

Bede

The Reckoning of Time

Second, Revised Edition

*Translated with introduction, notes and commentary
by Faith Wallis*



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Second, Revised Edition

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To Kendall Wallis
'may your heart live forever' (Psalm 22:26)

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PREFACE TO THE SECOND EDITION

The first edition of this translation of Bede's treatise on *computus* was published in 1999; a second printing, which corrected some typographical errors, appeared in 2004. Since that time, both Bede studies and *computus* studies have undergone changes that can well be described as transformative. Medieval time-reckoning studies have expanded, deepened, and diversified, enriched by editions of texts hitherto available only in manuscript or in inadequate earlier printed versions, and leavened by the insights of both seasoned and emerging scholars. In consequence, my own views about Bede and his book have evolved considerably. For this I can also thank the new generation of historians who have profoundly altered our understanding of Bede's religious, intellectual, and political environment and, in particular, exposed hitherto unsuspected connections between his work as an exegete and his writings on time. In the light of these developments, a fresh edition of *The Reckoning of Time* is in order.

These new influences and trends will be most apparent in the Introduction, which has been completely overhauled in both form and content. In recent decades, scholarship around Bede has been marked *inter alia* by the publication of major reference works, thematic essay collections, and new translations, notably of his biblical commentaries. In particular, the work of Peter Darby, Máirín MacCarron, and James Palmer has reframed Bede's ideas about time in the context of his concerns for the future and his awareness of the past. This new Introduction will also reflect a reassessment of Bede's relationship to the Irish traditions of *computus* in the light of new editions and studies by Dáibhí Ó Cróinín, Immo Warntjes, Jacopo Bisagni, and Tobit Loevenich, as well as the analyses of this tradition presented at the proceedings of the biennial Galway conferences on *computus* history. Many other domains of *computus* studies have also been transformed, resulting in revisionist histories of the early centuries of Christian time reckoning (by Leofranc Holford-Strevens, Alden Mosshammer, and others), of the nature of the Insular 'Easter Controversy', and of the force of apocalyptic

concerns. At the same time, our understanding of how *The Reckoning of Time* was received in the formative Carolingian period has been reshaped by the monumental editorial work of Arno Borst and the studies by John J. Contreni, Brigitte Englisch, Kersten Springsfeld, and others. Finally, the fertile and wide-ranging scholarship of C. Phillipp E. Nothhaft invites us to reimagine what *computus* meant in the medieval world and precisely what Bede contributed to *computus*. All this is taking place against a backdrop of fresh attention to historicizing Bede's exegetical writings: Scott DeGregorio, Alan Thacker, and Rosalind Love have influenced my understanding of how biblical reflection and computistical thinking are intertwined.

As for the text itself, this new edition corrects errors in translation, repairs stylistic infelicities that resulted in ambiguities or inaccuracies, adds newly identified sources in the footnotes, adds further biblical citations and parallels in Bede's exegetical works, and revises the references to take into account recent critical editions. The Commentary has been thoroughly revised to take the scholarship of the last quarter-century into account.

Finally, the Appendices have been enlarged to include a provisional checklist of copies of *De temporum ratione* (Appendix 5), which aims to show the textual and manuscript contexts in which this text was transmitted.

A revised edition incurs as many, or even more, debts than does its initial appearance. Over the years, a number of my fellow Bede scholars have communicated their suggested corrections and pointed me to pertinent sources. Some have shared as yet unpublished work and others have read and commented on all of parts of the text. I owe a particularly great debt to Dr Immo Warntjes of Trinity College, Dublin, who has read my drafts with great care and generously provided corrections and indications of newly published scholarship. Dr Rosalind Love, the external reader for Liverpool University Press, combed through every line with her wonted diligence and deep scholarship, and made numerous suggestions for improvement. Dr Peter Darby provided valuable comments, notably on the issue of Bede's eschatology. Dr Mary Whitby midwived this new edition from proposal to press with her wonted wisdom and good sense. Prof. Calvin Kendall, with his sharp editorial eye, fine sense of style, and diplomatic skill in telling me that what I had just written made no sense, prevented countless errors and missteps from making it into print. The meticulous and professional care of Sarah Davison and her team at Carnegie Book Production/Liverpool University Press is acknowledged with very sincere thanks.

This book is dedicated to my dear husband Kendall Wallis, amongst whose many virtues and accomplishments are a proofreader's eye, a librarian's finesse and accuracy with bibliographic citation, and the patience of a saint with his wife's shortcomings in both these domains. His contributions are found on every page, but especially in figure 3a, where his talents as a photographer of medieval architecture are on display.

The reader who cares to compare this new edition to the first will certainly notice how much my own thinking about Bede and the reckoning of time has evolved. What has remained constant is my profound admiration for, and delight in, the beauty and imaginative scope of this book. Bede knits together cosmos and liturgy, science and salvation, time and eternity into a complex, thrilling, but subtle whole that culminates in a deeply moving evocation of 'eternal stability and stable eternity', but on a New Earth where the same stars God fashioned at Creation will continue to shed their light. It is a glorious vision.

ABBREVIATIONS

- Bede, *Historia ecclesiastica* = [*Historia ecclesiastica gentis Anglorum*] *Ecclesiastical History of the English People*. Ed. and trans. Bertram Colgrave and R.A.B. Mynors. Oxford: Clarendon Press, 1969
- Bede, *Letter to Plegwine* = *Epistola ad Pleguinam*. Ed. in Jones *BOD* 615–26. Trans. in Appendix 3a of the present work
- Bede, *Letter to Wicthed* = *Epistola ad Wicthedum*. Ed. in Jones *BOD* 634–42. Trans. in Appendix 3c of the present work
- Bede, *In Gen.* = *Libri quatuor in principium Genesis usque ad nativitatem Isaac et eiectionem Ismahelis adnotationum*. Ed. C.W. Jones. CCSL 118A (1967). Trans. Calvin B. Kendall. *Bede: On Genesis*. Liverpool: Liverpool University Press, 2008
- Bede, *On Times* = *De temporibus liber*. Ed. in Jones *BOD* 580–611. Trans. Calvin B. Kendall and Faith Wallis, *Bede: On the Nature of Things and On Times*. Liverpool: Liverpool University Press, 2010
- Bede, *The Nature of Things* = *De natura rerum*. Ed. in Jones *BOD* 174–234. Trans. Calvin B. Kendall and Faith Wallis, *Bede: On the Nature of Things and On Times*. Liverpool: Liverpool University Press, 2010
- Bede, *The Reckoning of Time* = *De temporum ratione*. Ed. in Jones *BOD* 241–544
- Borst, *Schriften* = Arno Borst, *Schriften zur Komputistik im Frankenreich von 721 bis 818*. 3v. MGH, Quellen zur Geistesgeschichte des Mittelalters 21. Hannover: Hahnsche Buchhandlung, 2006
- CCCM = Corpus christianorum continuatio medievalis
- CCSL = Corpus christianorum series latina
- CSEL = Corpus scriptorum ecclesiasticorum latinorum
- Ep.* = *Epistola/ae*
- Hom.* = *Homelia/ae*

- Isidore of Seville, *DNR* = [*De natura rerum*] *Traité de la nature*. Ed. and trans. Jacques Fontaine. Paris: Institut d'Études Augustiniennes, 2002. English trans. Calvin B. Kendall and Faith Wallis, *Isidore of Seville. On the Nature of Things*. Liverpool: Liverpool University Press, 2014
- Isidore of Seville, *Etym.* = *Etymologies*. Citations from books other than those listed below are from *Isidori Hispalensis episcopi Etymologiarum sive Originum libri XX*. Ed. W.M. Lindsay. 2 vols. Oxford: Clarendon Press, 1911
- [book 3] *Etymologiae III. De mathematica*. Ed. and trans. G. Gasparotto and J.-Y. Guillaumin. Paris: Les Belles Lettres, 2009
- [book 5] *Etimologías Libro V. De legibus. De temporibus*. Ed. and trans. Valeriano Yarza Urquiola and Francisco Javier Andrés Santos. Paris: Les Belles Lettres, 2013
- [book 6] *Etimologías Libro VI. De las Sagradas Escrituras*. Ed. and trans. César Chapparo Gómez. Paris: Les Belles Lettres, 2012
- [book 9] *Etymologies Livre IX. Les langues et les groupes sociaux*. Ed. and trans. Marc Reydellet. Paris: Les Belles Lettres, 1984
- [book 11] *Etimologie Libro XI. De homine et portentis*. Ed. and trans. F. Gasti. Paris: Les Belles Lettres, 2010
- [book 13] *Etimologie XIII. De mundo et partibus*. Ed. and trans. G. Gasparotto. Paris: Les Belles Lettres, 2004
- [book 14] *Étymologies Livre XIV. De terra*. Ed. and trans. Olga Spevak. Paris: Les Belles Lettres, 2011
- [book 16] *Etimologías Libro XVI. De las Piedras y de los metales*. Ed. and trans. José Féans Landiera. Paris: Les Belles Lettres, 2011
- Jarrow Lecture = The annual Jarrow Lectures delivered at St Paul's Church, Jarrow. Those from 1958 to 1978 are collected in Michael Lapidge, *Bede and His World*, 2 vols, Aldershot: Variorum, 1994. Lectures after 1978 are identified by individual author and title. All are published by St Paul's Church, Jarrow
- Jones, *BOD* = *Bedae Venerabilis opera. Opera didascalica*. Ed. C.W. Jones and Calvin B. Kendall. 3 vols. CCSL 123A–C. Turnhout: Brepols, 1975–1980
- Jones, *BOT* = *Bedae opera de temporibus*. Ed. C.W. Jones. Cambridge, MA: Mediaeval Academy of America, 1943

Jones, *BP* = C.W. Jones, *Beda's Pseudepigrapha: Scientific Writings Falsely Attributed to Bede*. Ithaca, NY: Cornell University Press; London: Oxford University Press, 1939

Krusch, *Studien I* = Bruno Krusch. *Studien zur christlich-mittelalterlichen Chronologie. Der 84jährige Ostercyclus*. Leipzig: Von Veit, 1880

Krusch, *Studien II* = *Studien zur christlich-mittelalterlichen Chronologie. Die Entstehung unserer heutigen Zeitrechnung*. Abhandlungen der preussischen Akademie der Wissenschaften. Jahrgang 1937. Philosophisch-historische Klasse 8. Berlin: Akademie der Wissenschaften, 1938

MGH = *Monumenta Germaniae Historica*

AA = Auctores antiquissimi

Epp. = Epistolae in quarto

Leg. = Leges

Poetae = Poetae latini medii aevi

Quellen = Quellen zur Geschichte des Mittelalters

SS = Scriptores

Script. rer. mer. = Scriptores rerum merovingicarum

PG = *Patrologia cursus completus*. Series graeco-latina

PL = *Patrologia cursus completus*. Series latina

Pliny, *HN* = *Historia naturalis*. Ed. and trans. H. Rackham, W.E.S. Jones, and D.E. Eichholz. 10 vols. Cambridge, MA: Harvard University Press; London: Heinemann, 1938. Rpt. 1961

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INTRODUCTION

1. ‘OUR LITTLE BOOK ABOUT THE FLEETING AND WAVE-TOSSED COURSE OF TIME ...’

At the close of his *Ecclesiastical History of the English People*, Bede (ca. 673–735) appended a short autobiography. He identified himself as a monk of ‘St Peter and St Paul which is at Wearmouth and Jarrow’ who had been born on the lands of ‘this monastery’ and offered as an oblate at the age of seven. Educated under Abbot Benedict Biscop, the founder of Wearmouth and Jarrow, and Biscop’s successor Ceolfrith, Bede was ordained deacon and then priest by Bishop John of Hexham. That ordination was the last ‘event’ in his life. Thenceforth, Bede’s existence, by his own account, was one of sacred sameness, ruled not by change and chance but by the stable rhythms of monastic time:

From then on I have spent all my life in this monastery, applying myself entirely to the study of the Scriptures; and amid the observance of the discipline of the Rule and the daily task of singing in the choir, it has always been my delight to learn or to teach or to write.¹

Bede defines his principal activity as the study of Scripture, so, when he lists his writings, he begins with his biblical exegesis and his

¹ *cunctumque ex eo tempus uitae in eiusdem monasterii habitatione peragens, omnem meditandis scripturis operam dedi, atque inter obseruantiam disciplinae regularis, et cotidianam cantandi in ecclesia curam, semper aut discere aut docere aut scribere dulce habui*. Bede, [*Historia ecclesiastica gentis Anglorum*] *Ecclesiastical History of the English People* 5.24, ed. Bertram Colgrave and R.A.B. Mynors (Oxford: Clarendon Press, 1969), text 566, trans. 567. For a thoughtful reading of this autobiography, see Peter Darby and Máirín MacCarron: ‘The Autobiographical Statement of Bede the Scholar in *Ecclesiastical History* 5: 24’, in *Bede the Scholar*, ed. Peter Darby and Máirín MacCarron (Manchester: Manchester University Press, 2023), 7–32.

collected letters. In their wake are the lives of saints Felix, Anastasius, and Cuthbert, followed by the biographies of the abbots of Wearmouth-Jarrow and the *Ecclesiastical History*. Then comes his liturgical productions – a martyrology and hymns – and, after that, poetry on sacred themes. Bringing up the rear are books on the secular subjects of grammar and rhetoric: one on orthography, another on poetic metres, and a third on schemes and tropes. Between the poetry and the *grammatica* Bede lists '[t]wo books, one on the nature of things and the other on chronology (*de temporibus*): also a longer book on chronology (*item de temporibus librum unum maior*)'.²

This volume is a translation of that 'longer book on chronology', which in a more lyric vein Bede also called his 'little book about the fleeting and wave-tossed course of time'.³ It was composed in 725, which is identified as 'the present year' in some of the worked examples Bede used to demonstrate formulae.⁴ Medieval readers knew it as *De temporibus* (*On Times*) or *De temporibus liber secundus* (*The Second Book on Times*), to

2 *Historia ecclesiastica*, 5.24, ed. Colgrave and Mynors 571. Besides the specialized studies cited below, this introduction draws on a number of essay collections and general monographs about Bede, notably: Peter Darby and Máirín MacCarron, eds, *Bede the Scholar*; Peter Darby and Faith Wallis, eds, *Bede and the Future* (Farnham: Ashgate, 2014); Scott DeGregorio, ed., *The Cambridge Companion to Bede* (Cambridge: Cambridge University Press, 2010); George Hardin Brown, *A Companion to Bede* (Woodbridge: Boydell, 2009); Scott DeGregorio, ed., *Innovation and Tradition in the Writings of the Venerable Bede*, Medieval European Series 7 (Morgantown: West Virginia University Press, 2006); the annual Jarrow Lectures delivered at St Paul's Church, Jarrow, from 1958 to 1978 and published as Michael Lapidge, ed., *Bede and His World*, 2 vols (Aldershot: Variorum, 1994), hereafter referred to as 'Jarrow Lectures', and after 1978 by individual author and title; L.A.J.R. Houwen and A.A. MacDonald, eds, *Beda Venerabilis: Historian, Monk and Northumbrian* (Groningen: Egbert Forsten, 1996); Gerald Bonner, ed., *Famulus Christi. Essays in Commemoration of the Thirteenth Centenary of the Birth of the Venerable Bede* (London: S.P.C.K., 1976); Margot King and Wesley Stevens, eds, *Saints, Scholars and Heroes* (Collegeville, MI: Hill Monastic Manuscript Library, 1979); Peter Hunter Blair, *The World of Bede* (London: Secker and Warburg, 1970); A.H. Thompson, ed., *Bede: His Life, Times and Writings* (Oxford: Clarendon Press, 1935). Indispensable reference works include Michael Lapidge, 'Beda Venerabilis', in *La Trasmissione dei testi latini del medioevo/ Medieval Latin Texts and their Transmission*, ed. Paolo Chiesa and Lucia Castaldi (Florence: Edizioni del Galluzzo, 2008), v. 3, xiii–lxxx; and George Hardin Brown and Frederick M. Biggs, *Bede, Sources of Anglo-Saxon Literary Culture*, 2 v. (Amsterdam: Amsterdam University Press, 2017).

3 *noster libellus de uolubili ac fluctuago temporum lapsu: The Reckoning of Time*, ch. 71, ed. Jones, 544.91–2.

4 E.g. in chs 49, 52, 54, 58.

distinguish it from Bede's earlier,⁵ briefer treatment of time-reckoning, also entitled *De temporibus*. Its conventional later medieval and modern title *De temporum ratione* (*The Reckoning of Time*) is apparently derived from the opening words of the book's preface, *De natura rerum et ratione temporum duos quondam stricto sermone libellos discentibus ut rebar necessarios composui*. ('Some time ago I wrote two short books in a summary style which were, I judged, necessary for my students; these concerned the nature of things and the reckoning of time'), as well as those of chapter 1: *De temporum ratione, domino iuuante, dicturi ...* ('Before discussing the reckoning of time ...'). The 'two short books' mentioned by Bede were an introduction to cosmology entitled *De natura rerum* (*The Nature of Things*) and *De temporibus* (*On Times*); both were composed around 703.⁶

The preface of *The Reckoning of Time* frames this new book in relation not only to *On Times* but to its companion treatise, *The Nature of Things*. Bede intimates that he intends to combine these two earlier works into *The Reckoning of Time*. In so doing, he would reverse his earlier writing process, whereby he extracted the material on cosmology from Isidore of Seville's *The Nature of Things* to create his own treatise of the same name, while incorporating Isidore's chapters on the units of time into *On Times*. But Bede always considered *The Nature of Things* and *On Times* as conjoined works; they even shared a poetic epigraph: 'In brief chapters, I, Bede, the servant of God, / Have lightly touched on the varied natures of things / And on the broad ages of fleeting time ...'.⁷ In other words, Bede envisioned from early in his career a conceptual parallel between the *natura* (*natura*) of things and the *reckoning* (*ratio*) of time; this pairing of

5 *On Times* can be dated to 703 and *The Reckoning of Time* to 725, based on the final events recorded in the chronicles of these works. Illustrative calculations in *On Times* 14 and 22 also indicate an *annus praesens* of 703; those in *The Reckoning of Time* 49, 52, 54, and 58 point to 725. However, Bede seems to have begun work on *The Reckoning of Time* at least as early as 722: see *The Reckoning of Time*, ch. 11, n. 121.

6 *De natura rerum* (hereafter cited as *The Nature of Things*) and *De temporibus* (*On Times*) were edited by C.W. Jones, *BOD* 189–234 and 597–611; the latter incorporated without alteration Theodor Mommsen's edition of the chronicle in chs 17–22, originally published in *MGH AA* 13, 233–354. These two works of Bede's are translated with an introduction and commentaries by Calvin B. Kendall and Faith Wallis, *Bede: On the Nature of Things and On Times* (Liverpool: Liverpool University Press, 2010).

7 *The Nature of Things*, ed. Jones 189; trans. Kendall and Wallis 71; see also their introduction 4–5.

cosmos and time will underpin his innovative framing of time-reckoning within ‘nature’ in *The Reckoning of Time*.⁸

However, Bede also admits that, when it came to using *The Nature of Things* and *On Times* for instruction, brevity was a drawback: ‘When I undertook to present and explain [my two previous books] to some of my brethren, they said that they were much more concise than they would have wished, especially the book on time, which was, it seems, rather more in demand because of the calculation of Easter.’⁹ Bede would not only add more information to *The Reckoning of Time*; he would also demonstrate how its contents could be formally taught.¹⁰ Unlike *On Times*, *The Reckoning of Time* contains numerous demonstrations of the actual strategies Bede used to instruct. In this respect, Bede was building upon a new format of writing about time-reckoning pioneered by the Irish: the *computus* textbook. However, he struck out on his own by yoking his pedagogy to the visual layout of the Roman calendar and of the Paschal table. He also innovated by incorporating a considerable amount of astronomical and cosmological learning into his exposition – more, indeed, than ‘the calculation of Easter’ strictly required. To put it another way, *The Reckoning of Time* broadened the *computus* textbook into a scientific encyclopedia.¹¹

But was Bede entirely transparent when he claimed that his motivation came from students who were demanding more detailed instruction? Certainly, the calculation of Easter was a centuries-old problem and devising a sustainable way to predict it for years to come was still in the process of being resolved in 725. The solution which Bede espoused was the Alexandrian nineteen-year luni-solar cycle, as adapted for Western use by Dionysius Exiguus in 532. By the time Bede composed *The Reckoning*

8 Discussed below, pp. 68–80.

9 Ed. Jones 263.3–7.

10 On Bede as an educator, see Calvin B. Kendall, ‘Bede and Education’, in *The Cambridge Companion to Bede*, ed. Scott DeGregorio (Cambridge: Cambridge University Press, 2010), 99–112. Bede composed other didactic works at the beginning of his career, notably the treatises on orthography, poetic metre, and rhetorical figures. Kendall notes, however, that *The Reckoning of Time* was composed well after this initial stage of Bede’s output. It is also very different in scope and tone: see below (pp. 56–7, 65–80).

11 C. Phillip E. Nothaft, *Dating the Passion: The Life of Jesus and the Emergence of Scientific Chronology (200–1600)* (Leiden: Brill, 2012), 33. On Bede’s debt to Irish textbooks see below pp. 53–64; on his attention to the calendar and Paschal table, see pp. 65–8; on the surplus of astronomy, see pp. 68–75.

of Time, this solution had more or less achieved acceptance in the lands ruled by the English, as well as in Scotland and Ireland, though not yet amongst the British. Nonetheless, Bede's picture in the *Ecclesiastical History* of the total triumph of Dionysius' system at the Synod of Whitby in 664 is certainly more aspirational than historical. Bede himself may have harboured concerns that computistical ignorance, even in his own monastery, was hindering that final victory, notably by reinforcing engrained loyalties to the earlier system devised by Victorius of Aquitaine.¹² But his response contributed to the growing trend towards teaching clerics how Dionysian computation functioned. Old problems, in short, were being reframed as new pedagogy, conveyed through an innovative analytic and discursive literary medium.

Medieval people used the term *computus* both to denote the domain of knowledge encompassed by these treatises, and to designate the treatises themselves. *Computus* broadly connoted computation or accounting, but particularly from the Carolingian period onward, it referred to the body of data, techniques, and precepts required to maintain the Christian calendar, especially with respect to determining Easter and its dependent moveable feasts.¹³ The scholarship on medieval *computus* understandably stresses

12 James T. Palmer, 'The Ends and Futures of Bede's *De temporum ratione*', in *Bede and the Future*, ed. Peter Darby and Faith Wallis (Farnham: Ashgate, 2014), 145–6.

13 The word *computus*, whatever meaning is assigned to it, is post-classical; classical Latin prefers *computatio*. The *Oxford Latin Dictionary* defines *computare* as primarily a mathematical or counting term, though it also has an extended or metaphorical sense of 'to work out (a problem etc.)', which links it to some of the possible connotations of *ratio* (see below, pp. 75–80). The earliest use of *computus* in connection with time seems to have been astrological, e.g. Firmicius Maternus 1.12, which may explain its slow adoption as a term for Christian time-reckoning. For the most part, Bede uses *computus* only in its broader mathematical sense of 'calculation' (e.g. in the title of ch. 1 of *Reckoning of Time, De computo uel loquela digitorum*, though he certainly uses *computare* in the narrower sense of time-reckoning: e.g. in the same chapter, *computando seriem temporum* (ed. Jones 268.6–7). In *Historia ecclesiastica* 2.19 he paraphrases Pope Honorius' letter to the Irish admonishing them not celebrate Easter *contra paschales computos et decretalium synodaliū*, which Colgrave and Mynors translate 'contrary to the paschal tables and [synodical] decrees', but which probably denoted something less concrete, such as 'paschal formulae'. Only on one occasion does he use the term to refer to a work on Easter-reckoning, and that is in ch. 66, *s.a.* 4338, where he notes that Theophilus 'wrote his Paschal *computus*' (*paschalem computum scribit*). However, a volume containing calendar tables, texts, and rules is referred to as a *computus* in a penitential ascribed to Bede's younger contemporary Egbert, archbishop of York: *Councils and Ecclesiastical Documents Relating to Great Britain and Ireland*, ed. W. Stubbs and A.W. Haddan (Oxford: Clarendon Press, 1871), 3.417. Ælfric (*Epistola* 2.137,

its practical importance, and its role in the preservation and practice of ‘science’.¹⁴ But Bede also intimates that he understood *computus* to bear profound theological significance, and wanted his readers to as well.

ed. Bernhard Fehr, *Die Hirtenbriefe Aelfrics in altenglischer und lateinischer Fassung*, Bibliothek der angelsächsischen Prosa 9 (Hamburg: Grand, 1914)) echoes Egbert in insisting that priests should have, amongst their *divini libri*, a *computus*. This usage expanded in the Carolingian period, e.g. *Computus hic alphabeto confectus ...* the incipit of the metrical textbook on time-reckoning by Agius de Corvey, ed. Karl Strecker, *Agii versus computistici*, MGH Poetae 4.3 (1923), 937–43. By the twelfth century its specialized meaning was generalized: e.g. the anonymous treatises beginning *Computus est scientia rationis temporum ...* the earliest manuscript of which (Berlin Staatsbibliothek F.307 fols 8v–10v) dates from the twelfth century, and *Computus est computatio temporum secundum cursum solis et lune ...* in Montpellier 322, fols (3v)–(18v), also from the twelfth century. By the time of Sacrobosco and Grosseteste in the thirteenth century, *computus* meant almost exclusively time-reckoning: cf. the incipit of Sacrobosco’s textbook, *Computus est scientia considerans tempora ex solis et lune motibus ...* The noun *computista* or *compotista* is found as early as 737 on the Continent: see Borst, *Schriften* 1.17. Bede nonetheless prefers *computator* (e.g. *Reckoning of Time*, ch. 38, where he warns that the *peruersus computator* who forgets to intercalate the leap-year day will eventually be horrified to discover that the seasons are out of phase with the calendar: ed. Jones 400.38). For further citations see R.E. Latham, *Dictionary of Medieval Latin from British Sources*, fasc. IIC (London: Oxford University Press for the British Academy, 1981). On the evolution of computistical terminology in general, see Faith Wallis, ‘Chronology and Systems of Dating’, in *Medieval Latin Studies: An Introduction and Bibliographic Guide*, ed. George Rigg and Frank A.C. Mantello (Washington: Catholic University of America Press, 1996), 383.

14 It has taken some time for the scientific dimension of *computus* to achieve recognition by historians due to the fact that *computus* is essentially an application of other sciences, particularly astronomy and mathematics. It does not seek to establish universal principles or explain phenomena, and it boasts no theory. It has no ancestor in the ancient canon of the sciences and no posterity in the modern one. These factors shaped the older view represented by George Sarton, who admitted that *computus* treatises might be ‘interesting from the point of view of the history of civilization and popular education, but they hardly concern the historian of science’: *Introduction to the History of Science* v. 2 (Baltimore, MD: Williams and Wilkins, 1927–1947), 19. Though more sympathetic to the subject, David Lindberg mentions *computus* only once in his *The Beginnings of Western Science* (Chicago, IL: University of Chicago Press, 1992), 159: the context, significantly, is the work of Bede. The new *Cambridge History of Science. Volume 2: Medieval Science*, ed. David C. Lindberg and Michael H. Shank (Cambridge: Cambridge University Press, 2013) embeds discussions of *computus* within the essays by Stephen C. McCluskey (‘Natural Knowledge in the Middle Ages’, 286–301 at 292–8) and Bruce S. Eastwood (‘Early-Medieval Cosmology, Astronomy, and Mathematics’, 302–22 at 311–12). Some recent surveys of the history of mathematics have accorded attention to *computus*, notably Menso Folkerts and Barnabas Hughes, ‘The Latin Mathematics of Medieval Europe’, in *Sourcebook in the Mathematics of Medieval Europe and North Africa*, ed. Victor J. Katz [et al.] (Princeton, NJ: Princeton University Press, 2017),

So [my students] persuaded me to discuss certain matters concerning the stable order, course, and ends of time at greater length. I yielded to their enthusiasm, and after surveying the writings of the venerable Fathers, I wrote a longer book on time. I was enabled to do so by the largesse of Him who, abiding eternal, established the seasons when it pleased Him, and who knows the limits of the ages; indeed, when He sees fit, He himself shall decree an end to the unstable cycles of time (*labentibus temporum curriculis*).¹⁵

When Bede lays out the three axes of time – ‘order’ or ‘arrangement’ (*status*), ‘course’ (*cursus*), and ‘ends’ (*fines*) – he reveals an approach which is at once dynamic and profoundly spiritual. Time can assume a conceptually stable order when it is organized into patterns; one such pattern was mandated by God himself at creation – namely the seven-day week – and another – the rules governing the timing of Passover by the season and the Moon – is laid out in the book of Exodus. But the divine order of time is also a historical *cursus* from Creation through the present to the future. Christians understood that time had an appointed *telos* – an end, which was also its goal or consummation. Time will reach this end when Christ returns to earth to judge the living and the dead, and to usher in a new and everlasting Creation. To put it another way, Bede sees time as encompassing calendars (*status*), history (*cursus*), and eschatology (*fines*). Hence, at the close of *The Reckoning of Time*, at the climax of his chapter on the age to come, Bede proclaims that his ‘little book concerning the fleeting and wave-tossed course of time’ had attained (in both senses of the term) ‘a fitting end (*finem*) in eternal stability and stable eternity’.¹⁶

History and eschatology also come together at the close of Bede’s

which includes a section on *computus* by Immo Warntjes (29–36); as well as Wolfgang Hein, *Die Mathematik im Mittelalter* (Darmstadt: Wissenschaftliche Buchgesellschaft, 2010), 60. The numerous publications of C. Phillip E. Nothhaft take it for granted that *computus* is science, and played a highly significant role in the evolution of European science. Studies specifically of Bede and science stress not only the power of *computus* to attract a wide range of scientific information but the rational and critical mental processes it deployed: see Faith Wallis, ‘Bede and “Science”’, in *The Cambridge Companion to Bede*, ed. Scott DeGregorio (Cambridge: Cambridge University Press, 2010), 113–25, and literature cited therein. His writings on *computus* are explained as ‘science’ in a nuanced fashion by Michelle P. Brown, *Bede and the Theory of Everything* (London: Reaktion, 2023), 87–100.

¹⁵ Ed. Jones 263.6–12.

¹⁶ See below p. 393. See Commentary on Preface pp. 395–7. Why Bede used the plural *fines* to denote the eschatological dimension of time-reckoning and the singular *finis* to signify the end (in the sense of goal) of time is neither evident nor consistent. Rosalind Love has suggested to me that *fines* may indicate that time has ‘limits, ultimate boundaries’ both

preface to *The Reckoning of Time*, but in a manner less exultant and more controversial:

Lest anyone be shocked that in this work I have preferred to follow the Hebrew Truth [*i.e.* the Vulgate translation of the Bible] rather than the version <of the Old Testament> of the Seventy Translators as to the sequence of the unfolding ages <of the world>, I have introduced <the version of the Seventy> in every instance where there seemed to be a discrepancy, so that the reader, whoever he might be, could see both <versions> at the same time and select whichever he thinks preferable to follow For I do not reprove the old chronographers who sometimes followed the translation of the Seventy and sometimes rejected it, as their fancy took them,¹⁷ . . . but I prefer to all of these the integral purity of the Hebrew Truth, which the foremost men of learning – Jerome in his book *On Hebrew Questions*, Augustine in his book *On the City of God*, the chronographer Eusebius himself in the third book of his *Ecclesiastical History*, . . . agree contains a shorter span of time than is commonly conveyed in the edition of the Seventy. Even those who laud the Seventy to the skies with great and divine praises do not doubt that this <shorter span> should be followed. Should anyone examine what these men have written, I am sure that he will immediately cease to criticize our efforts, provided he does not regard them with envious eyes, which God forbid.¹⁸

Bede is alluding here to the *cursum* of historical time which he laid out in chs 17–22 of *On Times*, and which he would expand into the great chronicle in ch. 66 of *The Reckoning of Time*. But the defensive tone of this passage requires explanation, for it shows how serious and contentious issues about the calculation of time could be.¹⁹

Bede's chronicle in *On Times* is organized according to Augustine's schema of six World Ages. The first five ages span the period from Creation to the Incarnation of Christ; the sixth age, which the Incarnation inaugurated, extends to the End Times. The accepted chronology of the Third through to the Fifth Ages (Abraham to David, David to the Babylonian Captivity, Babylonian Captivity to the Incarnation) was the one laid down in the second part of Eusebius's *Chronological Canons* (*Kronikoi kanones*), which Jerome translated into Latin as the *Chronicle*. Eusebius began his chronicle with Abraham and accepted the chronology

in Creation and in the Eschaton. The course of time itself, though, runs in only one direction towards a single 'end' which is also its 'goal' (personal communication).

17 Bede is referring to Eusebius; cf. *Letter to Plegwine* 6 (Appendix 3.1).

18 Ed. Jones 264.13–264.37 (with gaps).

19 A more detailed discussion is provided in the Commentary on ch. 66, below.

of the Septuagint. However, the ages and generations of the patriarchs from Adam to Abraham in the Greek Septuagint translation of Genesis add up to a total which is considerably longer than the corresponding data in the Hebrew text. It was this Hebrew text which Jerome used as the basis of his Vulgate Latin translation of the Bible. But in the *Chronicle*, Eusebius (and Jerome) preferred the Septuagint record.²⁰ This Septuagint chronology placed the birth of Christ in *annus mundi* 5199. By following the Vulgate chronology for the pre-Abrahamic patriarchs in *On Times*, Bede revised this date to *annus mundi* 3952.

The publication of *On Times* ignited a storm of controversy in Bede's immediate milieu. A venerable tradition that the ages of the world mirrored the six days of creation seemed to find confirmation in the Bible's statement that with God 'a thousand years is as a day' (Psalm 90:4/89:4; 2 Peter 3:8).²¹ First articulated in the second century Letter of Barnabas, and elevated to a chronological principle by Julius Africanus (d. ca. 250), this notion translated into the expectation that each age was 1000 years long. Hence Christ's birth must have taken place at the beginning of the sixth millennium after Creation, in AM 5000 (or thereabouts). Eusebius–Jerome's date of *annus mundi* 5199 was close enough to satisfy those who held this view; it was near enough to 5000, and less ominous than Julius Africanus' AM 5500.²² But Bede's new date of 3952 made it clear that he was detaching the World Ages from millennia and yoking them to the data of history, not a mathematical definition. The consequence was that

20 However, in his *Chronographia* – which Jerome did not translate – and in the preface to the *Canons* (which Jerome severely reduced) Eusebius discussed the length of the period from Adam to Abraham, and acknowledged the discrepancies. For discussion see Anthony Grafton and Megan Williams, *Christianity and the Transformation of the Book. Origen, Eusebius, and the Library of Caesarea* (Cambridge, MA: Belknap Press of Harvard University Press, 2006), 156–9.

21 See Commentary on ch. 66, pp. 519–21.

22 On Africanus and his influence see below, pp. 16–17, and James Palmer, *The Apocalypse in the Early Middle Ages* (Cambridge: Cambridge University Press, 2014), 43, and Alden A. Mosshammer, *The Easter Computus and the Origins of the Christian Era* (Oxford: Oxford University Press, 2008), 387–421. Africanus' writings have not survived intact but are reflected in the *Cologne Prologue*, which once introduced a *Supputatio Romana* type Paschal table (ed. Krusch, *Studien I* 227–35). The *Prologue* consists of a brief chronicle to AD 299, an exposition of the astronomical and chronological criteria for the reckoning of Easter, and a discussion of the structure of the eighty-four-year cycle. It was possibly available to Bede: see *Letter to Plegwine*, Appendix 3a, p. 590 n. 36. Bede knew something of Africanus's views through Jerome: see *Reckoning of Time* ch. 9 (pp. 169–70 and n. 171).

Bede was accused of heresy by some unnamed clerics before his diocesan bishop, Wilfrid, on the grounds that he implied that the Incarnation did not inaugurate the Sixth Age. The charge was not trivial: only a few decades earlier in Spain, Julian of Toledo had addressed his *De comprobatione sextae aetatis* against Jews who pointed to the discrepancy between the Septuagint and Hebrew chronologies to argue that Christ could not be the Messiah, as he had been born too early.²³ While there is no trace of this work in early medieval Britain, we should not accept too readily Bede's description of the heresy charge in his *Letter to Plegwine* as the drunken ravings of ignorant men. It was serious.²⁴

The *Letter to Plegwine* was composed in great haste and crackles with Bede's outrage and defensive scorn.²⁵ But it is important to note that Bede shifted the topic under consideration away from that which his accusers first brought forward. They charged him with not dating the Incarnation within the Sixth Age. Bede, however, concentrated on demolishing the notion that *aetates* had fixed lengths by pointing to Augustine's historicist definition of the World Ages.²⁶ Bede then defends the priority of the

23 *De comprobatione sextae aetatis*, ed. Jocelyn Hillgarth, Bernhard Bischoff, and Wilhelm Levison, CCSL 115 (Turnhout: Brepols, 1976). Julian argued that the Six Ages were not determined by a count of years, but by a number of generations: Palmer, *The Apocalypse* 90–1.

24 Translated in Appendix 3a.

25 On the 'Plegwine episode' see Peter Darby, *Bede and the End of Time* (Farnham: Ashgate, 2012), 35–57, 'Bede's Time-Shift of 703 in Context', in *Abendländische Apokalyptik. Kompendium zur Genealogie der Endzeit*, ed. V. Wieser, C. Zolles, C. Feik, M. Zolles, and L. Schlöndorff (Berlin: Oldenbourg, 2013), 619–40, and 'Heresy and Authority in Bede's *Letter to Plegwine*', in *Cities, Saints, and Communities in Early Medieval Europe: Essays in Honour of Alan Thacker*, ed. Scott DeGregorio and Paul Kershaw (Turnhout: Brepols, 2020), 145–67; Palmer, *The Apocalypse* 95–105; Anna-Dorothee von den Brinken, 'Jahrtausendrechnung, christliche Ära und Eschatologie bei Beda Venerabilis', *Akademie Gemeinnütziger Wissenschaften zu Erfurt. Sitzungsberichte der Geisteswissenschaftlichen Klasse*, 5 (2006): 11–26; Faith Wallis, 'Why did Bede Write a Commentary on Revelation?' in *Bede and the Future*, ed. Peter Darby and Faith Wallis (Farnham: Ashgate, 2014), 26–32; Celia Chazelle, 'Debating the End Times with Bede', *Irish Theological Quarterly*, 80.3 (2015): 212–32; and Paul Hilliard, 'The Venerable Bede as Scholar, Gentile and Preacher', in *Ego Trouble: Authors and their Identities in the Early Middle Ages*, ed. Richard Corradini (Vienna: Österreichische Akademie der Wissenschaften, 2010), esp. 103–5. For the impact of the episode on Bede's commentaries on Acts, on the first Epistle of John, and ultimately on the Gospel of Luke, see Calvin B. Kendall and Faith Wallis, *Bede: Commentary on the Gospel of Luke* (Liverpool: Liverpool University Press, 2024), Introduction 3–10.

26 For further discussion, see Commentary on ch. 66 below.

Hebrew text of the Old Testament over the Septuagint and, as a final *coup*, accuses his accusers of heresy. If the Sixth Age were to last 1000 years, then anyone could easily calculate the time of the Second Coming and the Last Judgement. Yet Christ himself declared that no one could know the time of the end, not even himself (Matthew 24:36; Mark 13:32; Acts 1:7).

However, in launching this counter-accusation, Bede laid bare some significant dangers lurking within Christian time-reckoning. If one can use the patterns of time to predict the dates of Easter far into the future, why not use analogous patterns to predict the Second Coming and the end of the world? The prediction of future Easters rested on the power of symbolically significant numbers, notably the seven-day week; why should the number of days in a week not govern the calculation of the World Ages? Bede himself was deeply enthralled by number symbolism and it played a significant role in his exegesis; so were the Irish textbooks of *computus* that were his models and sources. But, to prevent *computus* from contaminating eschatology, he had to find an alternative framework for time-reckoning. Hence Bede made a deliberate decision to ground his computistical teaching not in numbers but in nature – particularly the nature of the heavens, or astronomy.²⁷ At the same time, he also committed himself to demolishing the major rival to Dionysius Exiguus' Paschal reckoning, namely the system of Victorius of Aquitaine (*fl.* 457). Victorius' system was widely accepted in Ireland and England, as well as in Gaul from the early seventh century, and its popularity persisted in Bede's day. Bede objects to the way in which Victorius calculated the date of Easter and attacks him openly in *The Reckoning of Time*, notably in ch. 51. But Victorius' Paschal tables conveyed a threat relevant to the Plegwine controversy. The years in these tables were numbered from the alleged year of Christ's Passion, and Victorius' preface synchronized this era with the Eusebius–Jerome *annus mundi*. In sum, Victorius' computistical system was the vehicle for what was (in Bede's eyes) both an un-biblical chronology and one which tacitly underwrote the notion of six 1000-year World Ages, hence justifying speculation about the timing of the approaching end. This concern with the persistent influence of Victorius in his milieu made it urgent for Bede to write an instructional survey of *computus* that proved that only the Dionysian system was fully orthodox. There were, then, many reasons why he might feel that his fellow monks needed a more expansive treatment of the subject.

27 This is discussed at length below, pp. 85–8.

Standing back to examine the preface as a whole, we can observe how Bede has laid out the dominant themes of *The Reckoning of Time*. The old problem of establishing a reliable and orthodox system for determining Easter was on the verge of becoming a teachable ‘subject’ for monks and clergy. Argumentative tracts and duelling tables were giving way to systematic expositions of principles and practices. But *The Reckoning of Time* retains a strong polemical flavour, particularly when it comes to Victorius of Aquitaine and to the issue of future time. Secondly, Bede’s intention to frame time-reckoning within nature and, notably, astronomy would result in leavening the new pedagogy with a considerable infusion of ancient scientific learning. Finally, his concern to protect eschatology from the temptation to calculate the future drove Bede to restate and defend his new chronology of the World Ages, and to detach it from prognostication in the most explicit manner possible.

This Introduction will address each of these themes in turn: the nature of the *computus* problem; the evolution of a *computus* pedagogy; Bede’s reorientation of *computus* toward astronomy; and the purification of eschatology.

2. COMPUTUS AS A PROBLEM-SOLVING INSTRUMENT: FROM THE PATRISTIC PERIOD TO THE TIME OF BEDE

The Reckoning of Time was composed at an important transitional point when the calendar debates of Late Antiquity were undergoing metamorphosis into the medieval *computus*. One important feature of this transformation was that *computus* always retained its identity as an instrument for solving a complicated problem: how to find the date of Easter. Solving this problem – whether in debate or in teaching – involved elaborate co-ordination of lunar and solar data, but it also demanded interpreting biblical texts. Finally, by its very nature it drew into its orbit a wide array of learning, from grammar and history to astronomy and mathematics.²⁸

28 What follows is not intended to be a detailed history of *computus* and the debates about Easter, but a summary of the most important issues, events, and individual writers reflected in *The Reckoning of Time*. Scholarly literature covering the period to 2014 is listed in Faith Wallis, ‘Calendars and Time (Christian)’, *Oxford Bibliographies in Medieval Studies*, available by subscription online at <http://www.oxfordbibliographies.com>. For an accessible overview see Immo Warntjes, ‘The Mechanics of Lunar Calendars and the Modes of Calculating Easter AD 400–1100: Contexts and Perspectives’, in *La conoscenza scientifica*

This orientation towards solving a problem makes medieval *computus* distinctive and defines its intellectual and cultural importance. It marks an important difference between *computus* and the sciences of classical antiquity, whose value largely rests on metaphysical and theoretical criteria. For example, Boethius' mathematics was a mental and spiritual propaedeutic to the abstract reasoning required of philosophy, a way of acclimating oneself to the non-material world of ideas. *Computus*, by contrast, used mathematics in an instrumental way. It was also an 'experimental' activity, in that it involved testing and critiquing different solutions. The lack of authoritative solutions to the problems of early medieval *computus*, and hence the need to forge arguments based on reasoning and mathematics, are singled out by Immo Warntjes as a significant contribution to medieval science.²⁹ Brigitte Englisch carries the argument even further, claiming that *computus* marked the liberation of science from the restrictive metaphysical categories of antiquity. It was novel in that it incorporated the older quadrivial sciences, but harnessed them to the need to resolve doubts, refute criticism, and engineer a sustainable time-reckoning system.³⁰ Certainly the history of *computus* after the eleventh century bears eloquent witness to its profound importance for the history of science.³¹

The Paschal *computus* problem comprised two sub-problems: what were the correct criteria for Easter Sunday? And what kind of cyclical arrangement would most reliably produce legitimate dates for Easter into the future? Historically, these two sub-problems are inextricable: for example, the first Western entry into the lists, the table ascribed to

nell'alto medioevo (Spoleto: Fondazione Centro Italiano di Studi sull'Alto Medioevo, 2020), 273–307.

29 'Seventh-century Ireland: the Cradle of Medieval Science?' in *Music and the Stars: Mathematics in Medieval Ireland*, ed. Mary Kelly and Charles Doherty (Dublin: Four Courts Press for the Royal Society of Antiquaries of Ireland, 2013), 44–72, especially 55–7.

30 Brigitte Englisch, *Die Artes liberales im frühen Mittelalter (5.–9. Jh.): Das Quadrivium und der Komputus als Indikatoren für Kontinuität und Erneuerung der exacten Wissenschaften zwischen Antike und Mittelalter*, Sudhoffs Archiv, Beiheft 33 (Stuttgart: Franz Steiner, 1994): section 2.1, esp. p. 23; 'Realitätsorientierte Wissenschaft oder praxisferne Traditionswissen? Inhalte und Probleme mittelalterlicher Wissenschaftsvorstellungen am Beispiel von *De temporum ratione* des Beda Venerabilis', in *Dilettanten und Wissenschaft. Zur Geschichte und Aktualität eines wechselvollen Verhältnisses*, ed. Elisabeth Strauss, Philosophie und Repräsentation/Philosophy and Representation 4 (Amsterdam: Rodopi, 1996), esp. 19–21.

31 For a magisterial demonstration see C. Philipp E. Nothaft, *Scandalous Error: Calendar Reform and Calendrical Astronomy in Medieval Europe* (Oxford: Oxford University Press, 2018).

Hippolytus of Rome (AD 222), was criticized both for the criteria it used and for the fact that it ceased to produce accurate data after only eight years. However, in order to grasp the nature of each sub-problem and to follow the evolving debates it is necessary to deal with each separately, even if it entails returning to the beginning of the story (at least to some degree) when we come to discuss cyclical tables.

2.1 The problem of the criteria for Easter

Easter commemorates Christ's saving Passion and Resurrection. Nonetheless, Christians understood these events as 'timeless' in two senses: they were God's providential plan from the beginning; and they fundamentally changed human life for all time and eternity. But the Passion and Resurrection were also events that occurred at a unique historic moment; they were not a myth about a repeatedly dying and reborn god. Hence celebrating the annual feast of Easter proclaimed a cosmic and theological truth, but one inseparable from specific historical events.

According to the Gospels, these historic events took place during the Jewish feast of Passover. Following the divine injunctions recorded in Exodus 12, Passover was to be celebrated in 'the first month' of the Hebrew lunar calendar, the month of Nisan. At sunset on the fourteenth day of this lunar month or lunation, when the Moon was full, the Passover lambs were to be slaughtered and eaten. For the seven days that followed, the Jews were to eat unleavened bread.

The 'first month' is explicitly linked to the season of spring (Deuteronomy 16:1). The seasons are determined not by the Moon but by the Sun – more precisely, by the Earth's annual rotation around the Sun or, in pre-Copernican terms, by the Sun's annual journey around the ecliptic. But, in the Hebrew Scriptures, 'spring' was an agricultural event, not a precisely timed astronomical phenomenon. Within the Jewish communities of Antiquity, practices for determining Passover were diverse and fluid.³² In the first centuries of the Church many Christians, particularly in Syria and Asia Minor, were content to celebrate Easter at the same time as their Jewish neighbours celebrated Passover. These Christians were later labelled with the derogatory epithet of 'Quartodecimans' – that is, people who celebrated Easter on the *fourteenth* day of Nisan, along with the Jews, and who by

32 Sacha Stern, *Calendar and Community: A History of the Jewish Calendar Second Century BCE–Tenth Century CE* (Oxford: Oxford University Press, 2001).

implication relied on the Jews to determine when Easter would take place. Other Christian churches, notably in Egypt and in the western part of the Empire, while still timing the Easter season to coincide with Passover, decided that Easter itself should always be observed on a Sunday because the Gospels state that this was the weekday of Christ's Resurrection. To complicate matters, some communities elected to ignore both Passover and Sunday and to celebrate Easter as an anniversary on a fixed calendar date. Though there is no biblical evidence for either 25 March or 27 March as the anniversary of the first Easter, these were to become the traditional options.³³

In 325 the emperor Constantine convoked the Council of Nicaea to resolve disagreements over doctrine and practice within the Christian church. One item on the Council's agenda was the divergent times at which Easter was celebrated throughout the emperor's domains. Eusebius of Caesarea's biography of Constantine preserves a long letter from the emperor to the Syrian and Palestinian churches who did not attend the Council and who, not coincidentally, were located in areas where Quartodecimanism was entrenched. Constantine stated that the Council had 'unanimously decided that it would be best for everyone everywhere to celebrate [Easter] on the same day', but never 'in accordance with the practice of the Jews'. There is no need to consult the Jews, since 'a decent system exists' among virtually all the churches for determining the date of the Christian Easter. Finally, the emperor added the cryptic injunction that '[w]e should never allow the Pascha to be kept a second time in the same year'.³⁴

Constantine's letter did not spell out precisely what avoiding the practice of the Jews meant (should Easter never coincide with Passover?)

33 Mosshammer, *Easter Computus* 47–9; Jörg Rüpke, *The Roman Calendar from Numa to Constantine: Time, History, and the Fasti*, trans. David M.B. Richardson (Chichester and Malden, MA: Wiley-Blackwell, 2011), 159–60.

34 Eusebius, *De vita Constantini* [*Life of Constantine*] 3.18–19, ed. I.A. Heikel, *Eusebius Werke* 1 (Leipzig: Hinrichs'sche Buchhandlung, 1902), 85–7, trans. Averil Cameron and Stuart G. Hall (Oxford: Clarendon Press, 1999), 128–9. No decision on the Paschal question appears in the formal decrees of the Council; however, cf. Cassiodorus, *Historia tripartita* 9.38, ed. W. Jacob and R. Hanslik, CSEL 71 (1952), 557–64. For discussion, see Stern, *Calendar and Community* 67–9; Paul Grosjean, 'La date de Pâques et le Concile de Nicée', *Académie royale de Belgique, Bulletin de la classe des sciences*, 5th ser., 48 (1962): 55–66; Kenneth Harrison, *The Framework of Anglo-Saxon History to A.D. 900* (Cambridge: Cambridge University Press, 1975), 30; and Daniel McCarthy, 'The Council of Nicaea and the celebration of the Christian Pasch', in *The Cambridge Companion to the Council of Nicaea*, ed. Richard Kim Young (Cambridge: Cambridge University Press, 2021), 177–201.

