as two of his major relics, his head and arm, were venerated at Canterbury and Peterborough, respectively. The manuscript is based on calendar calculation of moveable feasts, for which there is an explanatory text in addition to the actual calendars of saints' feasts. The other texts are all aimed at life planning and maintaining health through the following prognostics: zodiac dispositions, planetary influences, New Year, and brontology in English and also using lunar activity charts.

Figure 31 – London, British Library MS Additional 17367, *Januarii/Aquarius*, *Februarii/Piscisi*
Image licence: CC BY-NC 4.0 DEED

Once unfolded, two sets of two compartments face each other on verso and recto, presenting two months of brontology entries with associated zodiac dispositions facing, as shown in Figure 31 (above).[868] When read from left to right as in a western codex, there is firstly the 'split-screen' effect of images of Occupations of the Months and the results of thunder in the month sharing a compartment beneath the brontology text, side-by-side with dispositions of the zodiac periods in the right-hand compartments. These have personifications and visualisations of each zodiac sign set in a wheel diagram showing the hours of daylight in the month in red ink and the hours of night in black.

As in the case of the Morgan 941 images, it is easy to categorise the relatively simple illustrations as farming advice for the year, but the selection of images shown with hours of daylight have to be taken as a whole prognostic grouping. As Carey explains, the reason for showing inequality of the hours of daylight and darkness through the year as 'one of the first steps required in any astrological investigation'.[869] This helps ascertain the boundaries of the astrological houses and Carey sees this as a definite move towards greater astrological expertise once the practitioner had access to the sort of ephemerides tables for the local meridian often seen in manuscripts in this study.[870] From left to right, the groupings of texts offers the following information, for example, January and February:

> 'If yt thunder in Januarii yt syugnyfyeth in that yere shalbe greate plenty of good corne and lyttyll frete or no(n)e.
>
> Aquarius
>
> Ys a signe ayery, hote, moist, sanguy(n)e, westly, masculyne, fyxed, digestyue, and governith the leggs
>
> If yt thunder in Februarii yt syugnyfyeth in that shalbe gret dethe amonge the peopyll and moste of rych men.
>
> Piiscis
>
> Ys a signe watery, cold, moist, flegmatyck, northly, feminyne, common, expulsyue, and governith the fete.'

In conjunction with the images, the following selection of matters can be readily applied to astrological medical judgements:

- brontology
- depiction of Occupations of the Month
- depiction of thunder prognostic, in parallel

[868] This chapter, p. 173.
[869] Carey (2004), p. 362.
[870] Ibid., these tables show the date and time that planets appear in conjunction with zodiac constellations, hence, the many references to the Sun 'in the sign'

- the prevalent humours during the period of the zodiac sign
- the cardinal direction and gender pertaining to the sign
- whether the sign is considered 'fixed' or 'moveable'[871]
- which bodily process benefits from zodiac influences at this time, i.e. in January it is the digestive process
- which part of the body is influenced by the sign at this time.

Figure 32, London, British Library MS Additional 17367, 'The Judgements of Yeares/The Gouerna(u)ns of Planettes'
Image licence: CC BY-NC 4.0 DEED

[871] This relates to how close a sign is to the middle of a season and therefore how much it embodies the quality of that season.

Readers could have looked at this brontology as the simple, stand-alone prognostic suggested by Phebe Jensen in her work on early English calendars,[872] but the immediate association of humours to the prognoses enables quite detailed astrological medical judgements.[873] The bodily states mentioned in the zodiac dispositions text would have needed some medical and physiological knowledge, regardless of whether the reader was a professional health advisor or not. Following these compartments are 'The Judgements of Yeares' and 'The Governau(n)s of Planettes' (shown below) which give added context to the previous prognostics. The Judgement gives prognostics for the year, presumably at New Year for the year ahead, based on the dominant planet and the dominical letter, usually on New Year's Day (alternatively, it was carried out on Christmas Day). The text shows symbols for the planets, commencing with the Sun, corresponding to the letter 'A', then the Moon, corresponding to 'B' and so on. The medically focused 'Governauns' text expands on the planetary dispositions text next to the brontology with more detail about which part of the body will be affected and what illnesses to expect. So, even in this tiny manuscript format both a full-length text and an abbreviation are provided on this subject. These texts should, therefore, be thought of like an 'app' for quick reference, of most use when needing an initial health prognosis, either in the field or whilst travelling yet still covering a surprising amount of precise information on planetary influences.

Later fifteenth-century manuscripts with brontology are part of the 'broad scientific culture'[874] seen in Trinity R.14.52 which, nevertheless, had not rejected weather-based predictions. Manuscripts from merchant and noble households, like Longleat 174 and Morgan 775 are manifestations of this in which practical medicine and business and social skills exist side by side in an, often didactic, integrity with the astrological medical material. In Sloane 213, the heading of the textual grouping shows brontology continuing to be used for teaching astrological science.[875]

It is significant that the format of many later fifteenth-century manuscripts differs from the earlier ones. All of the forms discussed in earlier chapters have survived into this time: textbooks, vade mecums, folding manuscripts, and reference works, but it is the latter which are now the most common. Typically, these are attractive, good-quality desk, library, or guild-based reference books for medical and apothecary studies with personalised additions such as recipes and experiments. Their contents suggest that brontology was part of a complex process

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[872] Jensen, *Astrology, Almanacs*, p. 30.
[873] See Hilary Carey, 'Judicial astrology in theory and practice in later medieval Europe', *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and Biomedical Sciences,* Vol. 41, Issue 2 (June 2010), pp. 90, 94, 97.
[874] See Trinity R.14.52, p. 147.
[875] This chapter, p. 129.

as practised by Arnaldus de Villa Nova, where many things were considered in making a diagnosis or prognosis.[876] This is an intellectually rigorous approach, whether expounded in Latin, English or a mixture of both, in full-length with additions, or abbreviated to fit into a folding manuscript. In most cases in the later fifteenth century, astrological medicine itself had spread into a multifarious practice like this, often deeply involved with the natural world through plants and other materia medica. Brontology is prominently positioned in this and woven into textual groupings with other prognostics and zodiac knowledge. In Huntington 64, this culminates in a health regimen with separate predictions from thunder and mist in conjunction with planetary influences. In Gonville & Caius 457/395 the grouping of brontology with astrological medicine to inform *De Urinis*, in the manner of De Lynn's canons, is entirely separate from other prognostics. Further evidence of rigour is also found in the quality of translations. Although there is greater use of English in line with changes in both the wider society and academia, the direct or close translations from Latin in later fifteenth-century manuscripts, including for brontologies, shows a continuing scholarly approach and access to learned material.[877] In Trinity O.1.57 and Digby 75, for example, texts on medical guidance are in Latin whereas the methodology is in English, so it is assumed that the compiler could understand the terminology in the texts but preferred vernacular terms for practice.

Although most of the content of the thunder prognostications remains very similar to the earliest brontologies, by the later fifteenth century there has been a shift in the less mundane aspects from classical-world references to ones resonant of the environment of *al-Andalus* (for example), which probably arrived with Islamicate scientific knowledge, reflected in the later items in Table 2 (below).[878] This argues for brontology's associations continuing to be at the least educational, if not learned. The main feature is a summer prognosis of storms violent enough to bring down trees and leading to ravaging beasts on hearing thunder. Lions and leopards are listed as said beasts, but also wolves, native to Britain in the Middle Ages (although dwindling), and sometimes foxes. Apart from one earlier fifteenth-century example, Sloane 989, this only appears in the later fifteenth century. Viticulture does not continue as a prognostic subject, likely due to climate-associated difficulties with production in the fifteenth century, when it was becoming increasingly centred on mainland Europe and North Africa rather than Britain, but also a matter of exposure to new brontology sources. The references to oil production also represent longstanding classical practices but they continue to crop up throughout the study period. This was more than

[876] See Wallis (ed.) (2010), pp. 211–220.
[877] See Voigts (2004), p. 205.
[878] This chapter, p. 178, in date order.

Table 2 - Exotic Items in Brontology Entries

Manuscript	Month/zodiac sign	Reptiles or crawling creatures	Viticulture	Lions	Leopards	Locusts	Cactus	Oil production
CUL Hh.6.11	Aries	✓						
	Gemini					✓		
	Leo		✓					
	Virgo	✓					✓	
Sloane 282	May	✓						
	July		✓					
	August	✓						
Sloane 989	June			✓				
	August	✓						
Digby 95	Pisces		✓					
	Taurus		✓					
	Gemini	✓						
	Cancer					✓		
	Scorpio							✓
Ashenden *Summa*	Pisces		✓					
	Taurus		✓					
	Cancer					✓		
	Gemini	✓						
	Scorpio							✓
Ashmole 342	Aries	✓						
	Taurus		✓					
	Cancer					✓		
	Leo		✓					
	Virgo						✓	
	Scorpio		✓					✓
Wellcome 8004	June			✓				
Digby 75	June			✓				
Sloane 213	June			✓				
Chetham's (2)	June			✓	✓			
	July			✓	✓			
CUL Ff.5.48	June			✓				
	July			✓				
Longleat 174	7th Hour							✓
Trinity R.14.52	Pisces		✓					
	Cancer	✓						
	Scorpio							✓
Additional 28725	June			✓				
	July			✓				
Gonville & Caius	June			✓				
Sloane 2270	June			✓				
Lincoln 91	June			✓				

an esoteric reference to something no longer grown in Britain as olive oil was of use to doctors and apothecaries as a medicinal substance,[879] and clerics and students needed it for lamps.[880]

Throughout the later fifteenth century, there is an important relationship between brontology and health regimens. Since astrological medical practice revolved around the balance of the humours, the next logical step for compilers of astrological medical manuscripts was to advise on how this balance could be achieved and many clients were no doubt willing to pay for this. This means that the compound texts associated with health regimens in this chapter should be understood as summaries, useful for students to understand how the elements of prognosis fit together, yet capable of being used to maintain health. This is especially notable in Chetham's A.4.99 and Huntington 64. Another significant relationship is between brontology and texts on other types of weather, which some compilers were particularly drawn to. This also occurs throughout the study period and continues undiminished to its end, most likely due to the extensive and widely disseminated work of John of Ashenden on this topic (who also went into print in 1489), along with other popular works by late-medieval writers on astrometeorology, such as Richard of Wallingford and Robert of York.[881] The Governal of Health in Radcliffe e30 is actually an astrological medical guide for the non-specialist using brontology to prepare for the weather science treatise: 'For kno(w)lege of the Impressions co(n)sideryng the weþeryngs,' which has a definite ring of Robert of York about it. In Wellcome 8004, the compiler attributes Wallingford with the complex information on planetary influences pertaining to the weather.

The later fifteenth century, therefore, was a time when brontology might have been becoming outmoded and relegated to weather forecasting but there was no sign that this was the case. Intricate and very close associations to astrological medicine, especially the compound texts, speak of a continuing, balanced application of brontology in the style of Arnaldus de Villa Nova. Trinity R.14.52 is a prime example of this, where theory and practice (including of mental health) are interwoven in a manual which was still of interest by the late sixteenth or early

[879] For example, John Mirfield's late-fourteenth-century '*Breviarum Bartholomei*' prescribes it as a rheumatism treatment, see Norman Moore, 'The Fitzpatrick Lectures For 1905. Delivered In The Royal College Of Physicians, November 14th And 16th. Lecture I. John Mirfeld (1393), And Medical Study In London During The Middle Ages,' *The British Medical Journal*, Vol. 2, No. 2342 (Nov. 18th 1905), pp. 1332–1339 (p. 1338); also, its use with snakeskin in Sloane 2584, Chapter 2, p. 56.

[880] See Andrew Norton and Guy Cockin for archaeological evidence of the type of oil lamps used in academic settings found at a site near former Oxford college Batayl Hall and several other colleges and former colleges, 'Excavations at the Classics Centre, 65–67, St. Giles, Oxford,' *Oxoniensia*, Vol. 73 (2008), pp. 161–194 (pp. 161, 168–169, 171).

[881] Lawrence-Mathers (2020), pp. 159, 169: see corpus manuscripts Longleat 176, Radcliffe e30, Longleat 174, Additional 27582, Huntington 64, Digby 88 for full text editions of their work, noting that abbreviated pieces of similar, unattributed texts also appear in many other corpus manuscript contexts.

seventeenth century when physician and Fellow of Cambridge University John Furtho continued to interact with it, adding his own prognostics including a different brontology example.

Chapter Five - Insertions into manuscripts

Introduction

The five manuscripts in this chapter: Cambridge, Trinity College MS O.2.45, Cambridge, St. John's College MS E.9, London, British Library, Ashmole MS 189, Lincoln, Lincoln Cathedral MS 91, and Oxford, Bodleian MS. Tanner 407, span a period from the mid thirteenth to the late fifteenth centuries. They are witnesses to the use of brontology in the study period as much as the other forty-four examples discussed in this thesis, but different in one important regard; their brontology texts have little or no relationship to textual groupings in the manuscripts in which they are found. They often take the forms of addenda on separate folios and in different hands from other booklets in the manuscripts. In investigating brontologies it is easy to overlook these examples as they occur in miscellaneous compilations and are unrelated to the dominant themes or areas of interest of the wider manuscripts. They are examined below to establish if they are truly alien to their manuscript contexts or if any design could be discerned in their placements.

Thirteenth century

Cambridge, Trinity College MS O.2.45

This textbook manuscript is from the Benedictine Abbey at Cerne and dated post-1248 by M.R. James from evidence of a calendar entry of St. Edmund of Canterbury (canonised 1248) for November.[882] It has 131 parchment folios. It is good quality and still in good condition. It is trilingual, in similar proportions to Rawlinson C.814,[883] mostly French and Latin with a little English later in the manuscript. Anglo-Norman French was a major vernacular language in England at this time.[884] Middle English was used in some practical medical contexts, but Latin was the language in which many high-quality texts arrived in England.[885] There is evidence that this manuscript was used for teaching, from a dual Latin/English text at the back with English in black ink and Latin in red, which is only partially complete because it was a forma to be copied by the student.[886]

The brontology is in Latin and neatly composed in the same style as the rest of the book, but placed near the back in a Latin textual grouping of didactic items with no special theme concerning the interests of the community at

[882] Measuring 230mm x 145 mm.
[883] Chapter 2, p. 35.
[884] See Richard Ingham on the quality of French still being spoken in England at this time, 'The Persistence of Anglo-Norman 1230–1362: A Linguistic Perspective' in Jocelyn Wogan-Browne et al (eds.), *Language and Culture in Medieval Britain: The French of England c. 1100–c. 1500* (York Medieval Press, 2009), pp. 44–55 (p. 55).
[885] See Monica H. Green, 'Genesis of Anglo-Norman Medical Literature' in Jocelyn Wogan-Browne et al (eds.), *Language and Culture in Medieval Britain: The French of England c. 1100–c. 1500* (York Medieval Press, 2009), pp. 220–235 (pp. 230–231).
[886] Trinity O.2.45, p. 351.

Cerne Abbey.[887] The grouping includes one other prognostic, on favourable and unfavourable days in a month starting from the new moon. The brontology itself is straightforward and does not contain any unusual or exotic items hinting at the material's distant classical and mediterranean origins (see Tony Hunt's edition, below). Both the prognostics in Trinity O.2.45 can be used together to ascertain the advisability of bloodletting (as affected by the Moon) at a given time. The brontology can be checked for any possible disruptions to the predicted favourable or unfavourable days, should it thunder. This suggests that this manuscript could have been consulted for medical treatments within Cerne Abbey, perhaps the regular bloodletting recommended by Benedictine custom in particular.

> Trinity O.2.45, p. 347.[888]
>
> '*Si tonitruus sonuerit mense januarii, ventos validos significat et habundantiam frugum et in eo anno bellum prenuntiat.*
>
> *Si tonitruus sonuerit mense februarii, multorum hominum mortem significat et maxime divitum.*
>
> *Si tonitruus sonuerit mense martii, ventos validos et frugum copiam et lites in populo significat.*
>
> *Si tonitruus sonuerit mense aprilis, jocunditatem et fructiferum annum et iniquorum mortem significat.*
>
> *Si tonitruus sonuerit mense maii, frugum inopiam in eo anno et famem significat.*
>
> *Si tonitruus sonuerit mense junii, habundantiam frugum et varias infirmitates hominum significat.*
>
> *Si tonitruus sonuerit mense julii, in eo anno bona annona erit et peccorum fetus peribunt.*
>
> *Si tonitruus sonuerit mense augusti, rei publice prospera significat et multi homines egrotabunt.*
>
> *Si tonitruus sonuerit mense septembris, habundantiam frugum et* …[blank]
>
> *Si tonitruus sonuerit mense octobris, ventum validissimum et annonam et frugum arborum et inopiam significat.*
>
> *Si tonitruus sonuerit mense novembris, habundantiam frugum et jocunditatem significat.*
>
> *Si tonitruus sonuerit mense decembris, annone habundantiam, pacem stetet et concordiam significat in populo*'.

My translation:

> 'If thunder sounds in the month of January, it signifies strong winds, abundant grain and heralds war in that same year.
>
> If thunder sounds in the month of February, it signifies many men will die and especially the rich.
>
> If thunder sounds in the month of March, it signifies strong winds, a supply of grain and dispute among the people.

[887] Trinty O.2.45, p. 347.
[888] Tony Hunt's edition (2013), pp. 221–222.

If thunder sounds in the month of April, it signifies a joyful and fruitful year and death of the wicked.
If thunder sounds in the month of May, it signifies scarcity of grain and famine in that same year.
If thunder sounds in the month of June, it signifies abundant grain and various ailments among men. If thunder sounds in the month of July, in that same year produce will be good and the offspring of sheep will perish.
If thunder sounds in the month of August, it signifies prosperity in the state and many men will suffer from sickness.
If thunder sounds in the month of September, abundant grain and…<blank>
If thunder sounds in the month of October, it signifies the strongest winds and scarcity of produce and tree fruits.
If thunder sounds in the month of November, it signifies abundant grain and joyfulness.
If thunder sounds in the month of December, it signifies abundant produce and continuing peace and harmony among the people.'

Fourteenth to fifteenth centuries

Cambridge, St. John's College MS E.9

This is a small, thick, manuscript, suitable in size for a vade mecum, but this example would have been unwieldy to carry around as it has 423 fine parchment folios.[889] Therefore, it is very likely to have been used as a reference book at a place of learning and this is supported by an inscription on the first folio placing it at Durham Priory, a Benedictine house. M.R. James also notes that it was entered in the Monks' Library catalogue of Durham Priory in 1393.[890] The manuscript came together into its current form a little later than this, with the addition of material in the early fifteenth century. A variety of similar secretary hands were used, indicating a number of individual scribes keeping to a distinct house style. The size, not the style, of each script distinguishes their different hands. There is also a marked resemblance to the script used in Ashmole 189, a slightly later manuscript whose brontology textual grouping is from the Benedictine Abbey at Muchelney.[891] The layout is simple: there are lightly ruled borders, the first initial of each sentence is rubricated, and lines link rhyming verse. The same hand wrote the initial and final verses of the compilation as a whole, which is evidence of a master compiler at Durham.

The main texts, *Veritas theologica*[892] (attributed to Thomas Aquinas), and Nicholas Gorham's *Distinctiones*

[889] Measuring 187 mm x 123 mm.
[890] M.R. James, entry for St. John's College MS E.9 in St. John's College Library catalogue.
[891] This chapter, p. 185.
[892] 'Theological truth'.

(both in Latin) deal with moral education for student priests.[893] After these texts comes the heading *Sex Memoranda* with a short text of six items warning against physical temptation, in keeping with the theological nature of the manuscript. The manuscript then continues with lighter material on social matters and entertainment with the apparently random insertion of a brontology. The texts in the group are as follows:

- *Sex memoranda contra temtacaem* (monastic advice against temptation)[894]
- Brontology, in Latin
- the aristocratic *De homage et fidelita*,[895] in French
- the *De prouisione oxonie*,[896] on the retraction of articles in the Magna Carta by Edward I (known as the 'Provisions of Oxford') and the Breaking of Ordinances by Edward II, both events around the turn of the fourteenth century.[897] [898]

Despite the more secular nature of the texts around the brontology they are as neatly curated and presented as the rest of the manuscript, with rubrication of sub-headings and the same rhyming verses linked with lines. An idiosyncratic combination of English and French is used, with Latin headings, as opposed to mostly Latin in the main body of the book. This mixture was probably a polylingual vernacular which had evolved in the confines of a priory community at the turn of the fifteenth century where all three languages were in use. The thunder prognostics within the brontology text are quite standard, without any classical, exotic or individualised features. Other, slightly earlier, fourteenth-century manuscripts with ecclesiastical provenance discussed in Chapter Two show a similar tendency to separate brontology from learned material.[899] However, by the end of the fourteenth century, brontology was much more regularly becoming attached to didactic astrological medicine. It is clear that the brontology in St. John's E.9 had simply been categorised as a piece of useful knowledge in an educational book which, though focused on theology also included etiquette for students who would be participating in high society (the homage and fealty text). The brontology content is very similar to the earlier Trinity O.2.45, also referencing problems with sheep, but from June onwards and with hail as an extra item in the prediction from April. These outlying texts were perhaps copied from favoured sources at Durham's cell at Oxford which became formalised as a college ca.1384, the whole book making its way to Durham Priory just before this happened.

[893] 'The theological truth' and 'Distinctions', ff. 1r–395r. Gorham's floruit was in the thirteenth century. He was a Dominican friar like Aquinas but from Merton College, Oxford, not Blackfriars Hall, then later a Doctor at the Sorbonne.
[894] 'Six reminders against temptation'.
[895] 'On homage and fealty'.
[896] 'On the Provisions of Oxford'.
[897] F. 400r.
[898] See V.J. Scattergood, 'Political Context, Date and Composition of "The Sayings of The Four Philosophers," *Medium Aevum*, Vol. 37, No. 2 (1968), pp. 157–165 (pp. 160–161).
[899] Trinity O.2.45 and CUL Hh.6.11.

Fifteenth century

Oxford, Bodleian Library MS. Ashmole 189

This is a good-quality textbook manuscript from the first half of the fifteenth century,[900] composed of four booklets, totalling 215 parchment folios. Chardonnens and Kienhorst believe its final compiler was Elias Ashmole himself,[901] who had acquired the individual texts for his own collection. There are several hybrid, Anglicana secretary hands in similar, neat looping styles characterised by softened quadrata minims and letter 'e's. The folios are neatly ruled with fine red lines, initials, and explanatory passages with diagrams are also in red ink giving it the pedagogic appearance seen in university textbooks. Despite the manuscript's origins as separate booklets the whole effect is of a house style like St. John's E.9 (above).[902] The second booklet does derive from a religious house, Muchelney Abbey in Somerset, another Benedictine house. The names Richard Wraxall and Dominus Richard Coscumbe, Prior de Muchelney are entered as owners.[903] These seem to be the two surnames of one person, the first from his birthplace, the second from the place where he established his career, showing that he had kept the booklet for some time, probably from the time of his education.[904] Given these facts, it is probably the case that Ashmole had identified some of the booklets as being from the same place and bound them in one manuscript, but his reasons for the addition of material from London astrologer Richard Trewythian (a professional astrologer and businessman working in London)[905] are less obvious.

The first booklet is the *Wise Book of Philosophy and Astronomy*[906] first owned by Robert Daniell about whom nothing is known. The brontology was placed in the second booklet in an astrological medical manual with full-length teaching texts:[907] on complexions of the heavens and their effects on Earth, planetary tables to find the ruling planet by the hour, and two sphere diagrams entitled 'Signs of Life and Death'. The third booklet is in Latin and a Germanic vernacular identified by Chardonnens and Kienhorst as Middle Dutch (Flemish dialect) used by an astrologer-physician.[908] This booklet continues on a medical and prognostic theme with the inclusion of lunary texts.[909] The fourth booklet contains verse prognostics for Christmas Day, a *Secreta secretorum* health regimen,

[900] Measuring 228 mm x 160 mm.
[901] László Sándor Chardonnens and Hans Kienhorst, 'Newly Discovered Notebooks of a Sixteenth-Century Flemish Astrologer Physician,' *Queeste: Journal of Medieval Literature in the Low Countries*, 25.1 (2018), pp. 1–31 (p. 2).
[902] This chapter, p. 183.
[903] f. 115r.
[904] ff. 71r, 108r, see William Black, *Ashmole Catalogue*, 'No. 189,' col. 152.
[905] Sophie Page identifies the hand as Trewythian's, 'Richard Trewythian and the Uses of Astrology in Late Medieval England', *Journal of the Warburg and Courtauld Institutes*, Vol. 64 (2001), pp. 193-228 (p. 197).
[906] ff. 1r–67v.
[907] ff. 70r–109r.
[908] Chardonnens and Kienhorst, 'Astrologer Physician,' p. 3.
[909] See Taavitsainen (1987), pp. 22–23.

another lunary (the *Storia lune*), and astrological horoscopes by Richard Trewythian.[910] The same verse prognostics appear in French in Ashmole 342.[911]

In the second booklet, the brontology (in English) was inserted into free space on a pre-ruled folio with a New Year's Day prognostic from the day of the week New Year's Day fell on. This scribe diverges from the main hand into a smaller, less formal and slightly forward-slanting script, still applying quadrata forms to minims, but less consistently. This sort of script was seen in Chapter Four in examples of extensive medical guides like Trinity R.14.52,[912] from places where scribes potentially had contact with the humanist scripts in use on mainland Europe which shared this slanting appearance. They are not wholly humanist in form, though, due to Anglicana details, but influenced by such scripts. Therefore, although not originally in the second booklet, the insertion of brontology into a set of two prognostic items by a later compiler was entirely in keeping with its application to existing astrological medical texts. This is quite different from St. John's E.9, showing that, in this case, brontology was utilised for a purpose.

Lincoln, Lincoln Cathedral MS 91 (olim A. 5. 2)

This is a larger corpus manuscript from the mid-fifteenth century (ca. 1430–1450), containing 322 paper folios (originally three hundred and forty).[913] It is known as 'The Thornton Romances' and is one of two well-crafted, personal manuscripts of Yorkshire landowner Robert Thornton, written in English in his own hand.[914] Although Lincoln 91 is described in the catalogue as entirely in Thornton's hand,[915] the brontology text alone looks different,[916] leading to the conclusion that it is an isolated example of another hand which Thornton inserted into Lincoln 91. Since he did so, the brontology must have interested him sufficiently to include with his own work. However, unlike Ashmole 189 (above) it does not pertain to any of the textual material around it. The previous text is 'The Prose Life of Alexander' and the one following, *Lamentacio Peccatoris*.[917] Also, although the manuscript does contain two small medical texts (charms for toothache and practical medicine) which might have been a point of association for the brontology as in other non-professional corpus manuscripts such as Morgan 775,[918] this does not occur in Lincoln 91. Therefore, it is probable that the brontology came into Thornton's possession

[910] ff. 201r–215r.
[911] Chapter 4, p. 95.
[912] See also, Huntington 64, Chapter 4, p. 155, 159, and Digby 88, p. 168, 169.
[913] Measuring 290 mm x 210 mm.
[914] The other is London, British Library MS Additional 31042.
[915] Rodney M. Thomson, *Catalogue of the manuscripts of Lincoln Cathedral Chapter Library* (Cambridge, D.S. Brewer, 1989) p. 69.
[916] Arthur E. B. Owen and Derek Brewer (eds.), *The Thornton Manuscript (Lincoln Cathedral Ms. 91)*, (London, Scolar Press, 1975), facsimile, ff. 50r–50v.
[917] ff. 1r–49r, 51v–52r, 'the lamentations of a sinner'.
[918] Chapter 4, p. 147.

around the time he was copying the above two medical texts into his compilation and he simply inserted it rather than copied it out himself for the practical reason that it occupied a complete folio.[919]

Fifteenth to sixteenth centuries

Oxford, Bodleian Library MS. Tanner 407

This manuscript, dating between 1445 and 1505, is a convenient and compact vade mecum size with 64 parchment folios.[920] It has an ownership inscription of 'Robert Reynys of Acle'.[921] Reynys was a landowner of moderately comfortable means living on the manor of Acle, not the lord but an administrator.[922] Tanner 407 is written in a similar secretary hand to Additional 27582 with semi-quadrata elements and long, swooping ascenders. In a descriptive edition of the manuscript, Cameron Louis notes variations in the hand but still assigns it to one scribe, most probably Reynys himself, describing it as 'somewhat conservative in character'.[923] This conservatism is a constant issue in the study of late-medieval manuscripts with brontology, since adherence to older forms of script originating from scribes' early education or a house style can skew perceived dates of the manuscript. Therefore, a manuscript like Tanner 407, potentially one man's life work, is a prime candidate for appearing older than it actually is.