Should it not be celebrated on the fourteenth day of Nisan, even if this fell on a Sunday?), since his overriding concern was to prevent Christians from having any relationship with Jews that implied dependence. His breezy assurance that the other churches already had a system in place for determining the date of Easter was quite unfounded, and he provided no details about this allegedly almost universal method. Neither the emperor nor the Council legislated any specific formula.³⁵

2.1.1 What is the ‘first month’?

The solution to the problem of uncoupling the Christian Easter from any perceived dependence on the Jews’ dating of Passover was to define ‘the first month’ in relation to a neutral and objective definition of ‘spring’ that did not require input from the rabbis. Some Jewish scholars had already entertained the idea of an astronomical definition. Philo (d. *ca.* AD 50) in *Life of Moses* 2.222–4 claimed that Moses stipulated that the vernal equinox fall within Nisan; Josephus (d. *ca.* AD 100) equates 14 Nisan with the Sun’s presence in the sign of Aries (*Ant. Jud.* 3.248).³⁶ The Christian chronographer Julius Africanus (d. *ca.* 240) took the debate in a different direction by proposing a historical proof that the equinox was the correct criterion. He held that the creation of the world, the first Passover (the Exodus), and Christ’s Resurrection all occurred on 25 March, the date of the vernal equinox in the Julian calendar, and that, in every instance, this date marked the full Moon. He dated the historic Passion to Olympiad 202.2, the sixteenth year of Tiberius, or (in our terms) AD 31, when 25 March fell on a Sunday.³⁷ In sum, Africanus argued that the vernal equinox was the criterion of Passover not on astronomical grounds but for theological–historical reasons – namely the coincidental calendar dates of Creation, Exodus, and Resurrection. He thus inaugurated what would become a persistent ambition amongst Christians to yoke calendar and chronology into a single, continuous, and internally self-referential system. Bede would embrace this aspiration by encompassing the calendrical ‘order’ of

35 Mosshammer, *Easter Computus* 50–2; see also his *Prologues on Easter of Theophilus of Alexandria and [Cyril]* (Oxford: Oxford University Press, 2017), 13–14. On the possibility that the Council implied that Easter should fall after the vernal equinox see below p. 20 and Mosshammer *op. cit.*

36 Mosshammer, *Easter Computus* 136.

37 The notion that the Creation and the Resurrection both took place on 25 March may be traced back to these speculations. It was certainly a widespread tradition in both east and west: Nothaft, *Dating the Passion* 56–7.

time and its historical ‘course’ within a single exposition of *computus*; but, as indicated above, he resisted the urge to read that relationship in overly literal terms, lest one fall into the trap of determining future events by astronomical or calendrical calculations. Africanus’ writings were both influential and controversial, but the point to be grasped here is that, from an early date, Christians were aware that chronology as well as astronomy could be in play when considering criteria for Easter.³⁸

While some Christians thought the entry of the Sun into the sign of Aries was a suitable astronomical marker, the equinox won more general favour. However, it was not easy to fix the date for the equinox. In any solar calendar claiming an astronomical foundation the spring equinox will in theory arrive on the same date every year. When the reformed Roman calendar was established on solar principles by Julius Caesar in 46 BC, that date was fixed at 25 March. The Julian calendar was based on an estimated length of the solar year of 365¼ days; it accommodated the extra quarter-day by inserting an additional calendar day every four years – the ‘leap year’ day. In antiquity and the Middle Ages, the leap-year day was inserted on 24 February (the 6th Kalends of March). In leap years, the 6th Kalends ‘happened’ twice: hence the term for leap year was *annus bissextus* – a year with two 6th Kalends of March. However, this did not ensure that the astronomical solstice would remain on 25 March. The true length of the tropical solar year is 365.24219 days, which is slightly less than 365¼ days. Consequently, inserting an extra day every four years overcompensated for the shortfall of the three preceding years. Unless some adjustment were made, the date of the astronomical equinox would slowly creep backwards in the calendar. At the time of the Council of Nicaea in 325, the astronomical equinox was considered by experts to fall on the Julian date of 22 or 21 March.³⁹ The Alexandrian Church, whose Paschal

38 The indispensable analysis of this issue is Nothhaft’s *Dating the Passion*, and it is worth repeating his insight that the ‘practice of relying on a single continuous era that can both designate the present year and put it into immediate relation with any past event, is by no means a cultural universal’ (10). Even within the Abrahamic religions, Christianity stands out in ‘the development of a rigorous technical chronology, based on astronomical dating-techniques and textual criticism’ (11). In part this was because Christianity was both a new religion and one with an exceptional commitment to concrete historical facts about its founder.

39 According to Ptolemy (*Almagest* 3.1) Hipparchus observed the equinox on 24 March 146 BCE, and Ptolemy himself did so on 22 March AD 140: Mosshammer, *Easter Computus* 18. Mosshammer thinks that 22 March was the agreed date for the equinox in Alexandria in

computus became generalized in the Greek East after this Council, fixed the equinox on 21 March, though other Churches, especially in the West, clung to the old date of 25 March. As we shall see, Bede pays particularly close attention to dating the equinox, for on it hangs the validity of the Alexandrian type of Easter formula he is promoting.⁴⁰

Regardless of which calendar date was chosen, Christians needed a system for correlating that date to the phases of the Moon, because Passover was celebrated at the full Moon of the 'first month'. Matching lunar months to dates in a solar calendar such as the Julian calendar is challenging. The synodic lunar month or lunation (the period between one new Moon and the next), according to modern calculations, is 29.530589 days long.⁴¹ Hence the solar year of 365.24219 days does not contain a whole number of synodic lunar months. Twelve lunar months is shorter than the tropical solar year by 10.8751, or roughly eleven days. This means that the Moon on any given calendar date will be about eleven days older next year on the same date. Every two or three years, this annual increment of eleven days results in the accumulation of an entire lunar month within the span of the solar year. Such 'embolismic' years have thirteen lunations, but these thirteen lunations still do not fit exactly into the solar year, for they add up to about 384 days.⁴² The excess will have to be added onto the twelve lunations in the following year.

One solution to finding the dates of any day of the lunar month was what was called 'calculation of epacts', and it seems to have been in use in Alexandria by the third century. *Epacta* is the Greek word for 'addition'.⁴³ To project the dates of new Moons into the future, start with a known date

the second and third centuries (141–3). The Julian calendar was used throughout the Empire as an official calendar. Local calendars continued in use in the East, and sometimes the Julian calendar was used with names and lengths of the months varied according to tradition. Cf. Alan E. Samuel, *Greek and Roman Chronology. Calendars and Years in Classical Antiquity*, Handbuch der Altertumswissenschaft I,17 (Munich: Beck, 1972): ch. 6, esp. discussion of *hemerologia* (concordances of the Julian calendar with local calendars), 171–8.

40 See section 3 below, and the Commentary on *The Reckoning of Time* chs 6, 16, 22, 30, 35, and 42; also Appendix 3.3, the *Letter to Wicthed*.

41 M. Chapront-Touze and J. Chapront, 'ELP 2000–85: a Semi-Analytical Lunar Ephemeris Adequate for Historical Times', *Astronomy & Astrophysics*, 190 (1988): 342–52. For the length of the tropical year see Jean Meuss and Denis Savoe, 'The History of the Tropical Year', *Journal of the British Astronomical Association*, 102 (1992): 40–2.

42 Nothaft, *Dating the Passion* 19.

43 The 'epact' marked on Paschal tables (see Appendix 2) specifically represents the age of the Moon on 22 March, and is used in conjunction with other constants (the 'lunar regulars') to calculate the age of the Moon on any calendar date. See *The Reckoning of Time* ch. 20.

(e.g. the new Moon of the present month) and add 11: the Moon on this date one year from now will be 11 days old. Keep adding 11 for successive years, subtracting 30 when the lunar age exceeds 30.⁴⁴ Of course, when working with a Julian calendar, one will also have to factor in the leap year days. Hence using ‘calculation of epacts’ to find the age of the Moon on a future vernal equinox, whether one dates the equinox to 21 March or 25 March, is complicated.

Celebrating Easter only on a Sunday, as was the custom of most Churches by the time of Nicaea, added a third variable to the calculation. The Julian year of 365 days, divided by 7, produces 52 weeks, plus one additional day. This means that if 1 January falls on a Monday this year it will fall on a Tuesday next year and a Wednesday in the following year. However, the steady progress of calendar dates through the week is interrupted in leap years, when an additional day is inserted. So if the present year is a leap year, and 1 January falls on Monday, next year it will fall on Wednesday. The calendar date/weekday cycle plays out over twenty-eight years, which is the product of the seven days of the week and the four years of the leap-year cycle. Knowing where each year in the future falls in this cycle is of critical importance, because the full Moon of Easter could occur on any day of the week; a formula was needed to correlate this date to the next following Sunday.

For all these reasons, the ideal solution to the Easter problem was a luni-solar cycle: that is, a whole number of solar years into which a whole number of lunar months can be divided, with nothing left over, so that the phases of the Moon occur on the same calendar dates after the end of the cyclic period. If the weekday cycle could also be factored in it would make the cycle even more useful. A luni-solar cycle would allow next year’s Easter full Moon to be ascertained well in advance, thus avoiding conflicts ... but only if there were agreement on the date of the equinox, on the range of days within the lunar month on which one could celebrate Easter, on the legitimate relationship of the full Moon to the equinox, and on the range of dates in the Julian calendar which could qualify as Easter Sunday.

2.1.2 The full Moon, the equinox, and the calendar

If the full Moon of Easter can fall on any weekday, but Easter can be celebrated only on Sunday, which seven days within the lunar month can be Easters? The full Moon is on *luna* 14: but can one celebrate then, if it

44 Mosshammer, *Prologues* 3–4.

is a Sunday? Behind this question lie debates about the meaning of Easter itself. For those who celebrated Easter on the fourteenth Moon, Christ was the true Paschal lamb, sacrificed to liberate God's people from the bondage of sin. They leaned on the chronology of the Passion found in John's Gospel, in which the Crucifixion occurred on 14 Nisan (John 13:1, 18:28, 19:21). The Synoptic Gospels, on the other hand, identify the Last Supper as the Passover meal of 14 Nisan (Matthew 26:17; Mark 14:12–16; 22:7–8), and so by implication date the Crucifixion to 15 Nisan. The Gospels all agree that the Resurrection occurred on Sunday, and this was the main impetus for always celebrating Easter on Sunday as the anniversary of the Resurrection and the 'first day' of the new age. But there were disputes about whether to allow Easter on the fourteenth Moon, thus merging Passion and Resurrection into a single saving event, or to take a 'historical' approach by limiting Easter to lunar dates after this. Moreover, the 'historicists' were uncertain whether to celebrate the Johannine anniversary on the sixteenth Moon or wait for the Synoptic anniversary on the seventeenth.⁴⁵

At least from the beginning of the third century, the Roman Church was clear that Easter commemorated the historic Resurrection, and could never be celebrated on the fourteenth Moon. The decision of the Council of Nicaea appeared to ratify this. The Alexandrian Church interpreted Nicaea to mean that if the fourteenth Moon fell on a Sunday Easter should be postponed to the following Sunday – in other words, the lunar limits were 15–21. This meant that Easter could still be the antetype of Passover without ever being celebrated on Passover.⁴⁶ The Romans, however, embraced lunar

45 There are two convenient anthologies of patristic texts on the significance of Easter: Rainero Cantalamessa, *Easter in the Early Church: An Anthology of Jewish and Early Christian Texts*, ed. and trans. James M. Quigley and Joseph T. Leinhard (Collegeville, MI: Liturgical Press, 1993), and August Strobel, *Texte zur Geschichte des frühchristlichen Osterkalenders* (Münster in Westfalen: Aschendorffsche Verlagsbuchhandlung, 1983). For discussion of the early Easter controversies, see August Strobel, *Ursprung und Geschichte des frühchristlichen Osterkalenders*, Texte und Untersuchungen 121 (Berlin: Akademie Verlag, 1977), and Odon Casel, *La Fête de Pâques dans l'église des Pères*, Lex orandi 37 (Paris: Cerf, 1963). The Easter controversy is also summarized concisely by Jones, *BOT* 6–77, though a number of his conclusions have been challenged, notably by Mosshammer, *Easter Computus*. Bartholomew MacCarthy's introduction to vol. 4 of *Annals of Ulster* (Dublin: His Majesty's Stationary Office, 1901) remains useful.

46 This is the line of argumentation followed in the first major Alexandrian *computus* tract, the *Prologue* of Theophilus, on which more below; cf. Jones, *BOT* 19.

limits of 16–22, though they found them increasingly difficult to defend, and in practice allowed celebration on the 15th.⁴⁷

What was the relationship of the fourteenth Moon to the equinox? The earliest known Easter table to take the vernal equinox as the *terminus a quo* for the fourteenth Moon was published by Dionysius, bishop of Alexandria, between 257 and 265.⁴⁸ But Hippolytus of Rome's Paschal table (AD 222) had fixed the earliest date of the fourteenth Moon on 18 March, the day the Sun entered the constellation of Aries in the Julian calendar. In other words, the zodiac, not the equinox, was the crucial astronomical marker of spring. Supporters of Hippolytus' table made an effort to justify the zodiacal criterion. This was the aim of a revised version of the Hippolytus table which appeared in 243, incorrectly ascribed to Cyprian of Carthage.⁴⁹ 'Cyprian' argues that the first day of Creation was the spring equinox, which in the old Roman calendar was fixed at 25 March (ch. 4). The Moon was created on the fourth day (i.e. 28 March) at dusk, and it was 'perfect' (i.e. full) (ch. 5). Thus 29 March would have been the fourteenth Moon. At the time of Creation, however, there was no '1 Nisan', because the Moon was created full; hence, in Jones' phrase 'the first month of the lunar year was *virtually* inaugurated on [the evening of] March 16'.⁵⁰ The first *real* 1 Nisan occurred in the following year, *anno mundi* 2. Since the Moons fall eleven days earlier with respect to the solar calendar with each passing year, this first historic 1 Nisan began on 5 March or, more precisely, on the evening of 4 March, and the full Moon fell on 18 March, the date of the Sun's entry into Aries. It may have been in response to 'Cyprian' and

47 Paul Grosjean argues that the objective of Nicaea was to replace the Jewish Nisan with a Christian one, and that Rome's peculiarities were of little interest to the Fathers. He disagrees with Venance Grumel ('Le problème de la date paschale aux IIIe et IVe siècles', *Revue des études byzantines*, 18 (1960): 161–78 at 169) that Rome fell into line after Nicaea, precisely on the grounds that Nicaea enunciated no specific criteria: 'La date de Pâques et le Concile de Nicée'.

48 See Grumel, 'Le problème de la date paschale'; Marcel Richard, 'Le comput pascal par octaétéris', *Museon*, 87 (1974): 311; MacCarthy, *Annals of Ulster* 4.xliv. Dionysius' cycle and criteria are mentioned in Eusebius, *Historia ecclesiastica* 7.20.

49 Ed. W. Hartel, *S. Thasci Caecilii Cypriani Opera*, CSEL 3.3 (Vienna: Tempsky, 1871), 248–71. English translation by George Ogg, *The Pseudo-Cyprianic De pascha comptus* (London: S.P.C.K., 1955). On this text, see Alden A. Mosshammer, 'Towards a New Edition of the Computus of AD 243', in *Late Antique Calendrical Thought and its Reception in the Early Middle Ages*, ed. Immo Warntjes and Dáibhí Ó Cróinín (Turnhout: Brepols, 2017), 43–70; Nothaft, *Dating the Passion* 52–3.

50 Jones, *BOT* 12.

the Romans that Dionysius of Alexandria sent out a new Easter table, accompanied by a clear statement, in the form of a Paschal letter, that it was not licit to celebrate before the equinox.⁵¹ For the Alexandrians, the equinox was the early limit of the fourteenth Moon of the ‘first month’, not just of Easter. They were already familiar with an Easter table devised by Bishop Anatolius of Laodicea (ca. 270) which incorporated this principle.⁵²

Over the following century, Rome and Alexandria continued to spar over the date of Easter. In principle, their systems diverged greatly; in practice, both sides made pragmatic compromises.⁵³ For Alexandria, the equinox was fixed at 21 March, and was the *terminus a quo* for the Paschal full Moon. Their lunar limits for Easter Sunday were 15–21, and therefore their Julian calendar limits were 22 March–25 April. The latter date was one full lunar month after the former, plus seven days to accommodate the following Sunday, for if the fourteenth Moon fell on 21 March that whole lunation had to be disregarded and only the following lunation would count as the first one of spring. The Romans, on the other hand, held that 25 March was the equinox and that it was the *terminus a quo* for Easter itself. Their lunar limits were 16–22, but their upper calendar limit was 21 April. This was insufficient to accommodate the necessary second lunation, but Rome clung to this date, for the popes wished to avoid any coincidence of Holy Week with the boisterous celebrations of the feast of Rome’s foundation on 21 April.⁵⁴ Sometime in the middle of the fourth century Rome quietly abandoned the 25 March equinox and moved its lower calendar limit accordingly,⁵⁵ but it refused to compromise on the upper calendar limit,

51 Those who hesitated to adopt the ‘traditional’ equinox-based criterion were held to keep Easter ‘with the Jews’ because they followed contemporary Jewish practice in determining the date of Nisan. These ‘Judaizers’ are not to be confused with true Quartodecimans, for they celebrated Easter on Sunday only: Grumel, ‘Le problème’ 168, 172. On Paschal letters, see ‘Paschal Letters’, in Sir William Smith and Samuel Cheetham, eds, *A Dictionary of Christian Antiquities* (London: John Mullary, 1908), 1462–4.

52 Eusebius, *Ecclesiastical History* 7.32 quotes Anatolius as stating that Jewish law obliges observation of the equinox (Mosshammer, *Easter Computus* 69). This is cited by Dionysius Exiguus in his letter to Petronius (ed. Krusch, *Studien II*, 65.13–17; see *Letter to Wicthed* 10, Appendix 3c, p. 602).

53 See Mosshammer, *Easter Computus* 166–70, which recounts in detail the back-and-forth between Bishop Athanasius of Alexandria (r. 328–373) and Rome.

54 Jones, *BOT* 28; cf. Prosper, *Chronicon* 1352, ed. Maria Becker and Jan-Markus Kotter, *Prosper Tiro: Chronik* (Paderborn: Ferdinand Schöningh, 2016), 124.9–11.

55 Cf. André Van de Vyver, ‘L’évolution du comput alexandrin et romain du IIIe au Ve siècle’, *Revue d’histoire ecclésiastique*, 52 (1952): 5–25.

or the lunar limits of 16–22. However, the records of actual Easter dates in fourth- and fifth-century Rome and Alexandria show that the Romans almost always celebrated on the Alexandrian dates.⁵⁶

Securing authoritative recognition of its primacy in determining Easter seems to have been the motivation behind the 100-year Easter table created by Bishop Theophilus of Alexandria shortly before his death in 395, and dedicated to the Emperor Theodosius. Theophilus was essentially lobbying the emperor officially to endorse Alexandrian reckoning throughout his domains.⁵⁷ The explanatory material attached to the table laid out the Alexandrian criteria in comprehensive fashion. According to Exodus, Passover must be in the ‘month of first fruits’, which means spring, which means after the equinox. Therefore the fourteenth day of Nisan – the Easter full moon – must never fall before 21 March. Should 14 Nisan coincide with a Sunday, Easter must be postponed until the following week. Finally, Easter must sometimes be celebrated in the ‘second month’, by which Theophilus means the second *solar calendar month* after the equinox (i.e. after 22 April): in short, he is targeting the Roman calendar limits here.⁵⁸

56 These records are (a) an Alexandrian list of Easters from 328 to 373, surviving only in a Syriac version, ed. William Cureton, *The Festal Letters of Athanasius* (London: Society for the Publication of Oriental Texts, 1848) and (b) the list of Roman consuls with corresponding dates for Easter in the *Chronograph of 354*. The *Chronograph* contains two lists of Easter dates: one covering AD 312–354 records the actual dates of Easter; the second, extending to 411, appears to be a list of future dates, calculated according to the Roman system. The *Chronograph* is edited by Theodore Mommsen, MGH AA 9: 13–148. For discussion, see Henri Stern, *Le Calendrier de 354. Étude sur son texte et ses illustrations*, Institut français d’archéologie de Beyrouth, Bibliothèque archéologique et historique 60 (Paris: Imprimerie nationale, 1953), and Michele Renee Salzman, *On Roman Time. The Codex-Calendar of 354 and the Rhythms of Urban Life in Late Antiquity*, The Transformation of the Classical Heritage 17 (Berkeley: University of California Press, 1990), 39–41. See also Jones, *BOT* 25–6, Mossman, *Easter Computus* 213–17.

57 Jones, *BOT* 29–30. Theophilus’ unprecedented act of sending, unsolicited, a Paschal table of his own devising to the emperor can also be explained as resistance to the central government’s demotion of the ecclesiastical importance of Alexandria: Max Lejbowitz, ‘Les Pâques baptismales d’Augustin d’Hippone, une étape contournée dans l’unification des pratiques computistes latines’, in *Computus and its Cultural Context in the Latin West, AD 300–1200: Proceedings of the 1st International Conference on the Science of Computus in Ireland and Europe, Galway, 14–16 July, 2006*, ed. Immo Warntjes and Dáibhí Ó Cróinín. *Studia traditionis theologiae* 5 (Turnhout: Brepols, 2010), 13–14.

58 Theophilus’ letter and prologue have been edited and translated from the (incomplete) Greek text and the three versions of the Latin translation by Mosshammer, *Prologues* 46–79; a detailed commentary is provided on pp. 81–107. This replaces the older edition in Krusch, *Studien I* 220–6, which contained lacunae that had to be supplied from older editions,

Though Theodosius never legislated on the Alexandrian criteria, the letter and table of Theophilus prompt us to turn our attention to the issue of Paschal tables. From this point forward, the debates circled around designing a table of valid Easter dates for many years into the future. Such tables proved their reliability not only by defending their lunar or calendar limits but by the cogency of the mathematics and astronomy on which they were based.

2.2 The problem of the luni-solar cycle

Luni-solar cycles aim to correlate the lunar month or lunation to the solar year so that each day of the lunation can be assigned a corresponding date in a solar calendar. The goal is to arrive at a number of whole solar years into which a whole number of lunar months can be inserted, so that the correspondence of lunar days and solar dates will repeat after the end of the cyclic period.⁵⁹ There were two issues to be resolved. The first is that neither the solar year nor the lunar month cover a whole number of days. The length of both the month and the year must be artificially adjusted, because calendars cannot handle units of time smaller than a day. The leap-year

e.g. those of Denis Petau, *De doctrina temporum* (Paris: Sebastien Cramoisy, 1727), for the Greek, and Gilles Bouchier, *De doctrina temporum* (Antwerp: ex officina Plantiniana Balthasaris Moreti, 1633), for the Latin.

59 For useful summaries and discussions of the astronomical basis of cycles see Kristian Peter Moesgaard, 'Basic Units in Chronology and Chronometry', in *The Gregorian Reform of the Calendar: Proceedings of the Vatican Conference to Commemorate its 400th Anniversary, 1582–1982*, ed. G.V. Coyne, M.A. Hoskin, and O. Pedersen (Vatican City: Pontificia Academia Scientiarum; Specola Vaticana: 1983), 3–13; Max Lejbowitz, 'Des tables pascales aux tables astronomiques et retour. Formation et réception du comput patristique', *Methodos*, 6 (2006): 1–66; Venance Grumel, *La Chronologie, Traité des études byzantines* 1 (Paris: Presses universitaires de France, 1968), esp. ch. 3 for the history of the nineteen-year cycle, and ch. 9 for the solar twenty-eight-year cycle and the 532-year Paschal cycle; Kenneth Harrison, 'Luni-solar Cycles: Their Accuracy and Some Types of Usage', in *Saints, Scholars and Heroes: Studies in Medieval Culture in Honor of Charles W. Jones, Volume 2: Carolingian studies*, ed. Margot King and Wesley Stevens, 2 v. (Collegeville, MI: Hill Monastic Manuscript Library, 1979), 2.65–78; O. Schissel and Maria Ellend, 'Berechnung des Sonnen-, Mond- und Schaltjahrszirkels in der griechisch-christlichen Chronologie', *Byzantinische Zeitschrift*, 22 (1943): 150–7; W.E. van Wijk, *Le nombre d'or. Étude de chronologie technique suivie du texte de la Massa compoti d'Alexandre de Ville-Dieu* (The Hague: Martinus Nijhoff, 1936), Preface, section 1; Jones, *BOT* 11 and 'A Legend of St Pachomius', *Speculum*, 18 (1943): 204–5; Krusch, *Studien II* 14–15; A.N. Zélinisky, 'Le calendrier chrétien avant la réforme grégorienne', *Studi medievali*, ser. 3, 23 (1982): 549.

intercalation more or less took care of the solar year. The synodic lunar month is slightly more than $29\frac{1}{2}$ days long, so the fiction was adopted that calculated lunations would alternate between twenty-nine and thirty days in length. Medieval computists called these ‘full’ and ‘hollow’ lunations.

The second problem is that a perfect luni-solar cycle is not possible. There is no number of solar years within which a whole number of lunar months can be accommodated with nothing left over. Dividing the 365.24219 days of the tropical solar year by 29.53058 (the average length of the lunation) yields a decimal excess of 0.368270228637, an irrational number that cannot be converted to a common fraction. Hence no number of whole lunations can ever be fitted into any whole number of solar years. Approximations, however, are possible. The decimal excess can be expressed fairly closely by the common fractions $\frac{3}{8}$ (.3750), $\frac{4}{11}$ (.3636), $\frac{7}{19}$ (.3684) or $\frac{31}{84}$ (.3690). The options, then, are to intercalate three lunar months of thirty days each over eight years, or four lunar months over eleven years, or seven over nineteen, or thirty-one over eighty-four. These are the bases of the eight-year cycle, or *octaëteris*, the various eighty-four-year cycles, and the nineteen-year cycle. All were used in late antiquity, though the nineteen-year cycle evidently is the most accurate.⁶⁰

The intercalated lunar months were known as embolisms (from the Greek ἐμβόλιον, ‘interlude, insertion’), and a year containing thirteen lunar months was embolismic. But in any given embolismic year, where (in relation to the solar calendar) ought one to insert the extra lunation? This was an important issue, because embolismic lunations were always counted as thirty days long. Consequently they disrupted the regular alternation of ‘full’ (thirty-day) and ‘hollow’ (twenty-nine-day) lunar months. The alternation of full and hollow months was supposed to march in step with the months of the solar calendar. Every lunation ‘belonged’ to the solar month in which it ended: January’s lunation was full, February’s hollow, etc. Therefore the ideal solution would be to make the embolism ‘invisible’ by inserting it in a calendar month whose proper lunation ended on the first or second day of the month. A whole embolismic month of thirty days could then be intercalated, which would end on the first or second day of the next month. This would allow this second month to absorb its own proper lunation, and for the pattern to continue undisturbed. But, even if it

60 Jones, *BOT* 11. The nineteen-year cycle is sometimes regarded as a fusion of the cycles of eight and eleven years, the error of the first being cancelled out by the opposing error of the second. For an alternative explanation see Warntjes, ‘Seventh-century Ireland’ 50.

is invisibly inserted, an embolism can nonetheless throw off the calculation of the fourteenth Moon by a day.

Finally, the nineteen-year cycle ends with one more calculated lunar day than necessary. At some point within the cycle, then, the lunar count has to ‘jump over’ or omit a day to get in phase with reality. This is what medieval computists called the *saltus lunae*, or ‘leap of the Moon’.⁶¹ The eighty-four-year cycles also incorporated *saltus lunae*, though of course they required more than one. Like the embolism, the positioning of the *saltus* was critical, for it would change the calculated age of the Moon by a day.

Optimally, a cycle of Easters would accommodate the cycle of Sunday, but, to do so, the cycle would have to be divisible by twenty-eight. Only two luni-solar cycles offered this feature: the 112-year variant version of Hippolytus of Rome’s *octaëteris*, and the eighty-four-year cycle. This was a major factor in their favour, but in the end it could not compensate for their astronomical inaccuracies.

2.2.1 Eight-year cycles: Hippolytus of Rome, ‘Cyprian’, and Dionysius of Alexandria

In his *Ecclesiastical History* (6.22) Eusebius states that Hippolytus of Rome’s tract on Easter reckoning accompanied a sixteen-year Easter table composed of two eight-year cycles. When multiplied by seven (the number of days in the week), this produced a cycle of 112 years; it is this version of the table that is engraved on the sides of the chair that forms the base of the famous, and controversial, statue of Hippolytus in the Vatican Library.⁶² Hippolytus’ criteria have been discussed above: his Paschal month ran from 18 March to 13 April, with Easter falling between *luna* 16 and *luna* 22, and within the calendar dates 20 March–21 April. These criteria were problematic, but so was Hippolytus’ cycle: the eight-year cycle is the least accurate form of luni-solar cycle, and the error in the age of the Moon amounted to thirty-six hours at the end of the cycle.⁶³

61 On the *saltus lunae* see Mosshammer, *Easter Computus* 76 and ch. 10; the term was first used in the fifth-century *Prologus Cyrilli* 16 (ed. Mosshammer, *Prologues* 124.105; Jones, *BOT* 41). On this text see below, p. 37 and n. 104.

62 The table is transcribed and translated by Mosshammer, *Easter Computus* 123–4; for a recent review of the history of the statue see Á. Bencze and F. Prampolini, ‘The Vatican Library’s “Statue of Saint Hippolytus” Revisited: An Interdisciplinary Project for a Multifaceted Problem’, *The Vatican Library Review*, 2.1 (2023): 103–17.

63 Mosshammer, *Easter Computus* 27, 205; Mosshammer, *Prologues* 4–5; Marcel Richard,

Hippolytus' advocate 'Cyprian', writing in 243, extended this table to 352, producing a table of 112 years with a *saltus* calculated over sixteen years. The lunar limits of 'Cyprian' remained 16–22, but his Paschal month was 17 March–12 April and the range of dates for Easter 19 March–22 April. Though it never had much traction, this obscure cycle has two very interesting features. First, its accompanying explanatory text is the earliest surviving treatise on Easter computation. Secondly, its author tested his table by a method akin to Julius Africanus' chronological system. He calculated the weekday, calendar date, and year of every Passover recorded in Scripture, from the Exodus to the Last Supper, which he concluded occurred on Thursday 8 April, 1579 years after the Exodus. Then 'Cyprian' tested his formula for the current year, AD 243, and found that it furnished the correct date of 26 March. Finally, he added that Christ was born on Wednesday 28 March, 1548 years after the Exodus – a date chosen because 28 March was the anniversary of the creation of the Sun and Moon.⁶⁴ In sum, 'Cyprian' was the first to use historical chronology as an instrument to judge the validity of a Paschal cycle.

Bishop Dionysius of Alexandria (r. 248–266) was probably reacting to 'Cyprian' when he proclaimed in a Paschal letter that Easter should not be celebrated before the vernal equinox. Nonetheless, the cycle he attached to the letter was still one of eight years. However, at some point between Dionysius' episcopate and the Council of Nicaea, the Alexandrian Church switched from the *octaëteris* to the nineteen-year cycle, associated with the fifth-century BC astronomer Meton of Athens and long used by scientists.⁶⁵

2.2.2 The Roman eighty-four-year cycle (*Supputatio Romana*)

Around the same time, Rome began experimenting with a replacement to the *octaëteris*. By the beginning of the fourth century an eighty-four-year table called the *Supputatio Romana* was circulating in the West.⁶⁶ This table retained the traditional Roman lunar limits of 16–22, but its calendar limits for Easter were 22 March–21 April, to respect the Alexandrian 21 March

'Comput et chronographie chez saint Hippolyte', *Mélanges de science religieuse*, 7 (1950): 237–68, and 'Le comput paschal par octaëteris'; MacCarthy, *Annals of Ulster* 4.xxxii–xxxiii.

64 Leofranc Holford-Strevens, 'Paschal Lunar Calendars up to Bede', *Peritia*, 20 (2008): 169–71. On ps-Cyprian's historical proof for this table see Ogg's introduction to his translation, ix; MacCarthy, *Annals of Ulster* 4.xl.

65 On the date of this transition, see Richard, 'Le comput pascal' 314; on the ascription of the cycle to Meton, and the disputed dating of his life, see Van de Vyver, 'L'évolution' 5–6.

66 For a reconstruction of this table, see Mosshammer, *Easter Computus* 209–13.

equinox but retain the distinctive Roman concern to end Lent by 21 April. The *Supputatio* devised a distinctive way of handling the *saltus lunae* within an eighty-four-year framework. The difference between eighty-four solar and eighty-four lunar years is 924 days (11×84), or thirty intercalated lunar months, plus twenty-four days. If this remainder is treated as an extra embolismic month, the cycle will end six days behind the astronomical reality. To deal with this, the calculated Moon will have to 'jump' six days in order to get in phase. There were two ways of doing this: one could insert a one-day *saltus* every fourteen years, or one could insert a *saltus* every twelve years and omit it in the last year of the cycle. The *Supputatio Romana* chose the latter solution. The Insular *laterculus* (which will be discussed below) opted for a *saltus* every fourteen years.⁶⁷ Unfortunately

67 A problem which bedevilled scholarship on *computus* in the middle decades of the twentieth century was a 'ghost table' initially proposed by Bruno Krusch in his account of the history of the eighty-four-year cycle (*Studien I* 5–23). Though Krusch abandoned this hypothesis in 1938 (*Studien II* 58) his older theory remained in circulation. Krusch noted that the Easter dates recorded in the Roman *Chronograph of 354* differ from those of the *Supputatio* on a number of occasions, and argued that the *Chronograph* must have based its dates on a lost Roman table, which he called the 'older Roman *Supputatio*'. This 'older *Supputatio*' differed from the 'newer' one by fixing the equinox on 25 March and using lunar limits of 14–20. Krusch hypothesized that it was a continuation of an eighty-four-year table devised by one Augustalis (ca. 213) and described in the 'Carthaginian *Computus* of 455': on this text, see Alden Mosshammer, 'The Computus of 455 and the *Laterculus* of Augustalis, with an appendix on the fractional method of Agriustia', in *The Easter Controversy of Late Antiquity and the Early Middle Ages: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín (Turnhout: Brepols, 2011), 21–47. According to Krusch, the Carthaginian text describes Augustalis' table as an eighty-four-year cycle, with a *saltus lunae* every fourteen years. A description of such an eighty-four-year cycle with fourteenth-year *saltus* is included in a ninth-century codex Munich CLM 14456, the manuscript of the Irish 'Munich Computus' of 718–719 (see below, pp. 54–6). In this Munich manuscript, the lunar limits are 14–20, and the earliest possible date for Easter is 25 March. Krusch concluded that the Munich manuscript contained a copy of the *laterculus* or table of Augustalis, which in turn was the basis of the 'older Roman *supputatio*', which was the table used by the *Chronograph of 354*. This theory was attacked by Eduard Schwartz on a number of grounds. First, the *Chronograph of 354* is not a prescriptive table but a record of actual Easters and, whenever it departs from the *Supputatio*, it does so in agreement with the Alexandrian Easters. In short, the *Chronograph* is evidence of Rome's compromises with Alexandria, not a relic of an earlier type of eighty-four-year cycle. Secondly, the lunar limits of 14–20 on Krusch's 'older *Supputatio*' fly in the face of Roman tradition, which ever since Hippolytus had staunchly defended 16–22. Finally, Schwartz demonstrated that the Carthaginian *computus* was describing a system with a twelve-year, not a fourteen-year *saltus*. Schwartz concluded that there never was an 'older Roman *Supputatio*'. What Krusch

the *Supputatio*'s eighty-four-year cycle, while superior to the *octaëteris* in accuracy, still produced a gap of about a day and a half between the calculated and the observed Moon after eighty-four years.⁶⁸

Finally, the *Supputatio*'s lunar calculations were based on the epact or age of the Moon on 1 January, the Roman New Year. This was such a distinctive feature of eighty-four-year cycles that early chronicles written in Ireland, where a variant version of the Roman eighty-four-year cycle long held sway, identified years by the weekday and lunar phase of 1 January even after the Irish had abandoned the cycle for Paschal reckoning.⁶⁹

2.2.3 The Alexandrian nineteen-year cycle: Anatolius, Theophilus, Cyril

Because it was ultimately the most successful cycle, and the basis of the Paschal *computus* taught by Bede, the nineteen-year Alexandrian cycle requires detailed explanation.⁷⁰

As we explained above, the nineteen-year cycle provides the most accurate, albeit not perfect, match to the astronomical realities. Nineteen solar years can accommodate 228 lunar months of 29½ days (i.e. 6726 days), plus seven intercalated lunar months of thirty days (210 days), plus 4¾ additional lunar days for the leap years. The total number of lunar days

thought was a primitive Roman eighty-four-year cycle was, in fact, the version of this cycle used by churches of the British Isles, the Insular *latercus*: see Schwartz, *Christliche und jüdische Ostertafeln*, Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, philol.-hist. Kl., N.F. 8,6 (1905), 64–6. Schwartz's arguments were summarized by D.J. O'Connell, 'Easter Cycles in the Early Irish Church', *Journal of the Royal Society of Antiquaries of Ireland*, 6.1 (1936): 67–106 at 71–4; cf. Mosshammer, *Prologues* 11–12. Unfortunately, Jones at the time of *BOT* (16–17) was still reporting the existence of the 'older *Supputatio*'; this is also the case with other scholars of the immediate post-war era, such as Richard and Cordoliani. The major point to retain here is that no Roman eighty-four-year cycle ever used a fourteenth-year *saltus*; only the Insular *latercus*' eighty-four-year cycle did.

68 Mosshammer, *Prologues* 10.

69 The authoritative study is now Daniel P. McCarthy, *The Irish Annals: Their Genesis, Evolution and History* (Dublin: Four Courts Press, 2008), esp. 202–18, 246–53, 353–4. See also Kenneth Harrison, 'Epacts in Irish Chronicles', *Studia Celtica*, 12–13 (1977–1978): 17–32; 'Episodes in the History of Easter Cycles in Ireland', in *Ireland in Early Medieval Europe: Studies in Memory of Kathleen Hughes*, ed. Dorothy Whitelock, Rosamond McKitterick, and David Dumville (Cambridge: Cambridge University Press, 1982), 314–15.

70 See Mosshammer, *Easter Computus* ch. 5; van Wijk, *Le Nombre d'or* Preface, sections 2–3.

is $6940\frac{3}{4}$, or one day more than nineteen solar years – $6939\frac{3}{4}$ days. This single day is deducted as the *saltus*.

The nineteen years of the cycle form a pattern of common and embolismic years, as follows: (1) during the first eight years of the cycle (the *ogdoas*): CCECCECE; (2) during the final eleven years (the *hendecas*): CCECCECCECE. In the Alexandrian cycle Bede knew, the embolismic months were inserted at the following points:

year 3: 2 December
 year 6: 2 September
 year 8: 6 March
 year 11: 4 December
 year 14: 2 November
 year 17: 2 August
 year 19: 5 March

Note that, in years 8 and 19, the embolismic month is inserted in March, at a time when it will affect the Paschal reckoning.⁷¹

Not only was the nineteen-year cycle more accurate than either the eight-year or eighty-four-year cycles, but its relatively short length also conferred practical and pedagogical advantages. All one needed to do was to memorize the nineteen calendar dates for the first full Moon after the equinox; these would repeat again after nineteen years, producing Easter full Moons in perpetuity.⁷² However, the cycle did not accommodate the weekday cycle. One would need other formulae or tools to determine the weekday of the Easter full Moon, and then locate the next following Sunday.

The first recorded Paschal table based on the Metonic nineteen-year cycle was composed by Anatolius, bishop of Laodicea, about 277–285. We know of this table mainly through Eusebius' *Ecclesiastical History*, and the various efforts to reconstruct it have been impeded by a lack of agreement on its criteria.⁷³ It is nonetheless certain that Anatolius insisted that the

71 Cf. *The Reckoning of Time* ch. 43. Year 11 also presents problems, albeit for a different reason: see Commentary on *The Reckoning of Time* ch. 20.

72 To assist the memorizing of these dates, a famous nineteen-verse poem was composed which gave the date of the full Moon and the *ferial regular* (a number which, when added to the *concurrent* – a number representing the weekday of 24 March – will give the day of the week on which the Easter full Moon falls): *Nonae aprilis norunt quinos ...*, etc. This poem seems not to have been known to Bede, but it became a standard component of later *computus* manuscripts: see Commentary on ch. 60, pp. 502–3.

73 Mosshammer, *Easter Computus* 128–61, esp. 148–9, who evaluates the attempts at

equinox was the terminus of the Easter full Moon, and provided reasons for this.⁷⁴ The success of Anatolius' table was reinforced by the fact that there was expertise available in Alexandria for constructing a continuation; indeed, Athanasius of Alexandria did so very shortly after the Council of Nicaea,⁷⁵ as did others, up to the time of Theophilus at the end of the fourth century.

The 100-year table which Theophilus sent to the Emperor Theodosius comprised five nineteen-year cycles, plus an additional five years to complete a symbolically satisfying century. It also contained a column with the repeating numbers 1–7, standing for the weekday from Sunday to Saturday on which 24 March would fall in the year in question. Using this column, one could locate the weekday of the Easter full Moon recorded on the table; the following Sunday would be Easter.⁷⁶ This feature suggested that Theophilus' table could be expanded into a fully cyclical Easter table, where all the lunar and solar criteria would recur – namely, by repeating the nineteen-year cycle twenty-eight times.

By 386, the nineteen-year Alexandrian table was known and appreciated in the West. In that year, Bishop Ambrose of Milan wrote to the bishops of Emilia about the problematic Roman date of Easter in the following year, 387. Ambrose declared his preference for the nineteen-year cycle, and even claimed it had been approved by the Council of Nicaea.⁷⁷ Initially, the

reconstruction. Eusebius discusses Anatolius in *Ecclesiastical History* 7.32.14. The date 285 is derived from the *Chronicon Paschale* 284–628 AD, trans. Michael Whitby and Mary Whitby, Translated Texts for Historians 7 (Liverpool: Liverpool University Press, 1989) s.a. 285; Mosshammer favours a starting date of AD 277 (p. 149). For echoes of Anatolius in Eusebius' account of Nicaea in *Ecclesiastical History* and *Life of Constantine*, see Jones, *BOT* 22 n. 3.

74 Debate continues on Anatolius' date for the equinox. Van de Vyver ('L'évolution' 9) argues that it was 20 March, because Anatolius identifies 22 March as the day when the Sun is in the fourth degree of Aries. This would have permitted Easter on 20 March, as endorsed by Hippolytus and his followers. It is also not known when Anatolius inserted his *salvus*. One feature of Anatolius' cycle which is clear is that it began with the year in which a new Moon fell on 26 Phamenoth, or 22 March; this ever after became the locus of the epacts in Alexandrian tables: cf. *Reckoning of Time* ch. 50.

75 For a reconstruction, see Schwartz, 24–5.

76 For further details, see Commentary on *The Reckoning of Time* ch. 53.

77 This is his *Letter on Easter*, Extra Collectionem 13.21, ed. Michaela Zelzer, *Sancti Ambrosii Opera. Pars Decima*, CSEL 82 (Vienna: Österreichische Akademie der Wissenschaften, 1996). See also Michaela Zelzer, 'Zum Osterfestbrief des heiligen Ambrosius und zur römischen Osterfestberechnung des 4. Jahrhunderts', *Wiener Studien*, 91 (1978): 187–204; Max Lejbowicz, 'Les Pâques baptismales d'Augustin d'Hippone'

Alexandrian Easter tables were difficult to adapt for Western use because their months did not overlap with Julian months and they were based on the Egyptian year, which began in September and inserted the leap-year day at the end of August.⁷⁸ To gain acceptance, the nineteen-year table needed to be modified for users of the Julian calendar. This was accomplished by the table ascribed (notably by Dionysius Exiguus) to Bishop Cyril of Alexandria, Theophilus' nephew and successor. It covered ninety-five years (AD 437–531) or five nineteen-year cycles,⁷⁹ and was certainly a feat of computistical skill. For the first time, the Alexandrian Easter system was successfully laid over the framework of the Julian calendar, with its year beginning on 1 January, its leap-year day inserted on 24 February, and its specific grid of months.

The Cyrillan table was laid out in eight columns. From left to right, these contained the number of the year as reckoned from the beginning of

1–39, and Leofranc Holford-Strevens, 'Church Politics and the Computus: From Milan to the Ends of the Earth', in *The Easter Controversy of Late Antiquity: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 10 (Turnhout: Brepols, 2011), 1–6.

78 Cf. *The Reckoning of Time* ch. 11.

79 The table itself must have been composed for the 437–455 cycle (i.e. under Cyril or his successor Proterius), and probably in Alexandria, but for Western use, with Julian calendar dates. It probably came to the West accompanied by Theophilus' prologue (Jones, *BOT* 38), which is why Gennadius ascribes it to Theophilus in *De viris inlustribus* 24, ed. E. Richardson (Leipzig: Hinrichs, 1879), 74.12–16. The choice of the ninety-five-year period was deliberate. 'The smallest set of 19-year cycles in which the total number of solar days will approximate a multiple of 7, without exceeding it, is 5. In 95 years, there are 34,698 $\frac{3}{4}$ days. The number 34,699 is a multiple of 7. So, more often than not, depending on exactly how the leap years appear at the beginning and end of a 95-year period, the Paschal moon will return after 95 years not only to the same day in the month, but also the same day in the week. It is therefore possible to build one 95-year cycle of Easter dates and base the next 95-year cycle upon it simply by observing the effect of leap year at the beginning of the new period. The Easter table of Dionysius Exiguus is an example of a 95-year period built upon an expiring exemplar': Mosshammer, *Easter Computus* 55. '[I]n ordinary years, all the data will repeat after an interval of 95 years, but in leap years the date of Easter Sunday and the age of the moon will differ': *ibid.* 68. Dionysius himself left a description of how the ninety-five-year table could be extended in *Ep. ad Petronium*, ed. Krusch, *Studien II* 64. An early version of the ninety-five-year table survives in MS Paris, Bibliothèque nationale lat. 10319 (s. VIII), a Spanish codex whose contents point towards a North African exemplar: Van de Vyver, 'L'évolution' 21–5.

the reign of the emperor Diocletian,⁸⁰ the indiction,⁸¹ the lunar epact for the year in question,⁸² the ‘concurrent’ or number of the weekday of 24 March,⁸³ the year of the ‘lunar cycle’ (i.e. a nineteen-year cycle beginning with the lunation of January),⁸⁴ the Julian date of the Easter terminus (i.e. the fourteenth Moon following the spring equinox), the Julian date of Easter, and, finally, the age of the Moon on Easter Sunday. When Dionysius Exiguus adapted and continued this table, his only change was to alter the chronology of the first column to *annus Domini*, the year of the Lord’s Incarnation. This was the format of Paschal table that Bede knew, and which he would expound, column by column, in *The Reckoning of Time*.⁸⁵

The availability of the nineteen-year cycle made the deficiencies of the eighty-four-year table evident. After eighty-four years there is an error of 1.28 days in the age of the Moon, and this is compounded with each repetition of the cycle.⁸⁶ In the face of the challenge this posed, proponents of the eighty-four-year cycle started tinkering with their tables to correct the lunar anomaly, either by adjusting the epact (or age of the Moon on 1 January) or by shifting the beginning of the cycle to a different year. The year selected to inaugurate the cycle was typically one of theological significance, such as the one corresponding to the year of the Exodus, or the year of Christ’s Passion.⁸⁷

80 The choice of the ‘era of Diocletian’ was a coincidence. To establish the equinox on 21 March, a computistical reform took place in Alexandria in the early fourth century. The revised cycle began in 303 and picked up on the previous cycle, which began in 284. The latter date was the first year of Diocletian’s reign, and regnal years were commonly used for dating in Egypt; the new cycle simply incorporated this as its era: see *Chronicon Paschale* s.a. 285, n2.

81 See *The Reckoning of Time* ch. 48.

82 *Ibid.* ch. 50.

83 *Ibid.* ch. 53.

84 *Ibid.* ch. 56.

85 See Appendix 2.

86 Harrison, ‘Episodes’ 308.

87 E.g. the fragmentary ‘Zeit table’ of 447 (ed. Mommsen, *Chronica minora* 1.503–10) starts in AD 29, extends over four eighty-four-year cycles, and corrects the age of the Moon in line with Alexandrian reckoning: see Daniel P. McCarthy, ‘The Zeit Paschal Table of AD 447’, in *Pre-Carolingian Latin Computus and its Regional Contexts*, ed. Immo Warntjes, Tobit Loevenich, and Dáibhí Ó Cróinín (Turnhout: Brepols, 2023), 17–28; O’Connell, ‘Easter Cycles’ 74–5; Krusch, ‘Die Einführung der griechischen Paschalritus im Abendland’, *Neues Archiv*, 9 (1884): 106; *Studien I* 116 sq.; Nothaft, *Dating the Passion* 72. The Carthaginian *computus* of 455 (Krusch, *Studien I* 279–97) describes two ‘reformed’ eighty-four-year cycles, one beginning in AD 29 and another in AD 439, a year corresponding to 2100 BC, the

Meanwhile, Rome showed no interest in formally endorsing any of these cycles, or even in consistently supporting any principle save that 21 April was the latest possible date for Easter. In practice, as the *Chronograph of 354* shows, it accepted Alexandrian Easter dates, provided they fell before 21 April. In 444 and again in 455, however, the Alexandrian Easter fell after this date, and the occurrence of such a crisis twice in little more than a decade forced Rome to seek a definitive solution. In both cases, Pope Leo yielded to Alexandria for the sake of unity, but he was unwilling to concede the principle. Increasingly, however, it looked like Alexandria would prevail. In 444, Bishop Paschasius of Lilybaeum responded to Pope Leo's query for advice on the differences between the Alexandrian and Roman reckoning by endorsing the former, apparently in the form of the Cyrillan table.⁸⁸ Paschasius capped off his proof that the Alexandrian Easter was the right one with an anecdote about a baptistry in southern Italy with a miraculous font that would automatically fill with water at the Easter Vigil; the font inevitably 'chose' the Alexandrian date. Such accounts are eloquent testimony to the difficulty of persuading people through authority or reason that any system of Paschal reckoning was infallible.⁸⁹

As a similar crisis approached in 455, Pope Leo cast about once again for help, writing first to Paschasius, whose reply has not survived, and then to the emperor Marcian.⁹⁰ Marcian referred the matter to Proterius, Cyril's successor as bishop of Alexandria, who wrote a firm, almost condescending response to Leo defending the Alexandrian reckoning, including its calendar limits.⁹¹ Leo gave in again.

2.3 Victorius of Aquitaine, Dionysius Exiguus, and the Insular *Laterculus*

To avoid a similar crisis in the future, Leo's archdeacon Hilarus commissioned Victorius of Aquitaine to investigate the discrepancies between the

traditional date of the Exodus and first Passover. In both cases, the effect was to cancel out the accumulated error in lunar reckoning of the eighty-four-year cycle. See Mosshammer, 'The Computus of 455'.

88 Paschasius' letter is edited by Krusch, *Studien I* 245–50; cf. Jones, *BOT* 55–6.

89 Cf. *The Reckoning of Time* ch. 43, where Bede cites this 'natural' confirmation of the Alexandrian system.

90 Leo's letters are edited by Krusch, *Studien I* 257–64.

91 The Latin translation of Proterius' letter is edited by Krusch, *Studien I* 269–78. On the fraught political context of these events see Holford-Strevens, 'Church Politics' 6–11.

Roman and Alexandrian systems and to propose a solution. Victorius is a shadowy figure, a ‘calculator of infinitesimals’ (*scripulum calculator*) according to Gennadius,⁹² and author of a *calculus* or set of multiplication tables with an appendix on fractions.⁹³ The extent of his training in astronomy or the traditions of the calendar is unclear, as are Hilarus’ reasons for choosing him for this job. Victorius’ new tables, published in 457,⁹⁴ abandoned the Roman eighty-four-year cycle in favour of the nineteen-year cycle, which Victorius knew in the form of Theophilus’, and possibly the Cyrillan, table. Victorius also set aside, without comment, the traditional Roman calendar limits. The years in his table were numbered according to a chronology whose base date was the year of the historic Crucifixion and Resurrection – the *annus Passionis* – a system adapted from Prosper of Aquitaine’s epitome of Jerome’s translation of Eusebius’ *Chronicle*, and which collapsed Christ’s ministry into a single year. This year, the fifteenth year of emperor Tiberius, during the consulate of the Gemini, coincided with Eusebius’ *annus mundi* 5228 (i.e. AD 28), and Victorius aligned this date with those of the Creation (which took place 5228 years before the Passion, i.e. 5210 BC, commencing on 25 March, the vernal equinox) and the first Passover in Egypt.⁹⁵ Victorius paralleled his *annus Passionis* chronology with a list of consuls down to 457. This *annus Passionis* was an appropriate and attractive feature for an Easter table, but it departed from Alexandrian practice by yoking the table to historical chronology and not to astronomy.

In one respect, his effort was an improvement over the Cyrillan cycle: Victorius projected his cycles for 532 years, and he knew that his table would repeat after this period – although he did not explain why. Indeed, Victorius saw his 532-year cycle as 4×133 years, not 19×28 , as Bede did.⁹⁶

92 *De viris inlustribus* 88, ed. Herdin 108.9–25; cf. *The Reckoning of Time* ch. 66, s.a. 4427. See Krusch, *Studien II* 4–15; Jones, *BOT* 60–8; Cummian’s Letter ‘*De controversia paschali*’ and the ‘*De ratione computandi*’, ed. trans. Maura Walsh and Dáibhí Ó Cróinín, *Studies and Texts* 86 (Toronto: Pontifical Institute of Mediaeval Studies, 1988), 42.

93 Ed. Alison Peden, *Abbo of Fleury and Ramsey: Commentary on the Calculus of Victorius of Aquitaine* (Oxford: Oxford University Press for the British Academy, 2003), 1–62.

94 These tables, and the correspondence with Hilarus, are ed. by Krusch, *Studien II* 16–52.

95 *Prologus Victorii Aquitani ad Hilarum archidiaconum* 7–10, ed. Krusch, *Studien II* 22–6. See also Nothaft, *Dating the Passion* 75. On Prosper see Mark Humphries, ‘Chronicle and Chronology: Prosper of Aquitaine, his Methods and the Development of Early Medieval Chronography’, *Early Medieval Europe*, 5.2 (1996): 155–75.