Louis notes that the manuscript was probably three volumes originally,[924] one of which became a guild book when Reynys was alderman of the Guild of St. Edmund at Acle. Otherwise, he held the office of church reeve, which Louis argues was little different from a manor reeve in the Late Middle Ages. Both were involved with village administration, acted as scribes and deputised when the lord of the manor was absent. This seemed to be the usual situation at Acle, since the lord, Thomas Colston, was Abbot of Tintern Abbey. Therefore, Reynys' designation was specifically church reeve rather than manor reeve.[925] Also, since Colstone's main place of residence was at a considerable distance from Acle, this would have necessitated Reynys travelling to see him on village and parish business rather than the other way round, explains Reynys' inclusion of the text advising on travel through England in his manuscript.[926]

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[919] ff. 50r–50v.
[920] Measuring 226 mm x 164 mm.
[921] Acle is in Norfolk.
[922] See Cameron Louis (ed.), *The Commonplace Book of Robert Reynes of Acle: an edition of Tanner MS 407* (New York, Garland, 1980), p. 39.
[923] Ibid., p. 8, 9, 33.
[924] Ibid., pp. 11–12.
[925] f. 52v, Ibid., pp. 13, 31.
[926] Ibid., p. 31.

The majority of the textual material in Tanner 407 is in English. Early in the manuscript there are useful items for a household: didactic poems on religious and historical topics, charms or short prayers asking for cures, rules for safe bloodletting.[927] Another grouping speaks of Reynys' local government responsibilities, containing: the geographical travel notes, a list of the cost of archers in cities and counties of England for 1473, taxes collected at Acle, lists of those slain in battles, and ordinances for weights and measures issued in 1475. The incomplete brontology, in Latin, ends at July and was slotted into the manuscript with the archers list and a dominical letters prognostic.[928] Louis tentatively suggests rarity of thunder later in the year as the reason for this omission.[929] This might be a plausible explanation if thunder was an uncommon occurrence in Reynys' part of the world, but in the vast majority of manuscripts in this study, wherever they are from, all twelve months or zodiac periods are covered, and a number of them are from the east of England like Tanner 407.

The positioning of the prognostics between administrative records seems perfunctory and very different from the planned, individualised, professional contexts for brontology seen in other fifteenth-century corpus manuscripts. The most satisfactory reason for this is that (as in Lincoln 91) brontology was an item of interesting knowledge added to Tanner 407 when Reynys came across it in the course of business or shared knowledge with Thomas Colston, or the parish priest at Acle with whom Reynys would have been in close contact as church reeve. It seems either his exemplar was incomplete or he did not have enough time to copy it fully, which is understandable if that took place on a visit to Tintern. That would, of course, make the brontology material ecclesiastical in origin and comparable with above Chapter Five examples.

In this chapter, brontology texts are not placed with astrological medicine or other practical groupings, because the manuscripts themselves are non-technical and predominantly concerned with the household, administrative and educational matters of churchmen (notably Benedictines) and literate landowners. This is why, even by the end of the study period, brontology is still surfacing in contexts with tenuous ecclesiastical connections, distant from new inclusions in calendars, medical canons and guides. Irrespective of the sources, however, the actual purposes of each brontology can only have been shaped by that particular compiler's abilities and interests. For example, Robert Reynys' interest in the text may well have lain in its role in informing of potential disruptions to feast days for the parish church, and plays for the guild he was involved with.[930] The warnings of coming

[927] f. 11v.
[928] ff. 55v, 59v.
[929] Louis, *Tanner MS 407*, p. 495 (Item 107).
[930] Reynys included fragments of morality plays in the book, see Iris G. Calderhead, 'Morality Fragments from Norfolk,' *Modern Philology*, Vol. 14, No. 1 (May 1916), pp. 1–9 (pp. 5–8).

epidemics, problems with food supplies and political disruption (as his archers text indicates) are also germane to his role as a local church administrator. Therefore, brontology was one of many pieces of information in these manuscripts which served to keep Reynys, and others with responsibilities, well-informed in their multifunctional positions in life.

Table 3 - Brontology Types by Month or Zodiac - references

Bront. No.	Months and Zodiac Brontologies
1	CUL Hh.6.11
2	Rawlinson C.814
3	Advocates 18.6.9*
4	John Ashenden *Summa*
5	John Ashenden *Summa*
6	Egerton 2852*
7	Rawlinson D.939
8	CUL Dd.6.29*
9	Rawlinson D.238*
10	Ashmole 345
11	Ashmole 345*
12	Sloane 2584
13	Digby 57
14	Digby 57*
15	Sloane 282
16	Sloane 1609*
17	Egerton 2724
18	Aberdeen 272
19	Ashmole 6*
20	Morgan 941
21	Sloane 636
22	St. John's K.49
23	Sloane 989
24	Sloane 989
25	Digby 95
26	Bodley 591*
27	Huntington 1336*
28	Ashmole 342
29	Ashmole 342

Bront. No.	Months and Zodiac Brontologies
30	Wellcome 8004
31	Wellcome 8004*
32	Sloane 1315*
33	Trinity O.1.57
34	Digby 75*
35	Sloane 213
36	Takamiya 61
37	Longleat 176
38	Chetham's Mun.A.4.99
39	Chetham's Mun.A.4.99
40	CUL Ff.5.48
41	Radcliffe Trust e.30
42	Additional 28725
43	Sloane 635*
44	Longleat 174
45	Morgan 775 *
46	Trinity R.14.52
47	Trinity R.14.52
48	Huntington 64
49	Digby 88
50	Digby 88
51	Gonville & Caius 457/395
52	Sloane 2270
53	Additional 17367
54	Trinity O.2.45
55	St. John's E.9
56	Ashmole 189
57	Lincoln 91*
58	Tanner 407*

*incomplete brontologies with less than twelve months' entries

Brontology Types by Month or Zodiac

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Strong Winds	2,5,6,7,8, 9,10,12, 14,16,17, 19,20,21, 23,24,26, 29,30,31, 34,35,37, 38,39,41, 42,43,44, 46,47,48, 49,50,51, 52,54,57, 58		2,5,6,7,8, 9,10,12, 19,20,23, 25,26,29, 30,31,32, 34,35,38, 39,40,41, 42,43,44, 46,48,49, 51,52,54, 55,56,57, 58		43	16,29,41, 46			14,15,16, 22,30,34, 40,41	2,5,6,7,8, 9,10,12, 15,16,19, 20,22,24, 25,26,29, 30,31,32, 33,34,36, 37,38,39, 40,41,42, 47,48,49, 51,52,54, 55,56,57		22
Strong winds from the east										4		
Damp damaging winds	1									22		
Windy harvest										1		
Lightning					4							
If damp there will be ice		11							50			
If thunder from west there will be joys and defeats		11										
If thunder from west men will have a rash	11											
Hailstones and tree fruits will fail if it thunders from the north	10											
Plenty of hailstones will affect food supply					1,28							
Hailstorm				55	4,15,25, 33,49,50						55	

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Land will be dry and frosty	4	13,15,21, 25,28,33, 47,50										
No rain										49,50		
No rain in the fields		1								1		
Good rains											1,4,25,28, 33,47,50	56
Rain will come to dry valleys first									1,13,4,25, 28,33,47			
Misty rains	28				1,28							
Rain showers					8,42							
Much rain	25,33,49, 50				4,11,25, 33,39,40, 47,50,53	41			49	28	56	4
Heavy rain lasting several days					1,15							
Terrifying rains	1,15,28											4
Tree fruits will fall because of heavy rain/winds									44	29	1	
Floods	48		48		11	48				48		22
Abundant food supplies			41	13	1,50	2,14,41	14,58			12,37,42	14,16,37	5,6,7,8,10 ,12,15,19, 24,26,29, 31,34,35, 37,38,42, 49,51,54, 57
Good quality food supplies				15	33		2,5,6,7,19 34,35,38, 39,42,54			7,15,32		
Cattle for food							24					

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Good quality crops	48,52		42			51	20,36,40, 41,49,52, 53	53				
Abundant grain crops	2,5,6,7,8, 9,10,14, 16,19,23, 24,31,35, 38,41,42, 43,44,49, 50,51,52, 53,54,57, 58		2,5,6,7,8, 9,10,16, 19,24,31, 32,34,35, 39,44,51, 52,54,57, 58		2,25,33, 52	5,6,7,10,1 4,19,38,4 4,49,53,5 4,58	16,23,46, 56,58		2,5,6,7,8, 9,10,14, 15,16,24, 31,32,34, 35,36,38, 39,42,49, 51,52,54, 56	5,23,26, 41,44,46, 51	2,5,6,7,8, 9,10,15, 19,23,24, 32,35,36, 38,40,41, 42,46,51, 52,57	20,32,39, 46,52
Good quality fish										8		
Many vegetables					25,33							
Sufficient vegetables							15,50					
Many fruits and vegetables					1,4,13,15, 28							
Plenty of fruit	17,20,26, 29,30,34, 37,39,40, 48,56	12,29	20,26,37, 30,46	23,39,41, 43,44	48	23,30,53	48,54		12,20,30, 37,41,48	5,52	12,29,30, 34,44	22,30,48
Plenty of tree fruits									23	22,35		
Abundant herbs	58											
Abundant food from the mountains but insufficient wine from the valleys				4,25,33,4 7,50								
Winds damaging food supply									14			
Less milk					50							
Food will be expensive then get cheaper							15,33,50					
Dear harvest							47		47			

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Good year for seed-sowing		35,36,39, 40,56			8							
Good harvest										20		
The harvest will not be lost to locusts						28						
Plenty of seeds				55								
Seeds and shoots in peril										47		
Peril of seeds and sheep				36								
Few buds										4,25		
Stored grain will decay							52					
Good onion crop						28						
Food crops in the valley will fail				49								
Seeds in peril				39,40								
Scarce crops			53	32	16,35,41, 44,51,55	50	31			31,51,57		
Damage to grass/corn crops				1	56				52			
Crop Failure		21,25,47	41,49	1	6,7,8,9,10 ,24,42,49, 54,58					2,6,9,10, 19,24,29, 54		2
Locusts will destroy crops						4,13,25,4 7,50						
Many vegetables will grow late							1					
Scarce vegetables					50							
Vegetables will shrivel		15				15						
Scarcity of fruit	55				12,20,24, 26,31,37, 42	48				20,26,31, 36,37,41, 56		
Fruit crops fail	19				38					10,19,39, 40,55	13	

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Locusts/insects destroy fruit crop						1,33						
Abundant grass			4,15,25, 33,47,50, 55	39		15,50,55	8,56				56	55
Long lasting-grass			1			1						
A reasonable year							30					
Good health							57					
Joyfulness	1			2,14,22,2 6,37,38, 41				41,53		41,56	2,5,6,7,8, 9,10,19, 22,23,24, 29,30,34, 36,38,41, 42	
Fruitfulness				2								
A merry and fruitful year				6,7,8,10, 12,16,20, 24,29,30, 32,34,35, 39,40,42, 48,49,51, 52,54,57, 58						14,23	20,31,35, 39,40,48, 49,51,52, 54,57	
People multiply	55		15									
Old trees damaged by wind								46	13	13		
Trees and woods will fall over/die						26,36,37, 56						
Ash blossom dies								28				
Flowers of fruit trees devastated by locusts						28						

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Tree fruits fail	4	13,33					19			6,7,8,9,16 ,24,30,32, 38,42,48, 49,51,54, 57	4,32,28, 33,47,49, 50	
Tree fruit will shrivel		28,49,50										
Apples will perish							5,14					
Fruitful vines				38								
Good wine											23	
Much wine	4	1,13,15, 21,25,33, 47,50		28						12		
Early damage to vines			28	28			50	1				
Vines will not produce much wine				1,15								
Lack of wine in the valleys				4,25								
Much wine turns to vinegar							1,15,28					
Bitter grapes										28		
Wine becomes expensive							1					
Oil will be cheap (also when it is windy)									13	1,4,13,25, 28,33,50		
Little oil		1,28										
Foul oil*										47		
Woodland beasts multiply					28							
Much Game						**48**					**39**	
Poor hunting										33		
Great abundance of fish									13	13		
Sea fish dying										4,25,28, 33,47,50		
Abundance of fowls				23,41,44, 53	13							

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Death of hens when moulting				16								
lack of creeping creatures (insect pollinators etc.)			1,28		8,15,28			1,15,50				
Various pollinators					42							
Many insects					4,25,33, 50	47						
Shrews multiply					28							
Creeping creatures will die								28				
Foxes Present						22						
Wolves present						1, 22		13,15,25, 33				
Grape harvest brings many wolves			1,50									
Trees blown over cause many wild beasts					28	16,20,24, 31,32,34, 35,39,40, 42,51,52, 57						
Wolves large and increasing								1,28				
Wolves attacking people								47,50				
Wolves diminish			15									
Quadrupeds will multiply			1,4,15,25, 47,50	4,13			22,36,40, 56					
Agricultural beasts will multiply				25,33,47, 50								
Agricultural beasts will suffer/starve			4,25,47,5 0		15,50		16,48,51					
Cattle will die in the fields				1,28				15	15			
Many horses will die								1,28		28,50		
Asses will die					15,50							
Sheep will be in peril				36,39,40								