96 Neither Victorius nor Bede was the first to recognize the cyclical character of 532

In other respects, though, Victorius' table created fresh problems. First, he positioned his *saltus lunae* in the sixth year of his (and the Alexandrian) nineteen-year cycle. The Alexandrians positioned the *saltus* at the end of the cycle. In consequence, Victorius' cycle was out of phase with the Alexandrian cycle for years 7–19. Why Victorius did this is unclear, since his letter to Hilarus acknowledges that the insertion of the *saltus* at the end of nineteen years is preferable.⁹⁷ The cause appears to lie in Victorius' decision to number his years according to a Christian historical epoch, and not a fixed date in the recent past, such as the accession of Emperor Diocletian. Victorius considered the nineteen-year cycle to have been initiated at Creation. The Eusebian–Septuagint *annus mundi* 5229 divided by 19 leaves 4 as a remainder, so *annus Passionis* 1 is year four of Victorius's nineteen-year cycle. In order to insert the *saltus* in year nineteen of his cycle, Victorius had to place it at *annus Passionis* 16, and every nineteenth year following. *Annus Passionis* 16 was year six of the Alexandrian cycle.⁹⁸

Secondly, Victorius states that Roman custom held that the earliest date for the Paschal full Moon was 20 March, and so the earliest date for new Moon of the Paschal month was 5 March. The Alexandrians, to avoid a full Moon before the equinox on the 21st, began the Paschal month at the latest on 8 March.⁹⁹ Thirdly, he retained the old Roman lunar limits of 16–22, rather than switching to the Alexandrian limits of 15–21.¹⁰⁰ This meant that the 'Roman' fourteenth Moon could pre-date the equinox, though Easter itself, falling at its earliest on the sixteenth Moon, never would. Finally, if Hilarus expected Victorius to come to a firm and unambiguous decision about future Easters, he was disappointed. Victorius' table set out parallel dates for 'Latin' and 'Greek' Easters and invited the pope to choose in cases of conflict. To add to the confusion, Victorius' 'Greek' Easters were not the Alexandrian dates; they were dates arrived at by Victorius' own interpretation of what he thought were Eastern rules, but which were

years. It was known to, and used by, the Alexandrian monk Annianus (fl. ca. 400), but for chronological calculations, not computistical purposes: Nothaft, *Dating the Passion* 64. Cf. MacCarthy, *Annals of Ulster* 4.lxxxv; Jones, *BOT* 64.

97 *quod est verius*: Krusch, *Studien II* 19.8.

98 This caused confusion both in Late Antiquity and for historians of Paschal reckoning in the modern period: Jones, *BOT* 65. It is discussed by Bede in *The Reckoning of Time* ch. 42.

99 Cf. *ibid.* ch. 51.

100 C.W. Jones, 'The Victorian and Dionysiac Paschal Tables in the West', *Speculum*, 9 (1934): 409; significantly, Bede did not address this error, for reasons which will shortly become evident.

not actually observed anywhere. Ironically, his 'Latin' dates were often identical with the Alexandrian dates, because his insertion of the *saltus* in year six cancelled out the discrepancy between his lunar limits for Easter and those of the Alexandrian Church. Therefore, if the pope chose to celebrate the 'Latin' Easter as recorded in Victorius' table, he would, in years 7–19 of the cycle, in fact be choosing the Alexandrian Easter date.

The fortunes of Victorius' table were assured by the fact that Archdeacon Hilarus, shortly after commissioning the table, was elevated to the papacy. In some manuscripts, Hilarus' title in the covering letter from Victorius is even altered from 'archidiaconus' to 'papa',¹⁰¹ thereby implying that the tables had received official approval at the highest level. This was reinforced by the coincidence that whenever the pope announced an Alexandrian date for Easter, it looked as if he were endorsing Victorius' 'Latin' dates. Nonetheless, the diffusion of Victorius' system was initially limited, save in Gaul; for example, a synod at Orléans in 541 formally adopted it as authoritative.¹⁰²

Some were critical of Victorius' dating of the Paschal month and his positioning of the *saltus*, to say nothing of the problem of double dates. At the pope's request, Victor of Capua wrote a merciless critique of Victorius' tables and called for new tables.¹⁰³ Even in Rome, support for the uncanonical Easter Moons generated by Victorius' *saltus* was hesitant, while in Africa or possibly Spain a writer whose *Prologus* circulated under the name of Cyril of Alexandria also took aim at Victorius.¹⁰⁴ So did the Irish missionary Columbanus, of whom more shortly.

101 Jones, 'Legend of St Pachomius' 205.

102 Mosshammer, *Easter Computus* 239–44, who takes a generous view of Victorius' achievements.

103 Victor's treatise has not survived, but passages from it are quoted by Bede in *The Reckoning of Time* ch. 51 and *Letter to Wicthed*. These and other recovered fragments were printed by J.B. Pitra in *Spicilegium Solesmense* (Paris: Firmin Didot, 1852), 1.296–301.

104 See Mosshammer, *Prologues* 32–3. The *Prologus Cyrilli* claimed to be a preface to the (authentic) ninety-five-year table of Cyril. It was shown by Krusch (*Studien I* 337–43) to be a forgery. Krusch argued that it originated in the seventh century, probably in Spain. Jones, *BOT* 52 dates it to 577–590. Mosshammer dates it to the second half of the fifth century (ed. cit. 2). Jones argued that an original version of the *Prologus Cyrilli*, written ca. 482, survived as the so-called Chartres *Praefatio* (ed. Jones, *BOT* 40–3). The author directed his attack against the 532-year cycle of Victorius, arguing (mistakenly) that the ninety-five-year cycle is truly cyclic. However, Alfred Cordoliani was of the opinion that the Chartres version was an excerpt from the *Prologus*, not a first draft: 'Textos de cómputo español du VIe siècle. El Prologus Cyrilli', *Hispania Sacra*, 9 (1956): 127–39.

In 532 Dionysius Exiguus, a monk of Eastern origin residing in Rome, but apparently with some important connections (for example, with Cassiodorus), as well as visibility as translator of canon law, proposed replacing Victorius' tables with fully authentic Alexandrian tables. He translated the Cyrillian table into Latin and constructed a continuation for another ninety-five years (AD 532–627); to this he attached an explanatory prologue and a translation of the computistical formulae or *argumenta* current in Alexandria.¹⁰⁵ He sent this, together with a Latin translation of Proterius of Alexandria's 454 letter to Pope Leo, to a certain Bishop Petronius.¹⁰⁶ Dionysius places considerable emphasis on his replacement of the conventional Alexandrian count of years, which took its start from the accession of Emperor Diocletian, with a chronology based on the year of the Lord's Incarnation, *annus Domini*. It is important to stress that Dionysius neither invented nor claimed to have invented *annus Domini*. He did not even start his table at the Incarnation, but instead at AD 532. Victorius, it will be recalled, began his table at the year of the Passion, but, unlike Victorius, Dionysius was not particularly interested in proving that *annus Domini* was historically accurate by retrospective synchronizations. Rather, it seems that his decision to emphasize Christ's Incarnation was

105 These *argumenta* constituted the earliest and most important computistical formulary, greatly facilitating the teaching of *computus* as well as everyday calculations; Bede will deploy them to structure chs 47–62 of *Reckoning of Time*. On their pre-Bedan circulation see Warntjes, 'The *Argumenta* of Dionysius Exiguus and their Early Recensions', in *Computus and its Cultural Context in the Latin West, AD 300–1200: Proceedings of the 1st International Conference on the Science of Computus in Ireland and Europe, Galway, 14–16 July, 2006*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 5 (Turnhout: Brepols, 2010), 40–111; *ibid.*, 'The *Computus Cottonianus* of AD 689: A computistical formulary written for Willibrord's Frisian Mission', in *The Easter Controversy of Late Antiquity and the Early Middle Ages: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 10 (Turnhout: Brepols, 2011), 178, and 'Seventh-Century Ireland' 48. They were edited by Krusch, *Studien II* 75–81. As Jones pointed out, this edition of Dionysius' *argumenta*, as well as the older one by J.W. Jan, *Historia Cyclic Dionysiani* (Wittenberg, 1718), 79–94, reprinted in PL 67.497–508, stand in need of revision, as only *argumenta* 1–9 are authentic: *BOT* 70–1. For a draft of such a new edition see Joan Gómez Pallarès, 'Hacia una nueva edición de los "Argumenta titulorum paschaliū" de Dionisio el Exiguo', *Hispania sacra*, 46 (1994): 13–31. On the superiority of Jan's edition of Dionysius' works, and particularly the *argumenta*, see Warntjes, 'Computus Cottonianus', 177–8, n. 17.

106 Jones, *BOT* 68; Mosshammer, *Easter Computus* 59–60; Warntjes, 'Seventh-Century Ireland' 50.

connected with contemporary theological disputes.¹⁰⁷ Much more important, in Dionysius' eyes, was his conviction that it was the Alexandrian system of Paschal reckoning that the Council of Nicaea endorsed.¹⁰⁸

Dionysius' work attracted little attention at first. He was a foreigner in Rome, perhaps not popular at the papal court,¹⁰⁹ and his work was addressed to an obscure bishop. In 525, however, it looked as if he might get a hearing. In the following year there would be a serious discrepancy between the Victorian tables and the Alexandrian Easter due to Victorius' placement of the *saltus*. To explain this discrepancy, Dionysius addressed a letter to Bonifatius and Bonus, *primicerii* (chief administrators) in the service of Pope John I, outlining the proper Alexandrian sequence of

107 This argument is presented by Máirín MacCarron, 'Christology and the Future in Bede's *Annus Domini*', in *Bede and the Future*, ed. Peter Darby and Faith Wallis (Farnham: Ashgate, 2014), 161–79, and by Luciana Cuppo Csaki, '*Roma magistra historiae*: the year 680 as *caput saeculi* in Cas. 641', in *Roma, magistra mundi. Itineraria culturae medievalis. Mélanges offerts au Père L.E. Boyle à l'occasion de son 75e anniversaire*, Textes et études du moyen âge 10,1 (Louvain-la-Neuve: Fédération internationale des Instituts d'études médiévales, 1998), 121–36; *ibid.*, 'Felix of Squillace and the Dionysiac Computus I: Bobbio and Northern Italy (MS Ambrosiana H 150 Inf.)', in *The Easter Controversy of Late Antiquity: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 10 (Turnhout: Brepols, 2011), 119–24. Dionysius refers to *annus Domini* only in connection with the designation of years in his Paschal table. He almost certainly derived the concept from an earlier tradition: see Mosshammer, *Easter Computus* 339–56; Daniel McCarthy, 'The Emergence of Anno Domini', in *Time and Eternity: the Medieval Discourse*, ed. G. Moreno-Riaño and G. Jaritz (Turnhout: Brepols, 2003), 31–53; Bonnie Blackburn and Leofranc Holford-Strevens, *The Oxford Companion to the Year: An Exploration of Calendar Customs and Time-Reckoning* (Oxford: Oxford University Press, 1999), 778–9; Immo Warntjes, 'Victorius vs Dionysius: the Irish Easter Controversy of AD 689', in *Early Medieval Ireland and Europe: Chronology, Contacts, Scholarship. A Festschrift for Dáibhí Ó Cróinín*, ed. Pádraic Moran and Immo Warntjes (Turnhout: Brepols, 2015), 74; Georges Declercq, *Anno Domini: the Origins of the Christian Era* (Turnhout: Brepols, 2000), and 'Dionysius Exiguus and the Introduction of the Christian Era', *Sacris Erudiri*, 41 (2002): 165–246; Máirín MacCarron, *Bede and Time: Computus, Theology and History in the Early Medieval World* (London: Routledge, 2020), 135–7.

108 Earlier scholars regarded this as an outrageous falsehood, but Dionysius was far from the first to conclude that the bishops at Nicaea had drawn up a table of some sort: Jones, *BOT* 71. As Mosshammer observes, the assertion was widely accepted by the end of the fourth century (*Easter Computus* 65), e.g. by Ambrose (see above, p. 31). Dionysius may have derived the notion of Nicene endorsement from the prefatory matter of Cyril's tables: Kenneth Harrison, 'Easter Cycles and the Equinox in the British Isles', *Anglo-Saxon England*, 7 (1978): 4.

109 Jones, 'Victorian and Dionysiac Paschal Tables' 414.

common and embolismic years. Bonifatius conveyed this explanation to Pope John himself.¹¹⁰ There was no immediate result because John died in the following year, and the outbreak of the Gothic War in 535 left little leisure for such questions. But, though it had no official status, Dionysius' table had influential admirers. A *computus* ascribed to Cassiodorus is essentially a copy of Dionysius' *argumenta*.¹¹¹ When the table was due to expire in 626, a continuation until 721 was constructed by Felix of Squillace, who was probably associated with Cassiodorus' monastery at Vivarium.¹¹² However, it is not clear when the Roman church began to use Dionysius' table.¹¹³

The Dionysian Paschal table forms the backbone of the second half of *The Reckoning of Time*, and will be discussed in detail in the Commentary on this section of Bede's book. A few of its notable features should, however, be signalled here. The Roman eighty-four-year cycles were based on the epact of 1 January; in other words, the cycle began in a year when the Moon was one day old on 1 January. Alexandrian epacts, on the other hand, began

110 Bruno Krusch, 'Ein Bericht der päpstlichen Kanzlei an Papst Johannes I. von 526 und die Oxforder HS Digby 63 von 814', in *Papstum und Kaisertum. Forschungen zur politischen Geschichte und Geisteskultur des Mittelalters* Paul Kehr zum 65. Geburtstag dargebracht, ed. Albert Brackmann (Munich: Verlag der Münchner Drucke, 1926), 48–58.

111 Ed. by Paul Lehmann, 'Cassiodorusstudien II: Die Datierung der Institutiones und der Computus paschalis', *Philologus*, 71 (1912): 278–99 (text is on 297–9). The older study by O. Neugebauer, 'On the Computus Paschalis of "Cassiodorus"', *Centaurus*, 25 (1982): 292–302, is problematic: see Warntjes, 'Argumenta of Dionysius Exiguus' 67–8. Cassiodorus expresses his admiration for Dionysius and reminisces about his personal association with him in *Institutiones* 1.23.2–3, but does not refer to his Paschal table. Though Cassiodorus had important connections with Spain, Dionysius was not the basis of the Iberian tradition of Alexandrian Paschal tables. Iberian computists carried out their own revision of the Cyrillan table and it was this table which Isidore of Seville (somewhat ineptly, as it transpired) included in *Etymologiae* 6.17. It consequently circulated in Ireland and thence to western Gaul: Immo Warntjes, 'The Continuation of the Alexandrian Easter in Seventh-Century Iberia and its Transmission to Ninth-Century Francia', *Revue d'Histoire des Textes*, n.s. 13 (2018): 185–94, and 'Isidore of Seville and the Formation of Medieval Computus', in *A Companion to Isidore of Seville*, ed. Andrew Fear and Jamie Wood (Leiden: Brill, 2020), 457–523. Warntjes' findings correct the conclusions of C.W. Jones, 'Two Easter Tables', *Speculum*, 13 (1938): 204.

112 Cuppo Czaki, 'Felix of Squillace' 110–36. This shadowy figure has long been mis-identified as 'Felix Gillitanus', i.e. from the region of Gillium in modern Tunisia. Vivarium may have been the origin of the Dionysian cycles Bede knew: see Cuppo Czaki, 'Roma magistra historiae' 125–7.

113 Indeed, our information on this question comes exclusively from Insular sources, notably Cumman and Bede: see below, p. 47–51.

on 1 September, the Egyptian New Year. Dionysius attached his epact to 22 March, the earliest possible date for Easter in the Alexandrian system. It had the added advantage for users of the Julian calendar of falling on the same weekday as the Roman leap-year day of 24 February, which would have facilitated ready adjustments. Hence, Dionysius' cycles begin in a year when the Moon is new on 22 March.¹¹⁴

From Bede's perspective, the critical turning point of the Paschal controversy took place not in the Papal court but in the British Isles. At the end of the seventh century a variant version of the Roman eighty-four-year *Supputatio* was used by the British as well as the Irish and Picts. By the time Bede wrote *The Reckoning of Time*, the Alexandrian *computus* of Dionysius Exiguus was used by all the Insular churches save the British. In between lay a century of contention and confusion.¹¹⁵

The Insular Paschal cycle or *latercus*¹¹⁶ differed in some respects from the Roman *Supputatio*. Its lunar limits were archaic – 14–20 – as was its 25 March equinox. Its calendar limits were 25 March–23 April. Finally, unlike the *Supputatio*, it inserted its *saltus* in the fourteenth year, not the twelfth.¹¹⁷ Exactly how this eighty-four-year cycle reached the British and

114 For a useful summary, see Gustav Teres, 'Time Computations and Dionysius Exiguus', *Journal of the History of Astronomy*, 15 (1984): 177–88; van Wijk, *Le nombre d'or* Preface, section 4.

115 For overviews see T.M. Charles-Edwards, *Early Christian Ireland* (Cambridge: Cambridge University Press, 2000), 391–409; Caitlin Corning, *The Celtic and Roman Traditions: Conflict and Consensus in the Early Medieval Church* (New York: Palgrave Macmillan, 2006).

116 *Latercus* derives from *laterculus*, the Latin word for 'list', used by Christians for a list of dates of Easter. The form *latercus* appears in texts from Britain and Ireland in reference to the form of the eighty-four-year cycle used there: Mosshammer, *Easter Computus* 219.

117 Much of the older literature on the Easter controversy has been preoccupied with finding, or attempting to reconstruct, an actual *latercus* Paschal table which would prove that these were indeed its criteria. Krusch, 'Einführung' 101–69, esp. 140–69, produced a manifestly erroneous reconstruction; McCarthy, *Annals of Ulster* 4.lxvi–lxxi recognized the importance of the 'Munich Computus' (see below, p. 53–6) and assembled the dossier of evidence that underpinned the studies of O'Connell, 'Easter Cycles' and Knut Schäferdiek, 'Der irische Osterzyklus des sechsten und siebten Jahrhunderts', *Deutsches Archiv für Erforschung des Mittelalters*, 39 (1985): 357–78. Thus the discovery of an authentic Irish Easter table in MS Padua, Bibl. Antoniana I.27, fols 76r–77v, was an important breakthrough: see Dáibhí Ó Cróinín and Daniel McCarthy, 'The "Lost" Irish 84-year Easter Table Rediscovered', *Peritia*, 6–7 (1987–1988): 227–42, reprinted in revised form in Ó Cróinín's *Early Irish History and Chronology* (Dublin: Four Courts Press, 2003), 58–75. For analysis of the technical basis of their reconstruction and confirmation that the base year was 354,

Irish Churches is unknown, though it seems likely that it arrived in the first quarter of the fifth century; however, the issue is complicated by the fact that defenders of the Insular *computus* such as Columbanus do not specify when the *saltus* took place and rarely even mention that it is a cycle of eighty-four years.¹¹⁸ It is now broadly accepted that Aldhelm of Malmesbury was correct in ascribing the *latercus* to the Gallic historian and biographer of St Martin, Sulpicius Severus (*fl. ca.* 400).¹¹⁹ Sulpicius' base year was AD 354, chosen to commemorate the year in which St Martin was baptized. Daniel McCarthy argues that Sulpicius used the lunar table found in Anatolius as the basis, and that he was responsible for the lunar limits of 14–20.¹²⁰ Immo Warntjes compared the *latercus* described by the *Munich Computus* with the unique surviving example of an Insular eighty-four-year Paschal table, concluding that, while they are not identical, they both represent an eighty-four-year cycle with *saltus* in the fourteenth year.¹²¹ This fourteenth-year *saltus*, in Mosshammer's view, establishes Sulpicius Severus's motivation:

His decision to change the position of the *saltus* from the end of the twelfth year to the end of the fourteenth was both more logical arithmetically and perhaps symbolically appropriate for the lunar limit of 14. If McCarthy is right that the Gallic cycle had a base-date corresponding to AD 354, Severus perhaps chose that date not only in honour of St Martin, as McCarthy suggested, but also because in that year 25 March was a Friday. In the Roman calculation, 25 March was the 15th day of the moon and the 57th year of the cycle. By

see McCarthy, 'Easter Principles and a Fifth-Century Lunar Cycle used in the British Isles', *Journal for the History of Astronomy*, 24 (1993): 204–24.

118 Daniel McCarthy, 'The Origin of the *Latercus* Paschal Cycle of the Insular Celtic Churches', *Cambrian Medieval Celtic Studies*, 28 (1994): 25–49, and 'On the Arrival of the *Latercus* in Ireland', in *The Easter Controversy of Late Antiquity and the Early Middle Ages: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 10 (Turnhout: Brepols, 2011), 48–75; Mosshammer, *Easter Computus* 223.

119 Letter to King Geraint, ed. R. Ehwald, *Aldhelmi Opera*, MGH AA 15 (1919): 483; trans. Michael Lapidge and Michael Herren, *Aldhelm: The Prose Works* (Cambridge: D.S. Brewer and Totowa, NJ: Rowman and Littlefield, 1979), 157. See Mosshammer, *Easter Computus* 204–5. For Sulpicius' *Chronicle* and its view of chronology and history see Simon Goldhill, *The Christian Invention of Time: Temporality and Literature in Late Antiquity* (Cambridge: Cambridge University Press, 2022), ch. 15.

120 'The Origin of the *Latercus* Paschal Cycle' 25–49.

121 'The Munich Computus and the 84(14)-Year Easter Reckoning', *Proceedings of the Royal Irish Academy*, 107 (2007): 31–85; Mosshammer, *Easter computus* 223–4.

moving the *saltus* to the end of the 14th year, Severus changed the epact for the year from 21 to 22. He thereby put 25 March, the fourteenth day of the moon, at the head of the cycle.¹²²

In sum, Sulpicius Severus was attempting to improve the Roman eighty-four-year cycle.¹²³

Given the origins of the Insular *latercus*, it is ironic that Gaul was the scene of the earliest recorded conflict involving the Irish about its use. In 600 the missionary Columbanus complained to Pope Gregory I that Frankish bishops were harassing his Irish monks for celebrating Easter according to their ancestral custom. The bishops insisted that they follow the Victorian *computus*, which the learned men of Ireland had inspected and found defective. In another letter to the synod of Gallic bishops, Columbanus added that the Victorian table was a modern novelty, without authority, especially when compared to the eighty-four-year cycle, which dated from ‘the times of the great Martin and great Jerome and Pope Damasus’.¹²⁴

The Gregorian mission to the Anglo-Saxons heightened the awareness of Irish Paschal reckoning in Rome. In 628 or 629 Pope Honorius demanded that the Irish conform.¹²⁵ In response to this letter, and in anticipation of a conflict over the date of Easter in AD 631, a meeting of southern Irish clergy was held at Mag Léne. They decided to send envoys to Rome to

122 Mosshammer, *Easter Computus* 230–1. There are other aspects of McCarthy’s argument which have won less general acceptance, notably his contention that Sulpicius based his table on that of Augustalis (see above, n. 67).

123 Mosshammer, *Easter Computus* 238–9.

124 Columbanus’ letters on the Easter question are edited by W. Gundlach, MGH Epp. 3 (1892), 156 (to Gregory I); 160 (to the synod of Gallic bishops); 164 (to Pope Sabinian?); 177 (to Pope Boniface IV); see also ed. and trans. by G.S.M. Walker, *Sancti Columbani Opera* (Dublin: Dublin Institute for Advanced Studies, 1970). For a new translation and analysis of the letter to Gregory see Robert Stanton, ‘Columbanus, “Letter” 1: Translation and Commentary’, *Journal of Medieval Latin*, 3 (1993): 149–68. On the letter to Boniface see Bruno Krusch, ‘Chronologisches aus Handschriften’, *Neues Archiv*, 10 (1885): 83–8. For context see Clare Stancliffe, ‘Columbanus and the Gallic Bishops’, in *Auctoritas: Mélanges offerts à Olivier Guillot*, ed. G. Constable and M. Rouche (Paris: Presses de l’Université de Paris-Sorbonne, 2006), 205–15, esp. 206–8. On the dating of Columbanus’ letters see P. Grosjean, ‘Recherches sur les débuts de la controverse pascale chez les Celtes’, *Analecta Bollandiana*, 64 (1946): 206–15. Final quotation trans. Walker 19. On *computistica* ascribed to Columbanus see Dáibhí Ó Cróinín, ‘The Computistical Works of Columbanus’, in his *Early Irish History and Chronology* 48–55.

125 Summarized by Bede, *Historia ecclesiastica* 2.19.

ascertain the practice of the universal Church. When the envoys returned to report that the practice in Rome was markedly different from that of the *latercus*, and was observed everywhere but in the western islands, the southern Irish converted to the Roman system. However, the northern Irish communities, and especially the *paruchia* of St Columba, centred at Iona, strongly disapproved of the decision. It was in defence of the southerners' decision that Cummian wrote his *Epistola de controversia paschali* (633).¹²⁶

What Cummian's letter reveals above all is that the Irish knew a great deal about matters computistical, and consequently needed compelling arguments if they were to be persuaded to change their method of reckoning Easter. They were aware that there were several authorities available – Cummian lists ten in his *Epistola* – and they were in possession of an ample library of Alexandrian-inspired texts, perhaps assembled to coincide with the debates of the 630s.¹²⁷ That some of these texts turn out to be pseudepigrapha should not diminish our regard for the Irish computists' engaged response to the challenge of weighing their computistical options. As no explanation of the construction principles of either Victorius' or Dionysius' system existed, the Irish were obliged to evaluate these on their own in order to resolve their internal disputes.¹²⁸

One of the most important texts in the Irish computistical library was the *Liber Anatolii de ratione paschali*. This was the primary document debated at the council of Whitby in 664.¹²⁹ It has additional significance

126 Cummian's letter has been edited and translated by Walsh and Ó Cróinín, *Cummian's Letter De controversia Paschali and the De ratione computandi*, 55–97. On the problems of dating the Mag Léne meeting and, consequently, the Letter of Cummian see Warntjes, 'Victorius vs Dionysius' 41–9, and Ó Cróinín and Walsh's Introduction, section A. The choice of 631 rests on the statement in the letter that the *latercus*' date for Easter of that year diverged from the Roman by a month (Walsh and Ó Cróinín, 88.238). Since the *latercus* retained the old Roman limits of 25 March–23 April, this could only happen when the 'Roman' Easter fell on 22–24 March or 24–25 April. This was the case in 631, when the *latercus*' Easter fell on 21 April, and the 'Roman' on 24 March. When they published their edition, Ó Cróinín and Walsh were using MacCarthy's reconstruction of the eighty-four-year table, but the rediscovered eighty-four-year table since published by Ó Cróinín and MacCarthy (see above, n. 117) confirms that these data are correct for 631. As Cummian's letter was not, as far as we are aware, known to Bede, we shall refer the reader to Walsh and Ó Cróinín's edition for further details and confine ourselves here to what Cummian reveals about issues directly relevant to Bede.

127 This anthology was known to Bede and is discussed in detail below, pp. 57–64.

128 Warntjes, 'Seventh-Century Ireland' 51.

129 Bede, *Historia ecclesiastica* 3.25; cf. Jones, *BOT* 82–5. The definitive edition, with translation and commentary, is by Daniel McCarthy and Aidan Breen, *The Ante-Nicene*

for us because Bede cites it frequently in *The Reckoning of Time* and the *Epistle to Wicthed*.¹³⁰ Everyone involved in the Insular Paschal controversy accepted the *Liber Anatolii* as an authentic work by Anatolius, though many, including Bede, claimed that the text had been corrupted, perhaps deliberately. This conviction rested on the fact that the *Liber Anatolii* includes a passage from Anatolius found in Rufinus' translation of Eusebius' *Ecclesiastical History*.¹³¹ However, the Paschal criteria in the Rufinus text are a 22 March equinox and lunar limits 15–21; in the *Liber Anatolii*, they are the *latercus*' principles of a 25 March equinox and lunar limits of 14–20.

The most curious aspect of the *Liber Anatolii* is that it advocates *latercus* criteria, but with a nineteen-year Alexandrian cycle. That the editor tried to marry a nineteen-year cycle to *latercus* criteria had the effect of convincing many readers of the *Liber Anatolii* that this work was arguing for the nineteen-year cycle against the eighty-four-year cycle. Cummián was one,¹³² and so were Aldhelm¹³³ and Bede.

What exactly motivated the confection of this text is obscure. Walsh and Ó Cróinín argued that it was targeting the Alexandrian nineteen-year system and that the *Liber Anatolii* included a nineteen-year table in order to demonstrate that nineteen years was an insufficiently long period to incorporate the solar data necessary to produce a true Easter cycle.¹³⁴ Alfred Cordoliani argued that the point of the *Liber Anatolii* was to defend

Christian Pasch. De ratione paschali. The Paschal Tract of Anatolius, Bishop of Laodicea (Dublin: Four Courts Press, 2003), 44–70. This replaces the earlier edition by Krusch, *Studien I* 311–27; for yet earlier editions, and criticisms of Krusch's, see Jones, *BOT* 82, n. 4. The text is corrupt in the manuscripts, but the table even more so. Hence earlier attempts to reconstruct it, such as MacCarthy's (*Annals of Ulster* 4.cxix–cxxvii) did not meet with success, since they were based on inadequate older editions and an incomplete knowledge of the manuscripts; see in particular the criticisms levelled by C.H. Turner, 'The Paschal Canon of "Anatolius of Laodicea"', *English Historical Review*, 10 (1895): 699–710, against the efforts of A. Anscombe, 'The Paschal Canon Attributed to Anatolius of Laodicea', *English Historical Review*, 10 (1895): 515–35.

130 Chs 6, 14, 22, 30, 35, 42, and *Letter to Wicthed* 11.

131 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.32.14, ed. Th. Mommsen, *Eusebius Werke* 2.1–3, *Die griechischen christlichen Schriftsteller* 9.1 (Leipzig: Hinrichs'sche Buchhandlung, 1903–1904), 723.

132 Ed. Walsh and Ó Cróinín 35.

133 In his letter to King Geraint, Aldhelm alluded to 'Quartodecimans who use a 19-year table'. This description fits the *Liber Anatolii*, which presents a nineteen-year table, with lunar limits of 14–20: ed. Ehwald 483; trans. Lapidge and Herren 157.

134 Ed. Walsh and Ó Cróinín 34–5.

the *latercus*' lunar limits by cloaking them in the authority of the great Alexandrian computist; the author really did not care that the cycle differed from that of the *latercus*.¹³⁵ The idea that the Irish scribes and editors might have separated the issues of Paschal criteria and Paschal cycle – the criteria to be defended at all costs, the cycle as less relevant – fits with other evidence. Irish writers seem, for instance, not to have been particularly concerned about the eighty-four-year cycle's astronomical defects.¹³⁶ Hence they were happy to adopt the Alexandrians as their advocates, regardless of the differences between the two cycles, as long as the criteria could be modified to conform to *latercus* tradition. It is noteworthy that at the Council of Whitby Colman defended the *latercus*' criteria, while Wilfrid attacked the eighty-four-year cycle.¹³⁷ Finally, Daniel McCarthy, in his and Aidan Breen's edition of the *Liber Anatolii*, argued that the *Liber Anatolii* actually represents the authentic text of Anatolius, and that it was translated into Latin by Rufinus himself. The version of Anatolius' work found in Eusebius' *Ecclesiastical History*, on the other hand, was a deliberate distortion of Anatolius' views – in short, it is the Eusebius version that is

135 'Les computistes insulaires et les écrits pseudo-alexandrins', *Bibliothèque de l'École des Chartes*, 106 (1945–1946): 7. This might seem improbable on the face of it, but prior to the confirmation of Sulpicius' authorship, when it was possible to argue that the *latercus*' criteria historically antedated the arrival of the eighty-four-year cycle, the defence of the former at the expense of the latter seems less bizarre. This possibility is proposed by O'Connell, 'Easter Cycles' 92–3, and Schwartz, *Christliche und jüdische Ostertafeln* 103.

136 Marina Smyth, *Understanding the Universe in Seventh Century Ireland* (Woodbridge: Boydell, 1996), 147–51. The author of *De mirabilibus sacrae scripturae* seems unaware of the concept of the regularized lunar and solar cycles, and assumes that the Easter table is a correct description of astronomical reality (164); when he discusses 'the solar cycle', for instance, he is referring not to an astronomical event but to Victorius' 532-year table (151–2). The *De ordine creaturarum* understands the importance of the equinox for Paschal reckoning, but seems uncertain what the word 'solstice' means (152–3), etc. As Immo Warntjes has pointed out, when Iona finally abandoned the *latercus* it was already in error concerning the equinox by four or five days: 'The Munich Computus and the 84(14)-year Easter Reckoning' 37.

137 Bede, *Historia ecclesiastica* 3.25: 'Colman replied, "Did Anatolius, a man who was holy and highly spoken of in the history of the Church to which you appeal, judge contrary to the law and the Gospel when he wrote that Easter should be celebrated between the fourteenth and twentieth day of the moon?"... Wilfrid replied, "It is true that Anatolius was a most holy and learned man, worthy of all praise; but what have you to do with him since you do not observe his precepts? He followed a correct rule in celebrating Easter, basing it on a cycle of nineteen years, of which you are either unaware or, if you do know of it, you despise it, even though it is observed by the whole Church of Christ": trans. Colgrave and Mynors 305.

the forgery. This argument has sparked much debate¹³⁸ but need not detain us here. The important point to bear in mind is that Irish scholars were working with texts that implied that even proponents of the nineteen-year cycle accepted the *laterculus*' lunar limits and dating of the equinox.

Cummian's major resource is another pseudepigrapha, the *Epistola Cyrilli*.¹³⁹ Like the *Liber Anatolii*, it is a revised version of a genuine text, a letter from Cyril of Alexandria addressed to the Council of Carthage in 419. This revision was probably composed after the time of Dionysius Exiguus, since it incorporates one of his 'signatures' – namely, the assertion that the Council of Nicaea approved the nineteen-year cycle.¹⁴⁰ The motivation appears to be the problem of determining the date of Easter in 607.¹⁴¹ Here is where certainty ends, for no known table will produce the data the *Epistola Cyrilli* describes. Jones argued that the whole exercise was an effort to correct some misconception of the Victorian table. For good measure, the author included Dionysian material.¹⁴²

When the southern Irish adopted 'Alexandrian reckoning' in 633, it meant that in practice they adopted Victorius' tables. Cummian indicates that the Victorian system was preferred because it was thought – perhaps correctly – that this was the one used in Rome and specifically recommended by Pope Honorius.¹⁴³ Certainly, the author of *De mirabilibus sacrae scripturae* was using Victorian tables in 654.¹⁴⁴ That is undoubtedly

138 See notably the criticisms of Mosshammer, *Easter Computus* 136–45, *idem*, *Prologues* 8–9.

139 Ed. Krusch, *Studien I* 344–9, and discussed on 101–9. See Dáibhí Ó Cróinín, 'A Seventh-century Irish Computus from the Circle of Cummian', in his *Early Irish History and Chronology* 116–17; and, in the same collection, 'The Irish Provenance of Bede's *Computus*' 174.

140 Jones, *BOT* 94; see above, p. 39 and n. 108.

141 Cordoliani, 'Les computistes' 25–7; Grosjean, 'Recherches' 226 *sqq.* AD 607 presents the same problem as AD 410, about which the real Cyril wrote to the Council of Carthage – namely the problem of an embolismic year where the embolismic month is inserted in the spring, and therefore affects the Easter calculation.

142 Jones, *BOT* 94–5. Jones' suggestion that 'Cyril' is really Pope Boniface IV, sporting a disguise contrived by Bishop Laurentius of Canterbury, is speculative. See also O'Connell, 'Easter Cycles' 79, who sees the *Epistola* as an attack on Victorius by a champion of Dionysius.

143 Warntjes, 'Victorius vs Dionysius' 33–98; ed. Walsh and Ó Cróinín 28 and n. 99; 38; 46; Harrison, *Framework* 59. Jones argued that the Irish did not see any significant difference between Victorian and Dionysian tables and used both, or some hybrid of the two: 'Victorian and Dionysiac Paschal Tables'; this is refuted by Warntjes, 'Victorius vs Dionysius' 39–40.

144 Warntjes, 'Victorius vs Dionysius' 50–2; James F. Kenny, *The Sources for the Early History of Ireland. Vol. 1 Ecclesiastical*. Rev. ed. (New York: Octagon, 1966).

why Bede's *Reckoning of Time* assumes that there are *two* Paschal systems which require refutation: the Insular eighty-four-year *latercus*, still used by most of the British, and the Victorian cycle, now favoured by some of the Irish and perhaps even most of the English.

The northern Irish wrote to Pope Severinus explaining why they declined to follow suit. A response came from Severinus' successor, the Pope-elect John IV, who condemned the recalcitrant Irish as Quartodecimans for retaining lunar limits of 14–20.¹⁴⁵ This is inaccurate, of course, and Bede excised the reference to Quartodecimanism in his transcription of Pope John's letter in *Ecclesiastical History* 2.19.¹⁴⁶ But the accusation stuck: it was raised by Aldhelm, as we have seen, and also used by Wilfrid at Whitby.

In interpreting the Council of Whitby, the historian is faced with the problem that both sources – Bede and Stephen of Ripon – were strongly invested in enlarging the Council's importance. This has perhaps distracted attention from an equally significant issue. Why was the meeting summoned in 664? The *latercus* and Alexandrian tables had been producing discordant Easters in Northumbria for twenty years and nobody had thought it urgent to remedy the situation.¹⁴⁷ On the other hand, one of

276–7; Jones, *BOT* 66; Harrison, 'Episodes' 310, n. 14. There is evidence that Victorius' cycle continued in use in Ireland until the eleventh century: see Daniel McCarthy, 'The Chronological Apparatus of the Annals of Ulster AD 431–1131', *Peritia*, 8 (1994): 46–97.

145 Kenneth Harrison, 'A Letter from Rome to the Irish Clergy', *Peritia*, 3 (1984): 222–9.

146 Alan Thacker, 'Bede and the Irish', in *Beda Venerabilis: Historian, Monk and Northumbrian*, ed. L.A.J.R. Houwen and A.A. MacDonald (Groningen: Egbert Forsten, 1996), 39; for the missing passage see Harrison, 'A Letter from Rome' 228. Bede also deletes a reference to the link between celebrating on 14 Nisan and Pelagianism found his account of the papal letter of 640 in *Historia Ecclesiastica* 2.19, though he leaves it in Ceolfrith's letter to Nechtan (5.21): Thacker, 'Bede and the Irish' 40; Dáibhí Ó Cróinín, "'New Heresy for Old": Pelagianism in Ireland and the Papal Letter of 640', in his *Early Irish History and Chronology*, 87–98; Jennifer O'Reilly, 'Bede and the Dating of Easter', in *History, Hagiography and Biblical Exegesis: Essays on Bede, Adomán and Thomas Becket*, ed. Máirín MacCarron and Diarmuid Scully (London and New York: Routledge, 2019), 169–76. However, see *Reckoning of Time* ch. 69 and ch. 66, *s.a.* 4591, and note. Bede sometimes confused Quartodecimanism with accepting the fourteenth Moon as a legitimate date for Easter: see *The Reckoning of Time* ch. 66, *s.a.* 4146. On Bede's sources see Michael Herren, 'The "Papal Letters to the Irish" cited by Bede: How did he get them?', in *Clerics, Kings and Vikings: Essays on Medieval Ireland in Honour of Donnchadh Ó Corráin*, ed. Emer Purcell, Paul MacCotter, Julianne Nyhan, and John Sherhan (Dublin: Four Courts Press, 2015), 3–10.

147 Leofranc Holford-Strevens, 'Marital Discord in Northumbria: Lent and Easter, his and hers', in *Computus and its Cultural Context in the Latin West, AD 300–1200: Proceedings of the 1st International Conference on the Science of Computus in Ireland and Europe, Galway,*

the rare disagreements between the Dionysian and the Victorian tables was looming in 665. Masako Ohashi has argued that the bone of contention at Whitby was not only, or even primarily, the eighty-four-year cycle, but the superiority of Dionysius' table over Victorius' table, its major rival.¹⁴⁸

That Wilfrid learned the *computus* of Dionysius under Archdeacon Boniface in Rome in 653–658 would suggest that the popes had adopted Dionysius' system by this time, but when exactly they did so is uncertain. Harrison argues that if Cumman were correct that Rome was using Victorian tables, the switch must have taken place between 630 (the date of Cumman's letter) and 640 (John IV's letter).¹⁴⁹ However, this is not certain, since the Victorian and Dionysian tables frequently produced identical Easter dates. Since Cumman's letter mentions the Dionysian tables, they would seem to have been known in the British Isles before Whitby, and the southern Irish *computus* manuscript used by Bede contained both a Victorian and a Dionysian cycle.¹⁵⁰ So argue Krusch and Poole; but Jones and Harrison demur.¹⁵¹ Harrison points out that, since Bede claims that Wilfrid was unable to learn the correct *computus* in England, it would follow that the Dionysian system was unknown there before 645.¹⁵² It was therefore Wilfrid who introduced the Dionysian system into England, and the Council of Whitby was really a promotion of that system, at the expense of the Victorian one, as the only valid alternative to the Celtic eighty-four-year system.

14–16 July, 2006, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 5 (Turnhout: Brepols, 2010), 143–58. Cf. Jones, *BOT* 103; Harrison, *Framework* 59–60.

148 Masako Ohashi, 'The Easter Table of Victorius of Aquitaine in Early Medieval England', *The Easter Controversy of Late Antiquity and the Early Middle Ages: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 10 (Turnhout: Brepols, 2011), 137–49, and 'Theory and History: an Interpretation of the Paschal Controversy in Bede's *Historia ecclesiastica*', in *Bède le Vénérable entre tradition et posterité*, ed. Stéphane Lebecq, Michel Perrin, and Olivier Szerwiniack (Lille: CEGES – Université Charles de Gaulle, 2005), 177–85. See also David Pelteret, 'The Issue of Apostolic Authority at the Council of Whitby', in *The Easter Controversy of Late Antiquity and the Early Middle Ages: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 10 (Turnhout: Brepols, 2011), 150–72.

149 *Framework* 161.

150 See below, section 5.

151 Krusch, 'Einführung' 150 *sqq.*; R.L. Poole, 'The Earliest Use of the Easter Cycle of Dionysius', in his *Studies in Chronology and History* (Oxford: Clarendon Press, 1934), 28–37; Jones, 'Victorian and Dionysiac Paschal Tables' 415; Harrison, *Framework* 62.

152 *Framework* 64.

The weakness of this argument is that it does not take into account the considerable difference between being able to *consult* a table and knowing how to *construct* one. The evidence of Cummián's letter seems incontrovertible: the Irish had access to the tables of Dionysius before 630 – but they almost certainly did not know how they were constructed. Even *De ratione computandi*, probably written in Cummián's own circle, and the most sophisticated of the Irish *computus* treatises yet to come to light, does not offer a coherent explanation of the Dionysian system's principles and why they are different from and superior to those of Victorius. These principles were what Wilfrid studied in Rome.

In any event, both Bede and Wilfrid's biographer Stephen misrepresent what was achieved at Whitby. It may have secured the victory of the Alexandrian system in Northumbria, but it may not have struck a decisive blow for the Dionysian version of that system. That would come with the appointment of Archbishop Theodore of Canterbury in 668 and the arrival of his collaborator, the North African scholar Hadrian, a year later. Both Bede and Aldhelm testify that the school of Canterbury under the leadership of these two men taught *computus*. But it has escaped the notice of most scholars that an important reason driving Pope Vitalian's decision to make this appointment was the necessity to supplant Victorian with Dionysian Paschal reckoning, particularly in the wake of the Synod of Whitby. In his transcription of the pope's letter to King Oswiu (*Historia ecclesiastica* 3.29) Bede omits a crucial passage and substitutes a paraphrase: 'After some remarks about celebrating the true Easter uniformly throughout the whole word, [the pope] goes on: ...'.¹⁵³ The missing passage proclaims that Rome and the whole world follows the Paschal reckoning of Cyril and Dionysius, and firmly forbids following that of Victorius.¹⁵⁴ In short, Vitalian's letter proves that the English, including the Roman party at Whitby, were largely adherents of Victorius' system, and needed correction – not the impression Bede wished to convey of the Synod. Vitalian's choice of the Greek Theodore and the bilingual Hadrian was a deliberate move to re-educate the Insular clergy in the Alexandrian *computus*. Immediately upon his arrival

153 *Historia ecclesiastica* 3.29, ed. and trans. Colgrave and Mynors 320–1.

154 The passage survives in MS Oxford, Bodleian Library Digby 63, fol. 57v (see Appendix 5, no. 166), and was edited by Krusch, *Studien II* 86. Tobit Loevenich and Immo Warntjes, 'Theodore of Tarsus and the Study of Computus at the Canterbury School', *Anglo-Saxon England*, 49 (2023): 9 (with translation in n. 35). See also Immo Warntjes, 'Pope Vitalian's Letter to King Oswiu of Northumbria and the Beginning of Armagh's Claim to Primacy over the Irish Churches', *Revue bénédictine*, 134 (2024): 1–38.

in Britain, Theodore toured the kingdoms to teach (in Bede's words), 'the right way of life and the canonical custom of celebrating Easter';¹⁵⁵ the first canon of the Council of Hertford in 682 stipulated the necessity of celebrating Easter by Dionysius' criteria, on the Sunday following the fourteenth Moon in the first month.¹⁵⁶

Nonetheless, Bede continued to see Victorius as a threat to be aggressively confronted. Irish computists continued to produce Victorian materials in the 680s and 690s.¹⁵⁷ The northern Irish communities were converted to the Dionysian reckoning for the most part by Adomnán of Iona around 686, though Adomnán was not immediately successful in persuading his own monastery to change, if we believe Bede's account.¹⁵⁸ The Picts adopted the Dionysian reckoning under King Nechtan about 713; Ceolfrith's letter to the king explicitly endorsed the Dionysian lunar limits of 15–21 and rejected the *latercus*' 14–20 and Victorius' 16–22.¹⁵⁹ Iona was won over by the Englishman Ecgbert, long a denizen of the Irish monastery of Rath Melgisi, in 715 or 716. Meanwhile, a concerted attempt was made to convert the British to the Roman Easter. Aldhelm of Malmesbury, at the request of a Wessex synod, wrote to King Geraint in Wales, recommending the Dionysian version of the Alexandrian system.¹⁶⁰ But the British churches adopted the Alexandrian reckoning only around the mid-eighth century.

In sum, at the time when Bede wrote *The Reckoning of Time* there were three competing *computus* systems: the *latercus*, now abandoned by all save the British; the Victorian system, still favoured in some circles in

155 *Historia ecclesiastica* 4.2, ed. and trans. Colgrave and Mynors 332–3.

156 *Historia ecclesiastica* 4.5, ed. Colgrave and Mynors 332–3; Loevenich and Warntjes, 'Theodore of Tarsus' 12.

157 Immo Warntjes, 'A Newly Discovered Prologue of AD 699 to the Easter table of Victorius of Aquitaine in an unknown Sirmond manuscript', *Peritia*, 21 (2010): 267.

158 Warntjes, 'Victorius vs Dionysius' 65–9; Harrison, 'Episodes' 309. The principal source here is Bede, *Historia ecclesiastica* 5.15.

159 Bede, *Historia ecclesiastica* 5.21, ed. Colgrave and Mynors 532–52.

160 Ed. Ehwald, 483; trans. Lapidge and Herren 157. Aldhelm also specifies the lunar limits of 15–21 and adds a typically Dionysian reference to the '318' bishops assembled at Nicaea.

Ireland,¹⁶¹ as well as in the Frankish territories on the Continent,¹⁶² the scene of Irish and English missionary efforts; and the *computus* of Dionysius Exiguus, known in the British Isles since at least 630, actively promoted, if not exactly introduced, by Wilfrid of Hexham, and officially mandated by Theodore of Canterbury. This situation is the context for Bede's vigorous efforts to defend Dionysius' system as the only acceptable one.

The last nineteen-year cycle in the extended Dionysian table began in 703 and ended in 721, necessitating a fresh continuation. This renewed attention to the problem may indeed have inspired Bede's two textbooks, *On Times* (703) and *The Reckoning of Time* (725). But these works also pointed to the need to make the Dionysian system sustainable. The answer was to make it teachable.

3. *COMPUTUS* AS A PEDAGOGY

Five things each day, without deception,
 should be known by each intellectual:
 by everyone, without the appearance of reproach,
 who is in holy orders.
 The day of the solar month, the phase of the moon,
 the tide, without folly,
 the day of the week, the feasts of the pure saints,
 related with exact clarity.¹⁶³

These verses come from the ninth-/tenth-century Irish 'Psalter of the Quatrains' (*Saltair na Rann*), but they capture with great clarity the achievement of Irish *computus* in the early medieval period, namely the transformation of *computus* into a coherent body of learning that could be

161 On the continuing conflict between southern and northern Irish churches, this time over Victorian and Dionysian forms of reckoning, see Warntjes, 'Victorius vs Dionysius' 70 sqq. A key issue dividing the Irish was the inability of Dionysius' tables to produce acceptable data for the historic Passion and Resurrection. Bede has to confront this problem in *Reckoning of Time* ch. 47. See the Commentary on this chapter for detailed discussion.

162 The 'apostle of the Frisians', Willibrord, was an *alumnus* of Wilfrid and a student of Egberht at Rath Melsigi, therefore a convinced Dionysian. His mission would lead him into Victorian territory, so Dionysian *computus* material would be necessary. Willibrord's *computus* manuscript survives as the first part of British Library MS Cotton Caligula A XV: see Warntjes, 'The *Computus Cottonianus* of AD 689'.

163 *Saltair na Rann* canto 1, trans. John Carey, *King of Mysteries: Early Irish Religious Writings*, rev. ed. (Dublin: Four Courts, 2000), 106.

systematically taught. The *Saltair* identifies this lore as essential for the Christian cleric and man of learning. What it does not mention is that, while the disciplines of the classical curriculum relied on authoritative textbooks – Donatus for grammar, Boethius for arithmetic and so on – *computus* had no named *auctor* and no canonized work of reference. In an important sense, Bede and *The Reckoning of Time* would occupy that space, but this was only possible thanks to his Irish models and Irish resources. At the same time, Bede departed from his Irish models in three ways: he aligned *computus* with astronomy (chs 1–64); he integrated *computus* and history (chs 65–6); and he dealt head-on with the potentially explosive issue of *computus* and eschatology (chs 67–71).

3.1 Bede's Irish *computus* 1: the Irish model of a *computus* textbook

The Reckoning of Time was part of a trend in *computus* literature that began in Ireland with a series of innovative textbooks composed between about 700 and 727, all supporting Dionysius' system of Paschal reckoning. These pioneering texts transformed *computus* into a pedagogy. The principal representatives of this genre are the *Computus Einsidlensis* (*Einsiedeln Computus*, ca. 710–718),¹⁶⁴ the closely related *Munich Computus* (ca. 718–719),¹⁶⁵ and *De ratione computandi* (*The Method of Computing*, now dated to about 727).¹⁶⁶ To these we may add a para-computistical work contemporary with *The Reckoning of Time*, and which Bede may have

164 The *Computus Einsidelensis* (hereafter *Einsiedeln Computus*) has been edited, translated, and analysed by Tobit Loevenich, 'The *Computus Einsidlensis*: First Edition and Translation with an Introductory Commentary', PhD diss., Trinity College, Dublin, 2023. On its textual tradition, see Immo Warntjes, 'Computus Einsidlensis', in *La trasmissione dei testi latini del Medioevo. Medieval Latin Texts and their Transmission. Te.Tra. 8. Opere anonime e pseudepigrafe*, ed. L. Castaldi (Florence: Edizioni del Galluzzo, 2023), 119–25.

165 Ed. and trans. Immo Warntjes, *The Munich Computus: Text and Tradition. Irish Computistics between Isidore of Seville and the Venerable Bede and its Reception in Carolingian Times* (Stuttgart: Franz Steiner Verlag, 2010). On its textual tradition, see Warntjes, 'Munich Computus', in *La trasmissione dei testi latini del Medioevo: Medieval Latin Texts and their Transmission. Te.Tra. 8. Opere anonime e pseudepigrafe*, ed. L. Castaldi (Florence: Edizioni del Galluzzo, 2023), 126–32.

166 Ed. and trans. D. Ó Cróinín in *Cummian's Letter 'De controversia paschali' and the 'De ratione computandi'*, ed. Walsh and Ó Cróinín 100–213. On its textual tradition, see Warntjes, 'De ratione computandi', in *La trasmissione dei testi latini del Medioevo: Medieval Latin Texts and their Transmission. Te.Tra. 8 Opere anonime e pseudepigrafe*, ed. L. Castaldi (Florence: Edizioni del Galluzzo, 2023), 133–41.

known: *De divisionibus temporum* (*The Divisions of Time*). *The Divisions of Time* takes the form of a dialogue between a pupil (*Discipulus*) and a teacher (*Magister*), and is in two parts. The second concerns the divisions of time from the atom up to sempiternity (*mundus*), while the first part is about the nature and value of *computus*.¹⁶⁷

These works embraced didactic formats in order to expound the foundations and techniques of *computus*.¹⁶⁸ This was the type of teaching to which Bede seems to have been accustomed, and which he probably received in his youth.¹⁶⁹ *The Reckoning of Time* is a textbook in this lineage. Bede is dedicated to defending the Alexandrian system and Dionysius Exiguus against alternatives, but that apologetic mission is now embedded in a pedagogical matrix.

The Irish, as well as Bede in *On Times*, adopted Isidore of Seville's catalogue of intervals of time in *The Nature of Things* and *Etymologies* 5.19–39 as their organizing framework. However, Isidore's Paschal table (*Etymologies* 6.17) was not usable, as he did not initially use Dionysius' model. Though later manuscripts of the *Etymologies* revised and eventually

167 The definitive study of this work, including a diplomatic edition based on the 'Sirmond Manuscript' (Oxford, Bodleian Library MS Bodley 309 fols 62v–64v) is by Jacopo Bisagni, *From Atoms to the Cosmos: the Irish Tradition of the Divisions of Time*, Kathleen Hughes Memorial Lectures 18 (Cambridge: Department of Anglo-Saxon, Norse and Celtic, 2020), 55–104. The two parts were published in PL 90 as *De computo dialogus*, also known as *Sententiae in laude computi* (cols 647–52), and *De divisionibus temporum* (cols 653–64). Bisagni dates the work to *ca.* 720 and establishes that its two parts form a single whole. For analysis of the resonance of *numerus* in this work see Faith Wallis, "Number Mystique" in Early Medieval Computus Texts', in *Mathematics and the Divine: A Historical Study*, ed. T. Koetsier and L. Bergmans (Amsterdam: Rodopi, 2005), 186–91.

168 On the Irish innovation of the *computus* textbook see Warntjes, 'Seventh-Century Ireland' 50–2, and 'Irische Komputistik zwischen Isidor von Sevilla und Beda Venerabilis: Ursprung, karolingische Rezeption und Forschungsperspektiven', *Viator Multilingual*, 42 (2011): 1–32.

169 He himself names only three men as his teachers: Abbots Benedict Biscop and Ceolfrith, and the monk Trumberht. Bede does not say what Benedict Biscop and Ceolfrith taught him (Trumberht educated him in the Scriptures): apparently, they taught him virtually everything, including *computus*. In the *Letter to Plegwine* 14, Bede reveals that he was studying *computus* as a boy, apparently from an ancient collection of texts. Dorothy Whitelock argues that his teacher was Ceolfrith: 'Bede's Teachers and Friends', in *Famulus Christi. Essays in Commemoration of the Thirteenth Centenary of the Birth of the Venerable Bede*, ed. Gerald Bonner (London: S.P.C.K., 1976), 24; cf. Benedicta Ward, *The Venerable Bede* (London: Geoffrey Chapman, 1990), 7, and Wesley Stevens, *Bede's Scientific Achievement* (Jarrow Lecture, 1985), 659.

aligned his tables with Dionysian norms, it was evidently not a good basis for teaching.¹⁷⁰ This obliged the Irish writers to innovate in both form and content.

The *Munich Computus* will serve as a representative example of the new Irish *computus* textbook. It opens with the intervals of time (chs 1–45) but expands Isidore's definitions by adding encyclopedic lore and instructions for calendrical calculations. For example, the chapter on the solar months (12) is enlarged by etymological and historical information on the origin of the Roman months (13–23) as well as the Hebrew and Greek months (24); a detailed explanation of the Roman mode of expressing dates in relation to the marker-days of Kalends, Nones, and Ides (25–8); and, finally, a chapter (29) on how to determine the weekday of any calendar day. Bede will follow this pattern in *The Reckoning of Time*: the general chapter on the months (ch. 11) will lead into a discussion of the Roman months based on the same material used by the Munich computist (12),¹⁷¹ then an explanation of the marker-days (13) and the Greek months (14). However, between the Greek months and the instructions for how to determine the weekday (21–2), Bede will insert a group of chapters on the zodiac, the relation of the lunar month to the passage of the Moon through the zodiac, and computing the age of the Moon on the Kalends (16–20). By contrast, the Munich computist carefully separates lunar computation from solar reckoning (46–53), and does not mention the zodiac at all.

Finally, the Munich computist turns to the computation of Easter (chs 54–8) and the structure of the nineteen-year cycle (59–62). This sequence is also broadly replicated in *The Reckoning of Time*. After expounding the units of time in ascending order from the day (chs 5–7) up to the solar year (30–43), Bede turns to the Paschal table of Dionysius Exiguus (44–6), explaining each of its eight columns in turn: the *annus Domini* (47), indictions (48–9), lunar epacts (50–2), solar epacts or concurrents (53–5), the lunar cycle (56–8), the Easter terminus (59–60), Easter Sunday (61), and the age of the Moon on Easter Sunday (62). But Bede does not stop there. The nineteen-year cycles of Dionysius can be joined together to form an even larger unit of time, the Great Paschal Cycle of 532 years

170 See above, n. 102.

171 This is the *Disputatio Chori et Praetextati*, an excerpt from Macrobius' *Saturnalia* probably made in Ireland for teaching purposes, and which circulated as an independent text. It is edited with a translation and introduction by Leofranc Holford-Strevens, *The Disputatio Chori et Praetextati: The Roman Calendar for Beginners* (Turnhout: Brepols, 2019).

(65). Straddling the Great Cycles are the World Ages chronicled in ch. 66; beyond them lie the unmeasured tracts of future time and the very end of time itself (67–71).

But Bede reveals his dependence on Irish models in style as well as substance. The *Munich Computus* adopts a conversational and didactic ‘voice’ that evokes the teacher–student encounter. This ‘voice’ expresses itself in rhetorical invitations (‘Let us examine ... ’ [249]), embedded master–student dialogues (‘How many epacts belong to every [Julian calendar] day? 19’ [167]), ‘signposting’ the instructor’s intentions (‘We will demonstrate ... Accordingly, we will set aside ... ’ [105]), emphatic imperatives (‘It has to be known ... ’ (*Sciendum quod* ...) e.g. 106–7) and pointers to doubtful questions (‘It is asked ... ’ (*queritur*) 128–9).

While *On Times* is drily expository, *The Reckoning of Time* shows Bede adopting Irish strategies to represent the act of teaching in his prose. To begin with, he frequently complains that it is much easier to teach *computus* face to face than to commit it to writing,¹⁷² which suggests that his new book was shaped by efforts to transcribe what he did in an instructional situation. When he explains a formula in *The Reckoning of Time*, Bede starts with a simple worked example, proceeds to a more complicated one, and finally inverts the process by beginning with the answer and working backward to the formula in order to corroborate its validity.¹⁷³ Moreover, Bede explicitly ‘streams’ his readership according to the degree of their background preparation. For example, he provides a number of methods for finding the zodiac sign in which the Moon is located, depending on whether the pupil has or has not learned the names and sequence of the signs and does or does not know how to perform certain arithmetical operations (chs 16–19). At one point he asks the more advanced students to explain the zodiac signs to the less well prepared (16).¹⁷⁴ He even constructs an ingenious (thought?-)experiment with hanging lamps in a darkened church to prove that a heavenly body which appears to an earthly observer to be higher up in the sky than another heavenly body may in fact be

172 E.g. *The Reckoning of Time* ch. 4: ‘These things can be both learned and taught more easily through speech than by the pen of a writer’; ch. 16: ‘Much can be said about this, but to better effect by someone speaking than by a writer’; ch. 55: ‘But many aspects of this discipline, just as of the other arts, are better conveyed by the utterance of a living voice than by the labour of an inscribing pen’.

173 For a good example of this method see ch. 17.

174 For other illustrations of Bede’s classroom manner see the commentary on *Reckoning of Time* chs 16 and 46.

closer to Earth (26). Apostrophes to the reader are frequent and at times we catch echoes of classroom dialogues and Bede's own somewhat gruff schoolmaster's intonation.¹⁷⁵ Finally, Bede likes to illustrate his points with familiar examples which summon up the experience of life in Anglo-Saxon England, a world lit and warmed by fire: for example, stars in the distant heavens are likened to torches advancing in the night (7), and an open-air fire-pit demonstrates the theory of climatic zones (34).

This stylistic change between *On Times* and *The Reckoning of Time* is striking: it bears witness to Bede's growing confidence as a teacher and writer, but also to the example of Irish textbooks. Before we consider how Bede modified this model, however, we must consider another element of Bede's debt to Irish learning: namely, his sources.

3.2 Bede's Irish *computus* 2: the 'library' of the Sirmond manuscript

Besides the textbook, Irish computists developed a second genre of *computus* literature, the anthology or dossier.¹⁷⁶ We have already encountered some elements of the Irish 'library' of Alexandrian and quasi-Alexandrian materials above. Here we will consider the contents of a specific assembly of materials created in Ireland before the 650s, and which constituted a major source of Bede's knowledge of *computus*.¹⁷⁷

A copy of this anthology made in the eleventh century in Vendôme survives as Oxford, Bodleian Library MS Bodley 309. Amongst scholars of *computus* this codex is called the 'Sirmond manuscript', after the French scholar Jacques Sirmond (1559–1651), who owned it and who loaned it to the Jesuit chronographer Denis Petau (1583–1652). Gilles Bouchier (1576–1665), another Jesuit, also borrowed the volume for his edition of and commentary on Victorius.¹⁷⁸

175 See Commentary on ch. 46.

176 See Warntjes' introduction in *Munich Computus* lii–liii.

177 This Irish background was argued most persuasively by Ó Cróinin, 'The Irish Provenance of Bede's *Computus*', 173–90.

178 This identification was made by C.W. Jones, 'The "Lost" Sirmond Manuscript of Bede's *Computus*', *English Historical Review*, 51 (1937): 204–19; see also *BOT* 105–10. It should be noted that the entire Sirmond assembly may not have been known to Bede, for new research suggests that it was assembled in stages, with some elements added as late as the Carolingian period: Warntjes, 'A Newly Discovered Prologue' 257, and *Munich Computus*, xxviii–xxxix, n. 55, and lxxiii–lxxiv; Marina Smyth, 'Isidore of Seville and Early Irish Cosmography', *Cambridge Medieval Celtic Studies*, 14 (1987): 69–102 at 94–101.

Petau records that Sirmond's volume contained the prologue and tables of Victorius of Aquitaine, the prologues of Theophilus and Cyril of Alexandria, the *Epistola Cyrilli*, the *Liber Anatolii*, Dionysius Exiguus's two letters, and much miscellaneous computistical information.¹⁷⁹ The Bodleian manuscript indeed contains all the items listed by Petau, including the Victorian cycles.¹⁸⁰ But the Sirmond volume is part of a larger manuscript cousinage. Three other manuscripts share much of the same material: Vatican City, Bibliotheca Apostolica Vaticana Rossiana lat. 227 (s. XI), Paris, BnF lat. 16361 (s. XI), and Geneva, Bibl. de l'Université 50 (s. IX). Jones also identified a number of other codices containing similar

Ó Cróinín, who proposed that the compilation was created in the middle of the seventh century, responded in 'The date, provenance and earliest use of the works of Virgilius Maro Grammaticus', in his *Early Irish History and Chronology*, 191–200. Smyth revisited the question in *Understanding the Universe in Seventh-Century Ireland* 156–7, n. 189; see also Warntjes, *Munich Computus*, xxviii–xxxix n. 55, lxxiii–lxxiv, as well as the useful synthesis in Kerstin Springsfeld, *Alkuins Einfluß auf die Komputistik zur Zeit Karls des Großen* (Wiesbaden: Franz Steiner, 2002), 68–79. For a recent review of the *status quaestionis* see Smyth, 'Isidorean texts in Sixth-Century Ireland', in *Isidore of Seville and his Reception in the Early Middle Ages: Transmitting and Transforming Knowledge*, ed. Andrew Fear and Jamie Wood (Amsterdam: Amsterdam University Press, 2016), 111–30 at 115–18. A critical piece of evidence is British Library MS Cotton Caligula A XV part A (ca. 743), which includes the *Computus Cottonianus* and other materials probably put together for Willibrord (ca. 658–739), who was educated in Ireland, in advance of his mission into Victorian territory on the Continent. It is one of the best and oldest witnesses to late antique and early medieval literature on Paschal reckoning (e.g. it is the sole surviving witness of the 'Cyprian' text of AD 243), but also contains Sirmond material: see Warntjes, 'Computus Cottonianus', and James T. Palmer, 'Computus after the Paschal controversy of AD 740', in *The Easter Controversy of Late Antiquity and the Early Middle Ages: Proceedings of the 2nd International Conference on the Science of Computus in Ireland and Europe, Galway, 18–20 July, 2008*, ed. Immo Warntjes and Dáibhí Ó Cróinín *Studia traditionis theologiae* 10 (Turnhout: Brepols, 2011), 213–28; the text of the *Computus Cottonianus* was discussed by Krusch, 'Die Einführung der griechischen Paschalritus im Abendland', who originally thought it was Cassiodorus' *computus*. A copy appears in the Silos *computus* MS, Paris, BnF nouv. acq. lat. 2169, fols 5v–9v, which led him to conclude that it was Spanish in origin. This was rightly refuted by J. Gómez Pallarès in his 1986 Barcelona thesis 'Estudios sobre el Computus Cottonianus', in *Studia Chronologica. Estudios sobre manuscritos latinos de cómputo* (Madrid: Ediciones Clásicas 1999), 21–42, and 'El Computus Cottonianus en los manuscritos de BnF, Vat. y Cottonianus', in *Studia Chronologica* 17, 1988, 1–18. B.N., NAL 2169 y León, Archivo de la Catedral de León, 204 and 205, and 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

configurations of material. All these codices are linked to Britain and Ireland.¹⁸¹

The Sirmond Manuscript opens with Bede's *The Reckoning of Time* and a list of Greek letter-numbers (fols 3v–41v).¹⁸² What follows comprises Carolingian reworkings of earlier Irish materials, many of which Bede used directly.

1. The Irish *De divisionibus temporum* (*The Divisions of Time*) discussed above (Bodley 309, fols 62r–73v). *The Divisions of Time* is probably the source of passages in *Reckoning of Time* chs 2, 3, 5, 6, and 11.
2. Short tracts on the *bissexthus* (Bodley 309, fols 74r–76r)¹⁸³ and on the *saltus lunae* (fols 74r–76r),¹⁸⁴ as well as formulae for the *saltus lunae* (fols 78r–v),¹⁸⁵ the *bissexthus* (fol. 78v),¹⁸⁶ and to find the number of hours of moonlight on any night of the lunation (fols 78v–79r). None of these are quoted directly by Bede, but none teach anything different from what is found in *The Reckoning of Time*.
3. *Computistical poem*: (Bodley fols 79r–80r) *Annus solis continetur ... Deo soli secula*.¹⁸⁷ Sometimes ascribed to Bede.¹⁸⁸
4. Computistical formulae. After three *argumenta* (Bodley 309, fols 80v–81r) – *De annis domini*, *De indictione*, *De Pascha* – the Sirmond manuscript reproduces the authentic *Argumentum titulorum paschalium* of Dionysius Exiguus (fols 81r–82r).¹⁸⁹ These Dionysian formulae for discovering various computistical data form the backbone of the whole second half of *The*

181 Other MSS include British Library Cotton Caligula A.XV, s. VIII; Bodl. Digby 63, s. IX; Cologne Dombibliothek 83-II, ca. 805; Milan Ambrosiana H 150 inf., ca. 810 (the 'Bobbio computus'); Leiden Bibl. der Rijksuniversiteit BPL Scaliger 28, s. IX; Bern Burgerbibliothek 610, s.X; Besançon 186, s. IX; Basel UB F III 15 k, s. IX; Vat. lat. 642, s. XI. To these can be added Bremen Staats- und Universitätsbibliothek misc. 0046: see Warntjes, 'A Newly Discovered Prologue'.

182 For a detailed list of the contents of the manuscript, see Dáibhí Ó Cróinín, 'Bede's Irish Computus', in his *Early Irish History and Chronology* 201–12.

183 Published amongst the works of Alcuin in PL 101.993.

184 PL 101.984–9.

185 PL 101.989–90.

186 PL 101.998–9.

187 See discussion below, p. 121.

188 BOT 270 and 283, n. 69. It is frequently attributed to Bede in the manuscripts. Jones did not include the poem in the *opuscula fortassis genuina* in *BOD*. However, the poem is included by Michael Lapidge in his edition of *Bede's Latin Poetry* (Oxford: Clarendon Press, 2019), 526–32.

189 In the Sirmond MS the *argumenta* stop with no. 10 in Jan's and Krusch's editions: see n. 105 above.

Reckoning of Time, since they are linked to each of the eight columns of the Paschal table. Bede cites them directly in chs 47–9, 52, 54, and 58. The formula for finding the date of the Paschal full Moons through the nineteen-year cycle which follows on fol. 82r–v (*A primo anno ... luna paschalis xiiii*) is not by Dionysius, but circulated in the Middle Ages as part of the expanded *Argumenta titulorum paschaliū*.¹⁹⁰

5. A dossier of letters in defence of the nineteen-year Alexandrian cycle, opening with ps.-Jerome, *Disputatio de sollemnitatibus paschae* (Bodley 309, fols 82v–84r).¹⁹¹ Bede does not directly cite this work, but he definitely makes use of the remainder of the dossier, namely the letter of Paschasius to Pope Leo (fols 84r–86r),¹⁹² cited in chs 9, 11, 43, and 66, and the letters of Dionysius Exiguus to Bonifatius and Bonus (fols 85r–86r),¹⁹³ and to Bishop Petronius (fols 86r–87v).¹⁹⁴ The letter of Dionysius to Petronius appears in chs 11, 16, 30, 38, and 47, while the one to Bonifatius and Bonus is cited in chs 42, 45, and 56. This dossier also includes Proterius of Alexandria's letter on the Easter controversy of 455 addressed to Pope Leo I (fols 88r–89v)¹⁹⁵ cited in *The Reckoning of Time* chs 6, 16, and 25, as well as the *Letter to Wicthed*; and the *Epistola Cyrilli* (fols 89v–90v),¹⁹⁶ quoted in ch. 44, as well as in the *Letter to Wicthed*.

6. *Liber Anatolii*, *Disputatio Morini*, and the *Acts of the Synod of Caesarea*. The *Liber Anatolii* (Bodley 309 fols 90v–93v),¹⁹⁷ which Bede, like so many others, accepted as genuine, and which is cited extensively in *The Reckoning of Time*,¹⁹⁸ is here accompanied by a puzzling work entitled *Disputatio Morini Alexandrini episcopi de ratione paschali* (fol. 94r–v). This text seems to be pro-Alexandrian, but the text is obscure and its motivations not entirely intelligible. More a theological than a computistical tract, it seems to argue

190 Cf. PL 67.505.

191 The rubric (*Exemplum suggestionis boni sci. primice. De sollemnitatibus et sabbatis ... ora pro me venerabilis papa*) belongs to the *Exemplum Boni* (ed. Krusch, 'Einführung' 109) but the text is ps.-Jerome, *Disputatio de sollemnitatibus paschae*, ed. Bruno Krusch, 'Chronologisches aus Handschriften', *Neues Archiv* 10 (1885): from Paris lat. 16361, 84–9. Also printed in PL 22.1220. Cf. *BOT* 108–9. This text is sometimes attributed to Columbanus.

192 See above, p. 34.

193 See above, pp. 39–40.

194 See above, p. 38.

195 See above, p. 34.

196 See above, p. 47.

197 See above, pp. 44–7.

198 Chs 6, 14, 16, 17, 22, 25, 30, 42, 50, 66 as well as the *Letter to Wicthed*. In the Sirmond manuscript this is followed by extracts from Eusebius, Jerome et al. concerning Anatolius (fols 93v–94r).

that, while the equinox is on 25 March, one must start to celebrate Easter on 22 March, since (a) Christ was crucified on 21 March and (b) 21 March was the anniversary of the Creation of the world, which occurred four days before the equinox. Since the conclusion follows that it is legitimate to celebrate before the equinox, it is little wonder that this tract fell into obscurity.¹⁹⁹ Bede does not cite Morinus. Finally, there are the spurious Acts of the Synod of Caesarea (fols 94v–95v), here entitled *Epistola Philippi de pascha*,²⁰⁰ another Insular tract composed in favour of the Alexandrian *computus*. It is cited in chs 47 and 56 of *The Reckoning of Time*.

7. A tract on Victorian Paschal reckoning containing a chronological note dating the ‘Easter of Suibne mac Commáin’ to the Victorian *annus Passionis* 631, i.e. AD 658 (Bodley 309, fols 95v–95^{bis}r)²⁰¹ is followed by three formulae for finding the age of Moon on the first of the month using the Victorian system of calculating from the Kalends of January (fol. 96r–v: *Incipit calculatio quomodo reperire ... errore sublato reperies*). These were later adapted by Bede in *The Reckoning of Time* ch. 20.²⁰²

8. Pope Leo I’s first letter to Emperor Marcian concerning the Easter

199 Discussed by Eric Graff, ‘The Recension of Two Sirmond texts: *Disputatio Morini* and *De divisionibus temporum*’, in *Computus and its Cultural Context in the Latin West, AD 300–1200: Proceedings of the 1st International Conference on the Science of Computus in Ireland and Europe, Galway, 14–16 July, 2006*, ed. Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 5 (Turnhout: Brepols, 2010), 112–42. Graff is preparing a new edition, a preliminary version of which is appended to this paper. This text is always associated with Dionysius Exiguus, and is even found in Reg. lat. 586, the manuscript Krusch used for his edition of Dionysius. It probably arrived in Ireland with other Dionysian materials: ‘Already in Cumman’s letter Morinus is grouped with Dionysius and Cyril in the list of paschal authorities’: Graff, ‘Recension’ 131. ‘Morinus’ may be an ascription of homage to Marinus, bishop of Arles, who presided over the synod of Arles in 314, whose first canon, asserting the necessity for unity on the date of Easter, is cited by Cumman (*ibid.* 132). See also Jones, ‘“Lost” Sirmond Manuscript’ 216; Grosjean, ‘Recherches’ 225 *sqq.*, and Cordoliani, ‘Les computistes’ 28–34, who transcribed the texts from MS Tours 334 and presented it in parallel with Muratori’s edition from Milan Ambrosiana H 150 inf., printed in PL 129.1357–8.

200 Ed. Krusch, *Studien II* 303–10, and from a different recension by A. Wilmart, ‘Un nouveau texte du faux concil de Césarée sur le comput pascal’, in his *Analecta Reginensia*, *Studi e testi* 59 (Vatican City: Bibliotheca Apostolica Vaticana, 1933), 19–27. The B-recension is the one cited by Bede. A new edition by Leofranc Holford-Strevens is forthcoming. It has also been edited by Uta Heil and Christoph Scheer, ‘Neuedition der sogenannten Akten des sogenannten Konzils von Cäsarea zum Ostertermin und Fastenfrage’, *Zeitschrift für antikes Christentum*, 26 (2022): 403–45.

201 Ó Cróinín, ‘Irish Provenance’ 103–5. This note is discussed below pp. 85–6.

202 Jones, ‘“Lost” Sirmond Manuscript’ 217.

controversy of 455 (Bodley 309, fols 96v–97r)²⁰³ which appears in ch. 44 of *The Reckoning of Time*.

9. A tract on the mystical significance of Easter (Bodley 309, fol. 97r–v: *De pascha autem tanquam maximo sacramento ... illuminante comedamus*). While this work is not cited by Bede, it may have been the inspiration for part of ch. 63, on the difference between Passover and the Feast of Unleavened Bread.²⁰⁴

10. *Romana computatio* (Bodley 309, fols 97v–98r: *Romana computatio ita digitorum ... aures retro respicientes*). A tract on finger-reckoning, probably the source of *The Reckoning of Time* ch. 1.²⁰⁵

11. Theophilus' prologue, dedicating his table to Theodosius (Sirmond fols 98r–99r),²⁰⁶ is frequently quoted by Bede in *The Reckoning of Time*, notably in chs 6, 11, 43, 59, and 61.

12. Fol. 99r–v. *Computistical argumenta*.

13. *Prologus Cyrilli* (Bodley 309, fols 90v–101r)²⁰⁷ is quoted in chs 11, 30, and 43.

14. Bodley 309 fols 101r–105v contains the *Disputatio Chori et Praetextati* mentioned above. Most of chs 11–13 of *The Reckoning of Time* consists of quotations from this work; it is cited in chs 16, 36, and 46. Bede used it much more sparsely in *On Times*.

15. Miscellany of computistica, including extracts, some from Isidore (Bodley 309, fols 105v–107v), the rubric of Dionysius Exiguus' cycles (fol. 107v), and a rota showing lunar and solar months and number of days in seasons (fol. 108r).

16. Following a biographical note on Victorius of Aquitaine, based on Gennadius (Bodley 209, fol. 108r), the Sirmond anthology reproduces Archdeacon Hilarus' letter to Victorius, as well as Victorius' prologue (fols 108r–110v). Hilarus' letter to Victorius appears in ch. 43 of *The Reckoning of Time* and Victorius' prologue in chs 50, 51, and 61. A short chronicle intervenes (fols 111r–113r), comprising selections from Eusebius/Jerome, from Olympiad 157 to AD 32; there follows Victorius' 532-year cycle (fol. 113r–120r). The Sirmond manuscript's version has no double dates for Easter. Bede refers directly to this cycle in chs 50, 51, and 61.

203 See above, p. 34.

204 This is discussed in the Commentary on ch. 63 below.

205 Ed. Jones, *BOD* 3.671–2; see Commentary on *The Reckoning of Time* ch. 1.

206 See above, pp. 23–4.

207 Ed. Mosshammer, *Prologues* 14–29. See above, p. 37.

18. Dionysius Exiguus' nineteen-year cycles (Sirmond fols 120r–131v). The Sirmond manuscript's version runs from AD 532 to 1421, and contains annals.²⁰⁸

The discovery of the Sirmond manuscript reveals that much of Bede's knowledge of Dionysian *computus* was derived not from Rome, or even from the Continent, but from Ireland. The itinerary of this collection was probably from southern Ireland to south or south-western England, and thence north. A southern Irish provenance is likely because the collection contains both Victorian and Dionysian material, but not an eighty-four-year Irish Paschal cycle. The south of Ireland had embraced the Victorian reckoning after Mag Léne; the north, however (Iona excepted), switched to Dionysius in the 680s, so the Sirmond anthology (like the Irish textbooks) may have been shaped in part by the subsequent debates between north and south.²⁰⁹

Did the Irish provenance of this material matter to Bede? Jones thought it did: he points out that Bede never mentions an Irish teacher or school or even the word *Scotti* because he 'feared these sources unless they were carefully checked'.²¹⁰ Ó Cróinín accuses Bede of deliberately suppressing information about the Irish origin of his material.²¹¹ Alan Thacker, however, refutes these allegations. Bede rarely refers to 'the Irish' in general terms, but, when he does, it is in a complimentary light: they are the *gens innoxia*, friendly to the English, whom Ecgrith of Northumbria unjustly attacked (*Historia ecclesiastica* 4.26). If Bede suffers from ethnic prejudice, it is against the British, not the Irish.²¹² By the time he wrote *The Reckoning of Time* all the Irish followed Roman Paschal reckoning; but even in Bede's account of Whitby in the *Ecclesiastical History* the Irishman Ronan argues on the Roman side. The Insular Paschal controversy, after all, was also a struggle in the mind of Bede himself. For Bede, Lindisfarne and Iona are the

208 On how these annals were influenced by their proximity to Victorius' prologue see C. Philipp E. Nothaft, 'Victorian Survival in High Medieval Chronography', in *Pre-Carolingian Computus and its Regional Contexts: Texts, Tables, and Debates*, ed. Immo Warntjes, Tobit Loevenich, and Dáibhí Ó Cróinín (Turnhout: Brepols, 2023), 201–22.

209 *Ibid.* 242. Ó Cróinín suggests that Aldhelm also had access to a Sirmond-type manuscript. A further argument in favour of a southern Irish origin is the fact that Cumman apparently had a similar anthology: cf. *Cumman's Letter*, ed. Walsh and Ó Cróinín 31. On the tensions between north (Dionysius) and south (Victorius) and how these were reflected in *computus* literature see Warntjes, 'Victorius vs Dionysius', and 'Pope Vitalian's Letter to King Oswiu of Northumbria'.

210 *BOT* 131.

211 'Irish Provenance' 246–7.

212 Thacker, 'Bede and the Irish' 32–6.

cradles of Northumbrian Christianity, and the resistance of Iona to Roman *computus* was a source of pain; that is why its conversion to the orthodox reckoning is the climax of the *Ecclesiastical History*.²¹³ Thacker makes the sensible suggestion that if Bede did not always credit his Irish computistical sources, it was probably because most of them were anonymous, like the Irish textbooks.²¹⁴ In the *Ecclesiastical History* he certainly expresses admiration for Irish learning as well as Irish sanctity.²¹⁵ And by the time he wrote *The Reckoning of Time* Bede would not associate the eighty-four-year cycle so much with the Irish as with the British, who still refused to convert. If anything, Bede may have felt that the problem with the present-day Irish was that many of them still favoured the cycle of Victorius, but they were not peculiar in that, as the Gaulish churches did too.²¹⁶

The Sirmond manuscript is uniquely important for understanding Bede's project, but it was certainly not the only *computus* collection available to him. Much computistical literature known to Bede is not accounted for by the Sirmond volume. He was familiar with several of the anonymous tracts, such as the *De saltu lunae* falsely ascribed to Alcuin (ch. 42), the anonymous *De causis quibus nomina acceperunt duodecim signa* (16, 17), and the *De ratione embolismorum* (45), and with earlier computistic literature such as Victor of Capua's *De pascha* (27, 50, 51, and 64), as well as other calendar material such as the *Laterculus* of Polemius Silvius (11, 14).

213 *Ibid.* 41–2.

214 *Ibid.* 50.

215 E.g. *Historia ecclesiastica* 3.3.27; Thacker, 'Bede and the Irish' 50. For further evidence of Bede's positive regard for the Irish and indifference to the issue of ethnic identification see T.M. Charles-Edwards, 'Bede, the Irish, and the Britons', *Celtica*, 15 (1983): 42–52; C.A. Ireland, 'Boisil: An Irishman Hidden in the Works of Bede', *Peritia*, 5 (1986): 400–3; Barbara Yorke, 'Bede's Preferential Treatment of the Irish', in *Cities, Saints and Communities in Early Medieval Europe: Essays in Honour of Alan Thacker*, ed. Scott DeGregorio and Paul Kershaw (Turnhout: Brepols, 2020), 223–40; and Sarah McCann, 'Plures de Scottorum regione: Bede, Ireland, and the Irish', *Eolas*, 8 (2015): 20–35. On Bede's use of Irish sources in other contexts see Jean-Michel Picard, 'Bede and Irish Scholarship: Scientific Treatises and Grammars', *Ériu*, 54 (2004): 139–48, and 'Bède et ses sources irlandaises', in *Bède le Vénérable entre tradition et postérité*, ed. Stéphane Lebecq, Michel Perrin, and Olivier Szerwiniack (Lille: CEGES – Université Charles de Gaulle, 2005), 43–55.

216 Thacker, 'Bede and the Irish' 53–4.

3.3 Bede's innovations 1: yoking *computus* education to the core graphic data (calendar and Paschal table)

Bede's Irish models divided their subject into solar and lunar reckoning. However, they never attempted to connect solar reckoning to the calendar as a graphic document, nor lunar reckoning to the physical layout of the Paschal table. Bede reframed his material on solar and lunar reckoning to highlight these two core documents.

Calendars in medieval manuscripts, like monumental calendars in the ancient Roman world, were vertical lists of dates in each of the twelve months.²¹⁷ In ancient Rome, each date was flanked by a designation of its legal character (e.g. whether it was a day on which courts could sit), as well as a series of letters in alphabetical order from A to H, standing for the eight-day Roman week. Year by year, one of these letters in sequence would represent the market day. The medieval Christian calendar maintained this format, replacing the character notations with the martyrology and modifying the A–H key-letters to a system using A–G (or the numbers I–VII) for the seven weekdays. Each year, the letter representing Sunday would advance by one and, in leap years, two. It is important to bear in mind that the Roman-type calendar Bede knew was generic, and had to be customized to represent the conditions of a particular year. Additional columns of key-letters were added to permit calculation of lunar data for any date.

He arranges his material in *The Reckoning of Time* to group together topics connected with the calendar-document, whether lunar or solar, instead of segregating them into two topical sections, as the Irish textbooks do. After introducing the Roman calendar and its unique way of expressing dates (chs 12–13), Bede turns to the zodiac signs associated with each month (16), explaining how to find the position of the Moon in the zodiac (17–19) and how to determine the age of the Moon on any calendar date (20–3). In ch. 19, Bede points his reader to the calendar and its column of letters A–O for finding the age of the Moon. He states that he has appended ‘at the beginning of this same work’ (*Praeposui* *eidem operi*) the Table of Regulars (*Pagina regularum*), which translates these key-letters in

217 See the illuminating synopsis and analysis by Immo Warntjes, ‘The Origin(s) of the Medieval Calendar Tradition in the Latin West’, in *Calendars in the Making: The Origins of Calendars from the Roman Empire to the Later Middle Ages*, ed. Sacha Stern (Leiden: Brill, 2021), 130–87.

the margins of the calendar pages into locations of the Moon within the zodiac. In sum, he is expecting his readers to have access to a calendar with specific features, as well as the table to convert the key-letters into dates (see Appendix 1). In ch. 23 he explains the ‘dotted letters’ (*litterae punctatae*) table, likewise based on a marginal calendar key, which reveals the age of the Moon on any given day. On both occasions, he refers his readers to the calendar (*annalis libellus*) to locate the key-letter, which they will then find on the table.

The Reckoning of Time is the first *computus* textbook to teach the use of such tables and, as such, it heralds a transformative trend in *computus* literature, when more and more information came to be encoded in and accessed through tables.²¹⁸ What is intriguing about Bede’s teaching style in these chapters is the sure-footed manner in which he instructs his student in the process of consulting the two documents, namely the calendar and the table. For example, in ch. 19 he addresses his reader:

So if you wish to know what sign or what part of the month the Moon is in on any given day of any year, open the codex <to the calendar> (*aperto codice*), and note the letter prefixed to that day. Then, turning to the Table of Regulars in which the sequence of letters is laid out, and having found the year <of the nineteen-year cycle> from the inscription at the top (*eodemque statim ex titulo frontis inuento*), find the letter pertaining to that day which you were seeking. Then, looking backwards and forwards [i.e. to the left and right margins], you will discover what month and sign the Moon is in from its position. Reader, we will give you something to serve as an example. Suppose you are looking for the location of the Moon on the Kalends of April in the sixth year of the nineteen-year cycle. Open the <calendar-> codex and look up that particular date. You will find written in front of it the letter E. Turn to the Table of Regulars. Look at the sixth year and find the letter E by looking through its alphabet. Now run your eye along to the margins. You will discover that the end of Gemini is noted on one side and the beginning of the month of June on the other. And reader, whether you are learned or unschooled, you will rejoice to have tracked down what you were looking for, right before your eyes. Moreover, during that whole year, on whatever days you find the letter

218 See Faith Wallis, ‘What a Diagram Shows: a Case Study of *Computus*’, *Studies in Iconography*, 36 (2015): 1–40, and ‘An Eleventh-Century “Science Album”’: Madrid, Biblioteca Nacional de España, Mss/9605’, in *Lumières du Nord. Les manuscrits enluminés français et flamands de la Biblioteca Nacional de España*, ed. Samuel Gras and Anne-Marie Legaré (Lille: Presses Univ. du Septentrion, 2021), 19–63, and literature cited therein.

E inscribed, you will know that the Moon, whether waxing or waning, is occupying that part of the sky.

Bede evidently feels quite confident in using, and teaching others to use, such combinatorial tables²¹⁹ in conjunction with a calendar. He clearly indicates that both calendar and tables are in the same physical volume and that one moves back and forth between the two to find the age of the Moon. It is possible that he learned this skill in working with Eusebian canons and canon tables during the preparation of the Codex Amiatinus and its sibling pandects at Wearmouth-Jarrow. Using canon tables, like consulting the Table of Regulars, involved correlating two documents: the Gospels with Eusebius' passage-numbers in the margins, and the tables themselves, which matched cognate passages in one or more Gospels using these key numbers. In front of the Gospels in the Codex Amiatinus is Jerome's preface *Nouum opus*, which includes an explanation of how to use the canon tables, modelled on Eusebius' *Letter to Carpianus*. This explanation bears a striking resemblance to Bede's instructions for the Table of Regulars, including numerous direct verbal echoes:

In each of the Gospels, starting at the beginning and running to the end, there are different numbers. The number in black ink has underneath it another number in red ink, which runs <from one> to ten, indicating in which canon the number is to be looked for. So **with the Gospel-book open** (*aperto codice*) **if you wish to know** (*scire uolueris*) what the canon is, you can learn it from the subscript number, and returning to the front (of the volume) where the canons are collected, and **having found** that canon **under the heading** (*eodemque statim ... ex titulo frontis inuento*) you will find the number of the canon of that same Evangelist under his name, and beside him **in the other columns near it** (*e regione*), take note of the numbers, and when you know them, turn back to the book of each <Evangelist> and having found the numbers which you made a note of, you will immediately find as well the places in which they said either the same thing or something close to it.²²⁰

219 Combinatorial tables: Wallis, 'What a Diagram Shows' 7–8.

220 *Singulis euangeliiis ab uno incipiens usque ad finem librorum dispar numerus increscit. Hic nigro colore perscriptus sub se habet alium ex minnio numerum discolore, qui ad decem usque procedens indicat, prior numerus in quo sit canon requirendus. Cum igitur aperto codice uerbi gratia illud siue illud capitulum scire uolueris cuius canonis sit, statim ex subiecto numero doceberis, et recurrens ad principia in quibus canonum est distincta congeries, eodemque statim canone ex titulo frontis inuento, illum quem quaerebas numerum eiusdem euangelistae qui et ipse ex inscriptione signatur inuenies, atque e uicina ceterorum tramitibus inspectis quos numeros e regione habeant, adnotabis et cum scieris,*

Bede will recycle much of the same vocabulary (notably *titulus* and *regio*) in his discussion of the eight columns of the Dionysian Paschal table in chs 44–64.²²¹ Here again, *The Reckoning of Time* will explicitly draw the reader's attention to the Paschal table's distinctive form and way of ordering information, even though no Paschal table is actually included in the text. This novel attention to calendar and table will influence how *The Reckoning of Time* was presented in medieval manuscripts.

3.4 Bede's innovations 2: aligning *computus* and astronomy

Another way in which Bede innovated with respect to his Irish models and sources was by declining to embrace the distinctive Irish identification of *computus* with 'number' (*numerus*).²²² This focus of Irish *computus* textbooks on number is most clearly articulated in the Irish *Divisions of Time*. The first part of this work promotes the elevated view of *computus* as the link between nature and Scripture by sketching a sort of Christian *quadrivium* of law (*canon divinus*), scripture (*historia*), 'number' (*numerus*), and *grammatica*.²²³

recurrere ad uolumina singulorum et sine mora, repperitis numeris quos ante signaueras, repperies et loca in quibus uel eadem uel uicina dixerunt: Jerome, *Nouum opus*, ed. Donatien de Bruyne, *Prefaces to the Latin Bible*, intro. Perre-Maurice Bogaert and Thomas O'Loughlin (Turnhout: Brepols, 2015), 154–5; emphases mine; my translation. On the Eusebian canon tables see Grafton and Williams, *Christianity and the Transformation of the Book* 194–200, and Matthew R. Crawford, *The Eusebian Canon Tables: Ordering Textual Knowledge in Late Antiquity* (Oxford: Oxford University Press, 2019), esp. 130–1 on *Nouum opus*. On the Canon Tables and *Nouum opus* in the Codex Amiatinus see Celia Chazelle, *The Codex Amiatinus and its "Sister" Bibles: Scripture, Liturgy, and Art in the Milieu of the Venerable Bede* (Leiden: Brill, 2019), 182–95. Bede's possible contribution to the production of the Codex are discussed by Michelle P. Brown, 'Bede's Life in Context', in *Cambridge Companion to Bede*, ed. Scott DeGregorio (Cambridge: Cambridge University Press, 2010), 11–12, and *Bede and the Theory of Everything*, ch. 7. For a more cautious assessment, see Richard Marsden, 'Manus Bedae: Bede's Contribution to the Ceolfrith Bibles', *Anglo-Saxon England*, 27 (1998): 65–85.

221 For detailed discussion, see commentary on ch. 47.

222 What follows builds on arguments I presented in "Number Mystique" in *Early Medieval Computus Texts* 181–99, and in 'Astronomy and ratio in Bede's *De temporum ratione*', in *Il tempo nell'alto medioevo. LXX Settimana di studio, Spoleto 13–19 aprile 2023* (Spoleto: Centro Italiano di Studi sull'Alto Medioevo, 2024), 109–45.

223 Ed. Bisagni, I.1.1, p. 57: 'Agustinus dixit de quattuor diuisionibus scripture: "Quattuor necessaria sunt in ecclesia Dei. Canon diuinus, in quo narratur et predicatur uita futura; Historia in qua gesta rerum narrantur; Numerus, in quo facta futurorum et sollemnitates diuine dinumerantur; Grammatica, in qua scientia uerborum intellegitur". Iste sunt quattuor diuisiones scripture, quasi quattuor fundamenta'. All translations from this text are mine.

By *numerus*, *The Divisions of Time* explicitly means *computus*: *numerus* is the skill ‘by which future events and divine celebrations are reckoned up (*facta futurorum et solemnitates diuinae dinumerantur*)’, and its meaning is illustrated by a quotation from Isidore of Seville:

In praise of *computus*, Isidore [*Etym.* 3.4] says:

The *ratio* of numbers is not to be scorned, for it reveals the mystery contained in many passages of Holy Scripture. Not in vain is it said of God [Wisdom 11.21]: Thou hast made all things in measure, number and weight. The number six, perfect in its factors, proclaims the perfection of the cosmos by a certain numerical significance. Likewise the forty days wherein Moses, Elijah and our Lord himself fasted cannot be understood without a knowledge of number. There are other numbers in Holy Scripture whose symbolism (*figuras*) can only be unravelled by those knowledgeable in this science. Using the science of numbers, we have an ability to stand fast (*consistere*) to some degree, when through this science (*disciplina*) we study the hours, discuss the course of the months or learn the span of the revolving year. Indeed through number we are taught so that we do not fall into confusion. Take number away, and everything lapses into ruin. Remove *computus* from the world, and blind ignorance will envelop everything, nor can men who are ignorant of how to calculate (*calculi ... rationem*) be distinguished from other animals.²²⁴

This passage from Isidore introduces a discussion of number itself. At one point the Pupil asks:

PUPIL: So tell me when this calculating (*ratio*) was first discovered. MASTER: At the time when the creatures were made, that is, at the beginning of the universe. That is when number first began; as we read in Genesis, ‘And the evening and the morning were the first day’. He spoke of night and day when he said ‘evening’ (that is, night) and ‘morning’ (that is, day). But he spoke of number when he said ‘the first day’, the second, third, fourth, fifth, sixth and seventh. God spoke of number again when he said about the Sun and Moon, ‘And they shall be signs for seasons and days and years’. When he said ‘days’

This passage is loosely based on Augustine’s *De Genesi ad litteram* I, 1; cf. *De ratione computandi*, ed. Ó Cróinín, 117.

224 I.1.1, ed. Bisagni 57. Isidore’s immediate source is Cassiodorus, *Institutiones* 2.4.7, ed. R.A.B. Mynors (Oxford: Clarendon Press, 1937), 141.1–7: ‘tolle saeculo computum, et omnia ignorantia caeca complectitur’. The final phrase may ultimately derive from Augustine, *De libero arbitrio* 2.16.42, ed. W.M. Green, CCSL 29 (1970) p. 265, ll. 25–6: *Formas habent creaturae, quia numeros habent, adime illis haec, nihil erunt* (Created things have forms because they have numbers; take this away from them, and they are nothing). The quotation from Isidore also appears in *De ratione computandi* 2, ed. Ó Cróinín 116–17.

and ‘seasons’ and ‘years’, then he spoke of number. For who can understand days and seasons and years except by number?²²⁵

Shortly thereafter, the Master introduces the three parts of philosophy and defines one of these – *physica* – as the four sciences of the quadrivium: arithmetic, geometry, music, and astronomy. The greatest of these is arithmetic, which is prior to all the others, and the ‘model of reasoning’ (*ratiocinationis exemplar*) of the Creator’s mind.²²⁶

In sum, the Irish writer identifies *computus* with *numerus* and justifies its religious significance by pointing to the link between number and creation and between number and Scripture. It is arithmetic – *ratio calculi* – that links *computus* to the divine and conveys its salvific power.

Bede departs from this Irish model in two interconnected ways. First, he replaces *numerus* or arithmetic with astronomy and cosmology – that is, the physical science of the movement of the heavenly bodies – as both the disciplinary analogue of *computus* and its theological justification. Indeed, apart from ch. 1 on finger-reckoning and ch. 4 on fractions, there is nothing about arithmetic *per se* in *The Reckoning of Time*, and certainly no encomium of the metaphysical power of number.²²⁷ Instead, a substantial percentage of *The Reckoning of Time* is about astronomy – and not all of this astronomical material is directly or obviously concerned with calculating Easter.

Secondly, while Bede follows the Irish by situating the principles of *computus* in God’s creation of the world, he identifies the exemplar of God’s thought not with number, but with astronomy. The creation of the heavenly bodies on the fourth day of the world is the basis of *computus*, because only then could the movements of the Sun and Moon provide the means to observe and measure time’s passing. Bede calls this divinely created time ‘natural time’. As he explains in ch. 6 of *The Reckoning of Time*, this fourth day of creation was the vernal equinox,²²⁸ and the Moon at its creation was ‘perfect’: that is, full. God’s rules for the Jewish Passover laid down in the

225 I.2.2, ed. Bisagni 58.

226 I.3.12, ed. Bisagni 60. The phrase derives from Boethius, *De arithmetica* 1, proem., ed. H. Oosthout and J. Schilling, CCSL 94A (Turnhout: Brepols, 1999), 12.77.

227 The exercises in number symbolism which Bede so frequently carries out in his exegetical works are all but absent in *De temporum ratione*. This is true even in cases where the numbers in question invite such symbolic readings, e.g. the twelve months of the year or the twelve signs of the zodiac: see Wallis, “‘Number Mystique’” 185.

228 E.g. Warntjes, *Munich Computus* ch. 44, 146–7, and Warntjes’ commentary on these pages.

book of Exodus are astronomical. Finally, God fulfilled his plan to save the world through the death and resurrection of Jesus Christ at the time of the Passover. Bede advocates Dionysius Exiguus' Paschal system because it alone (in his view) aligns with God's 'natural time' as embodied in the astronomical realities fashioned at creation, mandated in the Jewish Law, and given meaning by salvation history.²²⁹ Thirdly, Bede will use the word *ratio* to mean not only mathematical computation but 'scientific reasoning', particularly in connection with astronomy.

Bede's first step was to fold the cosmology of *The Nature of Things* into the basic structure of *On Times* based on the units of time, and to enlarge it with other cosmographical and astronomical material. Some of this material came from *The Nature of Things*, but Bede also added numerous chapters which have no analogue in the earlier work. The following table will make this plain.

Structure and sources of *Reckoning of Time* compared with Bede's
The Nature of Things (DNR) and *On Times* (DT), and Isidore's
De natura rerum

	1. Calculating with the fingers	no analogue
	2. Three ways of reckoning time	no analogue
	3. The smallest intervals of time	DT 1
	4. The reckoning of duodecimal fractions	no analogue
Calendar	5. The day	DT 2; Isidore DNR 1
	6. The world's first day	no analogue
	7. Night	Isidore DNR 2, 28
	8. The week	DT 4; Isidore DNR 3
	9. The seventy prophetic weeks	no analogue
	10. The week of the World Ages	no analogue
	11. The months	DT 5; Isidore DNR 4a

²²⁹ Bede's conception of natural time is discussed at greater length by Faith Wallis, 'Si Naturam Quaeras: Reframing Bede's "Science"', in *Innovation and Tradition in the Writings of the Venerable Bede*, ed. Scott DeGregorio, Medieval European Series 7 (Morgantown: West Virginia University Press, 2006), 61–94.

	12. The Roman months	DT 6a; Isidore DNR 4b
	13. Kalends, Nones and Ides	DT 6b; Isidore DNR 4c
	14. The Greek months	no analogue
	15. The English months	no analogue
	16. The signs of the twelve months	DNR 16–17
	17. The course of the Moon through the signs	DNR 21
<i>astronomy</i>	18. More on the course of the Moon, for those who are ignorant of the signs	no analogue
	19. More on the same subject: for those who do not know how to calculate	no analogue
	20. What age the Moon is on any given first day of the month	no analogue
	21. What day of the week it is on the kalends	no analogue
	22. A formula for any Moon or weekday	no analogue
	23. For those who do not know how to calculate the age of the Moon	no analogue
<i>astronomy</i>	24. The number of hours of moonlight	no analogue
<i>astronomy</i>	25. When and why the Moon appears to be facing upwards, facing downwards, or standing upright	no analogue
<i>astronomy</i>	26. Why the Moon, though situated beneath the Sun, sometimes appears above it	no analogue (the phenomenon mentioned without explanation in DNR 20)
<i>astronomy</i>	27. On the size, or eclipse, of the Sun and Moon	DNR 22–3; Isidore DNR 20–1
<i>astronomy</i>	28. What the power of the Moon can do	Isidore DNR 19
<i>astronomy</i>	29. The harmony of the Moon and the sea	DNR 39; Isidore DNR 40
<i>astronomy</i>	30. Equinoxes and solstices	DT 7; Isidore DNR 8

<i>astronomy</i>	31. The varying length of days and the different position of the shadows	DNR 47–8
<i>astronomy</i>	32. Why the same days are unequal in length	DNR 19
<i>astronomy</i>	33. In what places the shadows or days are equal	no analogue
<i>astronomy</i>	34. The five circles of the universe and the passage of the stars under the Earth	DNR 9; Isidore DNR 10
	35. The four seasons, elements and humours	DNR 4, DT 8; Isidore DNR 7, 11
	36. Natural years	DT 9a
	37. The different years of the ancients	DT 9b
	38. The calculation of the leap-year day	DT 10a
	39. Measuring the leap-year increment	DT 10b
	40. Why it is intercalated on the sixth kalends of March	no analogue
<i>astronomy</i>	41. The Moon also has its quarter day	no analogue
	42. The ‘leap of the Moon’	DT 12
<i>astronomy</i>	43. Why the Moon sometimes appears older than its computed age	no analogue
Paschal table	44. The nineteen-year cycle	DT 11a
	45. Embolismic and common years	DT 9
	46. The <i>ogdoas</i> and the <i>hendecas</i>	DT 11b
	47. The years of the Lord’s Incarnation	DT 13 (all columns)
	48. Indictions	—
	49. Formula for finding the indiction	DT 14 (all formulas)
	50. Lunar epacts	—
	51. How certain people err concerning the beginning of the first month	no analogue
	52. Formula for finding the number of the lunar epacts	—
	53. Solar epacts	—
	54. Formula for finding the number of the solar epacts, and when leap year will fall	—

	55. The cycle of both epacts, and how to calculate them using the fingers	no analogue
	56. The lunar cycle	—
	57. Formula based on the lunar cycle for finding the age of the Moon on 1 January	no analogue
	58. A formula to find what the year of the lunar cycle or of the nineteen-year cycle it is	—
	59. The fourteenth Moon of Easter	
	60. A formula for finding it	no analogue
	61. Easter Sunday	
	62. The Moon of that day	
	63. The difference between the Pasch and the Feast of Unleavened Bread	no analogue
	64. The allegorical interpretation of Easter	DT 15
	65. The Great Paschal Cycle	no analogue
World chronicle	66. The Six Ages of this world	DT 16–22
Future time	67. The remainder of the Sixth Age	DT 22b
	68. Three opinions of the faithful as to when the Lord will come	no analogue
	69. The time of Antichrist	no analogue
	70. The Day of Judgement	no analogue
	71. The Seventh Age, and the Eighth Age of the world to come	no analogue

As we observed earlier, chs 18 and 23 refer explicitly to tables which decode key-letters in the calendar for finding the position of the Moon in the zodiac and the age of the Moon. Where the Moon is in the zodiac has no relevance to Easter calculations and, while its age might be considered significant for locating the all-important Paschal full moon, in fact Bede does not make this connection. The purpose of these tables is apparently purely astronomical. There are also intriguing chapters on astronomical topics such as the position and visible shape of the Moon (chs 25–6), the

effect of the Moon on the tides (ch. 29), and the reasons why there are sometimes differences between the visible and the calculated age of the Moon (ch. 43). In short, Bede has injected a surplus of astronomy into *The Reckoning of Time*.