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Fleeces will be poor					4,15,25,33					50		
Agricultural beasts will die				1								
Many quadrupeds will die			13,33	15			29,31,46,53	1,4,13,25,33,47,50	12,13,37	13,33,50		
Great raging of lions and wolves						11	40, 42					
Battle amongst beasts						54						
Wild lions						24, 30, 46						
Tigers will die in the woods						12						
Hunger				23	12,22,26,30,37,39,40,44,46,48	4,47						
Famine				5,18,30	6,7,8,9,10 14,16,19,23,24,29,33,34,35,38,41,42,49,51,54,55,56,57,58	13,15,25,28,50						1,2,28
Foetuses/newborn creatures will perish							6,7,8,10,12,20,23,24,26,30,34,35,37,38,42,44,49,54			4,25,47		
Strangers arriving		14				1				1		
There will be killings						40			34,35			

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Killing of the powerful									2,5,6,8,9, 10,12,14, 22,23,24, 29,30,32, 36,38,39, 40,41,42, 46,48,49			
Wild beasts will kill men								4				
Many men will die	46	10,46,50		53,58		43			51,54			25
Many men will die in the countryside						42						28
Many rich men die		2,5,6,7,9, 12,13,14, 16,17,18, 19,23,24, 26,31,32, 34,35,37, 38,41,42, 43,44,49, 52,53,54, 55,57,58							56			
Rich men dying of sores		20										
Deadly rash												1
A great man in the world will die							1,4,13,15, 25,28,33, 47,49,50		7			

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Wicked men will die				2,6,7,8,10 ,12,20,22, 24,26,29, 30,32,35, 36,37,38, 39,40,41, 42,49,51, 52,54,55, 56,57,58				23				
Thieves and robbers perish							2	2				
Winds causing illness	15											
Sickness among men								9,12,22				
Cough	1,15,25,2 8,33,47											4,13
Scabs/scabies	1,15,25,2 8,33,47											4,13
Non-deadly sickness		2,4,13,15, 21,25,28, 33,47										
Many Men Sick	25	16,17,48, 50,52			2,48,49	6,7,10,14, 23,26,30, 38,41,44, 49,54,55, 58	56	2,5,6,7,8, 10,14,16, 19,20,23, 24,26,31, 32,35,36, 37,38,39, 40,41,42, 44,48,49, 52,54,55, 56	16			
If three nights of thunder there will be a plague on women					11							

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
If seven days of thunder children will die in the womb					11							
Women will miscarry				42						28,33,50		
Women and newborns will die				8,32								
Elders complain		32										
Rich men gravely ill		30,31,35, 36,39,40, 57										
Deadly Sickness								34				
Men will die of rickets												28
Much deadly ague	15											
Plague	17				10							1,4,13,25, 28,33,47, 49,50
Many men dispossessed/disperse												47
Healing/good wind	33		36									
Agreement among the people			16			2						
The King will prosper											25	
The King will collect many followers												1
Political success								5,6,8,9,10 ,14,19,24, 32,42,49, 54				
Anxiety/envy among the people	25,33,47, 50		1,4,13,25, 33,39,40, 47,50		29			22	31,50			

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Disputes among the people	21,25,28, 33	1,15,33	5,6,7,8,9, 10,14,19, 20,23,24, 26,30,31, 32,33,34, 35,36,37, 38,39,41, 42,43,48, 49,51,52, 53,54,55, 56,57,58	46	43	4,13,25,5 0			31			13
Sedition							4,13,15,2 5,33,50					
Quelling of great lords		29										
Strife amongst the rich			29									
Political failure						50	1	2,7,38				4
The King will contend with his family							28				1,28	
Followers desert (the King) and eat the flesh of children												1,28,50
Kings will fight											47,50	
Kings men will die											4,33	
Many King's men will die of great sickness		51										
Possible battle	16											

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
War	2,6,7,8,9, 10,12,17, 20,23,24, 26,29,30, 31,34,35, 36,37,38, 39,40,41, 42,43,44, 46,47,48, 49,50,51, 52,54,55, 56,57		12,23,44, 53				47					23
High prices					23		28					
Funds low		42										
Poverty								50,51				
Plan for peace												
War leaders will become kind										50		
Peace and accord						15					14,15,16	5,6,7,8,10 12,15,19, 20,22,23, 24,26,29, 31,32,34, 35,36,37, 38,39,40, 41,42,44, 46,48,49, 51,52,54, 55,56,57
Relaxation of laws	1	50					11					25
Charity									50			

Month/Zodiac	Jan Aquarius	Feb Pisces	March Aries	April Taurus	May Gemini	June Cancer	July Leo	Aug Virgo	Sept Libra	Oct Scorpio	Nov Sagittarius	Dec Capricorn
Prosperity / general increase in wealth	46	21,25,4,47				12,37	37,40	8,16,20, 26,29,31, 34,35,37, 38,39,40, 41,44,51, 52,53,57	12,29	26	12,13	12,44,55
Much sea travel						22						
Loss of goods whilst sailing										36,39,40, 56		
If thunder at noon shipping in danger and whales will be beached				12								
If thunder at noon there will be disaster	12											
Much pilgrimage								22,48				
Pilgrims will ask for shelter						1,28						
Completion of published work								30				
No earthquakes						15						
Many wonders will appear in the sky								12				
Moon will darken in the east										25,33,47, 50		

Table 4 - Brontology Prognostications by Month or Zodiac for the Summer Months

The following texts are prognostications from thunder in May, June and July, or the corresponding zodiac periods of Gemini, Cancer and Leo used in some brontologies in this study.

CUL Hh.6.11

'*In Geminis sit tonit(rui)s. pluvias dibit eth(er)s plures t(en)denos in vigiter us(quae) dies Grandinis i(n)tr(o)is hoc anno copia fiet. Dicabit q(uae) seges multiplicata vinos, dicabit quae vinos annona. legumina m(u)lta(s) crescent se(quae) m(u)ltas (i)n dabit annones.*

<In Cancro> Gramen erit segetu(m) se(quae) (i)n p(ro)ducet ad actu(m). Fructu(m) nam segetes dicit(ur) locusta teret in regione tame l(u)pinum com(m)oc(i)o mot(us) existet cast(ur) vir p(ere)grina petet.

Si Leo dat tonit(ruum), co(n)te(n)de regna indebis post sedare t(u)n(c) pax erit i/unde solo. Dolia vina dabu(n)t. se(quae) copia fiet acea. V(i)n(um) mag(na) carum fiet morbe merum. Principio fiet annona soli tibi cara. Anni p(os)tremo tempore vilis erit tu(n)c cr(e)scent fabe c(re)scec(i/us) legumina m(u)lta set moriet(ur) homo magn(us) i(n) orbe potens.' f. 68v.

Rawlinson C.814

'*Si in Mayo, h(ab)undancia(m) frugu(m) varias q(ue) infirmitates impendit.*

Si in Junio annone h(ab)undancia(m) et concordia(m) i(n) p(o)pulo designat

Si in Julio eo a(n)no annona bona. fures et lat(ro)nes p(er)ibu(n)t.' f. 74r.

John Ashenden's *Summa* (1)

'*Si in geminis pluuiarum et grandinum copia erit et fulmina legumina habundabunt lanigerae paucae et reptilia multa.*

Si in cancro erit fames hominum et commotio : locusta quoque fructus terrae uastabunt.

Si in leone seditio erit inter regna : a(n)nona cara in principio in sine et erit populi seditio et moriet(ur) aliquis magnus ho(minis) in sine anni.' ff. 145v–146r.

(2) - this brontology does not have an entry for May;

'*Iunii frugu(m) copia(m).*

Iulii annonae bonam. Sed fructus pomorum peribunt. Angusti reipublicae prosperitate(m) : sed homines multu(m) egrotabunt.' f. 146r.

Egerton 2852

'*Si tonitruis sonuerit in mense maii frugu(m) inopiam in eo anno et famem sig(nifica)t.*

Si tonitruis sonuerit in mense Junii habundancia(m) frugu(m) et varias infirmitates homi(nem) sig(nifica)t,

SI tonitruis sonuerit in mense Julii eo anno bona annona e(s)t et peco(rum) fetus p(er)ibu(n)t.' f. 107r.

Rawlinson D.939

'*Maiius*
Inopiam frugum et famem in illo anno
Junii
Habundanciam frugum et varias hom(inem) infirmitates
Julius
Bona annona et fetus peco(rum) peribit.' Section 3r.

CUL Dd.6.29 - this brontology does not have an entry for June;

'*Tonitruu(m) Maii sig(nifica)t frugu(m) inopiam et famem et p(ri)ncipie pluviale(m) a(ute)m se(m)ia opti(m)e pululabunt(ur)*
Tonitruu(m) July sig(nifica)t q(uo)d erit annona bona peco(rum)fetus leonie(m) lupo(rum) peribunt eo anno.' ff. 5v, 7v.

Rawlinson D.238 – this brontology only has an entry for May (out of the summer months);

'*Tonitruu(m) in Mayo sig(nific)at frugu(m) inopiam et famem illo anno*… f. 20v.

Ashmole 345 (1)

'*Si in mayo, frugum inopiam et famem in illo anno significat. Et si tertia nocte tonuerit, mulierum tamen pestilencia erit. Si septimo die eiusdem mensis tonitruit, mors parvulorum parentium in alvo matris erit.*
Si in junio, habundantia frugum et varias hominum infirmitates significat.
Si in julio, pecorum fetus proibunt.' f. 66v.

(3)

'*Si in maio , pluvie multe, aquarum inundantia.*
Si in junio, leonum et luporum rabies magna erit.
Si in julio, conventus magni erunt, mutabuntur leges antique.' f. 67r.

Sloane 2584

'ȝif it þundir i(n) Mai it is tokyn of scarcenes of fruit and hung(er) for to cu(m) i(n) þat ȝere.
ȝif it þund(ir) in Junii ryche ment and pore schul be made evyn riche. And tigyrs of wodis schul persche.
ȝif it þund(ir) in Iulii it schal be a good ȝere and þe hospryng of bestis schal persche.' f. 33r.

Digby 57 (1)

'*In ge)m)i(n)e ali(n)a(rum) copiam agit(er)niu(m) fructius) et legu(m)i(n)a h(ab)u(n)dab(i)t.*
In ca(nc)ro fames et (com)mocio(n) ho(mines) locuste fruct(us) t(er)r(e) vastabu(n)t.
In leo sedic(i)o(n) int(er) r(e)gna a(n)nona cara i(n) p(ri)n(cip)o m(u)l(tas) i(n) sine cari(us) sedi(os) p(ro)p(ter) morie(tur) magn(us). f. 178r.

(2)

'*Mai(us) fame(m) sig(nifica)t.*
Jun(ius) frugu(m) copia(m) et maxi(m)e a(n)no(n)e(m) et malas infir(mita)tes.
Jul(ius) a(n)nona(m) bona(m) sig(nifica)t pomo(rum) p(er)i(bun)t. f. 178v.

Sloane 282*

'*Si tonitruu(m) sit i(n) geminis. plures eru(n)t pluvie us(quae) ad triginta tres dico. et grandines eru(n)t et tormenta. Et multiplicabu(n)tur legumina et lanigere eru(n)t pauce. asine morient(ur). reptilia terre et mures augentur. Et bestie agri du(n)abu(n)tur.*
Si tonitruu(m) sit in hoc mense.[931] *Fames et tremor erit in p(ro)ui(n)cia et locu(m) no(n) i(n)ement et fructis terre no(n) stabu(n)t. et annona no(n) erit se(quae) herbe segetu(m) habu(n)dabu(n)t. comocio et motus no(n) erit in p(ro)vi(n)cia.*
Si tonitruu(m) sit i(n) hoc mense.[932] *sedicio erit int(er) regnu(m) et p(o)p(u)lo in p(ri)mis co(n)tendet et ultimo debet sedare. vinu(m) acetabit. annona cara erit in p(rovi)ncio et in ultimo vilis. et satis leguminibus erit. Et magnus ho(mine) moriet(ur) in s(e)c(u)lo.*' ff. 86r–86v.

*Sloane 282 and further brontologies with an asterisk, below, have been extracted from the compound prognostics in corpus manuscripts, retaining some correlations of months and zodiac periods.

Sloane 1609

'*De tonitruo*
In May yt tokenes nede scarsnes and derth of corn and great hunger.
In the monyth of Jua(n) Thondur betokynyth þ(a)t great wynddys schall douncast woodis and trees that same ȝer schall be great ragyng of wylde bests.
In July hyt tokenys great plente of corn and seycenesse of bests that ys say(n) ther strenthe scahll perych.' ff. 48v–49r.

Ashmole 6*

'*Maius 31. Tonitruu(m)*
Fructuu(m) inopia(m) et famie(m) eode(m) anno fore sig(nifica)t
Junius 30. Tonitruu(m)
Frugum copiam s(ignific)at
Julius 31. Tonitruu(m)
Annona(m) bona(m) sig(nific)at. Sequae fruct(is) arbor(um) p(er)ibu(n)t.' ff. 5r–7r.

[931] *Cancro.*
[932] *Leo.*

Morgan 941

'In Mayus þundir if it comeþ it bitokeþ nede of fruytis and hungir in þat ȝeer.
In Juyn of it þundir it bitokeneþ þ(a)t wodis shul be þrowe ovirt of ferfuelle of wyndis and þer shal be greet weodnes of lions and of wolves.
In þe moneþe of Juli it þundir in þat ȝeer shal be good corn ȝeeryng but þe burþe of beestis shal p(er)iche.' ff. 1r–2r.

St. John's K.49

'Maye Betokenyth corne And hung(er) yn lande.
Junii Betokenyth woode besitis wolvys and foxys and moche goyng on the see.
Julius Betokenyth gode bredyng of yonge best(is).' f. 60r.