The context for this surplus of astronomy lies in the connection Bede makes between *ratio* and *natura*. This is adumbrated in two chapters of *The Reckoning of Time* which have no precedent in his earlier works: ch. 2, on the three ways of reckoning time, and ch. 6, 'The world's first day'. In ch. 2 Bede tells the reader that the *ratio temporis* is threefold:

it operates either according to nature, or according to custom, or according to authority. This authority is itself twofold. It is either human authority – for example, holding Olympics in a cycle of four years ... or divine authority, as the Lord in the Law commands that the sabbath be kept on the seventh day Now it is by human custom that the month is considered as having thirty days, even though this does not match the course of either the Sun or the Moon. Those who probe with subtlety into these matters confirm that, in fact, the Moon has ... twelve hours less <than thirty days>, and the Sun has ten and a half hours more. Thus with nature as our guide (*natura duce*) we discover that the solar year is made up of 365¼ days, but the lunar year is finished in 354 days if it is common and 384 days if it is embolismic This 'nature' was created by the one true God when He commanded that the stars which He had set in the heavens should be the signs of seasons, days and years [Gen. 1:4]; it is not, as the folly of the pagans asserts, a creating goddess, one amongst many.²³⁰

This threefold division closely echoes the triad *auctoritas, consuetudo, ratio* which grammarians used to distinguish authority, custom, and reason in rules of speech.²³¹ It is noteworthy, however, that Bede replaces grammatical *ratio* with *natura*. There is a parallel in the Irish *De ratione computandi*,²³² but, unlike the Irish work, *The Reckoning of Time* tells us what *natura* is: it is what God created when he made the Sun, Moon, and stars to be the signs of seasons, days, and years. In ch. 6 Bede argues that the

230 Ed. Jones pp. 274–6, ll. 8–10, 14–15, 18–25, 29–31.

231 Cf. Quintilian, *Inst. or.* 1.6 for the triad *auctoritas consuetudo ratio*, which Bede might have encountered in Virgilius Maro Grammaticus or Augustine: see Vivien Law, *Wisdom, Authority and Grammar in the Seventh Century: Decoding Virgilius Maro Grammaticus* (Cambridge: Cambridge University Press, 1995), 80–1 and 'Auctoritas, consuetudo and ratio in Augustine's *Ars grammatica*', in *De ortu grammaticae: Studies in Medieval Grammar and Linguistic Theory in Memory of Jan Pinborg*, ed. G.L. Bursill-Hall, S. Ebbesen, and K. Koerner (Amsterdam: John Benjamins, 1990), 191–207.

232 Ed. and trans. Ó Cróinín 120–1 and n. 6.

first day of creation was not the vernal equinox on 21 April; 21 April was, rather, the date of the fourth day of creation, when the Sun and Moon were made.²³³ Without the Sun to cast a shadow that would measure the passage of the hours on Day 1, there was no way to tell whether the hours of daylight equalled those of night. Time itself *is* measurement (as Bede will proclaim in ch. 2) – but that measurement is provided by physical planets moving according to astronomical laws. The remainder of ch. 6 of *The Reckoning of Time* spells out further implications. The Sun was created at dawn, but the Moon was created at sunset, because it had to have been full. Thus all twenty-four hours of Day 4 of Creation were lit up by the equinoctial Sun and the full Moon. Together these two data points became the astronomical criteria of Easter, the celebration of the new creation. These conditions are pregnant with theological significance, a significance which Bede twice terms *ratio*. The Sun which triumphs over darkness at the vernal equinox symbolizes Christ; the Moon is the figure of the Church, which shines with the reflected light of the Saviour.²³⁴

Bede's message in ch. 6 is that the equinox is the 'natural' beginning of the year, and all cycles – solar, lunar, and astral – 'as far as nature is concerned (*quantum ad naturam*)' begin and end at the equinox; he laments that custom, and not nature, has governed the positioning of leap-year days and the *saltus lunae*.²³⁵ These 'customary' forms of time reckoning of the Greeks, Romans, and Egyptians did not conform to nature, because these people were ignorant of astronomy:

For astronomy (*astrologia*) arose, not with these nations – although the Greeks make this boast – but rather with the more ancient Chaldaeans, from whom the Patriarch Abraham learned to know God in the revolution of the firmament and stars, as Josephus relates. Later, as he understood this science more accurately, <Abraham> introduced it to the Egyptian people when he was exiled amongst them.²³⁶

The patriarch Abraham 'learned to know God in the revolution of the firmament and stars': before Scripture itself existed, astronomy was a vehicle of the revelation of the divine. By linking this natural theology to the particular astronomical conditions of Creation, Passover, and Easter,

233 Ed. Jones p. 290, ll. 5–8.

234 Ed. Jones 292–3, ll. 50–76.

235 Ed. Jones 317, ll. 73–9. It is worth remarking that Irish *computi* positioned the bissextus on 21 March.

236 Ed. Jones 294, ll. 85–90.

Bede establishes a rationale for incorporating a surplus of astronomy into *The Reckoning of Time*. This surplus included astronomical rhythms which the calendar does not record and *computus* does not need, such as the seasons, the ocean tides (ch. 28), the pattern of eclipses (ch. 27), variations of daylight according to latitude (ch. 7), and ‘natural years’ (ch. 36). But four examples stand out: Bede’s treatment of night in ch. 7; his intrusion of the zodiac into his discussion of solar and lunar reckoning; his discussion of the changing orientation of the crescent Moon, as well as the variable tides; and his explanation of why the Moon sometimes appears to be higher than the Sun in the sky.

In ch. 7 Bede discusses night not simply as a division of time but as an astronomical phenomenon. Night is the shadow formed when the Earth’s mass blocks the Sun’s light. The Moon can be eclipsed because it is situated at the apex of the cone formed by this shadow, and Bede goes into some detail about how an eclipse takes place. The more distant stars, however, are never darkened. It is noteworthy that the Irish textbooks discuss ‘night’ only as a division of time, and contain none of this astronomical material.²³⁷

The zodiac has no role to play in *computus*. Indeed, in ch. 2, on the smallest divisions of time, Bede associates close attention to minute divisions of the signs of the zodiac with judicial astrology, and warns his students against it. In ch. 6, however, he observes that the Hebrew word for zodiac, ‘Mazaroṯh’, appears in the book of Job ‘who lived not long after Abraham’, the founder of astronomy.²³⁸ This biblical reference admits the zodiac into Christian erudition. In ch. 8 its appearance is again marked by a denunciation of pagan superstition, but Bede swiftly rescues it for astronomy. The Gentiles learned about the week from the Israelites, but perverted it by naming the days after their own gods (e.g. the third day for Mars, the fifth day for Jupiter etc.). These pagans associated various human qualities with the planets, such as slowness with Saturn; this was because ‘Saturn travels more slowly than the other planets, for he finishes his course through the zodiac in 30 years’.²³⁹ This prompts Bede to reproduce a passage from Pliny detailing the length of time for each planet to circle the zodiac – a piece of gratuitous astronomical data that was not even relevant to Bede’s immediate purpose of explaining the week.

237 See Commentary on ch. 7 for further discussion.

238 Ed. Jones 294, ll. 90–2.

239 Ed. Jones 301, ll. 49–51.

The zodiac puts in its first formal appearance in ch. 16, 'The signs of the twelve months'. Bede explains that each sign is divided into thirty parts, because the Sun spends approximately thirty days against the backdrop of that sign in its annual circuit through the heavens. To put it another way, the constellation signs are defined by the Sun's motion. In ch. 17 ('The course of the Moon through the signs') Bede adds more details. At conjunction Moon and Sun will occupy the same point on the zodiac, but with each day it waxes the Moon will pull ahead of the Sun at the rate of about two-fifths of a zodiac sign per day. After fifteen days, when it is full, it will be exactly opposite the Sun on the zodiacal band. As it wanes it continues along the zodiac, but now approaching the Sun at the rate of about two-fifths of a sign per day. Bede then appends another chapter (18), 'For those who are ignorant of the signs'. Every day the Sun completes one degree of the zodiac and every day the Moon covers thirteen degrees. So wherever the Moon is in relation to the zodiac on 1 January, on the following day it will be where the Sun will be on 13 January, and the Moon on 2 January will be in the sign of the zodiac where the Sun will be twenty-four days later, on 26 January. However, some readers might not only be ignorant about the zodiac but also be unable to calculate, so, in ch. 19, Bede explains one final method for finding the position of the Moon in the heavens – the key-letters and table described above. In sum, Bede has devoted four chapters of *The Reckoning of Time* to explaining four different methods for locating the Moon in the night sky, using the zodiac as a reference grid. It is worth reiterating that while the age of the Moon on a given day is of computistical significance, its position in the zodiac is not.

Chapter 25, 'When and why the Moon appears to be facing upwards, facing downwards, or standing upright', introduces another issue involving the visible Moon's astronomical position; it is significant for us because in this chapter Bede introduces the term *naturalis ratio*. Its initial appearance is in a discussion of the variable orientation of the horns of the crescent Moon; the second occurs in Bede's explanation of the effect of the Moon on ocean tides in ch. 29. What characterizes astronomical rational order is that it is consistent, even when it seems to vary.

In ch. 25 Bede refutes the notion that variations in the orientation of the Moon's horns portend weather conditions. 'Reasoning about the natural world' (*naturalis ratio*) teaches that this cannot be the case. The Moon cannot be influenced by the atmosphere, because by its *nature* it is above the atmosphere, in the ether. The order of nature (*naturalis ordo*) demands that the Moon's shape and visibility be a function of its physical position

vis-à-vis the Sun, its source of illumination. Whether the crescent Moon's horns are upright or prone can be explained by seasonal variation in that position.

As Bede explains in ch. 29, 'The Harmony of the Moon and the Sea', astronomy lends stability and regularity even to the apparently restless and unstable tides. Here Bede is concerned to subject the common knowledge that the Moon influences the tides to *ratio* in both senses of the term. Every day of the lunar month, the Moon rises and sets later than the previous day at a rate which corresponds exactly to the interval by which high and low tides succeed one another day by day. Moreover, there is also a physical element. The number of high and low tides in any month equals the number of circuits of Earth by the Moon, and the timing of the tides in the morning or evening also reflects the Moon's position. Even the height of the tides alters in accordance with the phase of the Moon. And because the Moon is moving around the Earth, tides do not occur at the same time on every shore.

It is tempting to say that *naturalis ratio* here assumes almost the force of 'law of nature'. However, this trembles on the brink on anachronism, and also obscures Bede's emphasis on Creation as the ground of *ratio*. Instead, Bede sees *naturalis ratio* as a 'rule of fellowship' (*regulam societatis*) established once and for all when the Moon was created, and this constitutes a stable cycle. Moreover, that cycle is the nineteen-year luni-solar cycle which Bede will champion as the proper framework for the Easter *computus*.

An important feature of *naturalis ratio* is that it corrects the faulty judgment of the eyes. The horns of the Moon seem arbitrarily to turn this way and that, but in fact rotate consistently. In ch. 26 Bede addresses another optical illusion. The path of the Moon across the night sky sometimes seems higher up in the sky than that of the Sun, and sometimes lower. But the Moon is physically always lower than the Sun: that is, it is closer to the Earth. How can it ever seem to be higher? Bede resolves the problem with a simple experiment, involving hanging lamps in a darkened church.

This is an important instance where Bede uses *ratio* to mean 'reasoning', and reinforces it with an adjective – in this case, *manifesta*. Amplifying *ratio* in this way is most forcefully practised when Bede is defending the nineteen-year Alexandrian Paschal cycle. In ch. 44 Bede states that 'Proterius, bishop of Alexandria, <gave> a most lucid explanation (*lucentissimam ... rationem*) of this cycle at the request of the holy Pope Leo ...'; and, in ch. 59, 'Theophilus, bishop of the Church of Alexandria,

defeated <the opponents of the cycle> by plain reasoning (*manifesta ratione*); finally, in ch. 61, Moses, in laying down the rules for Passover in Exodus, ‘does not mention the equinox explicitly, nevertheless by the very fact that he orders the Pasch to be kept at the full Moon of the first month, he shows by thoroughgoing logic (*plenaria ratione*) that the equinox has passed’.²⁴⁰ There is a heavy dose of rhetoric here, reinforcing Bede’s contention that the system he is advocating is intellectually flawless. But he has a good astronomical reason to deploy such weapons. In ch. 43 Bede has to confront a serious challenge to his claim that Dionysian reckoning is as close to *naturalis ratio* as humans can come, because it is true to the astronomy of creation. It is not infrequently the case that the Moon in the night sky can actually be older than its computed age as found in Dionysius’ Paschal tables. Bede’s explanations are discussed in detail in the Commentary on this chapter, but what is important for us to realize is that the demands of *ratio* have obliged Bede to expose himself, and the computistical system he embraced, to a potentially painful examination. Bede’s explanation, flawed as it is, shows how committed he was to yoking *computus* with astronomical accuracy.

Bede never explains his reasons for pushing astronomy into the foreground. But it is important to remember that he was doing so at the expense of *numerus*. It was (or so Bede construed it) the fetish of numbers that led the clergy at Wilfrid’s court to accuse Bede of heresy: the mistaken notion that the six World Ages were each 1000 years long, because the Bible says that, for the Lord, 1000 years is like a day. History would unfold in six ‘days’, and the last age would begin in *annus mundi* 5000 and end in 6000. Hence Bede’s dethroning of number in favour of astronomy is paralleled by his new approach to relating *computus* and history.

3.5 Bede’s innovations 3: rethinking the relationship of *computus* with history

Like his Irish models, Bede arranged his text to follow the progression of units of time-reckoning from the smallest ones – the fractions of a minute (ch. 3) – up to the largest. In the Irish sources, the largest units were variously called *saecula* or *aetates*. As units of time comparable to weeks or years, a *saeculum* or an *aetas* was in principle measurable and

240 Ed. Jones 419.32–3; 448.53–4; 451.23.

defined in extent. In practice, matters were less clear-cut. For example, *De divisionibus temporum* (*The Divisions of Time*) explains that the definition of an *aetas* is context-specific. It can mean one of six stages of the human life-span, each of seven years, or the entire span of life from birth to death. There are also six World Ages, which the author claims total 6000 years, without stating that each *aetas* is 1000 years long. Indeed, he points out that the six ages of the world were demarcated by historical events (Adam to Noah, Noah to Abraham etc.), which implicitly did not follow a rigid timetable. He then quotes Isidore that the final age will last until the end of the world, and that its ultimate length is known to God alone (*Etymologiae* 5.38.5 and 38.42). Isidore says (*Etymologiae* 5.38.4) that *aetas* is perpetual, without beginning or end. It is composed of many *saeculi*. While Isidore defines a *saeculum* as consisting of human generations each ‘succeeding’ one another (*Etym.* 3.38.1), *De divisionibus temporum* bypasses this to define *saeculum* as ‘the totality of present time’.²⁴¹

The *Einsiedeln Computus* simply passes over the larger units, moving from years straight to the multi-year luni-solar cycles, including the Victorian and Dionysian 532-year Paschal cycle, and ending there. *De ratione computandi* also omits any discussion of *aetates* or *saeculi*, though it closes the first part of the text, on solar reckoning, with a statement that there were 5228 years from Creation until the Passion, and ends the second part, on lunar reckoning, by noting the *annus mundi* dates for the first Passover, as well as for Christ’s Passion (here explicitly ascribed to Victorius).²⁴² Tucked away into the chapter on the leap-year day, however, is a curious piece of implicitly apocalyptic calculation: there are 1500 leap-year days from the beginning of the world until AM 6000.²⁴³

This notion that the leap-year cycle provided a ‘measure’ of historic time reappears in the *Munich Computus* (ch. 41), though without the implicit countdown to the year 6000.²⁴⁴ More importantly, the *Munich Computus*, alone of all the Irish textbooks, deals explicitly with *aetates*. Its approach

241 *De divisionibus temporum* II.13–14, ed. Bisagni 102–3.

242 *De ratione computandi* 62 (5228 years from Creation to Passion), ed. Ó Cróinín 171; 85 (first Passover) 193; 89 (date of Passion) 196.

243 *De ratione computandi* 58, ed. Ó Cróinín 170.

244 Warntjes, *Munich Computus* 41, 140–1. Here the author noted that a 532-year cycle contained 133 bissextile days (a point also made by Bede in *Reckoning of Time* ch. 65). To make a ‘year’ of bissextile days – i.e. 365 such ‘days’ – would require 1460 years. He then noted that four such ‘years’ totalling 5840 years had passed since Creation. This date

was to use the 532-year cycle as the measure of an ‘age’. In ch. 68 the computist lays out twelve such cycles. Beginning at the fourth cycle, each ‘age’ carries a historical marker comparable to Augustine’s boundaries for the World Ages: e.g. the fourth cycle ended when 2128 years had elapsed since Creation, the fifth when 418 years had passed since the Flood, and so on. The eleventh cycle closed with the death of ‘Manchianus a teacher of the Irish’. It is now the twelfth cycle-age, but the author breaks the pattern here by declining to project that it will end 532 years after it began: ‘What kind of end the twelfth will have, which happens now in its own time, is unknown to us.’²⁴⁵ This echo of Isidore’s assertion that the time when the Sixth Age of the world will end is known to God alone strongly suggests that, while the author may have intended to use the 532-year Paschal cycles to stand in for the World Ages, he realized that assigning a fixed length to the *aetas* would expose him to the heresy of predicting the time of the Second Coming. His anxiety was justified. A variant version of the 1000-year World Age was in circulation, which posited twelve ages of 500 years, of which the present age was the last. The model was the twelve hours of the day, and it was inspired by the parable of the labourers in the vineyard (Matthew 20:1–16), the last of whom are hired at the eleventh hour. Bede would also attack this notion in the *Letter to Plegwine*.²⁴⁶

Bede took a different path in handling the issue of *aetates* in his first work on *computus*, *On Times*. The *Munich Computist*, faithful to the notion that an ‘age’, as a unit of time, must have a defined measure, co-opted the Great Paschal cycle of 532 years as that measure. Bede simply abandons this premiss. He declares in *On Times* that all time from the Creation to the end of the world is distributed or distinguished (*distinguntur*) into six ages.²⁴⁷ These ages are of unequal length, being demarcated by historical events. In one sense, number remains in play, because each of the first five ages except the first contains fourteen generations in Christ’s lineage. Nonetheless, because a generation is not a uniform unit of reckoning, the

corresponds to AD 689. The Munich text is here drawing on the lost ‘Victorian computus of AD 689’: see Warntjes’ introduction to *Munich Computus*, lxxvii–cvi.

245 Warntjes, *Munich Computus* 68, 314–17. Warntjes argues that this innovation may also derive from the lost ‘Victorian computus of AD 689’: see his Introduction, cxxiv. The Twelve Cycles also appear in the ‘Irish Augustine’, *De mirabilibus sacrae scripturae* 2.4, PL 35: 2175–6 (composed in s. Ireland, ca. 654). Correlating world history and Easter cycles was also practised in the Eastern church: Nothaft, *Dating the Passion* 58–64.

246 See below, p. 590, n. 36.

247 *On Times* 16, ed. Jones 600.2; trans. Kendall and Wallis 117.

number of years in each age varies. Bede picks up Augustine's comparison of an age to a stage in the human life-cycle, but unlike Isidore, he does not assign a certain number of years to each stage. Instead, he reproduces Augustine's comparison of the ages to the changes that are characteristic of each phase of the life-cycle. For example, the Second Age sees the emergence of the Hebrew language, and the second stage of the life-cycle (childhood) is marked by learning to speak.²⁴⁸ Bede then lays out a concise world-chronicle in six chapters, each devoted to one of the Six Ages. The content of the *On Times* chronicle is overwhelmingly drawn from Isidore of Seville's *Chronica maiora* and the chronicle in *Etymologiae* 5.38–9 ('Chronicon B'),²⁴⁹ but the duration of each World Age is calculated according to the Vulgate, and not the Septuagint chronology of years since Creation. There is no running list of *anni mundi* in *On Times*, and there is only one occasion when a precise date is given. In ch. 22 the birth of Christ is dated to AM 3952, or 'according to others [i.e. those who follow the Septuagint chronology]' 5199.²⁵⁰ While reigns of emperors rather than generations of Christ's ancestors punctuate the Sixth Age, only the length of the reign and not its starting date is provided.

Bede was not thinking of devising a detailed chronology when he composed *On Times*, or even of pressing his case for Vulgate reckoning of *annus mundi*. His commitment to Vulgate chronology in 703 was the product of his monastery's intense involvement in the production of the Codex Amiatinus of the Bible, based on Jerome's translations and outfitted with his prefaces. It was not intended to be provocative or revolutionary, and, where appropriate, Bede always provided the number of years according to both systems. What was revolutionary, rather, was Bede's decision to insert a chronicle into a textbook of *computus*.²⁵¹ But it should be added that he was also doing this in a way which uncoupled *aetas* from the other units of time, and which (whether intentionally or not) made it impossible to use time-reckoning as a tool to predict the End of Time.

The hostile reaction to *On Times*, and Bede's response to the charge of heresy, had an important effect on how he chose to revise his earlier work

248 *On Times* 16, ed. Jones 600.5–9; trans. Kendall and Wallis 117–18. This material is reused in *Reckoning of Time* ch. 66 (see below, pp. 294–5); its source is Augustine, *De civitate Dei* 16.43 (CCSL 48, 550.72–5).

249 Both are edited in parallel by Mommsen, *Chronica minora* 2, 423–81.

250 *On Times* 22, ed. Jones 607.3–4; trans. Kendall and Wallis 126.

251 These important insights are laid out by MacCarron, *Bede and Time*, esp. chs 2–3.

in *The Reckoning of Time*.²⁵² When it came to the chronicle, the revision was dramatic.²⁵³ Bede decided to disinfest the notion of the *aetates* from any taint of prognostication by folding all six ages into a single chapter, thus playing down even further any residual notion that the *aetas* was a uniform unit of time. He provided a running list of Vulgate *annus mundi* years, marking the deaths of patriarchs and kings in the first five ages, and of each of the emperors in the Sixth Age. He reiterated the chronological parameters for the birth of Christ, but omitted the parallel Septuagint dating. On the other hand, he emphatically stated that Christ's birth inaugurated the Sixth Age. In sum, the chapter on the Ages of the World became a more vigorous and detailed defence of the anti-apocalyptic arguments of the *Letter to Plegwine*, in the name of the 'Hebrew Truth'. Interestingly, Bede never uses the phrase *Hebraica veritas* in *On Times*, but he did invoke it in the *Letter to Plegwine* and, as we have seen, in the Preface of *The Reckoning of Time*. Its immediate application was to chronology, but for Bede it stood for the authority and integrity of Scripture. It was Scripture itself – not number, and not even astronomy – that was the guarantee of accurate chronology.²⁵⁴

Scripture, however, was not always unambiguous about chronology. The Gospel of Luke (3:1) states that Jesus' ministry began in the fifteenth year of the emperor Tiberius, at which time he was about thirty years old (3:23). Like the other Synoptic Gospels, Luke implies that Jesus' mission lasted only one year. The Gospel of John, on the other hand, records three visits by Jesus to Jerusalem for the Passover, on the last of which the Passion took place. Hence Bede in ch. 66 records the fifteenth year of Tiberius as the date of Christ's baptism, and the eighteenth year of Tiberius as the time of his Crucifixion.²⁵⁵ In ch. 47 Bede will energetically defend this long chronology of Christ's life – so vigorously that he paints himself into a computistical corner, for the data in the Dionysian Paschal

252 Wallis, 'Bede and "Science"' 121.

253 Of course, the revised chronicle is also considerably longer than the *On Times* version, and based on quite different sources. These are discussed in the Commentary on ch. 66 below.

254 See MacCarron, *Bede and Time* 82–4; Damian Fleming, 'Hebraeam scire linguam: Bede's Rhetoric of the Hebrew Truth', in *Imagining the Jew: Jewishness in Anglo-Saxon Literature and Culture*, ed. S. Zacher (Toronto: University of Toronto Press, 2016), 63–78. Jerome himself coined the phrase 'Hebrew Truth'. It occurs over eighty times in Jerome's writings: J.N.D. Kelly, *Jerome* (London: Duckworth, 1975), 156.

255 See below pp. 336–7.

table corresponding to AD 34 does not match the Gospel narrative.²⁵⁶ Bede ends this chapter by urging his readers to believe the Gospel, not chronographers, but his true target was probably Victorius, whose *annus Passionis* chronology dated the Crucifixion to the fifteenth year of Tiberius, corresponding to Dionysius' AD 28. The problem, to be sure, was created not by Victorius, but by Dionysius. Yet it could be construed that Victorius contradicted the Gospel by making Jesus only twenty-nine or at most thirty at the time of his death.²⁵⁷ In sum, the Septuagint chronology not only encouraged apocalyptic speculation but apparently denied the veracity of the Gospels.

3.6 Bede's innovations 4: purifying eschatology

This concern with apocalyptic speculation and opposition to Victorius in particular also shaped Bede's final innovation: to include a discussion of the future in his *computus* textbook.²⁵⁸ This decision was closely linked to his revision of the chronicle and its more vigorous assertion of Vulgate *annus mundi* chronology. If *annus Domini* was inseparable from the Easter tables of Dionysius Exiguus, the Septuagint *annus mundi* reckoning was, in Bede's view, soldered onto Victorius' Paschal tables. Though Victorius chose to number his years from the Passion, that date was explicitly embedded in Septuagint chronology by Victorius' prologue, which synchronized *annus Passionis* with the Septuagint world era.²⁵⁹

In Bede's immediate milieu, texts which explicitly mention a 'countdown' to the year 6000 were mostly conveyed in the context of the computistical tradition of Victorius of Aquitaine. One of these is the

256 See commentary on ch. 34 below.

257 Máirín MacCarron, 'Bede', Irish Computistica and Annus Mundi', *Early Medieval Europe*, 23.3 (2015): 290–307; Warntjes, 'A Newly Discovered Prologue' 381–2.

258 Palmer, 'The Ends and Futures' 141–50.

259 *Prologus Victorii* 7,9 (Krusch, *Studien II* 22, 24): *repperi a mundi principio usque ad diluvium duo milia ducentos quadraginta et duos annos, itidem a diluvio Abrahae usque ad nativitatem annos nongentos quadraginta et duos ... Passum autem dominum nostrum Iesum Christum peractis ab ortu mundi quinque milibus ducentis viginti et octo annis, eadem chronicorum relatione monstratur.* (From the beginning of the world until the Flood there are found 2242 years, and from the Flood until the birth of Abraham, 942 ... The same account of the chronicles shows that at the time our Lord Jesus Christ dies, 5228 years had passed since the beginning of the world.)

chronological note about the ‘Easter of Suibne mac Commáin’ in the Sirmond manuscript, which is dated *anno Passionis* 631; the author then specifies that 141 years remain until the consummation of the 6000 years.²⁶⁰ This note can be summarized as follows: the first Passover was celebrated on 25 March, AM 3689. The Crucifixion took place on 25 March AM 5228.

And there are six hundred and thirty-one years from the Passion of Our Lord till the Easter which follows <the *obit*> of Suibne son of Commáin. And there are 141 years from that Easter till the predetermined time of the consummation of the world, that is when 6000 years will have been completed.²⁶¹

The persistence of Victorius’ *computus* may explain why many in Bede’s England were anxious that the End was close, and could be scheduled, as the *Letter to Plegwine* complains. Indeed, the reaction to *On Times* may have stemmed from the same concerns, especially because AD 700 marked the beginning of the final century before AM 6000. In his commentary on Revelation, composed around the same time as *On Times*, Bede was already labouring valiantly to uncouple biblical prophecies from speculative calculating of future time. John’s vision was reframed as an allegorical pageant of the Church’s experience throughout the whole of the Sixth Age. This pageant led into a coded account of the pre-conditions of the eschaton, namely Antichrist and the conversion of the Jews. Bede’s commentary on the first Epistle of John, composed slightly later, insisted that the Apostle’s warning ‘Little children, it is the last hour’ applied to the whole indeterminate Sixth Age.²⁶²

260 Immo Warntjes, ‘The Final Countdown and the Reform of the Liturgical Calendar in the Early Middle Ages’, in *Apocalypse and Reform from Late Antiquity to the Early Middle Ages*, ed. Matthew Gabriele and James T. Palmer (London: Routledge, 2018), esp. 58–61, and ‘A Newly Discovered Prologue’ 265–7. On the inherently apocalyptic implications of Septuagint *annus mundi* see James T. Palmer, ‘Calculating Time and the End of Time in the Carolingian World’, *English Historical Review*, 126.523 (2011): 1307–31.

261 *Ex domini uero passione usque in pascha quod secutum est Suibini filii Commanni anni sunt DXXXVIII. A pascha autem supradicto usque ad tempus praefinitum consummationis mundi, id est sex milibus consummatis, anni sunt CXL* (see above, p. 61); translation by Smyth, ‘Isidore of Seville’ 97. The reference to Suibne indicates the actual date of the text (Ó Cróinín: ‘Bede’s Irish Computus’ 194–5; ‘Irish Provenance’ 177–90; ‘Early Irish Annals from Easter Tables: a Case Restated’, in his *Early Irish History and Chronology*, 76–86. Revised version of an article first published in *Peritia*, 2 (1983): 83–4), or possibly *annus Passionis* 651 may have been singled out because Easter that year fell on 25 March (Smyth, ‘Isidore of Seville’ 97–8).

262 Faith Wallis, ‘Introduction’, in *Bede: Commentary on Revelation*, trans. Faith Wallis

Identifying the heresy of calculation with Victorius, his computistical nemesis, may have been one factor that cemented Bede's decision to end his textbook on *computus* with a denunciation of chiliasm. But, in another sense, the final five chapters of *The Reckoning of Time* are not so much about *computus* itself as about its limits. In ch. 67, 'The Remainder of the Sixth Age', Bede attacks the notion that each World Age would last 1000 years, invoking, for the second time in *The Reckoning of Time*, the authority of *hebraica veritas*. In Bede's view, this leads to two heresies: the conviction, first, that the end of the Sixth Age can be scheduled and, secondly, that it would be succeeded by the Millennium, a literal 1000-year Seventh Age when the saints would reign on earth. This Millennium is indeed prophesied by Revelation 20:4, but it should be interpreted figuratively. Chapter 68 reinforces this message in a lengthy quotation from Augustine's Letter 199, teaching that the faithful should adopt an agnostic posture on the time of the Lord's return so as to avoid both presumption and despair. The only timetable for the end is the one provided by Scripture: Antichrist will appear, and launch a persecution which the prophet Daniel says will last for 1290 days, or three and one-half years (ch. 69). Even after the fall of Antichrist, though, *when* the Day of Judgement (70) will come remains uncertain, though *how* events will then unfold can be inferred from the Bible. In ch. 71, Bede returns to his initial argument. The Seventh World Age is not an earthly Millennium, but the time of the Church Expectant in heaven. It thus runs in parallel to the historic World Ages. After the events of the End Times will come the Eighth Age, the dawn of a new creation-week and an everlasting Easter, when 'the fleeting and wave-tossed course of time' that is the concern of *computus* dissolves into 'eternal stability and stable eternity'.

Considering that these chapters are about times which cannot be reckoned, it seems strange that Bede chose to close his work on *computus* in this way. In one sense, he is expanding the arguments of the *Letter to Plegwine*, but he is not merely flogging a controversial dead horse. The end of time shaped Bede's theological perspectives from the time when he penned his first biblical commentary – *On Revelation* – to the *Ecclesiastical History of the English People*.²⁶³ As with Bede's commitment to the

(Liverpool: Liverpool University Press, 2013), and 'Why did Bede Write a Commentary on Revelation?' 23–45; on Bede's exegesis of 1 John, see pp. 32–3.

²⁶³ The definitive analysis is that of Darby, *Bede and the End of Time*. See also his 'Bede's History of the Future', in *Bede and the Future*, ed. Peter Darby and Faith Wallis

Vulgate, this was an orientation shaped by his monastic community, from their broader devotion to the writings of Gregory the Great to the suite of paintings of scenes from the Apocalypse that Benedict Biscop brought from Rome to adorn the abbey church at Wearmouth. For all these reasons, Bede could not simply let the arguments that led up to the *Letter to Plegwine* be.

Despite Bede's intense efforts to dislodge the idea of the 1000-year World Ages, it proved highly resilient. This mixed, or even tepid, reception of Bede's attack on the heresy of calculation exerted an influence on the fortunes of *The Reckoning of Time*. As James Palmer observes, Bede's post-Plegwine concern to ensure that neither *computus* nor chronology could be misused to encroach on God's prerogative had the result of producing what were effectively three books under a single title: a teaching manual of *computus* with a distinctly encyclopedic flavour (chs 1–65); a world chronicle (ch. 66); and a theological tract about orthodox attitudes towards future time (chs 67–71). For Bede, these three themes hung together, because God ruled over natural time (the *computus*), historic time (the Six Ages of salvation history), and cosmic time, bounded by Creation and the New Creation. They also hung together because Victorius, in Bede's view, demonstrated the link between deviant *computus*, deviant chronology, and deviant eschatology. But the reception of *The Reckoning of Time* shows that those who copied the work not infrequently chose to omit either the historical or the eschatological chapters, or both. Sometimes this was because they judged that these parts of the book were not relevant to teaching purposes; but sometimes it was because they actively opposed Bede's arguments about chronology, or about the dangers of calculating the future.²⁶⁴ It is to this complicated reception of *The Reckoning of Time* that we now turn.

4. RECEPTION AND DIFFUSION

[F]or God, the orderer of natures (*naturarum dispositor*) who raised the Sun from the east on the fourth day of Creation, in the Sixth Age of the world, has made Bede rise from the West as a new Sun to illuminate the whole earth.²⁶⁵

(Farnham: Ashgate, 2014), 113–48, and 'Apocalypse and Reform in Bede's *De die iudicii*', in *Apocalypse and Reform from Late Antiquity to the Middle Ages*, ed. Matthew Gabriele and James T. Palmer (London and New York: Routledge, 2019), 77–100.

264 Palmer, 'The Ends and Futures' 139–60. See also Commentary on chs 66–70.

265 ... *quem naturarum dispositor deus, qui quarta die mundanae creationis solem ab*

Though Notker the Stammerer (ca. 840–912) commended Bede primarily as a Scriptural exegete, the computistical references in this eulogy are worth our attention. Indeed, the diffusion and reception of *The Reckoning of Time* are known largely through the testimony of Insular missionaries and scholars who took his works to the Continent, and Continental scholars such as Notker who benefited from their labours.²⁶⁶ In Appendix 5 of the present volume a checklist of manuscripts of *The Reckoning of Time* tallies 105 complete copies and 181 manuscripts containing excerpts. The fortunes of *The Reckoning of Time* are traced through these manuscripts, their glosses, and, later, the printed editions.

By contrast, it is not easy to gauge how *The Reckoning of Time* was received in Bede's immediate milieu. Two manuscripts from Wearmouth left for the continent in the eighth century (Appendix 5, nos 48 and 66); another ninth-century codex which remained in England contains only an

oriente produxit, in sexta aetate saeculi nouum solem ab occidente ad inlumptionem totius orbis direxit. Notker the Stammerer, *Notatio de illustribus viris*, ed. Erwin Rauner, 'Notkers des Stammers "Notatio de illustribus viris": Teil I: Kritische Edition', *Mittellateinisches Jahrbuch*, 21 (1986): 60. The translation of this passage is by Michael Idomir Allen, 'Bede and Frechulf at Medieval St Gallen', in *Beda Venerabilis: Historian, Monk and Northumbrian*, ed. L.A.J.R. Houwen and A.A. MacDonald (Groningen: Egbert Forsten, 1996), 65.

266 The indispensable reference work on the manuscripts and text history of *The Reckoning of Time* is Lapidge, 'Beda Venerabilis' 71–4. The movement of Bede's works, including *The Reckoning of Time*, into the Carolingian lands is documented by Rosamond McKitterick, 'Kulturelle Verbindung zwischen England und den fränkischen Reichen in der Zeit der Karolinger: Kontexte und Implikationen', in *Deutschland und der Westen Europas im Mittelalter*, ed. Joachim Ehlers (Stuttgart: Jan Thorbecke Verlag, 2002), 121–48, esp. Table 1 (145–6) which records copies in seven of the ten library catalogues surveyed. See also Joshua Westgard, 'Bede in the Carolingian Age and Beyond', in *The Cambridge Companion to Bede*, ed. Scott DeGregorio (Cambridge: Cambridge University Press, 2010), 211; and more generally Dorothy Whitelock, *After Bede* (Jarrow Lecture, 1960); C.W. Jones, 'Bede's Place in Medieval Schools', in *Famulus Christi. Essays in Commemoration of the Thirteenth Centenary of the Birth of the Venerable Bede*, ed. Gerald Bonner (London: S.P.C.K., 1976), 261–85; J.E. Cross, 'Bede's Influence at Home and Abroad: An Introduction', in *Beda Venerabilis: Historian, Monk and Northumbrian*, ed. L.A.J.R. Houwen and A.A. MacDonald (Groningen: Egbert Forsten, 1996), 17–29; J. Hill, 'Carolingian Perspectives on the Authority of Bede', in *Innovation and Tradition in the Writings of the Venerable Bede*, ed. Scott DeGregorio, Medieval European Series 7 (Morgantown: West Virginia University Press, 2006), 227–49; David Rollason, *Bede and Germany* (Jarrow Lecture, 2001); Allen, 'Bede and Frechulf'; Wilhelm Levison, *England and the Continent in the Eighth Century* (Oxford: Clarendon Press, 1946); Wolfgang Viereck, 'Beda in Bamberg', in *Einheit in der Vielfalt: Festschrift für Peter Lang zum 60. Geburtstag*, ed. Gisela Quast (Bern: Peter Lang, 1988), 556–69.

excerpt (no. 166). Indeed, apart from a tenth-century fragment containing part of ch. 47 now in the UK's National Archives²⁶⁷ and the coeval Paris, BnF n.a.l. 586 (no. 208), all manuscripts known to have been in England before the Conquest were made on the Continent (e.g. Appendix 5, no. 114). This relative paucity of Insular manuscripts can be ascribed in some measure to the damage inflicted by the Viking invasions; but it is not impossible that Bede's magisterial textbook was more useful to missionaries working in regions where Victorius' *computus* still dominated than it was at home. When English monasticism and learning revived in the tenth century there was no rush to multiply copies of *The Reckoning of Time* or translate it into the vernacular. Both Byrthferth of Ramsey (ca. 970–ca. 1020) and Ælfric of Eynsham (ca. 955–ca. 1010), who produced vernacular (or, in Byrthferth's case, bilingual) manuals of time reckoning, evidently knew *The Reckoning of Time*, but neither used it as a model. We shall discuss their adaptations below.

The two English manuscripts that went to the Continent in the eighth century also survive only in fragmentary form. The first was initially owned by Boniface's monastery at Fulda. While working in the mission field in Germany, Boniface appealed to Hwætberht-Eusebius, abbot of Wearmouth-Jarrow, to send him copies of the works of that 'candle of the Church', Bede; one of those works was probably *The Reckoning of Time*.²⁶⁸ Three fragments of the original codex, written in Northumbrian uncial script, very probably at Wearmouth-Jarrow, survive. These are now Bückeburg, Niedersächsisches Landesarchiv Dep. 3 fols I–VIII, Münster, Staatsarchiv Msc I, no. 243 fols 1r–2v, 11r–12v, and Braunschweig Stadtbibliothek Fragm. 70. Together they contain chs 46–50, 56–9, and 63–4, as well as Dionysian Paschal tables with annals.²⁶⁹ The second

267 This is London, TNA SP 46/125, fol. 302: Appendix 5, no. 127. The scribe's hand is identified by David Dumville as English Square Minuscule of the 920s: 'English Square Minuscule Script: the Background and Earliest Phases', *Anglo-Saxon England*, 16 (1987): 147–79. See also Michael Roper, 'A Fragment of Bede's *De temporum ratione* in the Public Record Office', *Anglo-Saxon England*, 12 (1983): 125–8. Jones (*BOD* 247) also lists the 'Royal Psalter' (London, British Library Royal 2 B V; s. England, s. X^{med}–s. XI^{med}) as a manuscript of *Reckoning of Time*; however, it contains only a paraphrase of the general prologue of ch. 66 (fols 187v–188r) and does not ascribe this to Bede.

268 Letter 76, ed. Michael Tangl, *Die Briefe des Heiligen Bonifatius und Lullus*, MGH *Epistolae selectae* 1 (1916), 159.11–15; Jones, 'Bede's Place' 265.

269 See Appendix 5, no. 47. The fragments are reproduced in E.A. Lowe et al., *Codices Latini Antiquiores: a Palaeographical Guide to Latin Manuscripts prior to the Ninth Century*. 11 v. and Supplement (Oxford: Clarendon Press, 1934–71), v. 9, no. 1233 (now

manuscript is represented by a bifolium, now Darmstadt, Universitäts- und Landesbibliothek MS 4262. Written in Northumbrian uncial, perhaps during Bede's lifetime, it contains *The Reckoning of Time* chs 26–8.²⁷⁰ A third fragment was written in Anglo-Saxon minuscule, but in a German centre with connections to England in the Main region or Hesse. This single bifolium is preserved as Nürnberg, Germanisches Nationalmuseum, Kupferstichkabinett Kapsel 536/SD 285 (see Appendix 5, no. 159). Sparse as these fragments are, they indicate how keen the missionaries in Boniface's circle were to acquire and disseminate *The Reckoning of Time*.²⁷¹

Irish missionaries and scholars also carried Bede's *computus* to the Continent, as is evidenced by the fragments of a late eighth- or early ninth-century codex, Vienna Nationalbibliothek 15298 (Appendix 5, no. 278). These four leaves contain chs 7–9, 11–16, and 21–2, and were written and glossed in Ireland.²⁷² The glosses themselves are in Latin and

accessible via the *Earlier Latin Manuscripts* website at the National University of Ireland at Galway: <https://elmss.nuigalway.ie> and Supplement 4 (1233), and in his *English Uncial*, Tab. XVIIIa–c, as well as Bernhard Bischoff, Virginia Brown, and J.J. John, 'Addenda to "Codices Latini Antiquiores" II', *Mediaeval Studies*, 54 (1992): 303. Also listed by Helmut Gneuss and Michael Lapidge, *Anglo-Saxon Manuscripts. A Bibliographical Handlist of Manuscripts and Manuscript Fragments Written or Owned in England up to 1100* (Toronto: University of Toronto Press, 2014), no. 856; M.B. Parkes, *The Scriptorium of Wearmouth-Jarrow* (Jarrow Lecture, 1982), 4. For discussion of the Bückeburg and Münster fragments see Jürgen Petersohn, 'Neue Bedafragmente in Northumbrischer Unziale Sacc. VIII', *Scriptorium*, 20 (1966): 215–47 and Pl. 17–18, and *idem*, 'Die Bückeburger Fragmente von Bedas *De temporum ratione*', *Deutsches Archiv für Erforschung des Mittelalters*, 22 (1966): 587–97. Stevens, 'Bede's Scientific Achievement' 39; Lapidge, 'Beda Venerabilis' 68.

270 Appendix 5, no. 66. Gneuss and Lapidge, no. 818; Lowe, *Codices Latini Antiquiores* no. 1822. Now digitized at <https://tudigit.ulb.tu-darmstadt.de/show/Hs-4262>. The Darmstadt fragments are described, transcribed, and illustrated in Kurt Hans Staub, 'Ein Beda-Fragment des 8. Jahrhunderts in der Hessischen Landes- und Hochschulbibliothek Darmstadt', *Bibliothek und Wissenschaft*, 17 (1983): 1–7. See also Lapidge, 'Beda Venerabilis' 67–8.

271 On the diffusion of *Reckoning of Time* on the Continent and the role of the Bonifatian mission see Rosamond McKitterick, *History and Memory in the Carolingian World* (Cambridge: Cambridge University Press, 2004), 92–5 and 'Kulturelle Verbindungen zwischen England und den fränkischen Reichen'. Jones argued that there were two avenues for dissemination, one centred in the upper Rhine and Bobbio and a second in northern France and the lower Rhine. Jones, *BOT* 140–1. But see Joan Gómez Pallarès, 'Los *excerpta* de Beda (*De temporum ratione*, 23–5) en el MS. ACA, Ripoll 225, in *Studia chronologica*, 185–202; the readings in this eleventh-century manuscript suggest that the text transmission may be more complicated.

272 Lowe, *Codices Latini Antiquiores* 10, p. 21, no. 1511.

Old Irish, and there is every indication that they were the source for the glosses in the 'Karlsruhe Bede'. Some are ascribed to Adomnán of Iona.²⁷³

The 'Karlsruhe Bede' (Appendix 5, no. 95) bundled *The Reckoning of Time* with *The Nature of Things* and *On Times*, and this became a feature of manuscripts linked to Irish centres on the Continent. For example, St Gall, 251 (s. IX^{2/4}; Appendix 5, no. 226) presents *The Reckoning of Time* directly after *The Nature of Things*, while MS 248 (835–865, sister codex to the Karlsruhe Bede; Appendix 5, no. 224) and MS 250 (850–899; no. 225) also contain all three works (Appendix 5, nos 224, 225, 226). However, Irish monks and scholars also brought their native *computus* traditions to the Continent, as witness the Einsiedeln and Munich *computi*. This Irish stream would also irrigate the newly opened fields of Carolingian *computus* studies, offering an influential alternative to Bede's approach. Two manuscripts created at Cologne at almost the same time, Cologne Dombibliothek 83-II (ca. 798; see Appendix 5, no. 61) and Dombibliothek 103 (ca. 795–810; no. 63), show this dynamic.

Dombibliothek 103 contains the full text of *Reckoning of Time* along with Bede's letter to Wicthed, *The Nature of Things*, and *On Times*. It is introduced by a calendar and Dionysian Paschal tables.²⁷⁴ Dombibliothek 83-II²⁷⁵ features a text entitled *On Number* (*De numero*), prefacing two Irish texts, *The Computation of the Moon* (*De computu lunae*) and *The Divisions of Time*. Like many *computus* textbooks from Irish centres, *De numero*

273 Bisagni, *From Atoms to the Cosmos* 47–8. The glosses have been edited a number of times, but the most convenient synoptic version is John Strachan, 'The Vienna Fragments of Bede', *Revue celtique*, 23 (1902): 40–9. See also Miles Dillon, 'The Vienna Glosses on Bede', *Celtica*, 3 (1956): 340–4; Dáibhí Ó Crónín, 'The Earliest Old Irish Glosses', in *Mittelalterliche volkssprachige Glossen*, ed. Rolf Bergmann, Elvira Glaser, and Claudine Moulin-Fankhänel (Heidelberg: Winter, 2001), 7–31, and Steven B. Killion, 'Bede's Irish Legacy: Knowledge and Use of Bede's Works in Ireland from the Eighth through the Sixteenth Century', PhD diss., University of North Carolina at Chapel Hill, 1992, 141–54.

274 Appendix 5, no. 63. Anton von Euw, 'Beda Venerabilis: Naturlehre, historiographische und zeitrechnerische Werke', in *Glaube und Wissen im Mittelalter. Die Kölner Dombibliothek*, ed. J. Plotzek and U. Surmann (Munich: Hirmer, 1998), 129–35.

275 Appendix 5, no. 61. P. Heusgen, 'Die komputistische Handschrift der Kölner Dombibliothek', in *Festgabe für Wilhelm Neuss zur Vollendung seines 65. Lebensjahres*, ed. E. Hegel (Cologne: Balduin Pick Verlag, 1947), 11–18; Anton von Euw, 'Kompendium der Zeitrechnung, Naturlehre und Himmelskunde (Dom HS 83 ¹¹)', in *Glaube und Wissen im Mittelalter. Die Kölner Dombibliothek*, ed. J. Plotzek and U. Surmann (Munich: Hirmer, 1998), 136–56; *ibid.*, 'Die künstlerische Gestaltung der astronomischen und komputistischen Handschriften des Westens', in *Science in Western and Eastern Civilization in Carolingian Times*, ed. P.L. Butzer and D. Lohrmann (Basel: Birkhäuser Verlag, 1993), 251–69.

is arranged according to the fourteen units of time-measurement, from *atomus* to *mundus*. Significantly, there is nothing in *De numero* about the planets, stars, zodiac, or structure of the heavens; *computus* is identified with ‘number’, and number is *par excellence* arithmetic. This codex, as Immo Warntjes argues, seems to have been created as a companion for Dombibliothek 103, supplementing 103 with ‘an anthology of texts presenting alternatives and/or additions to Bedan thought’.²⁷⁶ Cologne 83-II closes with an abbreviated and rearranged text of *The Reckoning of Time*, with many of the chapters on astronomical issues removed. Also missing is ch. 66 (though it is present in its sister-codex St Gall, 249), and Septuagint reckoning is also used at other points in this compilation.²⁷⁷ This points to another potential Irish influence, namely the substitution of a chronicle based on Septuagint chronology for ch. 66. The premier example of this is the ‘Karlsruhe Bede’ manuscript discussed above. This copy replaces ch. 66 with the short chronicle from Isidore’s *Etymologies* with its Septuagint *annus mundi* chronology, and it omits chs 66–71 completely. Elsewhere in the volume there is a concordance of Septuagint and *annus domini* years up to 848, which suggests that the creators of the volume hesitated in their allegiance to the Eusebian reckoning.²⁷⁸

Dionysian Paschal tables and Dionysian reckoning arrived in the Frankish lands well in advance of *The Reckoning of Time*, where they confronted and slowly ousted the computistical method of Victorius. Boniface may have arranged for a copy of Dionysius to be sent from England, but does not seem to have involved himself in debates within

276 ‘Köln als naturwissenschaftliches Zentrum in der Karolingerzeit: Die frühmittelalterliche Kölner Schule und der Beginn der fränkischen Komputistik’, in *Mittelalterliche Handschriften der Kölner Dombibliothek: Viertes Symposion, November 2010*, ed. H. Finger (Cologne: Erzbischöfliche Diözesan- und Dombibliothek, 2012), 41–96. Arno Borst laments that this manuscript, unlike Cologne 83-II, bows to Charlemagne’s wishes and celebrates the triumph of Bede (*Schriften* 1.238) but Warntjes interprets the contrast between the two in a more positive light: ‘In this respect, these two codices certainly have to be considered as one single great effort of the Cologne school to assemble in two codices all computistical material considered as important and fundamental at the turn from the eighth to the ninth century’: *Munich Computus* clxxx. He suggests 82^{II} is coeval or even slightly younger than 103, while Borst argues the opposite.

277 Palmer, ‘The Ends and Futures’ 152 n. 56 and 154 n. 62; Palmer, ‘Computus after the Paschal Controversy of AD 740’ 233.

278 Palmer, ‘The Ends and Futures’ 253 n. 51. The capitula initially stop at ch. 65 but a later hand added those for 66–72 (fol. 23v) ‘even though they were not then copied’ (153 n. 61).

the Frankish realm about the relative merits of Victorius or Dionysius.²⁷⁹ The Englishman Willibrord brought Dionysian material originating in Ireland (the ‘Computus Cottonianus’) with him on his mission, apparently in anticipation of Victorian resistance,²⁸⁰ and the Carolingian patronage of Willibrord’s foundation at Echternach doubtless predisposed the dynasty towards Dionysius.²⁸¹ A Frankish treatise arguing vigorously against Victorius and for Dionysius was composed in 737,²⁸² though other eighth-century texts preferred to attempt a reconciliation. A text which Arno Borst calls ‘The Rhineland Manual of 760/792’, and which apparently underwent a number of revisions, is the first extensive treatment of Dionysian *computus* created in the Frankish realm; its historic core was Irish, but its revisions drew on *The Reckoning of Time*.²⁸³ In short, Bede’s text can be said to have helped to consolidate a trend towards Dionysian *computus* that was already in train in the Frankish kingdoms, providing it with a broader scientific and theological platform orientated towards astronomy on the one hand and history on the other. This approach appealed to Carolingian rulers, especially Charlemagne, because it joined the reckoning of time to an ideology of Christian kingship that appreciated cosmic resonances and firmly believed in its own historical destiny.²⁸⁴

The proliferation of copies of *The Reckoning of Time* on the Continent also points to the importance which the Carolingian rulers of the Frankish kingdom accorded education in general and *computus* education in particular. The concern for *computus* was one element in Charlemagne’s broader project to promote theological and liturgical *correctio* and uniformity.²⁸⁵ The so-called Lorsch Calendar or Imperial Calendar of 789 bears witness to this ambition, and its three-zone format (key-letter columns keyed to tables such as the *Pagina regularis*; martyrology; astronomical and antiquarian information) points to an awareness of *The*

279 Palmer, ‘Computus after the Paschal Controversy of AD 740’ 235.

280 See above n. 161.

281 Palmer, ‘The Paschal Controversy of AD 740’ 236.

282 Ed. as *Dial. Neust.* by Borst, *Schriften* 1 381–423.

283 Ed. as *Lect. comp.* by Borst, *Schriften* 2 527–659.

284 See Rosamond McKitterick, *History and Memory in the Carolingian World*, esp. ch. 4, ‘The Carolingians and their Past’, with its analysis of the role of *computus* in structuring the Carolingian articulation of history.

285 For a case study of how the link between time-reckoning and authority penetrated to the laity, see Dmitri Starostine, ‘... in die festivitatis: Gift-giving, Power and the Calendar in the Carolingian Kingdoms’, *Early Medieval Europe*, 14.4 (2006): 465–86.