Sloane 989 (2)

'May a dere yere and fulle grete hunger in many place. Scarste of frute.
June plente of frute and mykel sekenes among the comon pepil.
Jule the burth of bestes shalle p(er)isshe and grete ple(n)te of corne.' f. 132r

(3)

'*Mense Maii si to(nitruum) sonavit frugu(m) in opia(m) et famein eode(m) ac affore p(ro)n(un)ciat.*
Mense Junii si to(nitruum) sonavit silve ab inipetu(m) ventor(um) obruentur. Et leonu(m) ac lupo(rum) rabies m(a)gna erit.
Mense Julii si to(nitruum) sonavit a(n)nona lina eodem anno erit peco(rum) et fetus peribit.' f. 133r.

Digby 95

'*Si in geminis tonit(rua) pluva(rum) habu(n)dancia(m) erit et g(ra)ndin(is) frumenta m(u)ltiplicabu(n)t(ur) et legumina laniger(e) pauce reptilia multa.*
Si in cancro tonit(rua) fames et co(m)mocio homin(is) locuste fruct(us) t(er)re vastabu(n)t.
Si in leone tonit(rua) sedic(i)o(n) erit int(er) et regnu(m) annona cara i(n) p(ri)ncipio p(o)puli sui sedicio moriet(ur) magn(us) homo.' f. 96v.

Bodley 591*

'If it thond(er) in maye it is token of scacenes of frute and honger(e) to be in that yer(e) comyng.
If it thond(er) in June riche and powre shal be mad evyn and treys and wods shall periche.
If hit thond(er) in July it shalbe a good yere and the ofspryng of bests shall p(er)ische.' f. 39r.

Ashmole 342 (2)

'May þond(er) toneth sirow honger of all þyng and wicked yer.
June þond(er) toneth grete wynds and thinning of mists <>
Julie þonder toneth gode yer and p(er)isching of bestes schull wax wide.' f. 134r.

Wellcome 8004 (1)*

'Geminis is a syne þe qwylle þe sone is in may for þen(n)e it dowbuls[933] þe hyȝte of þe moneth be for. The sone is sayd in geminis for Adam and Eve war mad both of on(n)e body. And who so is borne in þat moneth he sall be ryȝte por and wake[934] and lyfe in mykull tribulacione. And if it thono(r) in moneth, it betokyns scarsnesse of frutys and of hu(n)gur in þe same ȝer.

Cancer is a syne in þe qwille þe sone is in June for a crab is arswards beste and so þe sone is in þat moneth in þe fyrste parte of it also mychel as he may astendys miþe[935] end of þe moneth he is goynge arsward(s) he turnys hym(m) selfe. The sone is sayde in þe kankyr for Job wasse full of cankes. And qwo si is borne in þat syne he sall be dredfull[936] botte he sall be a gud mane. If thonur be hard in þat moneth it betokyns abowndau(n)ce of frute and dyverse seknesse.'

Leo is a syne in þe qwille þe sone is i(n) July for as þe lyone es moste fervente beste of all bestys in natur so þe sone in þat moneth es moste farvent in hys heete. The sone is sayd in þe lyone for Danyel p(ro)fyte was putt in þe lake of lyons. Who so is borne in þat syne he sall be hardy and lychyrus[937] and if it thonur in þat moneth it betokyns a resenabull ȝer botte frute of bestys sall pariche.' ff. 38v–39v.

(2) this brontology does not have an entry for May:

'Thund(ur) in June sygnifice þer sall be þ(a)t ȝer many wood(s) men(n)s and þere sall be throws and wynd(s) þat þais[938] take as a seknesse bar þe hed and also g(e)t wodnes[939] sall go of[940] lyons and wolfes and odyr arowfull[941] bestys.

Thund(ur) in July significe þ(a)t ȝer sall be lytyll corn(e) and bestis sall periche and fayle.' f. 70r.

Sloane 1315 – this brontology does not have entries for May or July:

'*Tonitru(um) Junii ab impetu vento(rum) obruent(ur) et leonu(m) ac lupo(rum) rabies ho(m)i(n)es i(n) singua p(er)ibu(n)t.*' f. 19v.

Trinity O.1.57

'*Si in Ge(m)ine .i. Mayus pluvia(rum) h(ab)u(n)dancia erit grandini et frument m(u)ltipl(ica)ta et ligumina lanig(er)e pauce reptilia m(u)lta.*

Si in ca(n)cro .i. Juni(us) Famis et (com)moc(i)o ho(m)i(nis) reptilea fruct(us) t(er)re vastabu(n)t.

Si in Leone .i. Juli(us) cedicio int(er) regnu(m) et regnu(m) a(n)nona cara i(n) prim(o) vile in nonissisus p(o)puli cedicio magni ho(m)i(n)es morientur.' f. 70r.

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[933] doubles.
[934] weak.
[935] see (by).
[936] fearful.
[937] lecherous/lascivious or amorous.
[938] these.
[939] madness/mental derangement.
[940] come from.
[941] awful.

Digby 75

'*In mense Maii e(ri)t sapia(m) fructu(m) et fame(m) in eodu(m) anno sig(nifica)t.*
In mense Junii e(ri)t silvo ab impetu ventoru(m) obruntur leonu(m) rabies est.
In mense Julii e(ri)t annona bo(n)a erit ju(ven)ta pecor(um) p(er)ibit.' f. 138r.

Sloane 213

'May
in may signifies þat same ȝere nede scarsce of derthe of cornes and grete hongur(e).
June
Thonder(e) in June signifies þat ilk same ȝere woddes sale be ow(er) throwen with wodenes of wyndes and grete ragyng sale be of lyones and wolves and of swilk oþer harmefull bestes þat ben wilde.
July
Thonder(e) in July signyfies þat þat (sic) ilk same ȝere sale be gode cornes and fetus of bestes þat is to say þer(e) strene sale p(er)sche then. f. 111v.

Takamiya 61

'Whan þonder is in may hungre derth of corne betokens þ(a)t yere.
Wha(n) þonder co(m)myth i(n) June wodis w(i)t(h) wynde schal be þrawe adowne and folks and treys shall sprede brode.
Whan þondi(r) comyth in Jule betokens þ(a)t yer(e) good cornes and good yer(e) of bestis.' f. 30v.

Longleat 176

'If hit thunder in May hit ys token of scarcenes of fruyte and hunger to be in that ȝere comyng.
If h(i)t thund(er) in June ryche and pore schalbe made evyn ryche treys and woodys schull perysche.
If hyt thunder in Julii hyt schalbe a good ȝer(e) and the ofspryng of bestys schall perysche.' f. 18r.

Chetham's A.4.99 (1)

'*Mense Maii*
Si tonit(ruum) fit me(n)se maii inopiam fructu(m) et famen in eo tempore sign(ifica)t.
Mense Junii
Si tonit(ruum) fit me(n)se Junii habu(n)d(antiam) frugu(m) et varias infirmit(es) sign(ifica)t
Mense Julii
Si tonit(ruum) fit me(n)se Julii bo(na) a(n)nona erit et fet(us) peco(rum) p(er)ib(un)t.' ff. 30r–30v.

(2)

ȝif þond(er) comeþ in þe may þat ȝer worþ[942] manye a wete day and corn worþ swyþe[943] der(e) hung(er) betokeneþ in þ(a)t ȝer(e).
And þond(er) come in þe Jun(ne) wodes for wynd schullen þrowe adou(ne), Lyou(ne)s and leberdes schul worþe wode ffolke and treis schul spille brode.
Whan þonder comeþ in þis p(ri)me good crop worth in þ(a)t tyme and a tidy ȝer bests but of wolf and lyou(ne) þat ilke ȝer schal be for don.' ff. 30r–30v.

CUL Ff.5.48

'*Maius sol i(n) geminis*
If þond(ur) come i(n) clene May
þ(a)t ȝere worthe many a wete day
And corne worthe a p(ri)cy dere
Hongur betokens þ(at) next ȝere.
Junius sol in cancro
When þond(ur) gret comeþ i(n) June
Trees and bowes[944] w(i)t(h) wynd go downe
Lyones and wolfes worth wode[945]
And gret spylling of man(n)es blode.
Julius sol in leone
If thond(ur) come in þ(i)s prime[946]
Gode croppe worth in þ(a)t tyme
A tidy ȝer of hors best[947] and lyouns
þ(a)t ilke ȝere shall passe save.'[948] f.

Radcliffe e30

'Thoner in May scarsnes of corne and fruyte and in many place grete hungre.
Thoner in June plente of frute and corn mykel sekenes among þe peple grete wyndes and raynes.
Thoner in Jule gode yer þutt þe byrth of bestes shall perysch.' f. 39v.

Additional 28725

'*Tonitruum Maii frugu(m) iopiam et famem in eodu(m) anno et p(ro)cipiie pluvialem ann(um) sig(nifi)c(a)t et fe(n)ina optie(m) pululabunt.*
Tonitruum Junii ab impetu vento(rum) obruentur et leonu(m) ac luporum rabies erit homines in signa peribunt.
Tonitruum Julii annona bona significat fetus pecorum leoninii ac luporum peribunt.' ff. 3, 4.

[942] will be.
[943] extremely.
[944] woodland bowers.
[945] shall rave.
[946] at the time of the new moon, or turn of the month.
[947] beast(s).
[948] safe (in safety).

Longleat 174

'If it thundir in May it tokens skarcnes of corne and hungre.
If it thundir in June it tokens plente of corne and mekill sekenes.
If it thundir in Jule the birth of bestes shall peryssh.' f. 82r.

Trinity R.14.52 (1)

'May thunde(r) betoken(s) hunger so derthe in land schull fall.
Thonde(r) in Juni(us) singfiethe gret wynd(s) and roryng of lyons.
Jule thonde(r) sygnyfiethe best shall dy ple(n)te of corne.' f. 105r.

(2) 'If in Geminis grete plente and adundaunce of reynes. Whete shalbe multiplied and many creepyng beestis.
If in Cancer shalbe hunger and locustis or flies and the fruyte of the erth shalbe wasted.
If in Leo sedicioun and strif(e) shalbe bitwixt realme and realme a diore h(ar)vest in the bigynnyng or in thend sedicioun of people and a g(re)te man shal die.' ff. 260v.

Huntington 64

'*Tonitria* (May)
And if hit thonder in this monythe þe schall have moche frute and grete sickenys and grete hongur in Londe.
Tonitria (June)
And if hit thonder in this monythe þe schall have litill frute and honger that yere and many woode bestis and wilde floodis.
Tonitria (June)
And if hit thonder in that signe þe schall have moche frute and honger amonge bestis.' f. 80r.

Digby 88 (1)

'*Si ton(itru)u(m) Me(n)s(e) Maii frugu(m) inopia(m) et fame(m) sig(nifica)t et grandi(n)es inf(i)r(mit)a(tes) m(agn)a multi(plicatur).*
Si ton(itru)u(m) Me(n)s(e) Junii habu(n)da(n)cia(m) frugu(m) et varias infirmitates homi(nem) sig(nifica)t.
Si ton(itru)u(m) Me(n)s(e) Julii bonu(m) ann(on)um sig(nifica)t et porco(rum) fet(us) p(er)ibu(n)t ac magn(us) ho(m)inis mori(etur) in sec(u)lo.'

(2)

'*Si in Geminis pluvie pluves erit us(que) .22. dies et grandines infra a(ni)m(ales) multiplicabu(n)t(ur) et ligumina minorabu(n)t(ur) et lactuger pavate e(m)ent et asini moriet(ur) reptilia t(er)re multiplicabu(n)t(ur) et bestie t(er)re d(e)ua(sta)bu(n)t(ur).* f. 37v.
Si in Cancro fames et wrror erit in p(ro)ui(n)cia et locuste venie(n)t et fruct(us) t(er)re devastabu(n)t(ur) et annona no(n) erit et herbe segetu(m) habu(n)dabu(n)t co(m)moco(n) et mot(us) homi(nem) er(i)t in p(ro)ui(n)cia.

Si in Leone sedico(n) int(er) reg(em) et reg(em) et p(o)pul(i)s in p(ri)mis co(n)tende(n)t in nomissio cedabu(n)t vinum amm(un)ciabit(ur) et annona cara erit in p(ri)cip(ium) et in nomissio vilis et satis ligu(m)inis erit et magn(us) homo moriet(ur) in sec(u)lo.' ff. 38r–38v.

Gonville & Caius 457/395

'Thundir in May signifiese þat same yere nede scarcenese and derþe of corn(s) and gret hung(er).
Thundir in Junii signifiese þatt same yere wudds schull ov(er) þrowe w(i)t(h) madnese of wynds and gret regys <> schall be of lyons and wulves and suche oþ(er) wylde jale(us) bestis.
Thundir in Julii signifiese þat same yere schall be good cornes and starvyng of bests.' f. 51r.

Sloane 2270

'Thonder in Maye signefyeth that same yeare shalbe mich scascitye of corn and great honger.
Thonder in June signifyeth the same yeare that t(re) roots shalbe ouerþrowne with wind and great wakyng[949] shalbe ou Lyons and wolves and oþer firce harmefull beasts that be now(n).
Thonder in July signifyece in the same yeare good graine stouer shall decay.' f. 5r.

Additional 17367

'Iff yt thunder in Maii yt sygnyfyeth in that yere shalbe gret wete and rayne and lytyll corne or noice.
Iff yt thunder in June yt syngnyfyeth in that yere shall be good corne good frewt grete batayle among bestys.
Iff yt thunder in Julii yt syngnyfyeth in that yere shalbe good corne good frewt and dethe among bestys.' ff. 5r–6v.

Trinity O.2.45

'*Si tonitruus sonuerit mense maii, frugum inopiam in eo anno et famem significat.*
Si tonitruus sonuerit mense junii, habundantiam frugum et varias infirmitates hominum significat.
Si tonitruus sonuerit mense julii, in eo anno bona annona erit et peccorum fetus peribunt.' p. 347.

St. John's E.9

'*In maiio defectu(m) bladi et fame(m).*
In Junio sig(nifica)t fertilitate(m) bladi et multas i(n)firmitater.
In Julio fertilitate(m) bladi.' f. 401r.

[949] stirring.

Ashmole 189

> 'If it thonder in May it betokenyth that yere grete honger and great derth of corne.
> If it thonder in June it betokenyth that yere that woods w(ith) gret wynds shal ov(er) throwe and folke and trees shall sprede.
> If it thonder in July it betokenyth that yere a good croppe of corne and a good yere of beasts.'
> f. 102r.

Lincoln 91

> 'Thond(er) in May sygnyfyet that same ȝere wyckednese of <f…> and grete haung(er) in many place yt tokeney(s).
> Thond(er) in June sygnyfyet þat same ȝere woodys þat ar wast dent of wynde[950] schall falle and grette wodnese of wolves and lyons þat ȝere schall be.
> Thond(er) in July sygnyfyet þat same ȝere a gode ȝer and grete sekynes schalle spyll.' f. 50r.

Tanner 407 – this brontology is incomplete and finishes at July

> '*Quando tonitruis est in Mense Maii significat frugum inopiam et famem in div(er)sis locis.*
> *Quando tonitruis est in Mense Junii signficat habundancia(m) frugu(m) significat qu(i)d in illo anno erit anona bona istud bona valet(em).*' ff. 104v–105r.

[950] Variant spelling of dint in the sense of 'by dint of wind'; The Middle English Compendium online gives 'dint of thunder' as a term for an impactful weather event.

Chapter Six – Intellectual Contexts of Brontology

Introduction

The preceding chapters have presented and analysed the evidence provided by the physical characteristics and textual contents of the manuscripts studied, and the placing of brontologies within both contexts. With that established it is now possible to move on to discussion of the range of ways in which brontologies could have been used in practice. Foremost, it has been revealed through the course of this study that brontology (although a prognostic with strong economic and political overtones) was often applied to judgements concerning the maintenance or restoration of health in the Late Middle Ages. This is demonstrated by the frequency with which brontology is found with health regimens (see Chapters Three and Four, above). At the same time, it could also be grouped with information on weather science where scribes or patrons had a particular interest in that field, yet it is also found with texts on technical weather forecasting.

The surviving manuscripts containing brontology are consequently very varied, the main differences involving: size, form, quality, age, provenance, and number of brontologies present. This signifies that although brontological texts have not survived in large numbers they were widely used within late-medieval society. These characteristics also go some way to decoding brontology use within their textual contexts. For example, brontology recurs in textual groupings focused on medical education in portable vade mecums, highlighting that there were other reasons behind their use in addition to making predictions in the field.

The survival of late-medieval brontology in ecclesiastical environments

In earlier-medieval prognostic manuscripts, Chardonnens shows Anglo-Saxon prognostics in Old English grouped together into sections whilst their Latin contemporaries are associated with computi.[951] The Latin brontology from England which he describes is not grouped with other prognostics but part of a series of scholarly 'encyclopaedic notes'[952] added into a tenth-century manuscript, Royal 2.B.v, in the same century. The first brontologies in the study period concur with this, in that they are in Latin and several are placed with calendar texts. This usefulness in planning life's activities is a sound reason for its continuity. Because brontologies are in Latin at the beginning of the study period it was expected that they would continue in such calendar textual groupings, but it became clear that this is by no means the only, or even the main,

[951] Chardonnens, *Anglo-Saxon Prognostics*, p. 192.
[952] Ibid., p. 47.

context. Some fourteenth and fifteenth-century surviving Latin brontologies, such as CUL Hh.6.11 and St. John's E.9,[953] were not grouped with calendars, health regimens or other prognostics, but as individual prognostics among miscellaneous material from the ecclesiastical environments of a manor and convent belonging to Ramsey Abbey, and Durham Priory, respectively. However, even then, the Latin delivers complex brontology with classical elements, indicating learned textual origins not rural ones.

As the study period progresses, continued choice of Latin rather than vernacular French or English for brontology comes to categorise it as practical and scientific and not the matter of entertainment or miscellaneous general knowledge. Importantly, apart from vocabulary, other factors behind manuscript origins and cultures meant the contents of the surviving Latin brontologies are quite dissimilar from each other. The existing similarities are certain ailments such as the cough and 'scab'[954] predicted in February. It was, therefore, necessary to examine closely the evidence from individual Latin brontologies' wider textual groupings as they had often been subject to change, as the case of Ashmole 342 highlights. In this manuscript, the textual grouping of the two brontologies no longer contains astrological medical content, but had done so before the original compilation was dispersed.[955] So, in this case, the unremarkable context of the brontology was an accident of its survival and not what the compiler had intended. It is at this juncture that ecclesiastical contexts of Latin brontology were being superseded by educational ones, as the universities developed. There was, of course, plenty of textual transmission between the two.

The value of calendars for timing medical procedures originating from earlier monastic contexts clearly explains their appearance with astrological medicine early on in the study period in ecclesiastical manuscripts and folding almanacs, the latter as described by Carey.[956] In these instances, brontology is the primary or only prognostic. For example, in late-fourteenth-century Rawlinson D.238 (possibly from a friary in Coventry), each month's brontology entry is the first item encountered, close to the large blue initials 'KL' for '*Kalends*,'[957] thus keeping the effects of thunder in mind when planning the month ahead. Calendar teaching tables enabling physicians to determine planetary and zodiac influences on a patient's condition from the time they fell ill are also germane to the use of brontology. The three other examples of brontology in calendars are not early in the study period, but spread through it in secular and educational

[953] Chapter 2, p. 35; this chapter, p. 184.
[954] This may refer to outbreaks of scabies, but could be any pustular disease such as chickenpox or measles.
[955] Chapter 3, pp. 95–96.
[956] Carey (2004), p. 350.
[957] Chapter 2, pp. 50–51, Figs. 5, 6.

manuscript contexts.[958] Therefore, this placement of brontology cannot be shown to be a specifically ecclesiastical or educational transmission.

Further manuscript contexts of brontology

From the late fourteenth century to the end of the fifteenth, brontology is most often in the context of medical knowledge, whether in books intended for medical instruction, brief folding almanacs, or encyclopaedic books used for teaching and reference. Despite an increase in popularity, brontology texts were not simply being copied and recopied without change. Individual compilers altered, organised and applied them in numerous ways, such as the intercalations and compositions with texts teaching about planetary influences on health detailed in this study. Items in health regimens, also arranged on a monthly basis, have a natural affinity to months brontologies and were of value to them by offering practical health measures for thunder-affected months. This was less useful for Days of Christmas and liturgical hours brontologies which, like wind and sunshine prognostics, make one set of predictions for the whole year ahead. Often, compilations of prognostics and astrological medical material include perilous days texts, useful for bloodletting and ascertaining the best days for wider business, sometimes appearing in calendar folios with the months brontologies.

Lunaries, or prognostics from the passage of the moon are relatively common in brontology textual groupings, appearing in about half of the study corpus. The other half, without lunaries in proximity to brontology, consists of didactic manuscripts covering a lot of astrological medical theory and less involved with practical medicine which might involve bleeding. This is not to say that lunar influences were not of interest in theoretical manuscripts, but as they were of most relevance to bloodletting practices, they were not the main concern in these contexts in the Later Middle Ages. Instead, highly individualised compilations of texts are found with brontology, consisting of numerous multifarious explanations of cosmic influences on health, notably illustrated by Zodiac Man and Vein Man. Instances of weather prognostics from sunshine or wind are much less common by this time, arguably because, like Days of Christmas brontologies, they predict the whole year ahead whereas prognostications following the cycle of months are more immediate and easier to plan for. Even where the information contained is broadly similar, no compilation has the same textual composition as another and the differences in sources and

[958] Aberdeen 272, Sloane 1315, Additional 28725.

language use result in unique combinations of English, Latin and idiosyncratic macaronic forms of language.[959]

The manuscripts without lunaries in brontology textual groupings also have a wider relationship with the Zodiac in those groupings, especially the longer-term influences of the Sun, to the extent that months and Zodiac sign time periods are conflated, often with the incipit *Sol in Aquario*, etcetera. In Wellcome 8004 this is reinforced as 'Aquarius is a syne in þe qwylle þe sone is in Aqauyver'[960] and the related listing of properties (in this case 'hot, moist, sanguine and of the air')[961] often seen in folding manuscripts. It is difficult to ascertain whether this means literally when the Sun is visible in the sky in Aquarius (during most of January), or that the term had become synonymous with the whole month. Although asynchronous, the blending of calendar month and period of a zodiac sign for brontology provided the reader with familiar useable information on potential planetary influences, at least for part of the month. They perhaps just accepted this anomaly, but it was becoming less of an issue as there was a growing match between the solar month and the sighting of the Sun at dawn in conjunction with each constellation caused by the Precession of the Equinoxes.

This precession was an irregularity in the Earth' spin causing the Sun's apparent move to drift by one degree approximately every seventy-two years, resulting in a whole sign (thirty degrees) every 2,160 years. In Western Europe this was explained away as two zodiacs, each on an individual celestial sphere. The sphere closest to the Earth was where the fixed stars and the Zodiac both lay. The sphere above this held a second, fixed (unmoving) Zodiac and attempts to illustrate this with circles were found in some of the manuscripts in this study. Under this system, the starting point of the ecliptic, or apparent path of the Sun through the Zodiac, was the first degree of Aries which was the spring equinox (when there were equal hours of day and night in a twenty-four-hour period). There was a discrepancy between this and what was happening on the lower moving Zodiac, however. On this lower Zodiac, the Sun moved into the constellation of Aries, and each subsequent constellation, earlier and earlier in the calendar month.

In the compound texts in Chapters Three and Four, both lunar and solar influences on the Zodiac are referred to, with the lunar routinely applied to cutting or bloodletting. However, a definite assigning of

[959] See Egerton 2852, ff. 80r, for example.
[960] f. 36v.
[961] See my edition, Chapter 4, p. 108.

these manuscripts to either a physician or surgeon on the basis of bloodletting texts is fraught with difficulty. Both were concerned with identifying opportune times to bleed, make incisions into the body, and carry out other procedures related to bodily fluids (such as bone-setting, bathing, and dietary recommendations for optimal digestion), whether they did so personally or directed it to be done. Also, surgeons may have had little choice about when to perform invasive procedures if an emergency arose, so would have needed speedy access to information on lunar influences to prepare for the eventuality of profuse bleeding. The corpus folding manuscripts would have been of use in this context. Nevertheless, and despite the limitations of their abbreviated format, they also advise on ongoing care via their other prognostic and health regimen texts. As in the case of calendars, brontology is usually the only other prognostic in corpus folding manuscripts.

The later manuscripts in Chapter Four offer groupings of applied prognostics like bloodletting, Sphere of Life and Death, physiognomy and onomancy. The brontologies in such groupings serve to remind the reader that thunder has the ability to disrupt a prognosis. There is less information on planetary influences than in the more technical type of folding manuscripts, but there are more prognostics. It might be thought, therefore, that the Sphere would be a popular inclusion in other manuscripts in this study, but of a total of nine (three each in manuscripts in Chapters Two to Four) only three are grouped with brontology. By the late fifteenth century, the main focus of brontology placement is on teaching bodily humours, specifically their susceptibility to planetary influences. The simple binary outcome of life or death obtainable from the Sphere is overshadowed by nuanced months brontology and Zodiac prognoses, supported by health regimen applications. The manuscripts with compound brontology textual groupings in Chapters Three and Four, from the fifteenth century onwards, continue to include brontology with prognostics for medical treatment but increasingly emphasise diagnosis in addition to this. For example, in Sloane 282 brontology was placed with a text on how the relative balance of the four humours through the seasons prolongs or curtails illness which is very much influenced by solar activity. The number of prognostics also increases in compound groupings like those in Wellcome 8004, Chetham's A.4.99 and Huntington 64, especially with health regimens. A reminder of the cosmopolitan nature of many of the manuscripts in this study comes from the detailed guide to medical diagnosis in Bodley 591, which has the traveller in mind by specifying the effects of the weather on health in four regions of the world.

Health regimen culture in the corpus manuscripts

Late-medieval health regimens seem to occupy a middle ground between learned and household books. They are unerringly practical, but with detailed explanations of their reasoning of the effects of planetary influences on health, illness and seeking sympathetic cures. The additional skills and knowledge brought to health regimens by medical professionals created credible medical prognoses and treatment options over and above basic acute treatment. For example, the health regimen in Huntington 64 warns against eating mallows in pottage or porridge in February because their chemical composition at that time of year has changed to make them poisonous. The warning to bleed cautiously comes with a further warning of an impending great sickness, specifically a murrain, but in humans not the animal variety. Consequently, they are wide-ranging guides to general wellbeing and psychological wellness, not just treatment for immediate illness. It is not surprising, therefore, that the effects of seasonal weather patterns on health were some of the factors considered within this system of thought and that brontology found a home there. Also, the initial appeal of health regimens lies in the regularity of their advice, which fits well with months prognostics like brontology.

Much popular health regimen material translated into, or transmitted in, English in the Late Middle Ages was based on Islamicate medical knowledge translated into Latin during the twelfth and thirteenth centuries. Translators from Arabic to Latin, such as John of Toledo and Arnaldus de Villa Nova, are prominently attributed in these texts, reinforcing textual authenticity.[962] The next phase in the study health regimens was the addition of the findings and opinions of the next generation of medically minded scholars, such as Bernard de Gordon and John of Burgundy. Bernard de Gordon was interested in what could be done to prevent disease (especially plague) by regulating health and nutrition. The next part of the puzzle of why brontology was in these contexts is whether it was part of an educational approach offering several comparative texts. Few manuscripts in this study have multiple health regimen texts, Sloane 989 being the best example with three of them along with many other multiple texts, including brontology. Additional 27582 and Takamiya 61 both have two health regimens, but only one brontology each. Additional 27582 is a better candidate for a teaching manual, as it has ecclesiastical provenance and a strong vein of apothecary knowledge. Since examples of late-medieval manuscripts with health regimens alone far outnumber those which also include brontology, it cannot be argued that it was considered essential in these contexts. Nevertheless, the health regimens with brontology deserve attention because they reveal compilers who

[962] Two academic physicians working in the thirteenth century, see Chapter 2, pp. 61 (fn. 304), 62.

went to the trouble of sourcing and adapting it for their textual groupings, usually because they were interested in the deeper effects of weather on health.