Reckoning of Time.²⁸⁶ This calendar format was never officially mandated, but it was distributed through the network of monasteries linked to the dynasty. More programmatic is the framework for clerical education announced in the *Admonitio generalis*. Amongst the skills to be taught to boys in episcopal and monastic schools – *psalmos* (reading, especially the liturgy), *notas* (writing), *cantus* (liturgical chant), *grammaticam* (Latin), *libros catholicos* (Christian literature) – the *Admonitio* included *computus*.²⁸⁷ Finally, a steady stream of ecclesiastical legislation throughout the ninth century aimed to ensure that priests were trained in *computus*.²⁸⁸

The emperor himself was interested in *computus*²⁸⁹ and exchanged

286 Arno Borst, *Die karolingische Reichskalender und seine Überlieferung bis ins 12. Jahrhundert*, MGH Libri memoriales 2. 3 v. (Hannover: Hahnsche Buchhandlung, 2001) and *Die karolingische Kalenderreform*, MGH Schriften 46 (Hannover: Hahnsche Buchhandlung, 1998). Borst's hypothesis that the format of the calendar originated in the Carolingian court was challenged by Paul Meyvaert, who noted its Bedan roots: 'Discovering the Calendar (*annalis libellus*) attached to Bede's own Copy of *De temporum ratione*', *Analecta Bollandiana*, 120 (2002): 5–64, esp. 5–9. Bede's influence is also emphasized by Brigitte Englisch, *Zeiterfassung und Kalenderprogramm in der frühen Karolingerzeit. Das Kalendarium der HS Köln DB 83–2 und die Synode von Soissons 744* (Stuttgart: Jan Thorbecke, 2002), 9–10. Borst responded that Bede, being a monk, would not have been interested in the historical details included in the Lorsch calendar: *Der Streit um den karolingischen Kalender*, MGH Studien und Texte, 36 (Hannover: Hahnsche Buchhandlung, 2004), 29–54. The incongruity of claiming that Bede was not interested in the relationship of history to *computus* was pointed out by Julia Barrow in her review in *Speculum*, 81 (2006): 812–13.

287 *Die Admonitio generalis Karls des Grossen* c. 70, ed. Hubert Mordek, Klaus Zechiel-Eckes, and Michael Glatthaar, MGH Fontes iuris Germanici antiqui in usum scholarum separatim editi 16 (Hannover: Hahnsche Buchhandlung, 2012), 224.320–3. See John J. Contreni, "'Let Schools be Established...' For What? The Meaning of *Admonitio Generalis*, cap. 70 (olim 72)", in *Music in the Carolingian World. Witnesses to a Metadiscipline. Essays in Honor of Charles M. Atkinson*, ed. Graeme M. Boone (Turnhout: Brepols, 2022), 219–46, esp. 234–6.

288 For a list of episcopal and synodal *capitula* on this topic see John J. Contreni, 'Counting, Calendars and Cosmology: Numeracy in the Early Middle Ages', in *Word, Image Number: Communication in the Middle Ages*, ed. John J. Contrani and Santa Casciani (Florence: SISMEL – Edizioni del Galluzzo, 2002), 66 n. 53. Contreni also underscores the wider 'mathematical literacy' supported by *computus* study and *computus* manuscripts.

289 *Discebat artem computandi et intentione sagaci siderum cursum curiosissime rimabatur*. ('He learned the art of computing and by intelligent application explored with great inquisitiveness the course of the stars': Einhard, *Vita Caroli Magni* 25, ed. G.H. Pertz and G. Waitz, MGH Scriptores rerum Germanicarum in usum scholarum, 25 (1911), 30.16–18. The reference to astronomy suggests that the *ars computandi* was *computus* as Bede conceived it. Einhard also records that Charlemagne gave German names to the

letters with Alcuin on the subject.²⁹⁰ But his cultural policies also linked *computus* to Frankish historical ideology. *Computus* became (in Arno Borst's phrase) a component of Carolingian *Herrschaftswissen* or 'sovereignty science'.²⁹¹ Reforming *computus*, like reforming grammar, orthography, and penmanship, was an emblem of *correctio*, the God-given mission of the Carolingian dynasty.²⁹² Even if the emperor's interest in dictating computistical doctrines should not be exaggerated, his determination to integrate it into the required training of priests and especially of monks had a significant impact on both the evolution of *computus* literature and the fate of *The Reckoning of Time*. But Bede's work may have also had a more direct political resonance. The 'Aachen Examination of 809' (Borst's *Cap. comp.* no. 16) records the questions posed to a group of Frankish computists on sensitive topics such as the date of the historic

months, perhaps consciously inspired by Bede's discussion of the English months in *The Reckoning of Time*, ch. 15. For an analysis of how the months and their names resonated with Carolingian ruler ideology see Carl I. Hammer, *Charlemagne's Months and their Bavarian Labors. The Politics of the Seasons in the Carolingian Empire*, BAR International Series 676 (Oxford: Archaeopress, 1997).

290 E.g. *Alcuini Epistolae*, ed. Ernst Dümmler, *Epistolae Carolini aevi*, MGH Epp. 4 (Berlin: Weidemann, 1895): 2.231–5 (Ep. 145, to Charles on the *salus lunae*) and 237–41 (Ep. 148, to Charles on the calculation of the zodiacal signs): for an overview, see Springsfeld, *Alkuins Einfluss* 320–1. Cf. Dietrich Lohrmann, 'Alkuin's Korrespondenz mit Karl dem Grossen über Kalender und Astronomie', in *Science in Western and Eastern Civilization in Carolingian Times*, ed. P.L. Butzer and D. Lohrmann (Basel: Birkhäuser Verlag, 1993), 79–114. On the Ep. 148 see Wolfgang Edelstein, *Eruditio und sapientia. Weltbild und Erziehung in der Karolingerzeit. Untersuchungen zu Alkuins Briefe* (Freiburg im Breisgau, 1965), 102–3. Four treatises on *computus* were also ascribed to Alcuin: *Ratio de luna* (PL 101.981–3), *Calculatio magistri Albini*, *De saltu lunae* (984–93), and *De bissexto* (993–8): only the first two are authentic, the latter two being earlier Irish material (on *De saltu lunae* see Commentary on ch. 42, pp. 478–9, nn. 201 and 203): Kerstin Springsfeld edits the *Calculatio magistri Albini* in the Appendix of *Alkuins Einfluss auf die Komputistik*, replacing the older edition in PL 101.999–1102.

291 *Schriften* 1.50. On the political and ideological resonance of *computus* and astronomy see Eric Ramírez-Weaver, *A Saving Science: Capturing the Heavens in Carolingian Manuscripts* (University Park: Pennsylvania State University Press, 2017).

292 See, in particular, Richard Corradini's study of 'The Rhetoric of Crisis: Computus and *liber annalis* in Early Ninth-Century Fulda', in *The Construction of Communities in the Early Middle Ages: Texts, Resources, and Artefacts*, ed. R. Corradini, M. Diesenberger and Helmut Reimitz (Leiden: Brill, 2003), 269–322, which illustrates how the production of a handbook of computistical pedagogy, Hrabanus Maurus' *De computo*, was bound up with royal resolution of a crisis in the government and the institutional memory of the monastery.

Crucifixion. On this issue, they waffled, apparently under the influence of *The Reckoning of Time* ch. 47.²⁹³

The advent of *The Reckoning of Time* in the Carolingian lands set off an impressive surge of copying.²⁹⁴ Of the 109 complete manuscripts of Bede's text, thirty-eight (35 per cent) were created before AD 900. Bede was known to be a prolific author, but for at least one ninth-century master who composed an *accessus ad auctorem* there was no question where his major achievement lay: Bede 'was, amongst those of the monastic profession, exceptionally studious in the Scriptures, but particularly in *computus* [*in arte calcularia*], concerning which he wrote a most elegant and useful book entitled *On Times* or *On the Reckoning of Time*. But he wrote much else besides ...'.²⁹⁵

The impact of *The Reckoning of Time* is also evident in the ways in which the text was presented. While many manuscripts contain the full text, in others the text is disassembled and integrated into new formats. Some of these formats are textual – 'consolidated' quasi-treatises, many with numbered chapters. Others are codicological. These manuscripts can be called *computus* albums: assemblages of tables and texts laid paratactically, side by side, but forming an implicitly structured single-volume 'library' of calendar lore and related topics (astronomy, mathematics, history ...). Such albums are more focused than mere *collectanea*, but not formally consolidated. *The Reckoning of Time* shows up in these albums as a complete text, but also in the form of extracts, sometimes in the same manuscript as the full text.

All these forms of presentation were created from the late eighth to

293 Ed. Borst, *Schriften* 3.1041. See Commentary on ch. 47, pp. 489–93. C.W. Jones, 'An Early Medieval Licensing Examination', *History of Education Quarterly*, 3 (1963): 19–29 discusses the text as found in the Sirmond Manuscript, Oxford, Bodleian Library 309, fol. 141. He thought this MS was unique, and was not aware of a previous edition, based on Paris, Bibliothèque nationale nouv. acq. lat. 1613 fols 20–2 (s. IX¹) and Brussels, Bibl. Royale 9590 fols 55v–56r (s. XI) by E. Dümmler, *Epistolae Carolini aevi* 2, MGH Ep. 4 (1895): 565–7. Borst's edition collates all these, plus Paris, BnF n.a.l. 1615 fols 143v–144v, as well as lat. 2796 fol. 98r–99r.

294 For a provisional list of eighth- and ninth-century codices see Stevens, *Bede's Scientific Achievement* 39–42. On early manuscripts of *The Reckoning of Time* and early mentions of the work in library catalogues, see Whitelock, 'After Bede' 42–3.

295 *Fuit enim monasticae religionis studiosissimus in scripturis, praecipue in arte calcularia, de qua scripsit pulcherrimum et utilem librum quem titulauit De temporibus siue De ratione temporum. Scripsit autem multa alia ... : Accessus ad auctorem Bedam*, ed. Jones, *BOD* 3, 701.306. The *accessus* accompanied Bede's *De arte metrica*.

the tenth centuries on the Continent, and they remained the framework for disseminating *The Reckoning of Time* until the advent of print. In what follows, we will examine each format in turn, featuring in the first instance Carolingian-period manuscripts, and then representative later examples.

4.1 Reading *The Reckoning of Time* 1: full-text manuscripts

From the time of the ‘Karlsruhe Bede’, the full text of *The Reckoning of Time* appeared as part of a ‘Bede anthology’ that included *On the Nature of Things*, *On Times*, and often the *Letter to Wicthed* as well. The order varied. In the earliest such manuscript, Vatican City, BAV Pal. lat. 1449 (s. IX¹; see Appendix 5, no. 251), *The Reckoning of Time* comes first, followed by *The Nature of Things* and *On Times*. More commonly, *The Reckoning of Time* comes last, following *The Nature of Things* and *On Times* (e.g. the ninth-century manuscripts St Gall, 248 and Melk, 412; Appendix 5, nos 224, 133), and sometimes with the *Letter to Wicthed* between *On Times* and *The Reckoning of Time* (e.g. London, British Library Harley 3091, s. IX^{2/3}; Appendix 5, no. 117). In Paris, BnF lat. 13013 (830; no. 200), *The Reckoning of Time* follows *The Nature of Things*, *On Times* (minus its chronicle), and the *Letter to Wicthed*, but the whole is treated as a single continuous text. This unusual pattern likewise appears in Milan, Ambrosiana D 48 inf. (1018; no. 137), though the order here is *The Reckoning of Time*, *The Nature of Things*, and *On Times*. Sometimes only *The Nature of Things* is included (e.g. St Gall, 251, though this manuscript also contains the chronicle from *On Times*). After the tenth century the three works were not infrequently supplemented by Heleric’s *On Computus* (a Bede-based textbook, which will be discussed below), or later by the innovative table-based *computus* of Abbo of Fleury (d. 1104). Examples of Abbonian manuscripts which incorporate the Bede text-group include London, British Library Royal 13 A XI (s. XI; see Appendix 5, no. 123), and the monumental album manuscript created at Thorney Abbey in Cambridgeshire in 1110, now Oxford, St John’s College 17.²⁹⁶

Full copies of *The Reckoning of Time* almost always include ch. 15 on the English month-names, even when they were copied on the Continent.²⁹⁷ At

296 Appendix 5, no. 174. Fully digitized with extensive commentary at <https://digital.library.mcgill.ca/ms-17/>.

297 Jones claimed (*BOT* 147–8) that ch. 15 was often omitted in Continental manuscripts out of disinterest, but, apart from Bordeaux 11, Munich CLM 18158, Paris lat. 7296, Stuttgart

some point in the transmission, however, this chapter was omitted, probably deliberately as not being relevant to a non-English readership. Nonetheless, several Continental copies indicate an intention to repair the loss. For example, in Paris, BnF lat. 13403 (s. IX^{med}; see Appendix 5, no. 201), ch. 15 is combined with ch. 14, suggesting an exemplar somewhere along the line had reinserted the missing ch. 15. In London, British Library Royal 15 B XIX (s. IX²; no. 124) ch. 15 is not listed in capitula, but is included in the text, albeit in a different hand. In Paris, BnF n.a.l. 1632 (s. IX^{2/4}; no. 213) ch. 15 is included in the text; however, in the capitula its title is added on the same line as ‘De mensibus grecorum’ and by a second hand.

Much more common are manuscripts which omit the chronicle of the Six Ages (ch. 66) and/or the closing chapters on future time.²⁹⁸ As we discussed earlier, the chronicle could be omitted because of resistance to Bede’s *Hebraica veritas* chronology (for example, in Karlsruhe, Aug. perg. 167; Appendix 5, no. 95). Sometimes the *capitula* claim to include chs 66–71, but these are not in fact copied: St Gall, 459 (s. IX^{4/4}; no. 229) is one such volume. More common is the entire omission of chs 66–71, or the inclusion of only the preface to ch. 66 (summarizing and allegorizing the Six Ages), with or without chs 67–71. The latter is the case, for example, with a group of related manuscripts, now Paris, BnF lat. 5543 (c. 849; Appendix 5, no. 188), Paris, BnF lat. 5239 (s. X^{1/3}; no. 187), and Paris, BnF lat. 7297 (s. X; no. 191), though in lat. 7297 an abbreviated version of the Chronicle is substituted. Examples of copies where the ch. 66 Chronicle is omitted, but the closing chapters included, are listed at the beginning of Appendix 5.

4.2 Reading *The Reckoning of Time* 2: extracts

Carolingian manuscripts of the full text of *The Reckoning of Time* certainly bear witness to its active use in teaching, notably in elite monasteries and cathedrals. In Bede’s formulae and worked examples, the *annus praesens*

Theol. Q. 172 and BAV Reg. lat. 1038, I have not encountered a Continental manuscript where the chapter was omitted and not thereafter supplied. Other manuscripts which reveal that the loss was recognized and an attempt made to repair it include: London, British Library Royal 15.B.19 (Reims s. IX²) which inserts ch. 15 on a fly leaf (Jones, *BOT* 147); and Paris, Bibliothèque nationale 13403 (Corbie s. IX) where ch. 15 is missing in the *capitula* but included in the text, though from a different exemplar than the rest of the treatise: *ibid.* 148.

298 See Appendix 5, p. 610.

was occasionally modified to bring it up to date,²⁹⁹ and sometimes additional formulae were interpolated.³⁰⁰ However, despite the high level of production of manuscripts of the full text of *The Reckoning of Time*, other forces were encouraging dismemberment, rearrangement, and excerpting. One of these was a by-product of Bede's own commitment to setting *computus* in the framework of astronomy. Martianus Capella's *De nuptiis Philologiae et Mercurii* introduced Carolingian schoolmasters to the idealized ancient curriculum of the *quadrivium*. Some of their number, such as Martin the Irishman (817–875), head of the cathedral school of Laon,³⁰¹ and his followers Manno of Laon and Heiric of Auxerre, glossed both Martianus and the works of Bede.³⁰² These commentators were also attracted to *computus* as a source of material to populate the classical categories of *astronomia* and *arithmetica* in an aspirational Liberal Arts curriculum. Bede, of course, deliberately incorporated astronomy and natural science into *computus*, but now works on these subjects were copied alongside *The Reckoning of Time*.³⁰³ In turn, *The Reckoning of Time* was mined for astronomical information. For example, the *Aratus latinus* is a Latin translation of a group of texts, including the astronomical poem of Aratus of Soli and a commentary on the same. It survives in two versions. The original version was put together in the first half of the eighth century, probably at Corbie. The revised version, prepared in the latter half of the same century, likewise came from northern France.

299 E.g. in Würzburg Theol. fol. 46 (Salzburg 792–807) the *annus praesens* in ch. 49 was changed by the original scribe to 800. For other examples of updating see Appendix 5, nos 39, 105, 282.

300 E.g. Munich CLM 14725 (Regensburg, s. IX¹) adds additional formulae to chs 49, 52, 54 (cf. Jones, *BOT* 147).

301 On Martin's glosses to *The Nature of Things* and *The Reckoning of Time* see John J. Contreni, *The Cathedral School of Laon from 850 to 930: Its Manuscripts and Masters*, Münchner Beiträge zur Mediävistik und Renaissance-Forschung 29 (Munich: Arbo-Gesellschaft, 1978), 124–6, and Jones, *BOD* 257–61.

302 Contreni, *Cathedral School* ch. 10, esp. 139, 150–1.

303 For a sensitive analysis of how *computus* and *computus manuscripts* enveloped this encyclopedic range of materials, and the intersecting role of courts, monasteries, and episcopal governance, see Ivana Dobcheva, 'The Umbrella of Carolingian Computus', in *La compilación del saber en la Edad Media. La Compilation du savoir au moyen âge. The Compilation of Knowledge in the Middle Ages*, ed. Maria José Muñoz, Patricia Cañares, and Cristina Martín (Porto: Fédération Internationale des Instituts d'Études Médiévales, 2013), 211–29. On astronomy in particular see Stephen C. McCluskey, *Astronomies and Cultures in Early Medieval Europe* (Cambridge: Cambridge University Press, 1998), ch. 8, and Bruce Eastwood, *Ordering the Heavens: Roman Astronomy and Cosmology in the Carolingian Renaissance* (Leiden: Brill, 2007).

This version abbreviated the poem drastically and rewrote the commentary in better Latin, with some parts replaced by new texts borrowed from Hyginus, Isidore of Seville, Fulgentius, Pliny, and so on. The Pliny excerpts are in fact lifted from Bede's *The Nature of Things*, and the *Aratus latinus* also borrows other passages from Bede.³⁰⁴

An index of this 'quadrivial turn' with regard to *computus* is Hrabanus Maurus' manual of *doctrina christiana*, *De institutione clericorum* (*The Education of the Clergy*). Hrabanus' model was Cassiodorus, who had no place for *computus* in either his 'divine' or his 'human' categories of learning. So Hrabanus elected to equate *computus* with one of the Liberal Arts, specifically what Isidore would call *astrologia naturalis*, or astronomy:

It behoves God's cleric by skilful art to learn about this part of astronomy which follows natural inquiry and which prudently searches out the courses of the Sun, Moon and stars and the sure distinctions of time, so that through sure interpretation of the rules, and established and true appraisal of the formulae, he may not only inspect in a trustworthy manner the past courses of the years but also know how to reason about the time to come, and so that he may find out for himself the beginning of the Paschal feast, and the true places [in the calendar] which ought to be observed for all solemnities and celebrations and be able to proclaim their lawful celebration to the people of God.³⁰⁵

However, it is doubtful that every Carolingian cleric was expected to master *The Reckoning of Time*. Students, and probably teachers as well,

304 Vernon King, 'An Unreported Early Use of Bede's *De natura rerum*', *Anglo-Saxon England*, 22 (1993): 85–91. Bede's heavy use of Pliny in *The Nature of Things* was an important innovation, which he carried over into *The Reckoning of Time*. He probably did not possess a full text of the *Historia naturalis*, but the contents of the only anthology of extracts that can be dated and localized to Bede's milieu do not align with his citations: this collection was edited by Karl Rück, *Auszüge aus der Naturgeschichte des C. Plinius Secundus in einem astronomisch-komputistischen Sammenwerke des achten Jahrhunderts*, Programm des Königlichen Ludwigs-Gymnasiums für das Studienjahr 1887–88 (Munich: F. Straub, 1888).

305 Hrabanus Maurus, *De institutione clericorum* 3.25, ed. Detlev Zimpel (Turnhout: Brepols, 2005), 564.3–12; cf. Isidore of Seville, *Etym.* 3.27.1–2. Isidore's distinction between astronomy and astrology is discussed by Max Lejbowicz, 'Postérité médiévale de la distinction isidorienne *astrologia/astronomia*: Bède et le vocabulaire de la chronometrie', in *Documents pour l'histoire du vocabulaire scientifique*, 7 (1985): 24, and 'Théorie et pratique astronomiques chez Isidore de Seville', in *L'Homme et son univers au moyen âge*, ed. Christian Wenin, *Philosophies médiévales* 27 (Louvain-la-Neuve: Éditions de l'Institut supérieur de philosophie, 1986), 622–30.

even at monasteries such as Fulda, found the level of detail and comprehensive sweep of Bede's work daunting. Hrabanus Maurus' solution was to abbreviate *The Reckoning of Time* and recast it in the form of a question-and-answer dialogue. This had the effect of reducing Bede's intricate expositions to more instrumental 'teachable' bites of information. Hrabanus retained the architecture of Bede's original work, which allowed the reader to progress, if desired, to the more advanced work.³⁰⁶

The most widespread approach, however, was to take *The Reckoning of Time* apart and rearrange or selectively excerpt its contents. This process could unfold in two ways. One was to construct a consolidated 'textbook' or 'encyclopedia' out of pieces of *Reckoning of Time* and other works; the result was a suite of titled 'chapters', sometimes numbered and arranged into books. The second method was to construct an 'album' containing calendars, Paschal tables, *computus* tables, lists of computistical data, and unconsolidated *lectiones*. In the last category could be found one or more chapters of *The Reckoning of Time*. These albums almost always contained materials on astronomy, mathematics, and related topics, so, even if they were not explicitly structured as treatises, they reflected the encyclopedic range of *computus* which Bede promoted.

4.2.1 Extracts in 'consolidated' encyclopedias

The first half of the ninth century saw the production in Carolingian centres of a number of 'encyclopedias' of *computus*, in which extracts were consolidated into numbered books and chapters. The best-known examples of this new genre are the 'Aachen encyclopaedia' of 809 (also called the 'Palatine' or 'Seven-Book Encyclopedia') and the 'Salzburg Encyclopedia' or 'Nine-Book Encyclopedia' of 818. The premier witnesses of the latter are the twin manuscripts Munich, CLM 210 and Vienna, Nationalbibliothek 387, while the Aachen Encyclopedia's most studied representative is the *de luxe* edition made for Drogo of Metz, now Madrid, Bibl. nac. 3307.³⁰⁷ As Nothaft remarks, 'In these convoluted anthologies,

306 Hrabanus' *De computo* is edited, with a historical introduction, by Wesley M. Stevens, *CCCM* 44 (1978), 165–331.

307 The Aachen Encyclopedia is edited as *Lib. comp.* by Arno Borst, *Schriften* 3. 1054–334, and the Salzburg Encyclopedia as *Lib. calc.* on 1367–451. On the former, see Borst's 'Alkuin und die Enzyklopädie von 809', in *Science in Western and Eastern Civilization in Carolingian Times*, ed. P.L. Butzer and D. Lohrmann (Basel: Birkhäuser Verlag, 1993), 53–75, and Anton von Euw, 'Die künstlerische Gestaltung der astronomischen und computistischen Handschriften des Westens', in *Science in Western and Eastern Civilization in Carolingian*

which were often only selectively copied by later scribes, readers could find a wealth of knowledge, encompassing chronography, arithmetic, astronomy, meteorology, and metrology, making them an early medieval *summa* of the natural and numerical sciences.³⁰⁸

The Aachen Encyclopedia is divided into seven books, devoted to (1) martyrology, historical materials, and Paschal cycles; (2) *argumenta* for the columns of the Paschal table and other computistical operations; (3) solar years; (4) lunar reckoning; (5) astronomy; (6) weights and measures; and (7) Bede's *The Nature of Things*. Apart from quotations from ch. 9 (on the Seventy Prophetic Weeks) in Book 1, and an abbreviated version of ch. 4 on the measurement of *unciae* in Book 6, all the material extracted from *The Reckoning of Time* falls into books 3 and 4. In book 3 chs 38 and 39 are excerpted to become two chapters on the *saltus lunae* (3.6–7), but elsewhere Bede has been paraphrased, for example ch. 1 on finger-reckoning (3.1) and ch. 31 on the lengthening and shortening of the day throughout the year. Book 4 shows the same pattern of direct quotation (e.g. 4.9–12 reproduce Bede's chs 42, 46, 41, and 20; 4.27 is ch. 28) combined with paraphrases and patchworks. For example, 4.26 on the harmony of the Moon and the sea combines the chapter on this topic from *The Nature of Things* with bits of *The Reckoning of Time*'s ch. 29.

The Salzburg Encyclopedia is organized into 111 chapters along much the same thematic lines as its Aachen counterpart, beginning with historical materials and moving on to the solar calendar and its adjustments, lunar reckoning, and the specifics of Paschal computation. In contrast to the Aachen encyclopedia, many of its chapters are copied in full from *The Reckoning of Time*. For example, chs 39–43, which cover the solar year and leap year, are composed of Bede's chapters 36 (paraphrased) and 38–41. Bede's ch. 42 on the *saltus lunae* is supplemented by four chapters of additional material, before the compiler returns to *The Reckoning of Time* and ch. 43. The encyclopedia's chs 65–73 on the weeks and months are Bede's chs 7, 6, 8–9, 11–14, and 16, and Bede's chs 25–7 on phenomena relating to the visibility of the Moon are also reproduced in a block, becoming Salzburg's chs 74–6. Finally, chs 80–99 are made up only of chapters of *The Reckoning of Time*, i.e. 28–30, 35, 44–8, 50, 53, 55–9, 61–6 (ch. 66 is represented only by its preface).

Times, ed. P.L. Butzer and D. Lohrmann (Basel: Birkhäuser Verlag, 1993), 251–69. A major new study of the Madrid codex is Ramírez-Weaver, *A Saving Science*.

308 *Dating the Passion* 89.

Cologne Dombibliothek 83-II, as we noted above, is a collection which seems designed to present computistical alternatives to Bede.³⁰⁹ Nonetheless, it contains *The Reckoning of Time* on fols 86r–125v, but in a version which selects certain chapters from Bede's text and rearranges them in a different order.

Cologne chapter (chapters in square brackets are not in the <i>capitula</i>)	<i>Reckoning of Time</i> chapter
I. De die (<i>On the day</i>)	5
II. Vbi primus seculi dies sit (<i>The world's first day</i>)	6
III. De nocte (<i>Night</i>)	7
IV. De magnitudine solis et lune (<i>The size of the Sun and Moon</i>)	27
V. De equinoctiis et solsticiis (<i>Equinoxes and solstices</i>)	30
VI. De dispari longitudine dierum et uario statu umbrarum (<i>The varying length of days and the different position of the shadows</i>)	31
VII. Causa inequalitatis dierum [<i>capitula</i> umbrarum] (<i>The inequality of days (shadows)</i>)	32
VIII. Quibus in locis pares sint dies uel umbre. (<i>In what places the shadows or days are equal</i>)	33
VIII. De ratione unciarum (<i>Reckoning of fractions</i>)	4
X. De conpoto uel loquilla digitorum (<i>Calculating or speaking with the fingers</i>)	1
XI. De horis et momenta et minuta (<i>sic</i>) (<i>Hours, momenta and minutes</i>)	3
XII. De epactis solis id est concurrentes (<i>Solar epacts, that is, concurrents</i>)	53
XIII. De redito (<i>sic</i>) et computo articulari utrarumque epactarum (<i>The cycle of both epacts, and their calculation upon the fingers</i>)	55
XIII. De ebdomada (<i>The week</i>)	8
XV. De ebdomadibus LXX propheticis (<i>The seventy prophetic weeks</i>)	9

309 See above, p. 93 and Palmer, 'The Ends and Futures' 152, n. 56.

[XVa] De ebdomada etate saecula (<i>sic</i>) (<i>The week of the World Ages</i>)	10
XVI. De mensibus (<i>Months</i>)	11
XVII. De mensibus romanorum (<i>The Roman months</i>)	12
XVIII. De mensibus grecorum (<i>The Greek months</i>)	14
XVIII. De mensibus anglorum (<i>The months of the English</i>)	15
XX. De kalendis nonas idus (<i>sic</i>) et de feriis (<i>Kalends, Nones, Ides and weekdays</i>)	13
XXI. Quota sit feria in kalendis (<i>What day of the week it is on the first day of the month</i>)	21
XXII. De signis XII mensuum. (<i>The [zodiac] signs of the twelve months</i>)	16
XXIII. De trimoda temporum ratione (<i>Three ways of reckoning time</i>)	3
XXIII. De quatuor temporibus elimentis (<i>sic</i>) humoribus (<i>The four seasons, elements, and humours</i>)	35
XXV. De annis naturalibus (<i>Natural years</i>)	36
XXVI. De disparibus antiquorum annis (<i>The different years of the ancients</i>)	37
XXVII. De embolismos (<i>sic</i>) et annis communibus (<i>Embolismic and common years</i>)	45
XXVIII. De ogdoade et endigade (<i>sic</i>) (<i>Ogdoas and hendecas</i>)	46
XXVIII. De annis dominice incarnationis (<i>The years of the Lord's incarnation</i>)	47
XXX. De cyclo decennouenali (<i>The nineteen-year cycle</i>)	44
XXXI. De ratione byssexti (<i>The calculation of the leap-year day</i>)	38
XXXII. De mensura [in]crementi byssextilis (<i>Measuring the leap-year increment</i>)	39
XXXIII. Quare VI Kl.[marcii] intercaletur (<i>Why it is intercalated on the sixth Kalends of March</i>)	40
XXIII. De quinque circulis mundi (<i>The five circles of the universe</i>)	34
XXXV. De circulo magno pasche (<i>The Great Paschal Cycle</i>)	65
XXXVI. Tipica pasche interpretatio (<i>The typological interpretation of Easter</i>)	54

XXXVII. Quid inter pascha et azima distat (<i>The difference between the Pasch and the Feast of Unleavened Bread</i>)	63
XXXVIII. De XIII luna pasche et argumentum inueniendi ea (<i>The fourteenth Moon of Easter and a formula for finding it</i>)	59
XXXVIII. De die dominicae Pasche (<i>Easter Sunday</i>)	61
XL. De luna ipsius diei (<i>The Moon of that day</i>)	62
XLI. Quomodo errant quidam in primi mensis initio (<i>How certain people err concerning the beginning of the first month</i>)	51
XLII. Argumentum de luna XIII pasche (<i>Formula for the fourteenth Moon of Easter</i>)	60
[XLIII] Quando uel quare luna uel prona uel supina uel uidetur erecta (<i>When and why the Moon appears to be facing upwards, facing downwards, or standing upright</i>)	25
[XLIII] Qua ratione luna cum sit situ inferior superiora sole aliquociens uideatur (<i>Why the Moon, though situated beneath the Sun, sometimes appears to be above it</i>)	26
[XLV] De effectiue lunae potentiae (<i>sic</i>) (<i>What the power of the Moon can do</i>)	28
[XLVI] De concordia maris et lunae (<i>The harmony of the Moon and the sea</i>)	29
[XLVII] Quot horis luna luceat (<i>The number of hours of moonlight</i>)	24
[XLVIII] De ciclo lunari (<i>The lunar cycle</i>)	56
[XLVIII] Quota sit luna in kalendas (<i>What the age of the Moon is on the first day of the month</i>)	
[L] De epactis lunaribus (<i>Lunar epacts</i> – but actually the first half of ch. 43)	43 (part 1)
[LI] Quare aliquociens luna maior quam computatur pareat. (<i>Why the Moon sometimes appears older than its computed age</i>)	43 (part 2)
[LII] De lune cursu per signa (<i>The course of the Moon through the signs</i>)	17
[LIII] Item de lune discursu si quis signa ignoret. (<i>More on the course of moon, for those who are ignorant of the [zodiac] signs</i>)	18

[LIII] De eodem si quis computare nescit. (<i>More on the same subject, for those who do not know how to calculate</i>)	19
[LV] De etate lune si quis computare non potest. (<i>The age of the Moon, for those who do not know how to calculate</i>)	23
[LVI] Argumentum si quis computare non potest (<i>A formula for those who do not know how to calculate</i>)	–
[LVII] De adiectiones id est epactae lunares (<i>sic</i>) (<i>Lunar additions or epacts</i>)	50
[LVIII] De saltu lunae (<i>The ‘leap of the Moon’</i>)	42

The rationale behind this edition seems to be to gather the chapters on solar reckoning together, followed by those on lunar reckoning, a structure favoured by the Irish textbooks. Given the conservative orientation of this manuscript and the presence of other Irish material, such as *De divisionibus temporum*, this was intentional, as was the omission of chs 66–71.

A similar but more informally presented rearrangement of *Reckoning of Time* is found in Rome, Bibl. Vallicelliana E 26, written in Lyon around 816 (Appendix 5, no. 218). Fols 91r–136v constitute a block of titled, but not numbered, chapters virtually all of which are from Bede’s book. The suite begins with excerpts (sometimes reordered) from chs 1, 5, and 6, and then transitions to a series of complete chapters on climates, seasons, leap year, the *saltus lunae*, and the structure of the nineteen-year cycle (30, 35–6, 38–9, 41–3, 45–6). A block of non-Bedan *argumenta* or formulae is framed by *argumentum*-style chapters from *The Reckoning of Time* (22–3 and 55–63) leading up to the exposition of Easter itself. Finally, after a section of non-Bedan texts on epacts, common and embolismic years, equinoxes and so on, including some tables, the textbook closes with chs 66–71. In short, the editor of this volume eliminated all Bede’s material on weeks and months, most of his teaching on calculating the age of the Moon and the weekday, and all the chapters on eclipses, tides, and anomalies of lunar presentation. At the same time, he augmented the number of *argumenta*. One can only speculate on the motivation for this reworking of *The Reckoning of Time*, but it is not unlikely that the editor was keen to prune away antiquarian materials, calculation procedures rendered obsolete by tables, and astronomy that was considered superfluous.³¹⁰

310 On this manuscript see Pierre Chambert-Protat, ‘Des computistes au travail sous Agobert: pour un archéologie de la vie intellectuelle dans le Lyon carolingien’, in *Lyon*

None of the Aachen, Salzburg, or Vallicelliana compilations mentions Bede by name. However, Vatican City, BAV Reg. lat. 123 (Appendix 5, no. 252), a comparable *computus* encyclopedia in four books (on solar reckoning, lunar reckoning, ‘the nature of things’, and astronomy) copied at Ripoll in Catalonia in 1056, but based on a Fleury exemplar of the mid-ninth century, acknowledges the sources of all its chapters, including Bede. Virtually every chapter of *The Reckoning of Time* is included, albeit in a different order, interspersed with extracts from Pliny, Isidore, and Hyginus.³¹¹

These few examples by no means exhaust the genre of consolidated compilation of extracts, but it is largely a phenomenon of the ninth century. By far the bulk of excerpts from *The Reckoning of Time* are found in *computus* albums, and album manuscripts will become the dominant form for the remainder of the Middle Ages.

4.2.2 Extracts in *computus* albums

Unlike the structured encyclopedias of Aachen, Salzburg, or Ripoll, *computus* albums do not organize their contents as chapters within a confected treatise. Usually the album contains a calendar and the tables or formulae required to customize it for any given year, as well as Paschal tables. Around these nuclei swarm an array of tables, *lectiones*, shorter notes or ‘micro-texts’, and full-dress treatises such as *The Reckoning of*

dans l’Europe carolingienne: autour d’Agobert, ed. Marie-Céline Isaïa, François Bougard, and Alexis Charansonnet (Turnhout: Brepols, 2019), 93–117; Anne-Marie Turcan-Verkerk, ‘Florus de Lyon et le ms. Roma, Bibl. Vallicelliana, E 26: notes marginales’, in *La tradition vive: mélanges d’histoire des textes en l’honneur de Louis Holtz* (Turnhout: Brepols, 2003), 301–16; David Paniagua, ‘Sul ms. Roma, Bibl. Vallicelliana, E 26 e sulla trasmissione manoscritta di Polemio Silvio: un nuovo testimone (poziore) per due sezioni del Laterculus’, *Revue d’histoire des textes*, 11 (2016): 163–80. Immo Warntjes suggests that the Visigothic background of Agobard of Lyon may have influenced this reworking of *Reckoning of Time* (personal communication).

311 Appendix 5, no. 252. On the Irish provenance of a significant portion of the material in this compilation (notably from *De ratione computandi*) see Jacopo Bisagni, ‘The Newly-Discovered Irish and Breton Computistica in Città del Vaticano, BAV, MS Reg. lat. 123’, *Peritia*, 28 (2017): 13–34. See also José Martínex Gázquez and Gemma Puigvert i Panagumà, ‘Los *excerpta* de Beda (*De temporum ratione* 19 y 23) en Ripoll (ACA, Ripoll 59 y Vat. Reg. Lat. 123)’, *Emerita*, 64 (1996): 295–305; Alejandro García Avilés, *El tiempo y los astros. Arte, ciencia y religión en la alta edad media* (Murcia: Universidad de Murcia, 2001), chs 7–8; Joan Gómez Pallarès, ‘La literatura de cómputo en la Cataluña de los siglos X–XII: el caso de Ripoll’, in *Studia chronologica. Estudios sobre manuscritos latinos de cómputo* (Madrid: Ediciones Clásicas, 1999), 173–84.

Time. There is no explicit framework, though the selection and arrangement of the materials can reflect a thematic or pedagogical logic. In addition, the album may also include materials on astronomy and cosmology, history, medicine, prognostication, mathematics, or music. *Computus* albums bear a distinct family resemblance, yet there are very few cases where one seems to have been copied *in extenso* from another.³¹²

Complete copies of *The Reckoning of Time* are from an early date embedded in such albums. A case in point is St Gall, MS 250 (850 × 899; Appendix 5, no. 225); but another ninth-century St Gall volume, MS 184 (s. IX^{ex}; no. 223) takes a different approach, scattering selected chapters from Bede's book, without ascription, throughout the volume. The particularly rich album contained in London, British Library Harley 3017 (861–864; no. 116) includes a number of detached chapters and parts of chapters: ch. 19 (fols 133v–134v), part of ch. 35, (fol. 143r–v), and a block comprising ch. 48 (165r–v), the first half of ch. 50 (fols 165v–166r), and ch. 51 (fols 166r–167v), ch. 65 (fols 167v–168v).

Some chapters were particularly targeted for inclusion. Ch. 1, on finger-reckoning, is a case in point, being frequently copied in whole or in part, particularly the explanation of the finger positions that begins at *Cum ergo dicis ...* ('So when you say ...')³¹³ Occasionally the extract is illustrated.³¹⁴ Bede's use of finger-reckoning as a form of coded signalling also leads to ch. 1 being included in manuscripts devoted to grammar, such as Leiden UB BPL 154 (s. XIII; Appendix 5, no. 104), where it follows Priscian.

Another popular extract was ch. 9, Bede's explanation of the 'seventy prophetic weeks' in the book of Daniel. In Paris, BnF lat. 1829 (s. XI; Appendix 5, no. 181) chs 8–10 form a bridge between Jerome's commentary on Daniel and Bede's *On Times* with computistical argumenta and tables. Like ch. 1, though, ch. 9 could migrate across genres. In Paris, BnF lat 579 (s. XII^{ex}; no. 179) it is wedged between a glossed copy of Daniel and a second text expounding Daniel 9:24.

The two chapters in which Bede instructs his reader how to use the calendar and a reference table to determine the position of the Moon in the zodiac (ch. 19), or the age of the Moon (ch. 23), are occasionally presented adjacent to the tables in question, which is indeed logical. This is the case in

312 Faith Wallis, 'Albums of Science in Twelfth-Century England', *Peritia*, 28 (2017): 195–224, and 'An Eleventh-Century "Science Album"'.
 313 See below, p. 134.

314 See Commentary on ch. 1, pp. 318–19.

Rome, Biblioteca Vallicelliana E26, where ch. 19 on fols 1v–2r is followed by the *Pagina regularis* on fol. 2v. This manuscript also copies ch. 23, but without its table, as part of the consolidated ‘textbook’ discussed above; however, the two are found together in St Gall, 250 (pp. 104–5).

A particularly complex case is where ch. 66 on the Six World Ages appears alone. For the most part, the manuscripts which contain only the Chronicle are not *computus* albums, but anthologies of chronicles and histories, and most date from the eleventh century onwards. An early representative is Paris, BnF lat. 4860 (885–915; Appendix 5, no. 183) where chs 66–7 form part of a collection of chronicles. The latest example located to date is Paris, BnF lat. 6161 (s. XV; no. 189), which excerpts the Chronicle up to the reign of Titus and continues with an anonymous *Origo gentis Longobardorum* and a fragment of a chronicle from 855–1108.³¹⁵ An anomalous and rather enigmatic case is Paris, n.a.l. 1612 (s. IX^{med}. Tours; Appendix 5, no. 209), where *The Nature of Things* is directly followed by *The Reckoning of Time* chs 52–71.

Not infrequently, these extracts are not ascribed to Bede. *The Reckoning of Time* was evidently considered a useful storehouse of reliable *computus* teaching that could be rearranged, abbreviated, and modified to suit the needs of the album’s compiler. Where its authority was acknowledged is in those copies of the full text equipped with glosses.

4.3 Reading *The Reckoning of Time* 3: glosses

About 44 per cent of full copies of *The Reckoning of Time* have glosses of some kind. Most are interlinear and lexical (e.g. defining terms, supplying antecedents, and so on). Sometimes these are combined with more expository marginal notes. Occasionally, expository glosses form a more or less extensive continuous lemmatic commentary. For the most part, glosses cluster in the earlier chapters of the work, but there are exceptions. A comprehensive study of these glosses is a major desideratum. What follows here is a summary of what has been determined to date.

The glossing traditions of *The Reckoning of Time* stem in the first instance from an Irish tradition which antedates the arrival of the texts on the Continent and which was later adopted and taken in different directions by Carolingian glossators. Irish glossators focused tightly on matters

315 See Commentary on ch. 66 for discussion of other ways in which ch. 66 was edited in the course of its transmission.

computistical, while the Carolingian tradition incorporated elements of the new *quadrivium* approach to *computus* discussed above, occasionally venturing into philosophical and theological terrain. One particularly influential family of Irish glosses stems from the upper Rhine region of St Gall and Reichenau, and extends to Bobbio; its principal representative is the ‘Karlsruhe Bede’, Karlsruhe, Aug. lat. perg. 167 (Appendix 5, no. 95), and its slightly earlier but fragmentary relative Vienna, NB 15298 (no. 278). The glosses in these manuscripts are in both Latin and Old Irish.³¹⁶ The Irish glosses draw upon a developed body of native Irish computistical literature, much of which predates Bede; moreover, they aim not only to explain *The Reckoning of Time* but also to present alternative points of view. A striking example is the exceptionally extensive glosses in Breton, Old Welsh, and Latin in the ninth-century manuscript Angers Médiathèque Toussaint (Bibl. municipale) 477 (Appendix 5, no. 6), which rely heavily on Irish sources reflected in the *Munich Computus*, the *Einsiedeln Computus*, and *De ratione computandi*, and closely align with those in the Karlsruhe Bede.³¹⁷ The marginal glosses in the Angers manuscript are notably digressive. Jumping off from a cue-word in Bede’s text, the glossator mines sources such as Isidore’s *Etymologiae* or Hrabanus Maurus’ *De universo* for information on subjects as diverse as the Roman army, trees, the names of peoples, and stones. A second layer of these glosses, also composed of chains of quotations but this time from the Bible and classical and patristic writings, takes the form of laments or imprecations against bishops and abbots, adulterers, and fornicators. The adoption of *The Reckoning of*

316 For a detailed comparison see Killion, ‘Bede’s Irish Legacy’ 279 *sqq.* and emendations by Bisagni: *From Atoms to the Cosmos* 38 n. 96.

317 Loevenich, *Einsiedeln Computus*, LXXX, XCV–CVIII, and *passim* in his apparatus, which documents the Angers glosses’ indebtedness of *Einsiedeln Computus* and *Munich Computus*; Warntjes, *Munich Computus* clxxxiii–clxxxvii; Bisagni, *From Atoms to the Cosmos* 40–3. The Angers glosses were discovered by Léon Floriot, ‘La découverte de nouvelles gloses en vieux-breton’, *Compte-rendu des séances de l’Académie des Inscriptions et Belles-Lettres*, 103.2 (1959): 186–95. Pierre-Yves Lambert demonstrated the links between these glosses and those in Karlsruhe Aug. 167: ‘Les gloses en vieux-breton aux écrits scientifiques de Bède, dans le manuscrit Angers 477’, in *Bède le Vénérable entre tradition et postérité/The Venerable Bede. Tradition and Posterity*, ed. Stephane Lebecq, Michel Perrin, and Olivier Szerwiniack (Lille: CEGES – Université Charles de Gaulle, 2005), 309–34, and ‘Les commentaires celtiques à Bède le Vénérable’, *Études Celtiques*, 20 (1983): 119–43 and *Études Celtiques*, 21 (1984): 185–206.

Time as a standard work for monastic reading opened up its margins to reflections well beyond the bounds of *computus*.³¹⁸

Substantial Carolingian glossing of *The Reckoning of Time* stems from cathedral schools in north-eastern Francia, notably Auxerre and Laon. There are two main branches of this tradition – the ‘Auxerre’ glosses in Melk, Stiftsbibliothek 412 (St Germain d’Auxerre, ca. 840; Appendix 5, no. 133) and the ‘Laon’ glosses in Berlin, Staatsbibliothek Phillips 1832 (no. 23) – but they arise from a common root, namely the teaching of a group of masters at Laon, who also had links to neighbouring centres at Soissons, Compiègne, Reims, and Auxerre. The Berlin manuscript contains glosses on *The Reckoning of Time* written in Laon in the hand of its *scholasticus* Martin the Irishman, who had overall supervision of the construction of this codex.³¹⁹ The glosses are both interlinear and marginal, forming (in John Contreni’s words) a ‘layered’ deposit of learning and reflection, designed not so much for the classroom as for the appreciation of other teachers.³²⁰ They show evidence of composition over a period of time. The ninth-century manuscript Trier Stadtbibliothek 2500 (Appendix 5, no. 235) is a direct copy of Martin’s Berlin manuscript, even down to details of wording and attribution of quotations, and yet it contains only about fifteen of Martin’s hundreds of *Reckoning of Time* glosses. The rest were composed by Manno of Laon, who seems to have had access to Martin’s volume before the glossing was complete, perhaps as early as the 860s, when Manno had departed to teach at Compiègne.³²¹

The ‘Laon’ glosses in the Berlin manuscript are included as an apparatus in Jones’ *Bedae opera didascalica* edition of *The Reckoning of Time*. Salient features of Martin’s glosses are their attention to expounding Bede’s meaning, presenting worked examples of his calculations, and explaining geographical references. He is particularly interested in Greek

318 Dominique Barbet-Massin, ‘Le manuscrit 477 (461) d’Angers: étude codicologique et textuelle’, *Britannia monastica*, 19 (2017): 26–7.

319 The volume was later relocated to St Vincent in Metz: Jones, *BOD* 260. The Laon origin was demonstrated by John J. Contreni, ‘Bede’s Scientific Works in the Carolingian Age’, in *Bède le Vénérable entre tradition et postérité/The Venerable Bede. Tradition and Posterity*, ed. Stéphane Lebecq, Michel Perrin, and Olivier Szerwiniack (Lille: CEGES – Université Charles de Gaulle, 2005), 250–1, and *The Cathedral School of Laon*, 124–9.

320 ‘Bede’s Scientific Works’ 251.

321 John J. Contreni, ‘John Scottus and Bede’, in *History and Eschatology in John Scottus Eriugena and his Time*, ed. J. McEvoy and M. Dunne (Leuven: Leuven University Press, 2002), 136.

grammar and etymology.³²² The Berlin manuscript also contains glosses to *The Nature of Things*, not written by Martin, but corrected in his hand.

The 'Auxerre' glosses in the Melk codex are annotations by the *scholasticus* Heiric of Auxerre, who studied with Martin and with John Scottus Eriugena. Many are wholly or partially in Tironian notes.³²³ This manuscript belonged to Heiric and accompanied him on his travels from Auxerre to Ferrières (859–862) and Soissons (862–865), and back again to Auxerre (865–876/877).³²⁴ One intriguing feature of this manuscript is that a second collection of glosses is gathered together, separately from Bede's text, and identified as a *praefatio* to the work. These are not by Heiric. We can, for convenience, call this the 'Melk Commentary'.³²⁵

The Berlin, Melk, and Trier volumes share other features as well, notably Martin's, Heiric's, and Manno's insertion of autobiographical notices into the Paschal table annals. However, as John J. Contreni argues, the most significant common influence was that of John Scottus Eriugena, who may himself have composed glosses on Bede's scientific writings. Eriugena's works indicate his familiarity with these writings, and both the Auxerre and Laon glosses reflect Eriugena's interests and distinctive viewpoints, as well as his predilection for Censorinus' *De die natali* and Aulus Gellius' *Noctes Atticae* (this latter work was present in the Laon library). The Auxerre glosses even refer directly to 'Iohannes' in a context which can only point to Eriugena.³²⁶ The Laon–Auxerre families of

322 Contreni, 'John Scottus and Bede' 129–31.

323 Contreni, 'Bede's Scientific Works' 251, 254–5.

324 Contreni adds that the glosses in Paris, BnF n.a.l. 1615 (also from Auxerre) are probably Heiric's ('Bede's Scientific Works' 251n22). See Appendix 5, no. 210.

325 Edited by C.W. Jones, *Beda's Pseudepigrapha: Scientific Writings Falsely Attributed to Bede* (Ithaca, NY: Cornell University Press; London: Oxford University Press, 1939), 94–102, based on the Melk codex, as well as Paris, BnF lat. 5239 (fols 196r–199v), Vatican City BAV Vat. lat. 643 (fols 15v–16v; 'Incipit prefacio libri presbyteri de temporibus'; a shorter version), and BAV Reg. lat. 755 (s. X; fols 25v–27v, where it is titled 'Incipit perparua expositio super libellum de natura rerum'). Not cited by Jones is Bordeaux 11 (s. XII; fols 210v–211v, no rubric), which does not contain an integral copy of *The Reckoning of Time* (see Appendix 5, n. 41). Other copies of the initial 'essay' of this commentary are in Dijon 448 (s. X; fols 185r–186r) and Zwettl 296 (fols 86v–89r). Jones ascribed the Commentary to Heiric, but Heiric neither composed nor wrote this portion of the Melk codex: Contreni, 'John Scottus and Bede' 107 n. 49.

326 Contreni, 'John Scottus and Bede' 98–103. The possibility that Eriugena composed glosses on Bede's scientific works was first raised by Patrick Gautier-Dalché, 'Deux lectures et un commentaire de Jean Scot: Censorinus, Aulu-Gelle (livres I et III) et Bède le Vénérable', *Revue d'histoire des textes*, 21 (1991): 115–33.

glosses are certainly of outstanding importance. In Contreni's words they 'bear witness to a remarkable moment in the cultural history of the early Middle Ages when a concentrated group of scholars and teachers prepared materials to teach their students about the natural world and particularly about astronomy and times'.³²⁷

A very particular problem is posed by the so-called 'Byrhtferth Glosses'. Volumes 1 and 2 of the *Opera* of Bede published by Johannes Herwagen the Younger in Basel in 1563³²⁸ contain *The Reckoning of Time*, *The Nature of Things*, and *On Times*. In addition, Herwagen printed the *scholia* of Bede's earlier editor (1537) Noviomagus (Johann Bronchorst of Neumagen). To these he added glosses by an 'uncertain author' (*incertus auctor*) and an 'old commentary' (*vetus commentarius*) drawn from the computistical works of Abbo of Fleury (ca. 940–1004); both derive from Noviomagus,³²⁹ although Herwagen's text of Bede does not. But the manuscript from which Herwagen obtained his text may have been the source of the additional glosses which he appended to each chapter and which he ascribed to 'Bridefertus Ramesiensis' or Byrhtferth of Ramsey (fl. ca. 986–ca. 1016), the prolific writer and author of the bilingual Latin–Old English *computus* treatise called *Enchiridion* or *Handboc*.³³⁰ The ascription gained currency because Herwagen's edition was reprinted by Migne along with the Bedan texts in volume 90 of the *Patrologia latina*.

Doubts were raised about the authorship of these glosses by the pioneering Byrhtferth scholar K.M. Classen in 1896 on the grounds that the glosses showed no evidence of Byrhtferth's signature hermeneutic Latin style and paid only cursory attention to ch. 15 on the English month-names. Moreover, the computistical doctrines of the *Enchiridion* and those expressed in the glosses sometimes diverge.³³¹ In 1932 C.W. Jones pointed out that some of the glosses considerably antedate Byrhtferth, and are

327 'John Scottus and Bede' 137.

328 This and other printed editions of Bede are discussed below, pp. 121–2.

329 Noviomagus's *Vetus commentarius* is essentially Abbo's computistical writings, as found in Berlin Staatsbibliothek Philipps 1833 and Bern 250, but divided up and arranged as a commentary. Noviomagus also incorporated Abbonian matter into his own *scholia*. According to Jones, 'The Byrhtferth Glosses', *Medium aevum*, 7 (1938): 82, Noviomagus' main sources for all save the *Vetus commentarius* were Cologne Dombibliothek 102 and 103.

330 *Byrhtferth's Enchiridion*, ed. and trans. Peter S. Baker and Michael Lapidge, EETS s.s. 15 (Oxford: Oxford University Press for the Early English Text Society, 1995).