As multiple health regimen and brontology texts are relatively uncommon, other features of corpus manuscripts with both texts were considered. There are no specific textual patterns and, on the whole, little mention of astrology other than the planetary influences on health. However, groupings are often instructional, covering other matters such as: bloodletting and making incisions, household management, medical treatment and remedies for humans and animals, weather, and travel. So, in these corpus manuscripts, health regimens serve as convenient sets of rules or instructions for the maintenance of health without a medical practitioner present; during difficult times like plagues or when travelling. Brontology became attached to them because it could be extrapolated to the effects of weather on health and wellbeing within a shared concern for seasonality. The fact that there are so few health regimen manuscripts with brontology is evidence that it was of most interest to professional medical and astrological practitioners as part of their interpretative processes, and therefore appeared less frequently in texts designed for self-help.

However, there are three notable manuscripts which come into the latter category, directly mixing health regimens with brontology: CUL Ff.5.48, Wellcome 8004 and Huntington 64, all compiled in the later fifteenth century. They differ from the earlier manuscripts in this study with health regimens by providing authoritative texts explaining the astrological theory of planetary influences on zodiac sign periods. In Wellcome 8004 and Huntington 64, the material is combined with brontology into compound texts useful for those undertaking a journey like the extensive pilgrimage described in Wellcome 8004.[963] These manuscripts give the impression of doctors seeking high levels of precision in their diagnoses and prognoses whilst using an accessible form of writing. In these cases, the everyday regimen has been refurbished with more detailed astrology and extra prognostics, like brontology.

Teaching prognostics

The tenor of many later corpus manuscripts suggests they were designed for medical education. Evidence of this is seen in attention to layout for clear exposition, multiple versions of the same prognostics grouped together,[964] and use of rhyme. Four corpus manuscripts have a rhyming brontology: Ashmole 189, CUL Ff.5.48, Chetham's A.4.99, and Takamiya 61 (partial), which, though often only associated with

[963] Chapter 4, pp. 107–108.

[964] see Rolf H. Bremmer Jr. and Kees Dekker (eds.) for earlier examples of this practice, 'Practice in Learning: The Transfer of Encyclopaedic Knowledge in the Early Middle Ages' (Leuven, Peeters, 2010), p. 147.

young students was used as an aid to memory. Medical education compilations are an important aspect of the survival of brontology, reinforced by early owners and collectors of scientific and medical material seeking them out for teaching or personal collections. The guilds were another route to survival, offering a different kind of medical education using training manuals. Such manuscripts in this study have few, if any, marginal notes so they are not students' copies, but used for reference and teaching by masters or tutors. Evidence of a didactic approach is also seen in textual finding aids, chapter headings in red, didactic incipits, for example, a. and explicits, b. (below):

a. 'Nou hit ys to knowe the þondres þorgh the yere'
b. 'Worthy docto(rs) made þis litel tretees after þe desc(ri)pcion of dyuers doctoures, S(S). Bernard(us), Austyn, Plato and Tholome, Agstocel and Galyen, Sydrac and Auycen and many oder docto(r)is w(i)t(h) þe same'.[965]

Tables are used to divide astrological medical material on the properties of planets and their effects on health into quaternities in the first Wellcome 8004 brontology grouping.[966] The compound text with the brontology also uses this sort of division in the incipit, with immediate focus on expected effects from the properties of the first sign, Aquarius, in bright red ink. Each entry begins with the imprecise statement that the Sun will be in the calendar month when it is the time of that zodiac sign. However, this was given knowledge to the reader as the astrological texts which determine this are found earlier in the manuscript. The detailed Vein Man text discusses the effects of opening various veins in the manner of notes for a practical demonstration. The explanation of the earth in the wider cosmos from Huntington 64, below at a, is very reminiscent of pedagogic analogy in the second brontology in Trinity R.14.52, shown at b:

a. 'Erthe is a myddes the grete See as a litill ball rownde'[967]
b. 'Raby Moses the philosopher says in seventh book that all the body is round as a tennis ball and even everywhere and though there are many hills and mountains, in those things alone there are as many valleys and deans to the equality of them in compensation and (their) making'. [968]

[965] Radcliffe e30, f. 39v.
[966] f. 33v.
[967] f. 76v.
[968] f. 261r. Raby Moses is also known as Maimonides, see Chapter 2, pp. 51–52, footnote 249.

Although they sound more like schoolroom analogies than university texts, as the age of entry to university was closer to fourteen than eighteen in the Late Middle Ages, this sort of illustration may well have been commonplace.[969] However, without direct evidence that the intended students were at university, other possible educational settings such as grammar schools and guild halls, and home education should be considered, noting the merchant connections of Trinity R.14.52, for example. In the incipit to the compound text grouping, the compiler explains that brontology is included as a temporal mutation:

a. 'therefore in these chapters canonised times and temporal mutations or changes must be considered' (for prognostication).[970]

Longleat 174 demonstrates didactic phraseology, in alternate English and Latin, in a variety of prognostics with a calendar (three of which are brontologies), for example, the reader is reassured of the veracity of the nativity lunary, '*ista regula est multociens probata et sine dubio vera est*'.[971] Specialist entries, unique in this study, do hint at the professional interests of a guild or town medical practitioner, or a priest tutor who had studied applied astronomy:

> if it thunders on the seventh day of Christmas, 'Masters that have laws to keep shall die that year'.[972]

The accompanying sunshine prognostic is also not run of the mill, predicting sunshine on the ninth day of Christmas means that chapmen will have plenty of gold, also not found anywhere else in this study.
In Additional 27582, a volume bequeathed to the subprior of an ecclesiastical hospital by a cathedral priest in 1523,[973] didactic brontology is in close proximity to a practical medical guide, *Practica medicine Arnaldi de Villa nova*.[974]

Weather signs and weather science

It might be thought that prognostics based on other types of weather would be an obvious choice of grouping for brontology, continuing in the tradition of texts with attributions to Prophet Esdras.

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[969] See H.P. Cholmeley, *John of Gaddesden and the Rosa Medicinae* (Oxford, Clarendon Press, 1912), p. 12.
[970] f. 261r.
[971] 'This rule has been proven many times and is undoubtedly true,' f. 81v.
[972] f. 82r.
[973] Lori Jones, *Exploring Concepts of Contagion and the Authority of Medical Treatises in 14th – 16th Century England*, unpublished MA thesis (University of Ottawa, 2012), p. 110.
[974] 'Arnald of Villa Nova's Practical Medicine'.

Some occurrences of this were found in the manuscripts in this study, but it is certainly not the most common textual association for brontology. In CUL Hh.6.11, Sloane 2584, Sloane 282, Digby 88 (there is no wind prognostic in this manuscript), and Ashmole 6 (no sunshine prognostic), brontology is grouped separately from sunshine and wind prognostics. They use the Days of Christmas as a frame of reference whereas brontology is based on the Zodiac or the months. In Sloane 282, brontology is part of a specialist Latin text on the Twelve Signs, twelve months, and thunder in the signs, with extra weather forecasting texts. In Digby 88, two Latin brontologies are grouped near a travel prognostic from the phases of the moon.[975] In folding manuscript Ashmole 6, the compiler added a wind prognostic to the end flyleaf some distance from the brontology which is the first of three Latin, medical Zodiac texts on the separate folio recto each month.

The following examples do show a relationship between brontology and other weather prognostics. In Rawlinson C.814, a wind prognostic and brontology are both in the explicit to a medical treatise. In Sloane 1315, a wheel diagram subdivided into cardinal directions of the winds is included in the brontology textual grouping. The cardinal directions are a quaternity which can be used to complement the Four Humours, in this case creating a technical, directional wind prognostic applicable to medicine. An example of how this works follows; if wind is coming from the East, it may alter the predominant humour making it less wet, or hotter and so on. Longleat 174 has a collection of weather prognostics including: the two brontologies, a sunshine prognostic and one on the meaning of four of the colours of the rainbow when linked to the four elements.[976] Similarly, Additional 27582 groups four prognostics from the rainbow, wind, sun, and thunder with the four elements and a short text explaining the weather terms.[977] In Chetham's A.4.99, the compound text groups a sunshine prognostic in English, a Latin brontology, English brontology, and a dominical letters prognostic concerned with weather prediction. The Huntington 64 grouping is a unique example of brontology and a mist prognostic within a compound health regimen.[978] The brontology appears first in this text, immediately following lists of perilous days for each month. Huntington 64 also shows a wider interest in health, planetary influences and the weather in the inclusion of a specific excerpt from the legend of St. Michael on weather. Even though brontology was clearly placed with other weather prognostics in these contexts, the level of interdependence between them

[975] f. 40r.
[976] ff. 81v–82r.
[977] f. 267v.
[978] f. 81v.

is very variable and has different foci, distancing them from straightforward Prophet Esdras compilations and indicating that their compilers were versed in natural philosophy. This is demonstrated by the concern with quaternities. It is not simply that the experience of wind and thunder together may have certain ramifications, but the direction from which the wind comes will further inform this. Likewise, the colours of the rainbow are linked to elements and the mist prognostic in Huntington 64 informs of times when aqueous humours are augmented by the weather.

Therefore, as the fifteenth century progressed, in addition to brontology's role in health regimens and to inform humoral medicine, evidence from the above manuscripts shows it was becoming of interest in understanding weather science, not just for weather prediction. This is best demonstrated by three particular scientific manuscripts. In Sloane 636, brontology was placed with a text on favourable conditions for travel followed by eleven weather texts attributed to Alkyndus. In Bodley 591, brontology is grouped with a text examining the effects of weather on health in four regions of the world, also a travel text, and a detailed text on how all these would affect a medical diagnosis. Wellcome 8004 expounds the value of weather prognostics in a version of Robert of York's *De impressionibus aeris*. Therefore, the dramatic effects of thunder were defined as potential disruptors of astrological prognoses as part of an interest in revealing the wider workings of weather phenomena.

In this regard, it should not be forgotten that the timeframe for brontologies within a given year was always contracting and this was important in comparing weather phenomena and weather prognostics. It meant that if thunder was heard in October, for example, there was only the rest of that month and two more in which the predicted events could happen if it was to be within the same year. An example of an October prognosis tells of the following events for (the rest of) the year ahead if thunder is heard in that month;

> 'moche wynde and moche goods in water loste and lytell frute'.[979]

In a sense, this increases the value of the brontology because the likelihood of these events taking place increases as the timescale shortens. Trade deals, projected profits and feeding a household or community are all bound up in this prognostic, in addition to the broader effects of wind on health.

[979] Ashmole 189, f. 102r.

Now, a summary of the evidence of the range of uses of brontology in the manuscripts in this study. Earlier brontological textual groupings had survived in ecclesiastical contexts such as priories and canons' colleges (for non-monastic clergy). When they resurfaced in later educational works designed for university education, from the late fourteenth century onwards, they had maintained an original quality of language, which was usually Latin. This also implies that the original use was primarily educational and not in a household. The small amount of evidence of brontology use in calendars is also ecclesiastically focused and relates to computus, or the regularisation of life through the calendar, principally for calculating the date of Easter and also marking various saints' days, some of them relatively unknown and local. Those who engaged with these calculations generated an affinity between brontology by months and brontology by the periods of the Zodiac which recurs in many corpus manuscripts, sometimes as two separate items, often both together in one text.

Later, various forms of almanac utilising astronomy and astrology to make predictions also include calendrical material. In addition to saints' days, there are multipurpose texts on hours of daylight through the year and Occupations of the Months, for example, which is where brontology is located in almanacs. Brontology is also found with texts on predictions from the phases of the Moon in almanacs and other larger manuscripts for reference and study, but increasingly as the study period progresses there is a focus on the effects of all the planets, often on the Sun in particular because of its role in determining the longevity of an illness or condition. At this point in time language use in corpus manuscripts is varied, primarily because English is starting to be used as an academic language, if not for a whole text, perhaps its incipit, explicit and explanatory subheadings. There are also numerous examples of didactic expression and diagrams, notably Zodiac Man, confirming the likelihood that these manuscripts were used for the study of medicine. Other manuscripts appear later in the study period, which although encyclopaedic and containing learned texts, do not resemble such textbooks. They are often much richer in quality and have a higher incidence of applied texts such as health regimens and travel texts. Weather texts associated with brontology in the later corpus manuscripts show origins in learned works such as Robert of York's *De impressionibus aeris*, usually in translation from Latin, and are often linked to travel matters. The interest in the feasibility and practicalities of travel in these very good quality manuscripts points towards owners of some status, such as merchants and ambassadors, and their physicians.

Chapter Seven – Conclusion

The historical significance of the survival of late-medieval brontology

The previous chapter showed brontology as very much a living text during the Late Middle Ages and one that was applied to both practical and educational medical contexts. The fifteenth century saw the most integration of brontology into practical and scientific manuscripts, often physically intercalated with astrological medical material and applied to health regimens. A very small number of examples of such individually crafted brontology were still being produced into the sixteenth century: Additional 17367, a multipurpose folding manuscript based on learned astrology, little different from the fourteenth-century study examples and Sloane 2270, a doctor's vade mecum. However, the number and type of surviving manuscripts was much reduced from the fourteenth and fifteenth centuries and more regional in context. The popular prognostics moving into print from the late fifteenth century onwards become standardised,[980] losing the detailed and specialist professional knowledge of the individualised manuscript compilations. At first glance, Leonard Digges' popular versions of prognostics printed in almanacs from the late sixteenth century (as described by Anne Lawrence-Mathers)[981] resemble the popular textual groupings often seen in this study, but Digges' are simpler and result in formulaic weather predictions which were not applied to astrological medicine.