331 K.M. Classen, *Über das Leben und die Schriften Byrhtferðs, eines angelsächsischen Gelehrten und Schriftstellers um das Jahr 1000* (Dresden: Teubner, 1896), esp. 4–15, 25–35.

found in both the Auxerre (Melk) and Laon ensembles. However, the same 'Byrhtferth' glosses are not found in both, which led Jones to conclude that Herwagen himself had assembled the glosses from these two sources, but principally from the Auxerre ensemble. The attribution to Byrhtferth was probably inspired by John Bale's *Scriptorum illustrium*, published in Basel in 1559 by Herwagen's stepfather, Johan Oporin, in which Bale lists commentaries on *The Nature of Things* and 'de temporibus' (probably *The Reckoning of Time*) in his notice on Byrhtferth.³³² Jones dismissed Byrhtferth's claim and thereafter referred to the *Glosae Brideferthi* as the 'Auxerre glosses'.

This is where matters stood until 1996, when Michael Gorman revisited the glosses.³³³ He defended Herwagen's ascription to Byrhtferth, arguing that the (lost) manuscript from which he was working must have contained this information. However, Gorman's most significant contribution to the debate lies in bringing to the fore the character of the Byrhtferth glosses. They are in many cases so prolix that it is highly unlikely that they ever appeared in the margins of Bede's text; some are as much as ten times the length of the passage from *The Reckoning of Time* they purport to expound. The glosses, in short, originally constituted a stand-alone commentary intended to be read as a whole (it is, for example, equipped with numerous cross-references, as well as suggestions for further reading), though it adheres to the chapter divisions of *The Reckoning of Time*, rather like the consolidated 'Melk Commentary' mentioned above. Secondly, the glosses do not so much explain *The Reckoning of Time* as deploy it as a springboard for digressions on theological, exegetical, and spiritual topics. Thirdly, they are in the main assembled from lengthy extracts from named authors. Using ch. 5 ('The Day') as his laboratory, Gorman identified Remigius of Auxerre (*recte* Haimo of Auxerre), Bede's and ps.-Bede's commentaries on Genesis, as well as works by Augustine and Ambrose amongst the named sources, and, among the unnamed sources, Isidore of Seville, Hrabanus Maurus' *Computus*, and the Laon glosses by Martin the Irishman. Gorman concluded that Byrhtferth might be the compiler of these glosses, because he admired Bede, was fond of glossing, and was active in the later tenth century, which the sources of the glosses indicate as the time when they were assembled. He also pointed out that, until the affiliations of the glossed

332 'The Byrhtferth Glosses' 88–97.

333 M.M. Gorman, 'The Glosses on Bede's *De temporum ratione* attributed to Byrhtferth of Ramsey', *Anglo-Saxon England*, 25 (1996): 209–32.

manuscripts of *The Reckoning of Time* are properly established, and the glosses themselves fully edited, caution about authorship must prevail.

Gorman's article ignited a vigorous debate. John Contreni defended Jones' rejection of Byrhtferth's authorship, arguing that in both form and content they were Continental in origin.

We now know that a number of masters glossed Bede's works. *DTR* was the subject of a continuous commentary independent of Bede's text [i.e. the 'Melk Commentary'] as early as the first decade of the ninth century and probably earlier. By the third quarter of the century, the commentary had been pulled apart and individual glosses from it served new masters, such as Heiric of Auxerre and Martin Hiberniensis. Others contributed to the enterprise. ... At Auxerre and Laon these streams of glosses were united in extant schoolbooks, the Melk and Berlin Bede manuscripts. By the last quarter of the ninth century, someone, perhaps Remigius of Auxerre, began systematically to organize a *summa* of Carolingian glosses on *DTR*. These B [i.e. Byrhtferth] glosses testify to the variety of approaches Carolingian teachers and thinkers took toward Bede's work. Technically precise glosses share space with glosses inspired by religious concerns. Most of all, the B glosses testify to the richness and depth of Carolingian studies of Bede's scientific works.³³⁴

Michael Lapidge joined the conversation in 2007, in an article which laid out not only a case for Byrhtferth as compiler of the glosses but a serious critique of Jones' editions of Bede's works.³³⁵ He argued that Herwagen's manuscript of Bede texts was not in the lineage of the northern French copies associated with Auxerre, but closer to a group of English manuscripts which includes Oxford, St John's College 17 – a manuscript identified by Lapidge and Baker as a copy of Byrhtferth's own *computus* album. Herwagen's text of *On Times* is also strikingly close to that in St John's 17. Finally, the glosses also show connections to Abbo of Fleury, who spent time at Ramsey Abbey in 986–987 and left a trail of computistical materials behind in England. Lapidge concluded that Herwagen's manuscript was English, and 'furnished with glosses compiled by Byrhtferth himself'.³³⁶ Some of the more unusual sources named in the glosses, such as Paul the Deacon's *History of the Lombards*, were cited by Byrhtferth in other works, and there are structural links between the

334 'Bede's Scientific Works' 259; reiterated in 'John Scottus and Bede' 138.

335 'Byrhtferth of Ramsey and the *Glossae Bredferti in Bedam*', *Journal of Medieval Latin*, 17 (2007): 384–400.

336 'Byrhtferth of Ramsey' 392.

glosses and the *Enchiridion*. Above all, Lapidge derides Jones' suggestion that Herwagen simply assigned the glosses to Byrhtferth on a whim. The manuscript he used was very probably English, perhaps brought to Basel by Bale himself, and the ascription genuine.

Contreni responded to Lapidge in considerable detail,³³⁷ reasserting Classen's original arguments, citing fresh evidence of Herwagen's cavalier editing and publishing practices, and pointing out that the *Enchiridion* cites sources and addresses themes that are not found in the glosses, and vice versa. If Byrhtferth cites sources found in the glosses, this cannot be construed as proof that he composed the glosses. Above all, the absence of Byrhtferth's highly characteristic Latin style seems conclusive. Contreni thus stands by his thesis that the B glosses were by a second-generation Carolingian scholar who synthesized the Laon and Auxerre annotations.

While no further exchanges have taken place between the two sides, at least to date, the debate itself has yielded useful insights. First, it highlights the need for comparative editions of the Auxerre and Laon glosses and a more thorough study of the affiliations of the manuscripts of *The Reckoning of Time*. Secondly, it brings to the fore the sheer variety and vigour of glossing activity – i.e. teaching activity – related to Bede's text. The glosses range from interlinear lexical explanations designed to help the reader with Bede's vocabulary all the way to the massive *collectanea* of the 'B glosses' (to adopt Contreni's more neutral term for the 'Byrhtferth' glosses), where the text of *The Reckoning of Time* becomes the platform for a commonplace book of extended quotations from other authors. Many contain additional worked examples, and one English family of twelfth-century manuscripts incorporates a unique body of 'graphic glosses' framed as tables or diagrams.³³⁸ The glosses thus constitute a rich treasury of responses to Bede's text, exposing a range of environments for reading and a variety of expectations.

Furthermore, many of the glosses of *The Reckoning of Time* belong to lineages other than Laon or Auxerre. Some are found in more than

337 John J. Contreni, "'Old Orthodoxies Die Hard": Herwagen's *Bridfertii Ramesiensis Glossae*", *Peritia*, 22–3 (2011–2012): 22–52.

338 Faith Wallis, 'Diagrams as Glosses in a Family of English Twelfth-Century Manuscripts of Bede's *De temporum ratione*', in *The Visualization of Knowledge in Medieval and Early Modern Europe*, ed. Adam Cohen, Katrin Kogman-Appel, Marcia Kupfer, and Andrea Worm (Turnhout: Brepols, 2020), 291–326. Astronomical and cosmographical diagrams of a rather different kind are also found in Vienna, Österreichische Nationalbibliothek 12600 (see Appendix 5 nos 55, 85, 113, 115, 174).

one manuscript; others are apparently independent.³³⁹ An important and understudied family of glosses is what I will for convenience call the ‘Valenciennes Glosses’, after the oldest manuscript, Valenciennes, 174. s. IX (Appendix 5, no. 240).³⁴⁰ Other witnesses include London, British Library Royal 15 B XIX (s. IX²; no. 124); Brussels, 9837–9840 (s. XII, and like Valenciennes, from St-Amand; no. 46);³⁴¹ Rouen, 524 (I 49) (after 814; no. 219); Wolfenbüttel, Gud. lat. 2^o 127 (s. XI–XII; no. 281); Troyes, 422 (s. XII; no. 236); and Oxford, Magdalen College 184 (s. XV; no. 172). The Valenciennes glosses are abundant and, remarkably, continue to the very end of the work. They are characterized *inter alia* by numerous references to Aulus Gellius, which points to the influence of the Laon and Auxerre glosses. The Troyes manuscript is particularly striking for the deliberation with which the glosses were planned, with spaces carved out of the text block in advance to accommodate the glosses.

Not all glosses belong to families, however. The abundant interlinear and marginal glosses in Munich, Bayerische Staatsbibliothek CLM 18158 (s. XI; no. 155) seem to be found only in this manuscript. Perhaps they were not copied and diffused because they are somewhat eccentric. Particularly at the beginning of *Reckoning of Time*, the glosses seem not to be related to the text at all. Most seem to be about recondite terms, etymologies, and philosophical points, though some are almost essay-length disquisitions on *computus*.

4.4 Reading *The Reckoning of Time* 4: medieval diffusion, debate, and adaptation

Another way in which *The Reckoning of Time* was diffused in the Carolingian period was through excerpts in scholarly commonplace books. Such personal anthologies are represented by Paul the Deacon of Monte Cassino’s compilation and the collection of extracts associated with Walahfrid Strabo of Reichenau. Paul’s notebook survives as Paris, BnF lat. 7530 (s. VIII²),³⁴² a large *collectanea* of materials on the *artes*, overwhelmingly about the trivium, with the section on the quadrivium

339 Jones, ‘Bede’s Place’ 271 *sqq.*

340 See Appendix 5, no. 240. Jones, *BOD* 259; see also Jones, *BP* 26.

341 Jones considers it a copy of Valenciennes: *BOT* 150.

342 Appendix 5, no. 196. See also Dobcheva, ‘The Umbrella of Carolingian Computus’ 218–19.

beginning fol. 271 and the *computus* sub-section starting on fol. 276v. Ch. 1 of *The Reckoning of Time* appears on fols 280v–281r. The manuscript long held to be Walahfrid’s *vademecum* (St Gall, 878; Appendix 5, no. 230), but which is certainly not in Walahfrid’s hand, is much richer in computistical and astronomical learning, and incorporates chs 9, 38, 39, 41, 42, and 20 of Bede’s textbook. What is interesting is how little of *The Reckoning of Time* makes it into these collections. It was apparently considered too difficult for classroom use, and Carolingian teachers generally preferred the more concise *On Times*, or Hrabanus Maurus’ *On Computus*, composed around 820.³⁴³

Another condensed version of *The Reckoning of Time* was composed around 900. This treatise was one of the most popular textbooks of *computus* of the central Middle Ages, but its very popularity has obscured the identity of its author. In the manuscripts his name assumes a variety of forms – Helpericus, Hilpericus, Chilpericus, Albericus, Heiricus, Heriricus – while the pedagogical ploy of making the worked examples in *argumenta* more relevant by substituting (not always consistently) the year in which the manuscript was copied for the *annus praesens* named in the exemplar has resulted in much confusion about the date of the original.³⁴⁴ *On Computus* is furnished with two prefaces, the first of which is a letter to Asper, abbot of Saint-Germain in Auxerre; in it the author identifies himself as a monk of Granval and alludes to an offer by Asper of a teaching post in Auxerre. The connection to Auxerre, coupled with the fact that the author’s name appears as Heiricus or Heriricus

343 Wesley M. Stevens, *Rhetoric and Reckoning in the Ninth Century: The Vademecum of Walahfrid Strabo* (Turnhout: Brepols, 2018), 163. The texts are transcribed in Appendix D. That this manuscript is not in Walahfrid’s hand (and therefore probably by amanuenses, if it is indeed connected to Walahfrid) has been demonstrated by Tino Licht, ‘Revisiting the Question of Walahfrid Strabo’s Autograph: New Evidence and a Conclusion’, *Journal of Medieval Latin*, 32 (2022): 65–80.

344 The form of the author’s name and the date of the *annus praesens* are the criteria for Ludwig Traube’s classification of thirty-three MSS of *De computo* in ‘Computus Helperici’, in *Vorlesungen und Abhandlungen*, ed. Franz Boll (Munich: Beck, 1909–1920), 3128–53, a revised version of an article which originally appeared in *Neues Archiv*, 18 (1893): 73–105. The only edition remains the one in PL 137.17–20. On the transmission of the text see the (incomplete) survey of manuscripts in *Clavis scriptorum Latinorum medii aevi. Auctores Galliae, 735–987* = *Clavis des auteurs latins du Moyen Âge. Territoire français, 735–987*. Tomus III. *Faof Cabillonensis–Hilduinus Sancti Dionysii* = *Faof–Hilduin*. Édité par Marie-Hélène Jullien. Notices établies par Clara Auvray-Assayas, Jean-Paul Bouhot, and Sébastien Bricout [et al.] (Turnhout: Brepols, 2010), 421–30.

in some Loire valley codices, prompted Ludwig Traube to suggest that Helerpic was actually the Carolingian *scholasticus* Heiric of Auxerre (owner and glossator of the Melk codex), a theory he later withdrew in favour of the traditional ascription to Helerpic of Granval.³⁴⁵ In a number of manuscripts from the eleventh century onwards, Helerpic's text accompanied *The Reckoning of Time*, sometimes taking the place of Bede's own *On Times* (e.g. Salisbury, Cathedral Library 158 ca. 969–978; London, British Library Royal 12 F II s. XII; London, British Library Royal 12 D IV s. XIII ½).³⁴⁶ The revival of monasticism and clerical learning in tenth-century England produced Byrhtferth's Latin–Old English treatise the *Enchiridion*³⁴⁷ and Ælfric of Eynsham's Old English *De temporibus anni*.³⁴⁸ The debt of both writers to *The Reckoning of Time* is considerable.³⁴⁹

But other teachers found equally inventive ways of adjusting *The Reckoning of Time* for the classroom. Paris, lat. 4860 (885–915, Reichenau, later St Stephen, Mainz; Appendix 5, no. 183) contains only chs 66–8 of *The Reckoning of Time* as part of a collection of chronicles, but on fols 111v–117v (following Bede's *The Nature of Things*) is a reworking of *Reckoning of Time* in question-and-answer format ('Incipit eiusdem alius libellus Bede Presbiteri de ratione compoti cum interrogationibus et responsionibus').

345 Traube, 'Computus Helerpici' 3.146 and 128, note. André Van de Vyver, 'Les oeuvres inédits d'Abbon de Fleury,' *Revue bénédictine*, 47 (1935): 149 suggested that Heiricus, abbot of St-Mesmin de Micy (a dependency of Fleury) in the reign of Louis the Pious, may have lent his name to the Loire valley exemplars.

346 See Appendix 5, nos 221, 122, 121.

347 See above, pp. 114–17. For an illuminating discussion of the 'bilingual' format of this text see Rebecca Stephenson, *The Language of Politics: Byrhtferth, Ælfric, and the Multilingual Identity of the Benedictine Reform* (Toronto: University of Toronto Press, 2015), chs 1–3. On the significance of *computus* in establishing monastic identity see her 'Saint Who? Building Monastic Identity through Computistical Inquiry in Byrhtferth's *Vita s. Ecgwini*', in *Latinity and Identity in Anglo-Saxon Literature*, ed. Rebecca Stephenson and Emily V. Thornbury (Toronto: University of Toronto Press, 2016), 118–37.

348 Ed. and trans. Martin Blake, Ælfric's *De temporibus anni* (Cambridge: D.S. Brewer, 2009).

349 Their references to Bede are tracked by Brown and Biggs, *Bede* 84–91: besides Byrhtferth and Ælfric, we have citations in Alcuin, in Ælfric's *Catholic Homilies*, the Old English *Menologium*, Asser's life of Alfred, and even the Anglo-Saxon Chronicle. Byrhtferth probably had access to Bede's computistical writings through the connections of Ramsey Abbey to York, via Oswald: see Michael Lapidge, 'The Library of Byrhtferth', in *The Cambridge History of the Book in Britain. Volume 1: c. 400–1100*, ed. R. Gameson (Cambridge: Cambridge University Press 2012), 691.

The *annus praesens* in the *argumenta* which follow point to 771 as the date of composition.³⁵⁰ The core computistical data of *The Reckoning of Time* was even summarized in a long mnemonic poem, ‘*Annus solis continetur quatuor temporibus*’, sometimes ascribed to Bede himself.³⁵¹

The number of manuscripts of *The Reckoning of Time* drops off sharply after the twelfth century. Ironically, this decline can be ascribed to two problems which Bede himself identified. First, the historical date of Christ’s Crucifixion and Resurrection could not be located according to Dionysius’s *annus Domini* reckoning, because no year corresponding to Christ’s age at the time of these events would produce a Moon of the appropriate age on the required weekday, Friday. Bede pointed out this problem in ch. 48, but advised his readers to blame the historians, not the computists. This was an admittedly lame move, and by the tenth century readers of *The Reckoning of Time* no longer found it adequate. This inaugurated a series of critiques of *annus Domini* that proposed adding or subtracting a number of years to bring *computus* and history into agreement.³⁵² In the midst of this debate, new problems with Bede’s system came to the fore. Again, it was Bede himself who pointed the problem out to his readers, in ch. 43. In this case, the issue was astronomical: the calculated Moon and the observed Moon were no longer synchronized, though Bede did his best to persuade his readers that the Moon could sometimes appear older than its computed age for a variety of legitimate reasons, like the insertion of the *saltus*, without

350 I owe this information to Immo Warntjes (personal communication).

351 Edited and translated by Lapidge, *Bede’s Latin Poetry* 526–32. For discussion and list of manuscripts see Maria Grazia Di Pasquale, ‘*Versi computistici*. Proposte per una nuova edizione’, in *Poetry of the (sic) Early Medieval Europe*, ed. Eduardo D’Angelo and Francesco Stella (Florence: SISMEL – Edizioni del Galluzzo, 2003), 171–81, esp. 178–9. Computistical mnemonic verses would multiply greatly as *computus* came to be a regular instructional subject. The major collections are those edited by Karl Strecker in MGH Poetae 4.2 (1923), 667–702, by P. Baehrens (*Poetae latini minores* (Leipzig: Teubner, 1883), 5.349–56), and by A. Riese (*Anthologia latina* (Leipzig: Teubner, 1870), 1.258–9, 2.38, 91–2, 122–4, 140). The genre is discussed by John Hennig, ‘Versus de mensibus’, *Traditio*, 11 (1955): 65–90; Karl Strecker, ‘Zu den computistischen Rhythmen’, *Neues Archiv*, 36 (1911): 317–42; and Günter Bernt, *Das lateinischen Epigramm im Übergang von der Spätantike zum frühen Mittelalter*, Münchner Beiträge zur Mediävistik und Renaissance-Forschung 2 (Munich: Arbo-Gesellschaft, 1968), 286–94. For a repertory of *computus* poetry by *incipit* see Alfred Cordoliani, ‘Contribution à la littérature du comput ecclésiastique’, *Studi medievali*, ser. 3.2 (1961): 169–208.

352 Peter Verbist, *Duelling with the Past: Medieval Authors and the Problem of the Christian Era (c. 990–1135)* (Turnhout: Brepols, 2010); Nothaft, *Dating the Passion* chs 4–5.

jeopardizing the system. By the eleventh century it was obvious that the lunar discrepancy was real, and visible; in addition, observations with the astrolabe and access to tables and treatises translated from Arabic or inspired by Arab-Islamic models were persuading western computists that the calendar date of the vernal equinox was no longer 21 March, but several days earlier. These problems shifted computists towards astronomy in an effort to clarify what was wrong and propose a solution – one which would finally be implemented by the Gregorian reform of the calendar in 1582.³⁵³

Both because and in spite of these problems, Bede's treatise continued to be of interest, and not only to specialists. Munich, CLM 4423 s. XV (Appendix 5, no. 150) is the commonplace book of Fr Simon Weinhart of Füssen; it contains a tabular summary of the Roman, Egyptian, Greek, Hebrew, and Old English month-names derived from *The Reckoning of Time* ch. 15, the beginning of ch. 66 (summary of the world ages), and, most surprisingly, summaries of every chapter of Bede's computistical masterwork. Bede was still worth studying on the eve of the reform, and printers knew it.

4.5 Printed editions: early modern and modern readers of *The Reckoning of Time*

The first printed appearance of *The Reckoning of Time*³⁵⁴ was typically medieval in that it was an excerpt: it contained only the chronicle in ch. 66. This edition appeared in Venice in 1505 (reprinted in Paris in 1506, and again in Venice in 1509), and was edited by Petrus Marenus Alexander of Padua.³⁵⁵ The world chronicle was also printed with John Smith's critical edition of the *Historia ecclesiastica* in Cambridge in 1722, along with the preface of *The Reckoning of Time*. The standard modern edition is that of Theodor Mommsen in *Chronica minora* 3, MGH AA 13 (1898), 247–327, which is reproduced with virtually no change in Jones' *BOD* edition.

Another early *excerptum* to make it into print was ch. 1. This was published in Regensburg in 1532 as *Abacus atque vetustissima, veterum latinorum per digitos manusque numerandi (quinetiam loquendi)*

353 See Nothaft, *Scandalous Error*.

354 On printed editions of *The Reckoning of Time* see Jones, *BOD* 256–7, and *BP* 5–19, as well as Stevens, 'Bede's Scientific Achievement' Appendix 1.

355 *Venerabilis Bedae ... De temporibus sive De sex aetatibus huius saeculi liber ...* (Venice: per Ioan. de Tridino alias Tacuino, 1505).

consuetudo, ex beda ..., edited by Iohannes Aventinus; it was reprinted in Leipzig by Johann Friedrich Braun in 1710. Chs 1 and 2 also appeared as part of an omnibus volume dealing with, amongst other things, ancient weights and measures (*Hoc in volumine haec continentur. M. Val. Probus de notis Romanorum ...*) and printed by Ioannes Tacuinus in Venice, 1525.

The first complete text version of *The Reckoning of Time* was that of Johannes Sichardus, published in Basel in 1529,³⁵⁶ which also contained *The Nature of Things, On Times*, and Bede's 532-year cycle. However, it was not consulted by any later editors. Johannes Bronchorst of Neumagen, alias Noviomagus (b. 1494), who taught mathematics and philosophy at Rostock and Cologne, produced a new 'first' edition of Bede's computistical works, now including the *Letter to Wicthed*, in 1537. His text was based on the Cologne manuscripts Dombibiothek 102 and 103. He derived from an unidentified manuscript (or perhaps the missing final quires of Dombibiothek 102) a considerable quantity of material by Abbo of Fleury which he also incorporated into his edition, whether as tracts, tables, *figurae*, or glosses (notably the *vetus commentarius*).³⁵⁷

The collection of Bedan and pseudo-Bedan *computistica* printed in Giles' 1843 edition of the *Opera omnia*, and in Migne's *Patrologia latina* 90, basically reproduces the version in the folio edition of Bede's *opera omnia* printed by Johann Herwagen (Hervagius) the younger in Basel in 1564.³⁵⁸ Herwagen copied Noviomagus' own notes, as well as the *Vetus commentarius* and the *scholia incerti auctoris*, but, as noted above, his texts of Bede's works, as well as the 'Byrhtferth' or 'B', glosses, are from another, unidentified, manuscript. He included the Abbonian material printed by Noviomagus and added fresh Abbonian tables and texts. While Herwagen assigned them to the pen of Bede, the editors of *Patrologia latina* correctly designated them as *spuria et dubia*.³⁵⁹

The two modern critical editions of *The Reckoning of Time* are both

356 *Bedae ... de Natura Rerum et Temporum Ratione libri duo* (Basel: Heinricus Petrus, 1529). *The Reckoning of Time* is on fols 48–64v. Jones, *BP* 1–2.

357 *Opuscula quamplurima de temporum ratione, diligenter castigata atque illustrata ueteribus quibusdam annotationibus, una cum scholiis ... auctore* (Cologne: Johannes Prael and Petrus Quentel, 1537). Described by Jones, *Bedae Pseudepigrapha* 6–13. *The Reckoning of Time* is on fols XXXI^r–XCVI^v.

358 *The Reckoning of Time* appears in vol. 2, pp. 49–173.

359 See Jones, *Bedae Pseudepigrapha* 14–18, and Bernhard Bischoff, 'Zur Kritik der Heerwagenschen Ausgabe von Bedas Werken (Basel 1563)', in *Mittelalterliche Studien*

the work of C.W. Jones. The first appeared in 1943 as *Bedae opera de temporibus* (Cambridge, MA: Mediaeval Academy of America), and contained only chs 1–65; the second was published in 1977 as vol. 2 of *Bedae opera didascalica* in the series *Corpus christianorum series latina*, 123B, and contains the full text, with ch. 66 supplied from Theodor Mommsen's edition. It is this edition which is the basis for our translation of *The Reckoning of Time*.

Jones' edition has endured some criticism. Chs 1–65 are based on eight Continental manuscripts from the Carolingian period: Berlin, Staatsbibliothek Preussischer Kulturbesitz, Phillipps 1831; Cologne, Dombibliothek 103; Kassel, LB, Astron. fol. 2; London, British Library, Cotton Vespasian B. VI; Melk, Stiftsbibliothek 412; Munich, CLM 14725; Karlsruhe, Landesbibliothek Aug. 167; and St Gall, Stiftsbibliothek 251. Jones also collated these ninth-century manuscripts 'in part': Paris, BnF n.a.l. 1632; Paris, BnF lat. 7296; London, British Library, Royal 15.B.xix; Geneva, Bibliothèque publique et universitaire, lat. 50; Paris, BnF lat. 13404; Milan, Biblioteca Ambrosiana D. 30 inf.; and Berlin, Staatsbibliothek Preussischer Kulturbesitz, Phillipps 1869. The restricted chronological and geographical range of these witnesses mean that Jones' assertion that the text is very stable needs re-examination. For example, J. Gómez Pallarès and H. Millet's study of the eleventh-century manuscript Barcelona, Archivo Capitular Ripoll 225 indicates distinctive readings possibly connected to links between Ripoll and Auxerre.³⁶⁰ Jones' classification of texts on geographical criteria ('the Fulda–Verona axis', 'Neustria') has been critiqued by Michael Lapidge, who offers intelligent suggestions for how a new edition might be constructed.³⁶¹ The Mommsen edition of chs 66–71 is also problematic. Mommsen knew of eighty-one manuscripts, but based his edition of ch. 66 on a full collation on only five, and, of chs 67–71, only three witnesses.³⁶²

I have emended Jones' and Mommsen's text in the following instances:

(Stuttgart: Hiersemann, 1966–1981), 1.112–17. Jones, *Bedae pseudepigrapha* analyses these additional materials in detail.

360 'Los *excerpta* de Bede *De temporum ratione* 25–36' in *Studia cronologica*, 185–202.

361 'Beda Venerabilis' 67–8; see Jones, *BOD* 241.

362 These are: Milan, Bibliotheca Ambrosiana D 30 and Paris, BnF lat. 13403 (both of which contain only the chronicle); Berlin, Staatsbibliothek Preussischer Kulturbesitz, Phillipps 1831 (*F*); St Gall, Stiftsbibliothek 251 (*H*) and Vatican City, BAV Otton. 67 (*O*). Mommsen also collated the 'extended' chronicle in Paris, BnF, n.a.l. 1615: MGH AA 13, 231–7. For the period of the Chronicle corresponding to AD 410 and following, Mommsen

1. ch. 5, p. 147 (Jones 284.29–30): Jones reads *ecclesiastis* here, as do all his MSS save *A* (Paris, BnF nouv. acq. lat. 1632), which reads *ecclesiastes*. The genitive of *ecclesiastes* is *ecclesiastae* or occasionally *ecclesiastes*. In any event, Bede is not referring to ‘preachers’ but to the book of Ecclesiastes. Cf. the same quotation in ch. 7 (Jones 301.41–2).
2. ch. 46, p. 258 (Jones 422.3): Jones’ text in *BOD* reads ‘id est in .iii. et in .vxi. distinguitur annos’, but this is clearly in error; indeed, in his edition in *BOT* 263.3 the text correctly reads ‘in viii et in xi.’
3. ch. 61, p. 283 (Jones 452.71): both of Jones’ editions of *De temporum ratione* (*BOT* and *BOD*) read *XI kalendarum* here, but the older editions as well as the MSS I have consulted all read *IX kalendarum*, which is evidently correct (cf. Melk 412, p. 173ra).
4. ch. 65, p. 292 (Jones 140.10): Jones’ ed. reads ‘v.dlxxx’ here, but this is evidently a typographical error. The medieval codices furnish the correct figure of ‘vi.dlxxx’: e.g. Melk 412 (370), p. 180b.
5. ch. 66, p. 293 and n. 609 (Jones 463.17): All MSS read CCLXXII, but MLXXII is clearly what Bede meant, as this is the figure he provided *s.a.* AM 1693 and 1948.
6. ch. 66, p. 304 (Jones 472.291–2): Mommsen’s text reads ‘qui et iustae creduntur diuinitus inspirati’, which I emend to ‘qui et iuste ...’; cf. Cologne, Dom- und Diözesanbibliothek 103, fol. 154v.
7. ch. 66, p. 313 (Jones 478.567): correcting Jones’ ‘Zarachiae’ (*sic*) to ‘Barachiae’ (Mommsen and Matthew 23:35).
8. ch. 66, p. 345 (Jones 502.1182): Jones, following Mommsen, reads ‘xiiii’, but some manuscripts cited in Mommsen’s apparatus read ‘xv’. The next sentence implies that Bede probably understood ‘fifteenth’ since ‘Theophilus’ (i.e. the spurious *Acta synodi Caesareae*) rejected the fourteenth Moon as a suitable date for Easter.

5. PRINCIPLES GOVERNING THIS TRANSLATION

When this translation first appeared in 1999 it was presented as the first complete translation of *The Reckoning of Time* into any language. C.W. Jones translated chs 1–29 as part of his 1932 Cornell dissertation,

reported readings from the further forty-one manuscripts (listed in Jones’ ed., p. 462). See Lapidge, ‘Beda Venerabilis’ 71–74.

'Materials for an edition of Bede's *De temporum ratione*', but I did not see the Jones translation until well after my own was completely terminated. I have relied on it only for slight modifications. Parts of ch. 1 have been translated in a number of studies of finger-reckoning³⁶³ and the section of ch. 66 constituting the chronicle Sixth Age has been translated by Judith McClure and Roger Collins as part of the 'World's Classics' edition of *The Ecclesiastical History of the English People* (Oxford: Oxford University Press, 1994), 307–40. In 2004, Roland-Pierre Pillonel-Wyrsh published a French translation and commentary in his doctoral thesis at the Université de Fribourg in Switzerland as *Le calcul de la date de Pâques au Moyen Âge. Analyse et commentaires sur "De temporum ratione" de Bède* (Fribourg; Academic Press Fribourg, 2004). Pillonel-Wyrsh's commentary emphasizes the scientific dimensions of Bede's text, rather than the historical contexts.

My translation indicates the corresponding pages of Jones' edition in *BOD* (e.g. /306/) to enable the reader to refer readily to the Latin text. I have not always been able to indicate the page transition with perfect precision, due to the transposition of phrases from the original into the translation.

Not every faithful translation is a literal translation, and with no author is this more true than Bede. His grammar is impeccable and his style stately, but long, complex sentences frequently need to be broken into more digestible morsels for the modern English reader. I have attempted to reproduce Bede's technical language faithfully. Hence I have elected to retain his Latin terms for units of time such as *momenta*, because it would be misleading to render this exact unit of measurement as 'moment'. On the other hand, I have translated *cyclus decemnovennalis* as 'nineteen-year cycle' rather than 'decennovenal cycle'. Bede uses the word *Pascha* to mean both Easter and Passover. I have chosen one or other term to fit the context, and in ambiguous cases used phrases such as 'the Pasch' or 'the Paschal season'.

I have given Bede's dates in the Roman calendar form he used, with modern calendar dates in brackets following: e.g. 'the fifth Kalends of December [27 November]'. My purpose in so doing is to give the reader some impression of what it was like to think about calendar problems and perform calculations using such a counter-intuitive calendar schema.

My policy regarding numbers is pragmatic, but consistent: where numbers (apart from dates) are part of a mathematical formula, numerals

363 See Commentary on ch. 1.

are used, e.g. ‘3 times 4 equals 12’, but elsewhere they are written out, e.g. ‘the twelve months of the year’. The aim is not to reproduce the practice of the manuscripts but to make the text clear to the modern reader, while following stylistic norms laid down by the Press.

For the sources and analogues cited in the notes I have drawn freely on Jones’ own *apparatus fontium*, and on his notes in the *BOT* edition of *The Reckoning of Time*. However, I have checked all his references, eliminating some as inconsequential or misleading, adding many others, and correcting and expanding throughout. To indicate Bede’s use of his sources with greater precision, particularly when he does not acknowledge that he is quoting, I have italicized all passages taken verbatim from the source text.

Additions to Bede’s text to clarify his meaning are enclosed in angled brackets: e.g. ‘he fixed each <year> at twelve lunar months’ (ch. 7). Occasionally, the Latin word or phrase is added, where it is significant, in round brackets: e.g. ‘by a new calculation (*ratione*)...’ (ch. 7). Square brackets are used to enclose the translator’s explanatory glosses: e.g. ‘in that it is the highest [i.e. ‘farthest out’ from Earth]’ (ch. 8).

Quotations from Scripture have been translated to reflect Bede’s Vulgate, with the Authorized Version serving as default. Names of biblical personages and books of the Bible follow the *New Revised Standard Version* (NRSV) familiar to most English readers. In the case of references to the Psalter, the Vulgate numbering follows that of the NRSV, in parentheses, where necessary.

This translation is followed by a chapter-by-chapter Commentary. Sources and issues regarding details of the text are handled in the text footnotes; the content and broader significance of each chapter is reserved for the Commentary.

PREFACE

/263/ Some time ago I wrote two short books in a summary style which were, I judged, necessary for my students; these concerned the nature of things, and the reckoning of time. When I undertook to present and explain them to some of my brethren, they said that they were much more concise than they would have wished, especially the book on time, which was, it seems, rather more in demand because of the calculation of Easter. So they persuaded me to discuss certain matters concerning the stable order, course, and ends of time at greater length.¹ I yielded to their enthusiasm, and after surveying the writings of the venerable Fathers, I wrote a longer book on time. I was enabled to do so by the largesse of Him who, abiding eternal, established the seasons when it pleased Him, and who knows the limits of the ages; indeed, when He sees fit, He himself shall decree an end to the unstable cycles of time.²

Lest anyone be shocked that in this work I have preferred to follow the Hebrew Truth³ rather than the version of the Seventy Translators as to the sequence of the unfolding ages, I have introduced <the version of the Seventy> in every instance where there seemed to be a discrepancy, so that the reader, whoever he might be, could see both <versions> at the same time and select whichever he thinks /264/ preferable to follow. But it is my firm judgement (which I dare say is not countered by any of the wise) that, just as the most reverend translator of this same Hebrew Truth said to those who cavilled at his work, *I neither condemn nor reprove the Seventy, but I prefer the Apostles to all of them*,⁴ so also shall I proceed with confidence. For I do not reprove the old chronographers who sometimes followed the translation of the Seventy and sometimes rejected it, as their fancy took them⁵ (this will be demonstrated over the course of this little work of ours), but I prefer to all of these the integral purity of the Hebrew

1 On the interpretation of these three categories (*status* or stable order; *cursus* or course and *fines* or end) by the glossators, see Commentary, pp. 395–6.

2 The image of ‘the unstable [*labentibus*] cycles of time’ reappears in chs 10 and 67 of *The Reckoning of Time*: see below, pp. 170, 528. It is also echoed in the closing words of the final chapter (p. 393).

3 I.e. St Jerome’s Vulgate translation of the Bible. In this paragraph, Bede is referring to the controversy sparked by his revision of the chronology of world history in *On Times*: see Introduction, pp. 8–11.

4 Jerome, *Apologia adversus libros Rufini* 2.25, ed. P. Lardet, CCSL 79 (1982), 18.11.

5 Cf. *Letter to Plegwine* 6, ed. Jones 619.98–620.110 (see Appendix 3.1 below, p. 583).

Truth, which the foremost men of learning agree – Jerome in his book *On Hebrew Questions*, Augustine in his book *On the City of God*, the chronographer Eusebius himself in the third book of his *Ecclesiastical History*, where he cites the historian Josephus, writing against Apion the grammarian⁶ – agree contains a shorter span of time than is commonly conveyed in the edition of the Seventy. Even those who laud the Seventy to the skies with great and divine praises do not doubt that this <shorter span> should be followed. Should anyone examine what these men have written, I am sure that he will immediately cease to criticize our efforts, provided he does not look upon them with envious eyes, which God forbid.

But however /265/ they who read my writings take them, I offer this little book, now completed to the best of my ability, to you first of all, my most beloved Abbot Hwætbert, that you may read it through and examine it, earnestly beseeching you that should you find anything reprehensible in it, you make it known to me immediately so that I can correct it. But if you perceive that something has been done properly and in accordance with reason, then devoutly join me in thanking God Who gave this gift, and without Whom we can do nothing. Should anyone be annoyed that I have presumed to try my hand at this subject, since I have laboured to confect⁷ a new work out of what they have found scattered here and there in the writings of the ancients, then let him listen to what St Augustine says: *It is necessary that many men make many books, in a different style, but not in a different faith, and even concerning the same questions, so that the subject-matter itself might be available to the greatest number: one way to some, but another way to others.*⁸ Let him also listen to me as I reply with simplicity on my own behalf to one who is displeased or to whom it seems superfluous that I have compiled this work from a number of sources at the request of my brethren and enclosed it in the bounds of a single book: let him discard this book, if that is what he wants, and drink in my company from the common wellspring of the Fathers whatever he deems adequate

6 For citations of all these works see *Letter to Plegwine* (Appendix 3.1).

7 *condere*: This term, suggestive of compilation, has Augustinian overtones of a synonym for literary composition. It has a more authoritative connotation than we are accustomed to associate with the word today. Compilation ‘carries with it a sense of orthodoxy and canonicity’ because the process is selective and grounded in judgement: Andrew Rabin, ‘Historical Re-Collections: Rewriting the World Chronicle in Bede’s *De temporum ratione*’, *Viator*, 36 (2005): 28.

8 Augustine, *De Trinitate* 1.3.25–28, ed. W.J. Mountain and F. Glorie, CCSL 50 (1978), 33.25–28.

for himself and his, but nonetheless guard uncorrupted the duty he owes to fraternal feeling.

CHAPTER TITLES

1. Calculating or speaking with the fingers
2. Three ways of reckoning time
3. The smallest intervals of time
4. The reckoning of duodecimal fractions
5. The day
6. The world's first day
7. Night
8. The week
9. The Seventy Prophetic Weeks
10. The week of the World Ages
11. The months
12. The Roman months
13. Kalends, Nones and Ides
14. The Greek months
15. The English months
16. The signs of the twelve months
17. The course of the Moon through the signs
18. More on the course of the Moon, for those who are ignorant of the signs
19. More on the same subject, for those who do not know how to calculate
20. What the age of the Moon is on any first day of the month
21. What day of the week it is on the first day of the month
22. A formula for any Moon or weekday
23. For those who do not know how to calculate the age of the Moon
24. The number of hours of moonlight
25. When and why the Moon appears to be facing upwards, facing downwards, or standing upright
26. Why the Moon, though situated beneath the Sun, sometimes appears to be above it
27. On the size, or eclipse, of the Sun and Moon
28. What the power of the Moon can do
29. The harmony of the Moon and the sea
30. Equinoxes and solstices
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32. Why the same days are unequal in length
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35. The four seasons, elements, and humours
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47. The years of the Lord's Incarnation
48. Indictions
49. Formula for finding the indiction
50. Lunar epacts
51. How certain people err concerning the beginning of the first month
52. Formula for finding the number of the lunar epacts
53. Solar epacts
54. Formula for finding the number of the solar epacts, and when leap year will fall
55. The cycle of both epacts, and how to calculate them using the fingers
56. The lunar cycle
57. Formula based on this <lunar cycle> for finding the age of the Moon on the Kalends of January
58. A formula to find what year of the lunar cycle or of the nineteen-year cycle it is
59. The fourteenth Moon of Easter
60. A formula for finding it
61. Easter Sunday
62. The Moon of that day
63. The difference between the Pasch and the Feast of Unleavened Bread
64. The typological (*typica*) interpretation of Easter
65. The Great Paschal Cycle
66. The Six Ages of this world

- 67. The remainder of the Sixth Age
- 68. Three opinions of the faithful as to when the Lord will come
- 69. The time of Antichrist
- 70. The Day of Judgement
- 71. The Seventh Age, and the Eighth Age of the world to come

1. CALCULATING OR SPEAKING WITH THE FINGERS

/268/ Before discussing the reckoning of time, we have decided to demonstrate a few things, with God's help, about that very useful and easy skill of flexing the fingers, so that when we have conveyed maximum facility in calculation, we may then, with our readers' understanding better prepared, attain equal facility in investigating and explaining the sequence of time through calculation. For one ought not to despise or treat lightly that rule with which almost all the exegetes of Holy Scripture have shown themselves well acquainted, no less than they are with verbal expressions. Not only have many others discussed this, but even Jerome himself, that translator of the sacred narrative, says in his treatise on the evangelical precept⁹ (and <Jerome> did not hesitate to take up the aid of its discipline): *The thirty-fold, sixty-fold, and hundred-fold fruit, though born /269/ of one earth and one seed, nevertheless differ vastly as to number. Thirty refers to marriage, for this conjunction of fingers depicts husband and wife, wrapped and linked (as it were) in a tender kiss. Sixty refers to widows, because their position is one of confinement and tribulation; hence they are pressed down against the upper finger, for the more the will of a <sexually> experienced person suffers in abstaining from sin, the greater the reward. Finally the hundred-fold number (pay careful*

9 Jones argues that the phrase *evangelicae tractatus sententiae* indicates that Bede was unaware that the passage from Jerome he is about to cite comes from *Aduersus Iovianianum*, and confused it with one of Jerome's commentaries on the Gospels. He speculates that Bede may, in fact, have used a florilegium of excerpts from Jerome (*BOT* 330–1). Such a conclusion is unnecessary. The manner in which Bede proceeds to qualify this phrase ('and <Jerome> did not hesitate to take up the aid of its discipline') indicates that *evangelica sententia* is not a synonym for 'Gospels' but an allusion to the 'counsels of perfection' in Matthew 19. Here, Christ describes a more perfect way of discipleship for those with a special calling, characterized by the renunciation of worldly goods and of marriage and sexual relations. *Aduersus Iovianianum*, a radical argument against marriage, can be seen as an exposition of one of these counsels. As Bede observes, Jerome followed his own advice, and never married.

attention, reader, I pray!) is transferred from the left hand to the right, and symbolizes the crown of virginity by making a circle with the same fingers, but not on the same hand, by which marriage and widowhood are signified on the left hand.¹⁰

So when you say ‘one’,¹¹ bend the little finger of the left hand and fix it on the middle of the palm. When you say ‘two’, bend the second <finger> from the smallest finger and fix it on the same place. When you say ‘three’, bend the third one in the same way. When you say ‘four’, lift up the little finger again. When you say ‘five’, lift up the second from the smallest in the same way. When you say ‘six’, you lift up the third finger, while only the finger in between, which is called *medicus*,¹² is fixed in the middle of the palm. When you say ‘seven’, place the little finger only (the others being meanwhile raised), on the base of the palm. When you say ‘eight’, put the *medicus* beside it. When you say /270/ ‘nine’, add the middle finger. When you say ‘ten’, touch the nail of the index finger to the middle joint of the thumb. When you say ‘twenty’, you insert the tip

10 Jerome, *Adversus Iovinianum* 1 (PL 23.213B–214A); cf. *Ep.* 48, ed. I. Hilberg, 2nd ed., CSEL 54.1 (1996), 353.15–354.9; *In Evangelium Mathei* 2.13, ed. D. Hurst and M. Adriaen, CCSL 77 (1959), 106.805–814. Bede cited, paraphrased, or alluded to the passage from *Adversus Iovinianum* in other works, e.g. his commentary on Luke (*In Lucae Euangelium expositio*) (ed. Hurst CCSL 120, 177; trans. Kendall and Wallis 321–2). The triad of virgins, continent and married, though without the reference to the symbolism of finger positions, also appears in his commentary on Genesis (ed. Jones 110.1338–111.1341; trans. Kendall 181); cf. C.W. Jones, ‘Some Introductory Remarks on Bede’s *Commentary on Genesis*’, *Sacris erudiri*, 19 (1969–70): 115–98, particularly his remarks on the symbolism of 30 (172) and 100 (173). Further references are assembled in *Bede: On the Tabernacle*, trans. Arthur G. Holder (Liverpool: Liverpool University Press, 1994), 34 n. 1. In two manuscripts (Vatican Reg. lat. 755 fol. 28v and Paris, BnF lat. 7927 fol. 1v) *The Reckoning of Time* is preceded by a verse preface (‘Incipit uersus cuiusdam ex praefatione supposita’) on the symbolism of thirty, sixty and one hundred. *inc.* ‘Excolat ergo sui quisquis iam pectoris agrum...’ (Dieter Schaller and Ewald Könsgen, *Initia carminum latinorum saeculo undecimo antiquiorum* (Göttingen: Vandenhoeck & Ruprecht, 1977), 218, no. 1777) by Aganus, possibly bishop Aganus of Chartres (s. 926–41), ed. and trans. Brian Stock and Edward Synan, ‘A Tenth-Century Preface to Bede’s *De temporum ratione*’, *Manuscripta*, 23 (1979): 113–15. Finally, the shift from the left hand (units) to the right hand (hundreds) is also invoked as an allegory of the passage from earthly to heavenly life in Bede’s *In Ezram* 2, ed. D. Hurst, CCSL 119A (1969), 316.1163–317.1165; trans. Scott DeGregorio, *Bede: On Ezra and Nehemiah* (Liverpool: Liverpool University Press, 2006), 123.

11 Many excerpts of this chapter found in manuscripts begin at this point and close at the end of the quotation from the *Romana computatio* (see n. 13 below), ‘linking your thumbs together’: see e.g. Appendix 5, nos 4, 182, 193, 195, 211, 247, 259.

12 The ring finger.

of the thumb between the middle joints of the index and middle fingers. When you say ‘thirty’, you join the tips of the index and middle fingers in a gentle embrace. When you say ‘forty’, you pass the underside of the thumb over the side or top of the index finger while holding both erect. When you say ‘fifty’, you rest the thumb, bent at the last joint into the shape of the Greek letter *gamma*, against the palm. When you say ‘sixty’, *you carefully encircle the thumb, bent as before, by curving the index finger forward.* When you say ‘seventy’, you fill the index finger, bent as before, by inserting the thumb, with its nail upright, through the middle joint of the index finger. When you say ‘eighty’, you fill the index finger, curved as before, with the thumb extended full length and its tip placed against the middle joint of the index finger. When you say ‘ninety’, you place the tip of your bent index finger against the base of your upright thumb. So much for the left hand.

You make one hundred on the right hand the way you make ten on the left, *two hundred on the right the way you make twenty on the left, three hundred on the right the way you make thirty on the left*, and the rest in the same manner up to nine hundred. You make *one thousand on the right hand the way you make one on the left, two thousand on the right hand the way you make two on the left, three thousand on the right hand the way you make three on the left, and so forth up to nine thousand.* Then when you say ‘ten thousand’, you place your left hand flat on the middle of your chest, /271/ *but with the fingers pointing upwards to the neck.* When you say ‘twenty thousand’, place the same hand, spread out sideways, on your chest. When you say ‘thirty thousand’, place it flat but upright with the thumb on the breastbone. When you say ‘forty thousand’, turn it on its back upright against the belly. When you say ‘fifty thousand’, lay it flat but upright, with your thumb against your belly. When you say ‘sixty thousand’, grasp your left thigh with your flattened hand. When you say ‘seventy thousand’, turn <your hand> on its back on your thigh. When you say ‘eighty thousand’, lay it flat on your thigh. When you say ‘ninety thousand’, grasp your hip with your thumb turned towards the groin. One hundred thousand, two hundred thousand and so forth up to nine hundred thousand, you perform in the same manner as we said, but on the right side of the body. When you say ‘one million’, cross your two hands, linking your thumbs together.¹³

13 Italicized passages from *When you say four ... thumbs together*, are from *Romana computatio*, ed. Jones, *BOD* 671–2. See above p. 62, and Commentary on ch. 1.

There is also a second type of computation worked on the joints of the fingers which, since it pertains to the reckoning of Easter, will be more conveniently explained when we have arrived at that point.¹⁴

From the kind of computation I have just described, one can represent a sort of manual language, whether for the sake of exercising one's wits, or as a game. /272/ By this means one can, by forming one letter at a time, transmit the words contained by those letters to another person who knows this procedure, so that he can read and understand them even at a distance. Thus one may either signify necessary information by secret intimation, or else fool the uninitiated as if by magic. The method of this game or language is as follows. When you wish to show the first letter of the alphabet, hold up 'one' with your hand; for the second, 'two'; for the third, 'three' and so on in that order. For example, if you wish to warn a friend who is among traitors to act cautiously, show with your fingers 3, 1, 20, 19, 5 and 1, 7, 5; in this order, the letters signify *caute age* ['act cautiously']. It can be written down in this manner, if greater secrecy is demanded. But this can be more easily learned and manipulated using the letters and numbers of the Greeks,¹⁵ who do not, like the Latins, express numbers by a few letters and their duplicated forms;¹⁶ rather, they depict the figures of numbers by means of all the letters of the alphabet, plus special signs for three additional numbers,¹⁷ /273/ representing the numbers in the same order as the alphabet is written, as follows:

A	1
B	2
Γ	3
Δ	4
E	5
ς	6
Z	7
H	8
Θ	9
I	10

14 See below, ch. 55.

15 On Greek letter-numbers as cryptography see Commentary, pp. 405–9.

16 That is, the Latins use multiples and combinations of the letters I, V, X, L, C, D, and M to form their numbers.

17 These 'three additional numbers' are 6, represented by the *stigma* or *episinon* and sometimes *digamma*; 90, represented by the archaic Greek letter *koppa*; and 900, represented by an ancient form of the letter *sampi* (now Ϡ). See commentary for further discussion.

K	20
Λ	30
M	40
N	50
Ξ	60
O	70
Π	80
J	90
P	100
Σ	200
T	300
Y	400
Φ	500
X	600
Ψ	700
Ω	800
↑	900

Thus whoever has learned to signify numbers with his fingers knows without hesitation how to shape letters with them as well.

So much for this. Now let us proceed to the explanation of time, in so far as He who created and imposed order upon time will deign to assist us.

2. THREE WAYS OF RECKONING TIME

*Times (tempora) take their name from 'regulation' (temperamentum), either because every unit of time is separately regulated (temperatum)*¹⁸

18 Virgilius Maro Grammaticus, *Epitomae* 11, ed. Bengt Löfstedt, *Virgilius Maro Grammaticus: Opera* (Munich and Leipzig: K.G. Saur, 2003), 234.151–4. On the presence of Virgilius Maro Grammaticus in Irish *computus* contexts, and notably in the 'Sirmond Manuscript' (Bodley 309, fols 105v–106r) see Ó Cróinín, 'The Date, Provenance and Earliest Use'. Bede did not provide an etymology of 'time' in *On Times*. The etymology from *temperamentum* was very popular with the Irish computists (e.g. *Einsiedeln Computus* 10, ed. Loevenich 38.2–3, *De ratione computandi* 42 ed. Ó Cróinín 150.1–151.4, *Munich Computus* 30, ed. Warntjes 86.205), but, unlike Bede, they consider *tempora* to refer to seasons, not 'times' in general, and draw their etymology from Isidore *Etym.* 5.35.1. Isidore states that the seasons are called *tempora* because of 'the tempering of commonality, by which each tempers the other with respect to moisture, dryness, heat and cold' (*Dicta sunt autem tempora a communione temperamento, quod invicem se humore, siccitate, calore et frigore temperent*), ed. Urquiola and Santos 117; see also Isidore, *DNR* 7.4.39–45 (ed.

or because all the courses of mortal life are regulated [*temperantur*] in moments, hours, days, months, years, ages, and epochs.¹⁹ We shall explain each in turn, as the Lord grants us the power to do so.

First, we point out to the reader that there are three kinds of time-reckoning: it operates either according to nature, or according to custom, or according to authority.²⁰ This authority is itself twofold. It is either human authority, for example, holding Olympics in a cycle of four years, markets in a cycle of eight days, and indictions in a fifteen-year cycle – likewise the Romans, Greeks, and Egyptians ordered the <leap-year> day which is assembled out of quarter-days to be intercalated in the month of February or August, as it pleased them²¹ – or divine authority, as the Lord in the Law commands that the sabbath be kept on the seventh day,²² that one refrain from agriculture in the seventh year,²³ or that the fiftieth year be called a Jubilee.²⁴ For although it is true that barbarian nations are believed to have weeks, it is nonetheless obvious that they borrowed this from the people of God.