Notable and applicable knowledge

Prior to print, therefore, brontology was part of a late flourishing of richly varied, individual compilations of useful and readily applicable knowledge.[982] The previous chapter plots the nature of brontology's spread in late-medieval society from ecclesiastical and university education to medical practitioners and their trainees working in the field, and educated householders, their tutors and priests. A hierarchical model of dissemination with educational institutions at the top does not adequately define this spread. A better analogy is of information rippling out widely from classical and university sources through the social and educational connections of the day. An understanding of how this came about comes from the social milieu of writers like Chaucer who was interested in scientific ideas and, although not university-educated himself,

[980] See, for example, Phebe Jensen on '*Erra Pater*' prognostications, *Astrology,* pp. 30, 80.
[981] Anne Lawrence-Mathers, 'Domesticating the Calendar: The Hours and the Almanac in Tudor England,' in Anne Lawrence-Mathers and Phillipa Hardman (eds.), *Women and Writing c. 1340–c. 1650: The Domestication of Print Culture* (York Medieval Press, 2010), pp. 34–61.
[982] As Eisenstein postulates in *The printing press*, see Chapter 1, p. 13.

had educated acquaintances,[983] also John Vale, a trainee merchant who owned Trinity R.14.52, later writing a book himself, and Richard Trewythian, with a multifaceted professional life involving astrology and medicine among other business concerns. Londoners like these, literate and often Latinate thanks to grammar schools and home tutors, had contacts in a variety of professions and greater educational opportunities than previously. This put them in an excellent position to share and copy texts, acquiring the means to do so from stationers, either just the materials or copies of individual texts via the *pecia* system). All of this applies to professionals in university cities as well, where copying services were available from students like Simon Wysbech at Cambridge.

Numerous corpus manuscripts show that brontology clearly had a place in groupings of late-medieval practical and professional information with other prognostics, but close study of the contexts in question has shown how prominent this was. An important reason for this is the greater utility of brontology than other weather prognostics in dealing with monthly fluctuations in health and wellbeing. There are three examples of brontologies using the Days of Christmas framework in the same way as wind and sunshine prognostics but they are never presented by themselves, only in sets of two or three brontologies and in all cases including calendar months as a framework.[984] The second reason for the prominence of brontology is its function as a wild card when applied with other prognostics or personalised predictions such as nativities and horoscopes. The presence of a brontology makes the reader aware that a thunder event would affect an original diagnosis, medical prognosis, or travel plans. Information is provided on how this will happen in each affected month, thereby allowing for prophylactic measures to be taken.

So, by the fifteenth century, this had led to brontology as part of intensive groupings of medical prognostics invoking the Zodiac because of its relevance to the working of the seasons and humoral balance and, in a number of cases, it was the only temporal framework. In Chetham's A.4.99, for example, the brontology is showcased as the initial item in the heading and incipit of the compound textual grouping of prognostics and health regimen advice. Hence, although brontological material was widespread in society it had a particular affiliation to astrological medicine, reflected in the professional quality of fifteenth-century corpus manuscripts. The fact that there are tens of these manuscript contexts surviving, rather than

[983] Douglas Gray, 'Chaucer, Geoffrey (c. 1340–1400),' 'Early Years,' ODNB (23 Sep 2004). https://doi.org/10.1093/ref:odnb/5191 [last accessed 23 Jan 2024].
[984] Radcliffe e30 (two), Longleat 174 (three), Sloane 989 (three).

hundreds (as there are of health regimen texts)[985] speaks of a specialised culture, which could even be described as niche, with an underlying curiosity about the mechanics of the cosmos, especially weather phenomena.

The greater application of scientific information in the manuscripts in this study coincides with greater use of English. The scientific application is seen in more visual representations, tables, volvelles, diagrams, analogies, and attributions to known scholars or at least a wider authority.[986] Some of the scholars and practitioners involved with these eclectic manuscripts were university graduates or qualified physicians and some were not; they had been able to enter university but did not graduate for a variety of reasons, often financial. This means that they had had some learning and in the case of those entering religious orders, could perhaps continue their studies or some other form of training, for example, the friar Henry Daniel, writer on herbs.[987] Daniel knew Latin yet increased his use of English through the fifteenth century as it became a more acceptable vehicle for scientific knowledge, his work permeated by a background Latinity all the while.

Many of the brontology textual groupings reflect this use of language, with examples of English increasing through the fifteenth century and Latin taking on the aspects of a professional medical jargon, as it still does today for naming medical conditions and disease processes.[988] Since late-medieval medical practice spanned a variety of specialisms of differing complexity and competences, individual compilers of corpus manuscripts drew things out of the texts which were germane to their specific practice and these would inform linguistic choices and layout. For brontology texts this is manifested in their location in manuscripts and the compiler's choice of supporting material like diagrams and the omission, inclusion, or mingling of other prognostic texts. Apart from professional contexts, brontology is a reference text in general knowledge sections of a small number of household books distinct from didactic miscellanies, but at least with an astrological medical slant in most cases. These latter witnesses should not be dismissed as less significant to the study conclusion because they are less scientific or of less educational value. Rather, they should be regarded as an outlying part of the knowledge circulating out from learned contexts, grouped not

[985] Using a simple search of 'regimen' by century, eTKeVK2 yields ninety examples for the thirteenth century, a hundred and eighty for the fourteenth and five hundred and sixty-three for the fifteenth (this total includes the manuscripts in this study with health regimens).
[986] For example, 'the Jews' in Longleat 174, Chapter 4, p. 143.
[987] Examples of his texts are found in Digby 95 and St. John's K.49, with abbreviated and edited versions elsewhere in this study.
[988] See Siraisi, for 'inventive solutions' to this, *Medieval and Early Renaissance Medicine*, p. 53.

as weather prediction but intended as health care, drawing attention to everyday phenomena which affect the humours in a user-friendly version of the more substantial health regimens discussed below.

Special regard for the major luminaries

Texts on the passage of the moon and prognostics based on this are natural partners to months-based health regimens and a major source of information for surgeons on safe bleeding. Later-medieval physicians also became interested in the possibilities which surgery offered their art. Polymath master surgeons like John Arderne, without medical degrees but also skilled in apothecary practice,[989] emerge in the London Surgeon's Company in the fifteenth century, and from the beginning of the study period there were advocates for learned practical medicine. Lanfranc of Milan defended the intellectual dignity of surgery, and Henri de Mondeville its scientific value,[990] whilst Guy de Chauliac taught that interdependence of astrological medicine and surgery benefited and improved both disciplines.[991]

Apart from carrying out invasive procedures and bleeding, late-medieval doctors of all types dealt with many acute conditions and physical and mental states thought to arise from fluctuation in bodily fluids caused by the passage of the moon. Some of these conditions arose from within the body: menstruation difficulties (or lack thereof), swellings such as cysts, and increase and decrease in bone marrow (a very important consideration for bone setting). They were therefore thought of as direct manifestations of ill-balanced humours, i.e. literally too much or too little liquid. The influence of the sun, however, was perceived as overarching and therefore affected chronic illness the most. It is obvious, ~~therefore~~, that for doctors a more stable income lay in treating long-term conditions. A call-out for an acute illness resulting in a deathbed would earn a single fee, whereas management of a course of treatment earned fees for the duration of a condition and possibly a reward at the end if a cure was effected. In the corpus manuscripts, this focus on the passage of the Sun coincides with a dwindling of Sphere of Life and Death texts. In effect, this means that the medical practice of their compilers was now treatment-orientated and palliative, as opposed to emergency care requiring a binary answer. In practice, most doctors would have needed to display knowledge of the separate effects of both the major luminaries, and in conjunction with other planets if they were going to diagnose with any subtlety. They would have needed to keep in mind Galen's teaching that the Moon depends on the Sun for its light and that this also affects its potency and, by

[989] See Christopher Booth, 'Physician, Apothecary, or Surgeon?', pp. 24–35 (p. 29).
[990] Wallis (1995), pp. 288–296.
[991] Ibid., pp. 296–300.

extension, the effects of both solar and lunar eclipses.[992] Also the effects on health, notably mental health, of the rising of the star Sirius during summer months when the Sun itself was potent were noted in connection with brontology.

Whatever the initial education and training of the late-medieval practitioners who wrote and used the manuscripts in this study, such facility with the combinations of cosmic influences was germane to profitable practice and career progression in very competitive and reputation-led environments, certainly in larger towns and cities. Throughout the study, a recurring regard for major luminaries is first seen in the late fourteenth century in physicians' folding almanacs, then, increasingly in codices in the fifteenth century, notably John of Ashenden's *Summa*. This regard manifests in three ways in the later textual groupings with brontology: solar calendars identifying the Sun's passage through the sky (common in the folding manuscripts), references to the 'sun in the sign' for prognostics based on the Zodiac, and Zodiac Man diagrams showing solar influence on the Zodiac extrapolated to body parts.[993] Often, Zodiac Man diagrams also include cosmic effects on quaternities (especially the four elements and the four humours) constantly reminding the reader of the relationships between the physical body and heavenly bodies.

The evidence of regard for solar influences in corpus manuscripts shows that, throughout the study period, physicians and other health practitioners kept their options open regarding the type and level of treatment and advice they chose to offer. They applied knowledge of the effects of the Sun in the zodiac sign to health regimens and Zodiac Man diagrams could be used to ascertain effects of both the Sun (for long-term health) and Moon (short-term health) on the body at a given time. Three significant findings come from this. Firstly, it is not just the fact that brontology continued to be included in late-medieval scientific manuscripts, but that it was prominent within textual groupings on health care, suggesting a familiarity with and regard for the text in medical society. Secondly, the textual groupings, and brontologies themselves, are increasingly immersed in, and illustrated by, cosmic frames of reference. The third finding was that the manuscripts most associated with this practice are expensive, detailed and authoritative, so it seems there was profit in knowledge.

Although brontology continued to appear in a small number of monastic and household books to the end of the study period (and did go into print in simplified contexts shortly after that), its historical significance lies

[992] See the translation of the *Summary of Crises and Critical Days* by 'Master B,' in Wallis (ed.) (2010), pp. 318–323.
[993] Ashmole 189 has medical rules from 'Homo Signorum' ('Man of Signs,' otherwise 'Zodiac Man'), also see Taavitsainen (1994), p. 298.

in the regularity with which it continued to recur as part of astrological medical practice in the fourteenth and fifteenth centuries. The strength of evidence for this sort of use, occurring when the effects of weather on health were being explored by scholars such as John of Ashenden and Robert of York, distances brontology from earlier conceptions as popular superstition. Brontology, along with equally tenacious but often less prominent texts, was chosen by manuscript compilers to aid medical prognosis and treatment as part of a holistic, astrologically led philosophy. The insights from the role of brontology in judgements on health and wellbeing open the way for investigations into other highly individualised texts such as nativity and physiognomy texts and specialised health regimens,[994] especially multipurpose combinations of texts.

[994] Also see Joanne Edge's forthcoming work, *Onomantic Divination in Late Medieval Britain: Questioning Life, Predicting Death* (York Medieval Press, Forthcoming March 2024).

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MS 272	Aberdeen 272	3	72
California, San Marino, The Huntington Library,			
MS HM 64	Huntington 64	4	155
MS HM 1336	Huntington 1336	3	93
Cambridge,			
Gonville and Caius College MS 457/395	Gonville & Caius 457/395	4	170
St. John's College MS E.9	St. John's E.9	5	183
St. John's College MS K.49	St. John's K.49	3	83
Trinity College MS O.1.57	Trinity O.1.57	4	125
Trinity College MS O.2.45	Trinity O.2.45	5	181
Trinity College MS R.14.52	Trinity R.14.52	4	147
University Library MS Ff.5.48	CUL Ff.5.48	4	132
University Library MS Dd.6.29	CUL Dd.6.29	2	46
University Library MS Hh.6.11	CUL Hh.6.11	2	34
Edinburgh, National Library of Scotland,			
Advocates MS 18.6.9	Advocates 18.6.9	2	37
Lincoln, Lincoln, Cathedral Library MS 91	Lincoln 91	5	186
London, British Library,			
Additional MS 17367	Additional 17367	4	172
Additional MS 27582	Additional 27582	4	166
Additional MS 28725	Additional 28725	4	136
Egerton MS 2724	Egerton 2724	3	68
Egerton MS 2852	Egerton 2852	2	40
Sloane MS 213	Sloane 213	4	128
Sloane MS 282	Sloane 282	2	58
Sloane MS 635	Sloane 635	4	141
Sloane MS 636	Sloane 636	3	81
Sloane MS 989	Sloane 989	3	85
Sloane MS 1315	Sloane 1315	4	124
Sloane MS 1609	Sloane 1609	3	66
Sloane MS 2270	Sloane 2270	4	171
Sloane MS 2584	Sloane 2584	2	55
London, Wellcome Library MS 8004	Wellcome 8004	4	100
Manchester, Chetham's Library MS Mun.A.4.99	Chetham's A.4.99	4	116

New York, The Morgan Library,			
MS M.775	Morgan 775	4	146
MS M.941	Morgan 941	3	76
New Haven, Yale University, Beinecke Rare Books and Manuscript Library			
Takamiya MS 61	Takamiya 61	4	129
Oxford, The Bodleian Libraries MSS.			
Ashmole 6	Ashmole 6	3	73
Ashmole 189	Ashmole 189	5	185
Ashmole 342	Ashmole 342	3	94
Ashmole 345	Ashmole 345	2	53
Bodley 591	Bodley 591	3	88
Digby 57	Digby 57	2	57
Digby 75	Digby 75	4	128
Digby 88	Digby 88	4	167
Digby 95	Digby 95	3	86
Radcliffe Trust e.30	Radcliffe e.30	4	136
Rawlinson D. 238	Rawlinson D.238	2	49
Rawlinson C.814	Rawlinson C.814	2	35
Rawlinson D. 939	Rawlinson D.939	2	42
Tanner 407	Tanner 407	5	187
Warminster, Longleat House Library			
MS 174	Longleat 174	4	142
MS 176	Longleat 176	4	131

Primary Sources – Other Manuscripts	Chapter
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MS 123	2
Aberystwyth, National Library of Wales	
Peniarth MS 26	1
Peniarth MS 27	1
Cambridge	
Magdalene College MS Pepys 1236	4
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