Fontaine, 201–3). The physical and medical notion of balance or equilibrium is wedded to the idea of sequential ‘regulation’ and the ambiguity of *tempus* as both ‘time’ and ‘season’ is captured by the Laon glossator: ‘because the crops ripen (*temperant*) or because each <season> is tempered by another (*eo quod temperant fructus, uel eo quod unumquodque ab altero temperantur*)’: ed. Jones 274. On the Laon glosses, see Introduction, pp. 112–13. But Bede’s explanation concerns measurement, not tempering, and he speaks of times in general, not seasons in particular. Jones’ apparatus cites the ‘Merovingian Computus of 727’, ch. 7 (i.e. 8) (Krusch, *Studien II* 54; Borst, *Schriften* 2.360 and n. 29), but this work also refers to seasons, not to times in general.

19 Bede’s list is probably modelled on Isidore, *Etym.* 5.29.1 (ed. Urquiola and Santos 87–9), but Isidore’s list inserts *lustra* after months. Isidore is followed by the *Einseideln Computus* 4 (ed. Loevenich 8.15–16). The *Munich Computus* 1 (ed. Wartjes, 4.4–8) and *De divisionibus temporum* 2.1.1 (ed. Bisagni 66–7) expand the list to fourteen categories: atom, *momentum*, *minutum*, quarter-day (*quadrans*), day, week, month, season, year, *saeculum*, age and *mundus* (i.e. sempiternity). Cf. Bede, *On Times* 1 (ed. Jones 585.2–3; trans. Kendall and Wallis 107).

20 Cf. Quintilian, *Institutio oratoria* 1.6 for the triad *auctoritas consuetudo ratio*, which Bede might have encountered via Virgilius Maro Grammaticus or Augustine: see Law, *Wisdom, Authority and Grammar in the Seventh Century* 80–1 and ‘*Auctoritas, consuetudo and ratio* in Augustine’s *Ars grammatica*’ 191–207, as well as Rabin, ‘Historical Re-Collections’ 30–1, who highlights Bede’s analogy between *computus* and language. Note, however, that Bede replaces *ratio* with *natura*.

21 Cf. *Letter to Wicthed* 7 (Appendix 3.2, p. 600).

22 Exodus 23:11–12.

23 Leviticus 25:1–7.

24 Leviticus 25:8–10.

Now it is by human custom /275/ that the month is considered as having thirty days, even though this does not match the course of either the Sun or the Moon. Those who probe with subtlety into these matters confirm that, in fact, the Moon has twelve hours less <than thirty days>²⁵ – setting aside the calculation of the ‘leap of the Moon’²⁶ – and the Sun has ten and a half hours more. Thus with nature as our guide²⁷ we discover that the solar year is made up of 365¼ days, but the lunar year is finished in 354 days if it is common and 384 days if it is embolismic.²⁸ The complete course of the Moon is encompassed in a nineteen-year cycle. But each of the planets as well is borne around the zodiac at its own rate.²⁹ This ‘nature’ was created by the one true God when He commanded that the stars which He had set in the heavens should be the signs of seasons, days, and years;³⁰ it is not, as the folly of the pagans asserts, a creating goddess, one amongst many.³¹

3. THE SMALLEST INTERVALS OF TIME

An hour is one-twelfth of a day, and a day is made up of twelve hours, as the Lord testifies, saying, *Are there not twelve hours /276/ in a day? If any man walk in the day, he does not stumble.*³² Here, although He spoke of Himself allegorically as the ‘day’, and of His disciples (who received the light from Him) as ‘hours’, He nonetheless defined the number of hours according to the usual manner of human computation. Now it should be

25 Bede is referring here to the synodic lunar month, or the period between one new Moon and the next. He points out that this period is slightly more than 29½ days, but that this slight excess is disregarded until the end of the nineteen-year cycle, when its cumulative effect will be to put the calculated Moon one day ahead of the astronomical Moon. This is corrected by ‘leaping over’ one day in the lunar calculation (the *saltus lunae*).

26 See below, ch. 42.

27 On the significance of this phrase see Commentary, pp. 408–12.

28 See below, ch. 45. The 10½ hours by which the Sun exceeds the thirty days of the notional month, when multiplied by twelve months, makes 180 hours, or 5¼ days. Added to 30 × 12, or 360 days, this produces the solar year of 365¼ days. The lunar ‘year’ is twelve months of 29½ days, or 354 days; in embolismic years, an additional month of thirty days is added, bringing the total to 384 days.

29 Cf. ch. 8 below, and *The Nature of Things* 13, ed. Jones 204.2–205.11; trans. Kendall and Wallis 81.

30 Genesis 1:14.

31 On the ‘creating goddess’ Nature, see Commentary, pp. 408–12.

32 John 11:9.

noted that if all the days of the year were thought to have twelve hours, summer days would of necessity be composed of longer hours and winter days of shorter hours. But if we wish to make all hours equal, that is, to have equinoctial <hours>, we must then give fewer hours to the winter day, and more to the summer day.

An hour has four *puncti*, ten *minuta*, fifteen *partes*, forty *momenta*, and in some lunar calculations, five *puncti*.³³ These divisions of time are not natural, but apparently are agreed upon by convention. For since it was necessary for calculators to divide the day into twelve, or the hour into four or ten or fifteen or forty or other segments, whether larger or smaller, they sought out terminology for themselves by which they might designate what they wished, and might denote one thing or another. What <constitutes> the margin (*ora*) of a certain time, they call an 'hour' (*hora*), even as we are accustomed to call the boundaries of garments, rivers, or of the sea 'margins' (*oras*).³⁴ *Puncti* they name after the swift passage of the point (*punctus*) /277/ on a sundial,³⁵ *minuta* after an even smaller (*minore*) interval,³⁶ and *partes* from the partition of the zodiacal circle, which they divided into thirty days for each month.³⁷ Then

33 A *pars* is not one of the fourteen divisions of time found in the Irish *computus* textbooks, nor is it in Isidore. It appears to be a novelty introduced by *The Reckoning of Time*, from whence it passed to Hrabanus and the later *computus* tradition: Bisagni, *From Atoms to the Cosmos*, 50–1. On the 'lunar calculations' see *The Reckoning of Time*, ch. 17.

34 Isidore, *Etym.* 5.29.2 (ed. Urquiola and Santos 89). However, Bede passes over the claim that *hora* derives from *horologium* and vice versa, found in Irish sources such as *De divisionibus temporum* II.6.3 (ed. Bisagni 72), *Munich Computus* 6 (ed. Warntjes 16.4–5) and the text *De numero* in Cologne, Dom- und Diözesanbibliothek 83-II, (see Appendix 5) 24.1 (fol. 20v).

35 Bede undoubtedly derived this from an Irish source: cf. *Munich Computus* 5 (ed. Warntjes 12.3–5); *De divisionibus temporum* II.5 (ed. Bisagni p. 71); Cologne, Dom- und Diözesanbibliothek 83-II, 24.1 (fol. 20v).

36 Cf. *Einsiedeln Computus* 5.2 (ed. Loevenich 10.30–1), *Munich Computus* 4 (ed. Warntjes 14.4–5).

37 Bede does not suggest that *pars* as a degree of a zodiac sign had anything to do with *pars* as one-fifteenth of a hour, but merely explains the origin of the term for the time-interval. However, the ambiguity seems to have puzzled his readers, so the Laon Glossator makes an effort, albeit a clumsy and erroneous one, to provide an explanation: 'Every day the Sun, moving in a direction opposite to that of the firmament, passes through one degree (*pars*) of a zodiac sign. But insofar as it moves in the same direction as the firmament, the same *pars* which it covers in its proper course in 24 hours is 1/15th or half a sign, for half a sign is 15 degrees. So it is moved from place to place by 1/15th of an hour, that is, by 2 2/3 *momenta*. And therefore Bede correctly states that the *partes* of hour take their name from

they name *momenta* after the swift motion (*motu*) of the stars, when it was observed that something moved and succeeded itself in a very brief space of time.³⁸ The smallest time of all, and one which cannot be divided by any reckoning, they call by the Greek word ‘atom’, that is, ‘indivisible’ or ‘that which cannot be cut’.³⁹ Because of its tiny size, it is more readily apparent to grammarians than to computists, for when they divide a verse into words, words into feet, feet into syllables, and syllables into quantities (*tempora*), and give double quantity to the long <foot> and single to the short, they are pleased to call this an *atomus*, as they had nothing more beyond this which they could divide.⁴⁰ In exploring the nativities of men, astrologers (*mathematici*) likewise claim to arrive at the atom when they divide the zodiacal circle into twelve signs, /278/ each sign into thirty *partes*, each *pars* into twelve *puncti*, each *punctus* into forty *momenta*, and each *momentum* into sixty *ostenta*, so that by carefully observing the position of the stars they might learn, as if without error, the fate of the newborn.⁴¹ Let us see to it that these things are avoided, because such observance is futile and alien to our faith.

The Apostle uses the term for this kind of time in a better sense, to suggest the swiftness of the Resurrection, stating, *We shall all rise, but*

the *partes* (i.e. degrees) of the zodiac, when the *pars* of an hour and the *pars* of a sign are the same thing, although this should be understood of two movements’ (ed. Jones 277 *ad lin.* 24).

38 Isidore, *Etym.* 5.29.1 (ed. Urquiola and Santos 87). Cf. *Einsiedeln Computus* 5.1 (ed. Loevenich 8.7–10.10), *Munich Computus* 2 (ed. Warntjes 12.2–5).

39 *Ibid.* 13.2.3 (ed. Gasparotto 14–16). Ultimately from Augustine, *Sermones ad populum* 362.17.20, PL 39.1624.

40 Julian of Toledo, *Excerpta*, ed. Heinrich Keil, *Grammatici latini* (Leipzig: Teubner, 1855–1880), 5.321–3; *De divisionibus temporum* II.2.2–3 (ed. Bisagni 69; cf. Bisagni, *From Atoms to the Cosmos* 14–15); Bede, *De arte metrica* 2 (*BOD* 86.4); MS Bern 207, fol. 112 ed. Heinrich Keil and Hermann Hagen, *Grammatici latini* 8 (Leipzig: Teubner, 1890), xxiv. By way of contrast, Isidore does not use a metrical analogy: *Sic et littera: nam orationem diuidi in uerba, uerba in syllabas, syllabam in litteras. Littera, pars minima, atomus est, nec diuidi potest.* (The same is the case with the letter. For you divide a statement into words, words into syllables, syllables into letters. A letter is the smallest part; it as an atom, cannot be divided’): *Etym.* 13.2, ed. Gasparotto 16. This is excerpted or adapted in Irish sources, like the *De numero* in Cologne, Dom- und Diözesanbibliothek 83-II (fol. 20r), and *Munich Computus* 2 (ed. Warntjes 10.25–8).

41 Cf. Basil of Caesarea, *Hexaemeron* 6.5–6, trans. Eustathius, ed. Emmanuel Amand de Mendieta and Stig Y. Rudberg, *Texte und Untersuchungen* 66 (Berlin: Akademie-Verlag, 1958), 75–8; Ambrose, *Hexaemeron* 4.4, ed. C. Schenkl, CSEL 32.1 (1897), 120.9–122.10. Since the passage which follows is from Jerome’s Letter 119.5 (see below), this is probably Bede’s immediate source, though Jones (*BOT* 333) opts for Ambrose or Basil.

*we shall not all be changed, in a moment [in atomo], in the twinkling of an eye, at the last trumpet.*⁴² This deserves our attention, because although computists make a strict distinction <between these terms>, many writers indiscriminately call that tiniest interval of time in which the lids of our eyes move when a blow is launched against them, and *which cannot be divided or distributed*,⁴³ either a *momentum*, a *punctus* or an atom.

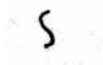
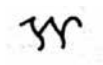
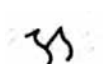
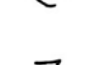
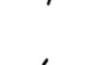
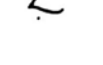
4. THE RECKONING OF DUODECIMAL FRACTIONS

To know how to divide duodecimal fractions [*unciae*] is no unworthy ambition, for one can apply it to the calculation not only of coinage, but of time and of other things. /279/ Because from time to time various historical narratives, and even Holy Scripture itself, will use the names and symbols <of fractions>, we have taken the trouble to record them in summary form here.

	pound or <i>as</i> or <i>assis</i>	12 <i>unciae</i>
	<i>deunx</i> or <i>iabus</i>	11 <i>unciae</i>
	<i>decunx</i> or <i>dextans</i>	10 <i>unciae</i> [⁵ / ₆]
	<i>dodrans</i> or <i>doras</i>	9 <i>unciae</i> [³ / ₄]
	<i>bes</i> or <i>bisse</i>	8 <i>unciae</i> [² / ₃]
	<i>septunx</i> or <i>septus</i>	7 <i>unciae</i>

42 I Corinthians 15:51–2; cf. Augustine, *Ep.* 205, ed. W. Goldbacher, CSEL 57 (1911): 355.1–4, and *Sermones ad populum*, 362.16.19, PL 39.1626. The scriptural examples found in *De numero* 24.1, Cologne Dom- und Diözesanbibliothek 83-II fols 20v–21r are quite different (Introduction, pp. 92–3).

43 Jerome, *Ep.* 119.5, ed. I. Hilberg, CSEL 55 (1996), 450.8–20.

	<i>semis</i>	6 <i>unciae</i> [$\frac{1}{2}$]
	<i>quincunx</i> or <i>cingus</i>	5 <i>unciae</i>
	<i>triens</i> or <i>treas</i>	4 <i>unciae</i> [$\frac{1}{3}$]
	<i>quadrans</i> or <i>quadras</i>	3 <i>unciae</i> [$\frac{1}{4}$]
	<i>sextans</i> or <i>sextas</i>	2 <i>unciae</i> [$\frac{1}{6}$]
	<i>sescunx</i> or <i>sescuncia</i>	1½ <i>unciae</i> [$\frac{1}{8}$]
	<i>uncia</i>	24 <i>scripuli</i>
	<i>semuncia</i>	12 <i>scripuli</i>
	two <i>sextulae</i> or <i>sesclae</i> , that is, $\frac{1}{3}$ of an <i>uncia</i>	8 <i>scripuli</i>
	<i>sicilicus</i>	6 <i>scripuli</i> [$\frac{1}{4}$ <i>unciae</i>]
	<i>sextula</i> or <i>sescla</i>	4 <i>scripuli</i>
	$\frac{1}{2}$ <i>sextula</i> or <i>sescla</i>	2 <i>scripuli</i>
	<i>scripulus</i>	6 <i>siliquae</i> ⁴⁴

44 Priscian, *De figuris numerorum* 10–11, ed. Heinrich Keil, *Grammatici latini* (Leipzig: Teubner, 1855–1880), 3.408–9; cf. 15–16 (410–11); 31 (416). See also Victorius of Aquitaine, *Calculus*, ed. Alison Peden, *Abbo of Fleury and Ramsey: Commentary on the Calculus of*

These names and symbols for weights are suitable, I say, not only to assigning values to money, but to quantifying bodies or spans of time. Hence it is both logical and customary that in reciting their computations, boys often change ‘one’ and ‘two’ to ‘*assis*’ and ‘*dipondium*’; likewise they say ‘*tressis*’, ‘*quartus*’, ‘*quinqvis*’, ‘*sexis*’, ‘*septis*’, and so forth in this fashion, instead of ‘three *asses*’, ‘four *as ses*’, and a sequence of however many numbers in the same manner.

Therefore, should you wish to divide one hour, or a whole day, /281/ or a month, or a year, or any other specific length of time, greater or less, into twelve, that twelfth part is an *uncia*; the remaining eleven are called *deunx* [$^{11}/_{12}$]. If you divide into six, the sixth part is called *sestans* [$^{1}/_{6}$]; the remaining five are called *dextans*, or according to others, *distas* [$^{5}/_{6}$]. If into four, the fourth part is called *quadrans* [$^{1}/_{4}$]; the residual three take the name of *dodrans* [$^{3}/_{4}$]. Something which perturbs many beginners is solved by the rule of this discipline; for Philip, in his commentary on the blessed Job, describing how the ocean tide comes in twice each day, adds <that it arrives>, *whether by day or by night, later <than the previous day’s tide> by an interval of a dodrans [i.e. $^{3}/_{4}$] of an equinoctial hour, with no break in continuity*.⁴⁵ Now if you want to divide by three, you will call the third part *triens*, and the remaining two parts *bisse* [$^{2}/_{3}$]. If by two, you will call the half *semis*; and so on for the rest. These things can be both learned and taught more easily through speech than by the pen of a writer. /282/

If your task is to divide miles or *stadia* or acres or perches, or even cubits, feet, or palms, proceed according to the method given above; the same holds for bodies. Thus in Exodus a half-cubit is called *semis*, for Moses relates that the Ark of the Covenant was two and one-half (*duos*

Victorius of Aquitaine (Oxford: Oxford University Press for the British Academy, 2003), 1–62. Many manuscripts of *The Reckoning of Time* have more than one suite of symbols for the fractions. While Irish *computus* textbooks do not have any analogue to this, Priscian’s *dodrans siue doras* does appear in the discussion of the quarter-day in *Einsiedeln Computus* 5.5 (ed. Loevenich 16.85), *De ratione computandi* 21 (ed. Ó Cróinín 129.6) and *De divisionibus temporum* II.7 (ed. Bisagni 72).

⁴⁵ Philippus Presbyter, *Commentarii in librum Iob* 38 (PL 26.752D); cf. ch. 29 below, and A.K. Brown, ‘Bede, a Hisperic Etymology, and Some Early Sea Poetry’, *Mediaeval Studies*, 37 (1975): 419–32. Jones argues that this passage is a criticism of Philippus: ‘Bede may have believed that if Philippus had known the proper names for fractions he would not have said *dodrans*, which is forty-five minutes. Bede’s calculation for the retardation of the tides is forty-eight minutes’ (*BOT* 334–5). But Bede is merely stating that the term *dodrans* is unfamiliar to many readers, not that Philippus is using it correctly.

semis) cubits long and a cubit and a half (*cubitum ac semissem*) high,⁴⁶ and in the Gospel the fourth part of the universe, that is, earth, is symbolically designated by the term *quadrans*. It is said to the sinner as he is sent to his punishment, *You shall not go hence until you have paid the last farthing (nouissimam quadrantem),*⁴⁷ that is *until you atone for your earthly sins*, as St Augustine explains: *For the sinner heard this: You are earth and to earth you shall go.*⁴⁸ *Now the fourth and last (quarta ... et nouissima) of the distinct divisions of the universe is found to be earth, so that you begin with heaven, count air as coming second, water third, and earth fourth.*⁴⁹ He also alludes to this branch of study in his commentary on the Gospel, where it is written, *And it was about the sixth hour of the preparation of the Passover,*⁵⁰ saying, *For it was not fully the sixth hour, but about the sixth hour, that is, the fifth hour was finished and /283/ the sixth somewhat begun. For these men would never have said five and a quarter (quadrans) or five and a third (triens) or five and a half (semis) or anything of that kind.*⁵¹

5. THE DAY

Day is air which is lit up by the Sun, and it derives its name from the fact that it separates and divides the darkness.⁵² Because, at the very beginning of Creation, *darkness was upon the face of the deep, and God said: Let there be light. And there was light, and God called the light 'day'.*⁵³

46 Exodus 25:10. This was an important passage for Bede, and he commented on its allegorical significance in *De tabernaculo* 1, ed. Hurst 14.349–78; trans. Holder 12.

47 Matthew 5:26.

48 Genesis 2:19.

49 Augustine, *De sermone Domini in monte* 1.11.30, ed. A. Munzenbecker, CCSL 35 (1967), 31.664–5, 660–3.

50 John 19:14.

51 Augustine, *De consensu evangelistarum* 3.13.41, ed. F. Wehrich, CSEL 43 (1904), 324.21–325.3.

52 Virgilius Maro Grammaticus, *Epitomae* 11, ed. Löfstedt 234.147; see Damian Bracken, 'Virgil the Grammarian and Bede: a Preliminary Study', *Anglo-Saxon England*, 35 (2006): 12. Cf. *Munich Computus* 8, ed. Warntjes 20.1.

53 Genesis 1:1–4. The issue of whether there were actually days prior to the creation of the Sun and Moon is discussed by Bede below and in ch. 6.

This word is defined in two ways, that is, according to common parlance, and according to its proper <meaning>. Ordinary folk all call *the Sun's presence above the Earth 'day'*.⁵⁴ But properly speaking, a day comprises twenty-four hours, that is, a circuit of the Sun lighting up the entire globe.⁵⁵ <The Sun> always and everywhere carries the daylight around with itself, and it is believed to be borne aloft at night under the Earth by no less the height of air than it is by day above the earth. This claim rests on the authority of many authors, both our Christian ones and those <who composed> secular <works>, but we need the testimony of only one Father, Augustine. In the second book of questions on the Gospels, explaining the the total number of the seventy-two disciples⁵⁶ /284/ according to its figural meaning, he says, *Just as the whole globe is traversed and lit up in twenty-four hours, so the mystery of the illumination of the globe through the Gospel of the Trinity is intimated by the seventy-two disciples*.⁵⁷ For 24 times 3 is 72. The same <Augustine> says in the first book of *The Literal Interpretation of Genesis*: *Can it be said that although this work of God's was swiftly concluded, light remained without a night to follow it so long as the diurnal interval ran its course, and that the night which succeeded upon the light remained until the interval of nocturnal time had passed and the dawn of the second day came, when the first day was over? But were I to say this, I would be afraid of being ridiculed both by those whose knowledge is certain and by those who can easily perceive that when it is night with us, the presence of the light illuminates those parts of the world through which the Sun passes between its setting and its rising. And for this reason, throughout the entire circuit of the globe, there does not fail to be day in one place and night in another for the whole twenty-four hours*.⁵⁸ And shortly thereafter, recalling the opinion of

54 Isidore, *Etym.* 5.30.1, ed. Urquiola and Santos 89 and *DNR* 1.1 ed. Fontaine 173; quoted by Bede in *On Times* 2, ed. Jones 585.2; trans. Kendall and Wallis 107.

55 Cf. *De ratione computandi* 24 (ed. Ó Cróinin 131), *De divisionibus temporum* II.8.2–5 (ed. Bisagni 72–3); Augustine, *Ep.* 199.18, CSEL 57, 258.13–16. Cf. ch. 3 above, where Bede states the length of the day according to 'common parlance', i.e. twelve hours.

56 Luke 10:1, 17.

57 Augustine, *Quaestiones evangeliorum* 2.14, ed. Almut Mutzenbecher, CCSL 44B (1980), 58.2–4. Bede makes the same point in *On Luke* 3, ed. Hurst 214.1878–1886; trans. Kendall and Wallis 371.

58 Augustine, *De Genesi ad litteram* 1.10, ed. I. Zycha, CSEL 28.1 (1894), 15.6–16. Bede paraphrases this passage in *In Gen.* 1, ed. Jones 9.219–10.240; trans. Kendall 75.

Ecclesiastes⁵⁹ concerning the meaning of the Sun,⁶⁰ he says, *Therefore when the Sun is in the south, it is day with us; but when it traverses the northern part⁶¹ of its orbit, it is night for us. Nonetheless, it does not happen that there is no day in that other region where the Sun is present – unless perchance your heart favours poetic conceits, so that you believe that the Sun sinks into the sea, [285] and rises thence in splendour from another quarter at dawn. Notwithstanding, were this so, the abyss would be lit up by the very presence of the Sun, for it can illuminate the waters, while it cannot be extinguished by them. But to suggest this, is absurd.*⁶²

Before the Sun was created, what now comes to pass by means of the Sun was accomplished by the circling of the primeval light, lighting up in its circuit on the first and second days the waters of the abyss which covered the Earth, and on the third day, the empty air. But with respect to the text, *In the beginning God created the heavens and the Earth; and the Earth was without form and void, and darkness covered the face of the deep*,⁶³ some of the Fathers think that a formless confusion of heaven and Earth and water and all the elements is denoted, so that what is meant is not water or Earth or heaven but, if I may use such a phrase, a single seedbed-material (*seminaria ... materies*) of them all.⁶⁴ Therefore, since they could not find a place within the universe capable of receiving the

59 Jones reads *ecclesiastis* here, as do all his MSS save *A* (Paris, BnF nouv. acq. lat. 1632), which reads *ecclesiastes*. The genitive of *ecclesiastes* is *ecclesiastae* or occasionally *ecclesiastes*. In any event, Bede is referring to the book of Ecclesiastes, as the Laon gloss (Jones 284 *ad lineas* 29–30) recognizes.

60 Bede here alludes to, but omits, Augustine's quotation from Ecclesiastes 1:5–6, which (in the Vulgate) reads: *Oritur sol et occidit et ad locum suum revertitur ibique renascens gyrat per meridiem et flectitur ad aquilonem* ('The sun rises and sets and returns to its place, and rising there again, makes his round by the south and turns again to the north'). But Bede knew another version of these verses: see n. 132 below.

61 Augustine's references to the 'southern' and 'northern' part of the Sun's *daily* orbit are confusing, for Ecclesiastes is referring to the southward and northward progress of the Sun through the *year*. For inhabitants of the northern hemisphere the arc of the Sun's daily path always tilts to the south, so the Sun is always visible to the south of the zenith. Augustine seems to imply that since its orbit is circular, the Sun, when passing through 'that other region' at night, must follow a path which is tilted to the north of our nadir. But this would make sense only if the 'other region' were the southern hemisphere, and not the opposite side of the globe, where during the day (while it is night for us) the Sun would still be south of the zenith.

62 Augustine, *De Genesi ad litteram* 1.10, ed. Zycha 15.22–16.7.

63 Genesis 1:1–2.

64 Cf. Augustine, *De Genesi ad litteram* 5.23 (ed. Zycha 167–9), 6.10 (ed. Zycha 182–3).

first light, they teach by a loftier scrutiny that everything which they read concerning the first seven days is of necessity otherwise than the custom of our age holds. /286/

But it is much easier to understand if, following the traditions of equally catholic Fathers, the circle of the upper heaven is understood to have been designated by the name 'heaven', and by the name 'earth' [*terrae*, i.e. the substance or element; by extension the counterpart of 'heaven'], the Earth [*tellus*, i.e. the planet] itself, enclosed in the confines which belong to it now, save that it had brought forth no growing plant or living animal, and by 'abyss', an infinite expanse of water washing the whole Earth, in the midst of which, it is recorded, the firmament of heaven was afterwards made. Thus St Clement, the disciple of the Apostles and third bishop of the Roman Church after Peter, writes as follows in the sixth book of his histories: *In the beginning God made heaven and Earth. The Earth was invisible and disordered, and darkness was upon the face of the deep, and the spirit of God hovered over the waters. Like the Creator's own hand, this Spirit of God, at God's command, separated light from darkness, and then fashioned this visible heaven after <fashioning> the other invisible one, in order to make the upper regions into a home for the angels, and the lower a home for men. For your sake, therefore, the water which was on the face of the Earth retreated at God's command, that the Earth might bear fruit for you.*⁶⁵ Ambrose, bishop of Milan, concurs with this in the second book of the *Hexaemeron*.⁶⁶ But so does Basil, bishop of Caesarea in Cappadocia, who in the fourth book of a work bearing the same title says, *Let the waters draw together and the dry land appear. He draws aside the veil so that what was hitherto unseen might become manifest.*⁶⁷ Jerome as well, that erudite translator of the sacred record, /287/ in explaining the Prophet's statement (wherein he says, *You who said in your heart, 'I will ascend to heaven; I will exalt my throne above the stars of God'*),⁶⁸ calls to mind the upper heavens, writing thus: *He [Lucifer] said this either before*

Bede also refers to 'seminal' causes in *The Nature of Things* 1, ed. Jones 192.12–13, trans. Kendall and Wallis, and in *In Gen.* 1, ed. Jones 40.1258–60; trans. Kendall 106.

65 Ps.-Clement, *Recognitiones* 6.7, trans. Rufinus (PG 1.1351A). Bede distinguishes between 'upper heaven' (the abode of angels) and 'lower heaven' in *The Nature of Things* 7, ed. Jones 197–8, trans. Kendall and Wallis 77.

66 Ambrose, *Hexaemeron* 1.6.20, ed. Schenkl 16.19–17.14.

67 Basil, *Hexaemeron* 4.2.3, trans. Eustathius, ed. Amand de Mendieta and Rudberg 47.17–18.

68 Isaiah 14:13–15.

he fell from heaven or after he fell. If he were still in heaven, how could he say, 'I will ascend to heaven?' But because we read 'To the Lord belongs the heaven of heaven,'⁶⁹ although <Lucifer> was in heaven, that is, in the firmament, he desired to ascend into the heaven where the Lord's throne is, not out of humility, but out of pride. But if he spoke these boastful words after he fell from heaven, we should be aware that he does not lie quiet now that he has been cast down, but still promises himself great things: not to be amongst the stars, but to be above the stars of God.⁷⁰

We who follow in the footsteps of the Fathers⁷¹ may conclude that when God said *Let there be light*,⁷² then the darkness which covered the deep vanished, and light, emerging from the east in the midst of the waves, clothed the whole surface of the Earth in the expanse of its splendour, reaching in a single instant to the northern, southern, and western shores. Gradually setting as the interval of the day was completed, it passed in its orbit beneath the lower parts of the earth and, preceded by the dawn, completed the second and third day in the same sequence. It differed from solar light only in that it lacked heat, and because the stars did not yet exist, it left those nights still blackened by the primal darkness.

Should anyone think it incredible that the paths of the waters should be capable of containing light, let him observe the work of sailors, who make the depths of the sea visible by pouring oil on it. Then let him understand that God, the Creator of all things, is much more capable of illuminating water, no matter how deep, by the breath of His mouth, /288/ particularly since the waters are believed to have been much more limpid at that time, before the Creator forced them together so that dry land could appear.⁷³

69 Psalm 115 (113):16.

70 Jerome, *In Isaiam* 6.14.13–14, ed. M. Adriaen, CCSL 73 (1963), 241.5–13.

71 One of Bede's favorite formulae of self-identification: see also the prologues to *In primam partem Samuhelis*, ed. D. Hurst, CCSL 119 (1962), 10.53–4; trans. Scott DeGregorio and Rosalind Love, *Bede: On First Samuel* (Liverpool: Liverpool University Press, 2019), 104 and to *In Cantica canticorum*, ed. D. Hurst and J.F. Hudson, CCSL 119B (1983), 180.503, and the preface to *Expositio Actuum Apostolorum*, ed. M.L.W. Laistner (Cambridge, MA: Medieval Academy of America, 1939), 3.9, trans. Lawrence T. Martin, *The Venerable Bede: Commentary on the Acts of the Apostles* (Kalamazoo, MI: Cistercian Publications, 1989), 3. See Scott DeGregorio, 'Footsteps of his Own: Bede's Commentary on Ezra-Nehemiah', in *Innovation and Tradition in the Writings of the Venerable Bede*, ed. Scott DeGregorio, *Medieval European Studies* 7 (Morgantown: West Virginia University Press, 2006), 143–68.

72 Genesis 1:4.

73 'Should anyone think ... could appear': cf. Basil, *Hexaemeron* 2.6 trans. Eustathius,

Now the Lord also defined the day according to common parlance in the statement I cited above, saying, *Are there not twelve hours in a day?* But Moses described it in its proper terms, saying, *And the evening and the morning were the first day.*⁷⁴ The Hebrews, Chaldeans, and Persians, following the order of primal Creation, deduce that the course of the day is from dawn to dawn, that is, they add the time of darkness onto that of the light. On the other hand, the Egyptians prefer to calculate their days from sunset to sunset, the Romans from midnight to midnight, the Umbrians and Athenians from midday to midday.⁷⁵ Divine authority, which in Genesis decreed that days should be calculated from dawn to dawn, /289/ ordained in the Gospel that the period of a whole day should begin at sunset and end at sunset.⁷⁶ For He who at the beginning of the world first called light ‘day’ and darkness ‘night’, at the end of the ages first illumined the night with the glory of His Resurrection, and thus consecrated the day by showing

ed. Amand de Mendieta and Rudberg 27.15–17; Ambrose, *Hexaemeron* 1.9.33, ed. Schenkl 35.19–36.3; Bede, *In Gen.* 1.1.3 (ed. Jones 8.185–94), trans. Kendall 73–4.

74 Genesis 1:5. Bede’s insistence that the first three days of creation were proper days, even in the absence of the Sun, is comparable to the statement in *Munich Computus* 8: ‘The day was first created during the work of the angels. Thence is it metaphorically (*translatiue*) called “the presence of the sun”, as it is announced in Genesis: He called the light day’ (ed. Warntjes 20.2–4, trans. 21).

75 Cf. Isidore of Seville, *Etym.* 5.30.4, ed. Urquiola and Santos 91 (Egyptians, Persians, Athenians, and Romans) and *DNR* 1.2, ed. Fontaine 173.7–11, trans. Kendall and Wallis 111 (Chaldeans). A close analogue is *Munich Computus* 8, ed. Warntjes 26.34–9: *Dies apud Aegyptios ab occasu solis inchoat, lunam enim sequuntur. Apud Persas et Chaldeos ab ortu solis usque ad ortum, quia secundum solis numerant. Hebrei a sexta hora usque in sextam horam, lunarem enim cursum inuestigant. Quos Athenienses sequi properant. Romani uero media nocte diem incipiunt ...* (‘Among the Egyptians the day begins at sunset, as they follow the moon. Among the Persians and the Chaldeans (the day stretches) from sunrise to sunrise, as they reckon according to the sun. The Hebrews (reckon the day) from the sixth hour (ie. noon) to the sixth hour, for they investigate the lunar course. The Athenians hasten to follow these. The Romans, however, begin a day in the middle of the night ...’ trans. Warntjes 27). The *Munich Computus* is the only Irish source to mention the Persians. Where Bede got his information about the Jewish day is unknown: the Irish textbooks – *Einsiedeln Computus* 6.2 (ed. Loevenich 22.47–9), *De ratione computandi* 26 (ed. Ó Cróinín 134.2–4), *De divisionibus temporum* II.8.18 (ed. Bisagni 75–6) and the Cologne *De numero* (fol. 21v) – agree with *Munich Computus* that it began at noon. At the end of this chapter, Bede acknowledges a problem: the day of Creation may have begun at dawn, but the Mosaic ceremonial law prescribes that feasts begin at sunset. The reference to the Umbrians comes from Pliny, *HN* 2.79.199, ed. Rackham 1.318–20, and is not found in any of the Irish texts.

76 Cf. Matthew 28:1, Mark 16:1.

Himself to His disciples; He confirmed them more fully in the faith of His Resurrection by eating with them the following evening and offering Himself to their touch, and also by bestowing the gift of the Holy Spirit.⁷⁷ And because after the creation of light, *the evening and the morning were the first day*⁷⁸ but now *at the end of the sabbath it began to dawn towards the first day of the week*,⁷⁹ this transformation of time means that we also, who once were borne away from the light of Paradise to this vale of tears, shall very soon be transported from the darkness of sin to heavenly joy.⁸⁰ Nor is there any other way, save by placing the night before the day, of explaining how *the Lord spent three days and three nights in the heart of the Earth, after the pattern of Jonah*. There is a *synecdoche* here:⁸¹ if you take that *part of the Day of Preparation /290/ on which He was buried, together with the previous night, as a day and a night (that is, a whole day), then the whole sabbath, night and day, and the night of Sunday together with the dawn of that day* which it inaugurated, *as a part standing for the whole, you will indeed have three days and three nights*.⁸² It might well be asked why the people of Israel who, following the tradition of Moses, always preserved the order of the day from dawn to dawn, should begin all their feast days, as we do today, at sundown, and bring them to a close them at sundown; as their Lawgiver says, *From evening to evening you shall celebrate your sabbath*.⁸³

77 Cf. John 20:27, 21:12–13.

78 Genesis 1:5.

79 Matthew 28:1.

80 The notion that the Creation order (day preceding night) was reversed at the Resurrection is found in *Munich Computus* 9, ed. Warntjes 32.28–34; see Warntjes' commentary on p. 32 for additional parallels.

81 A *synecdoche* is a figure of speech in which a part stands for the whole: cf. Bede's *De schematibus et tropis* 2.2.7 (ed. Kendall, *Bede. Libri II De arte metrica et De schematibus et tropis. The Art of Poetry and Rhetoric* (Saarbrücken: AQ-Verlag, 1991), 191).

82 Cassian, *De incarnatione Domini contra Nestorium* 6.23, ed. M. Petschenig, CSEL 17 (1886), 350.17–28; cf. Matthew 12:38–40. Cf. Augustine, *Quaestiones evangeliorum* 1.7, ed. Mutzenbecher 10–11, and *De doctrina christiana* 3.35.50–1, ed. Joseph Martin, CCSL 32 (1961), 111.15–22. Bede quotes the *regulae* of Tyconius, as found in *De doctrina christiana*, in the Preface of his own *Expositio Apocalypseos*, ed. Roger Gryson, CCSL 121A, 223.37–231.125; trans. Faith Wallis, *Bede: Commentary on Revelation* (Liverpool: Liverpool University Press, 2013), 102–5; this may be his immediate source for the notion that the *triduum paschale* is a *synecdoche*.

83 Leviticus 23:32.

6. THE WORLD'S FIRST DAY

Some have claimed that the first day of the world was the eighth Kalends of April [25 March], and others that it was the twelfth [21 March]. In both cases they adduce the same argument, namely, the equinox.⁸⁴ For it seems reasonable that because God in the beginning divided light and darkness into two equal parts, we should believe that the beginning of the world took place specifically at the point of the equinox.⁸⁵ They conduct their inquiry well; /291/ but they do not think through what they are saying in a consistent fashion. They would act much more knowledgeably were they to assign to the equinox not the first day, in which light was created, but the fourth, in which the luminaries were made. For <God> decreed the beginning of time at that point when, upon creating the luminaries, He said, *Let them be for signs, and for seasons, and for days and for years.*⁸⁶ During the preceding three days, as everyone can see, light and darkness weighed equally in the balance, for since the stars were not yet made, there was no measurement of hours. Not until the fourth morning did the Sun, rising from the mid-point of the east, with the hours running through their lines by the shadow,⁸⁷ inaugurate the equinox, which has been maintained every year. That is, <the Sun>, when it first rose above the Earth, was

84 On the sources for this chapter see Commentary. Irish computists usually hold that the first day of creation was the equinox: cf. *Munich Computus* 11 (ed. Warntjes 42.37–40) and 44 (146), which provides both the ‘Greek’ date of 21 March and ‘Roman’ date of 25 March; *De ratione computandi* 68 (ed. Ó Cróinín 177.24–5) gives only the 21 March date. See also the Cologne *De numero* fol. 21r: *Id in XII Kl. april. quando coaequalis est dies et nox. Et hic dies primus factus est.* Others preferred Martin of Braga’s date of 22 March: see Warntjes, *Munich Computus* 42–3. Warntjes notes that Bede’s date was canonized by being inscribed on the March pages of calendars. On the notion found in Irish sources such as *De divisionibus temporum* and the Cologne *De numero* that the world was created at midnight and would be destroyed at midnight, see Bisagni, *From Atoms to the Cosmos* 49 n. 120.

85 I.e. the time of year when the day is divided into equal portions of light and darkness. See Anatolius of Laodicea, *Liber Anatolii* 2, ed. McCarthy and Breen 47.58–65 and trans. 64.1–9.

86 Genesis 1:14.

87 There could be no equinox before the fourth day of Creation because before the Sun and stars were made there was no way to determine whether the length of the day was or was not equal to the length of the night. Bede imagines that, on the day the Sun was made, God also made a natural sundial, since the shadows cast by the Sun (by striking what obstacle, we may wonder!) marked the passage of the hours. In his commentary on Genesis Bede expands upon this idea: ‘For that whole period of three days had earlier passed in the undivided progress of its course, having internally no measurement of hours, since, when primordial light still filled everything generally and had no starting point, which it now receives from

positioned in that part of the sky which philosophers call the fourth degree of Aries.⁸⁸ It was destined to return there when a year had passed by, after 365 days and six hours. This addition <of six hours> amounts to a quarter day, so that the vernal equinox itself sometimes occurs at dawn, sometimes at noon, sometimes at sunset and sometimes at midnight.⁸⁹

The Moon, on the other hand, was full at sunset, for the Creator, Who is equity itself, would never make something in an imperfect state.⁹⁰ It appeared, together with the glittering stars, in the mid-point of the east, and stood in the fourth degree of Libra where the autumn equinox is fixed,⁹¹ and by its rising, it sanctified the beginning of His Pasch.⁹² For the only Paschal rule to observe is that the spring equinox be completed, with a full Moon following.⁹³ But if the full Moon precedes the equinox by a single day, it is considered to be the Moon of the last month, and not of the first. For it is fitting that just as /292/ the Sun at that point in time first assumed

the sun, nowhere did rays of light shine too brightly, nor did any shade grow chill as though it had withdrawn too far under cliff or tree' (trans. Kendall 81; ed. Jones 16.443–8).

88 Bede may have drawn this idea from Anatolius 2, as cited in Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.32.14, ed. Theodor Mommsen, *Eusebius Werke* 2.1–2, Griechischen Christlichen Schriftsteller 9.1–2 (Leipzig: J. C. Hinrichs, 1903–1908), 723.15, which says that the Sun at equinox has reached *quartam ... diem*. In McCarthy and Breen's ed. of the *Liber Anatolii* (46.40) these words are supplied from Rufinus. Pliny, *HN* 2.81, states that the vernal equinox occurs on the eighth day of the Sun's passage through Aries, i.e. 25 March – and this goes back to Babylonian astronomy (Mosshammer, *Easter Computus* 143); if this were his source, Bede corrected the text to 'the fourth day'. Note that Bede interprets this text in a different sense in *Letter to Wicthed* 7 to mean the quarter-day which will accumulate into the leap-year day: see Appendix 3c.

89 Cf. *Letter to Wicthed* 3 (Appendix 3c, p. 598); *On Times* 10, ed. Jones 592.4–7; trans. Kendall and Wallis 112.

90 Augustine (*De Genesi ad litteram* 2.15, ed. Zycha, CSEL 28.3.2, 56) was torn between regarding the Moon at the time of its creation as new or as full. Victorius, *Prologus in cyclo paschali* 8 (ed. Krusch, *Studien II* 23) was certain it was full; cf. the Irish *De ratione computandi* 67, ed. Ó Cróinín 175.4–11), and the *Einsiedeln Computus* 17.2: *In plenitudinem enim mundus factus est sicut homo in perfectione factus est XXX^{ma} aetate et lune in plenilunio*. ('The world was made in fullness, just as the human being was made in perfection, that is, aged 30 years, and the Moon when full'), ed. and trans. Loevenich 74.25–7.

91 Cf. *Letter to Wicthed* 5 (Appendix 3c, p. 599).

92 Cf. Anatolius 2, as cited in Rufinus' trans. of Eusebius, *Historia Ecclesiastica* 7.32.18, ed. Mommsen 725.14.

93 Cf. Theophilus, *Prologus Theophili* 4, ed. Alden Mosshammer, *The Prologues on Easter of Theophilus and [Cyril]* (Oxford: Oxford University Press, 2017), 58; Proterius, *Ep. ad Leonem* 8, ed. Krusch, *Studien I* 276–7.

power over the day, and then the Moon and stars power over the night, so now, to connote the joy of our redemption, day should first equal night in length, and then the full Moon should suffuse <the night> with light. This is for the sake of a certain symbolism, because the created Sun which lights up all the stars signifies the *true* and eternal *light which lights every man that comes into the world*,⁹⁴ while the Moon and stars, which shine, not with their own light (as they say), but with an adventitious light borrowed from the Sun,⁹⁵ suggest the body of the Church as a whole, and each individual saint. These, capable of being illumined but not of illuminating, know how to accept the gift of heavenly grace but not how to give it. And in the celebration of the supreme solemnity, it was necessary that Christ precede the Church, which cannot shine save through Him. For were one to argue that the full Moon can come before the equinox, one would be stating either that Holy Church existed in its perfection before the Saviour came in the flesh, or that one of the faithful, before the bestowing of His grace, can have something of the supernal light.⁹⁶

It is not without meaning that the observance of the season of Easter, by which the world's salvation was fittingly both symbolized and brought to pass, was arranged by the divine plan so that its beginning was fixed not on the first day, in which light was created, nor the second, in which the firmament was made, nor the third, in which the dry land appeared, nor even on the beginning of the fourth, when the equinoctial Sun went forth like *a bridegroom from his chamber*,⁹⁷ but /293/ only at sunset when the Moon rose. That hour was awaited which would mark the illumination of the Church which was to come once and for all in Christ. In the rite of the heavenly sacrifice neither water nor wine alone should be offered, lest the oblation correspond only to God or only to man. Rather, we mingle the blood of the grape, squeezed from the winepress of the Cross, with the water of our fragility, and likewise mix the grain of the wheat, ground on the millstone of the Passion, with water, so that *cleaving to the Lord*,

94 John 1:9.

95 On the Sun as the source of the stars' light see ch. 7 below.

96 I.e. he would be guilty of Pelagianism – that is, the heretical belief that human beings, by nature, have the capacity to live without sin, and do not require divine grace to do so. This is the computistical 'heresy' of Victorius; cf. *The Reckoning of Time* ch. 51. For the analogy of the Moon and the Church see Isidore, *DNR* 18.6, ed. Fontaine 243–5, trans. Kendall and Wallis 142–3, and Ambrose, *Hexaemeron* 4.8.32, ed. Schenkl 137.27–138.22.

97 Psalm 19:5 (18:6).

as the Apostle says, we may be able *to be one with Him in spirit*.⁹⁸ Even so, in observing the season of this same sacrifice, let us not pay attention exclusively to the course of the Sun, as if we believed indeed in God, but that He is far above caring for us (like those who say *Thick clouds are a covering to him, so that He does not see; and He walks in the circuit of heaven*);⁹⁹ nor let us seek only to locate the full rising of the Moon, as if, like the Pelagians, we sought to be blessed without supernatural grace. Rather, following him who said *God shall go before me with his mercy*,¹⁰⁰ let us in the celebration of our Passover¹⁰¹ dedicate the equinoctial rising of the Sun (that is, of Him who overcomes the barriers of darkness), with the full Moon of our devotion following in His footsteps.¹⁰² On the day of His own Resurrection, He who *came not to do away with the Law but to fulfil it*¹⁰³ fulfilled this meaning (*rationem*) of the Mosaic Passover.

As God gives us means, we shall explain each of these matters in its own place in what follows. Here it suffices to point out that the equinox is to be observed on the twelfth Kalends of April [21 March] /294/ and the first day of the world three days before, that is, on the fifteenth Kalends of April [18 March], and I suppose the ancients wished to place the beginning of the zodiacal circle here to indicate the pre-eminence of this day. Yet neither the month nor the year – whose starting-point <the equinox> should be – of the Greeks, Romans or certainly of the Egyptians began on that day. For astronomy (*astrologia*) arose, not with these nations – although the Greeks make this boast – but rather with the more ancient Chaldaeans, from whom the Patriarch Abraham learned to know God in the revolution of the firmament and stars, as Josephus relates. Later, as he understood this science more accurately, <Abraham> introduced it to the Egyptian people when he was exiled amongst them.¹⁰⁴ For in the book of holy Job, who lived

98 I Corinthians 6:16–17. This classic interpretation of the meaning of the mingling of wine and water at the Eucharist comes from Cyprian, *Ep. 63 ad Caecilium*, ed. W. Hartel, CSEL 3.2 (1871), 701–17; cf. Joseph-André Jungmann, *Missarum Sollemnia* (Paris: Aubier, 1952), 2.312.

99 Job 22:14.

100 Psalm 59:10 (58:11).

101 *in nostri paschae celebratione*: Bede apparently wishes to contrast ‘our Passover’ (perhaps thinking of I Corinthians 5:7: *pascha nostrum immolatus est Christus*, ‘Christ our Passover is sacrificed’) and the Mosaic Passover. I thank Dr Rosalind Love for indicating this line of interpretation.

102 Cf. *Liber Anatolii* 4, ed. and trans. McCarthy and Breen 47.76–8 and 65.

103 Matthew 5:17.

104 Isidore, *Etym.* 3.24.2, ed. Gasparotto and Guillaumin 85–7; cf. *De divisionibus*

not long after Abraham, we find the word ‘Mazaroth’:¹⁰⁵ that is, the signs of the zodiac. Therefore, according to the division of the zodiac, the Sun enters the sign of Aries on the fifteenth Kalends of April [18 March], <the day> when light was created. But according to the sequence of its initial creation, the starting point of <the Sun’s> orbit, and simultaneously the beginning of all time, gives the prize to the twelfth Kalends of April [21 March]. Bishop Anatolius of Laodicea plainly teaches this when writing about the equinox: *In that day, /295/ he says, the Sun is found not only to have entered the first part [i.e. sign], but also to have already the ‘quadras’,¹⁰⁶ that is, the first of twelve parts <of the zodiac>. But this first small part out of twelve is the vernal equinox, and is itself the beginning of the months, the inauguration of the <zodiacal> circle and the completion of the course of the stars which are called planets (that is, wanderers), and the end of the twelfth small part*

temporum I.4.1, ed. Bisagni 61. In both works, Josephus is named as the source, i.e. *Antiquitates* 1.3.9, ed. Franz Blatt, *The Latin Josephus* (Copenhagen: Munksgaard, 1958), 136.24–137.2. See ch. 36 below, where this passage is quoted in full. The notion that Abraham was the father of astronomy is also found in the ps.-Clementine *Recognitiones* 1.32 (1226A) (a text certainly known to Bede) and became a commonplace of anonymous *computus* treatises (see examples cited by Jones, *BOT* 339). It is also found in Cassiodorus, *Institutiones* 2.3.22, and in Jerome’s *Ep.* 29.7: see Alan T. Thacker, ‘Bede, Ceolfrith, and Cassiodorus’, in *Bede the Scholar*, ed. Peter Darby and Máirín MacCarron (Manchester: Manchester University Press, 2023), 157.

105 Job 38.32; cf. Augustine, *Adnotationes in Iob*, ed. I. Zycha, CSEL 28.2 (1895), 610.22–611.12. Augustine, however, does not identify ‘Mazaroth’ with the signs of the zodiac; this comes from Jerome, *Liber interpretationis Hebraicorum nominum*, ed. P. de Lagarde, CCSL 72 (1959), 46.16, or possibly Virgilius Maro Grammaticus, *Epitomae* 4, ed. Löfstedt 131.247–9.

106 This phrase ‘also to have already the *quadras*’ was also taken to mean that the quarter-day that cumulated into the leap-year day was already incorporated into the reckoning of solar time at the creation of the Sun: cf. *Munich Computus* 7, ed. Warntjes 28.9–11: *Unde quadrans in initio mundus primum est finis lucis angelice antequam oreretur sol in VIII Kalendas Aprilis*. (‘Therefore, the quarter-<day> at the beginning of the world constituted the end of the angelic light before the sun rose on 25 March’: trans. Warntjes, slightly modified). Bede argues in the *Letter to Wicthed* 7 (Appendix 3c, p. 599) that the accumulation of the quarter-day (*quadram*) began at the creation of the Sun, and repeats the citation from the *Liber Anatolii* (*Letter to Wicthed* 7, ed. Jones 638.3). The Laon glossator, however, thinks that *quadras* means that the equinox occurs when the Sun is in the fourth degree of Aries – i.e. 21 March (294 *ad lineam* 97; 295 *ad lineam* 98) – echoing what Bede says earlier in this chapter. The term *quadras* (one quarter), glossed by Bede as ‘the first of twelve parts <of the zodiac>’ (*prima ex .XIII. partibus*), has attracted attention from historians of *computus*, who aim to determine the date on which Anatolius fixed the equinox: see Mosshammer, *Easter Computus* 140–3.

is also completion of the whole circuit.¹⁰⁷ Here he has understood perfectly correctly and explained in a very elegant manner that as far as nature is concerned the beginning of the zodiac is nowhere else but in the spring equinox, and that the twelve signs, which he calls ‘small parts’, have their beginning and their termination there. Both the quarter-day which we call the ‘leap year day’, and the ‘leap of the Moon’¹⁰⁸ start and finish there, and there the great year, that is, the course of the planets¹⁰⁹ has its appointed beginning and end.

7. NIGHT

Night (nox) is so called because it detracts from (noceat) human affairs or vision,¹¹⁰ or else because thieves and robbers find occasion therein to injure (nocendi) others.¹¹¹ Night is the absence of the Sun, when it is concealed by the Earth’s shadow from the time it sets until the time it rises again. The poet describes its nature accordingly: /296/

*night sank into the ocean,
wrapping Earth and pole in a mighty shadow.¹¹²*

And Solomon in Holy Scripture said *who feeds amongst the lilies until the day breaks and the shadows give way*,¹¹³ alluding to the departure of night, in an altogether elegant turn of phrase, as the shadows giving way.

107 *Liber Anatolii*, 2, ed. McCarthy and Breen 46.39–43 and trans. 64, or the text as cited in Rufinus’ trans. of Eusebius, *Historia Ecclesiastica* 7.32.15, ed. Mommsen 723.15; cf. *Letter to Wicthed* 7.

108 On the ‘leap of the Moon’ (*saltus lunae*), see ch. 42 below.

109 On the Great Year see ch. 36 below.

110 Cassiodorus, *Expositio psalmorum* 1.2, ed. M. Adriaen, CCSL 97 (1958), 232–3. However, for Cassiodorus’ *actionibus* (‘actions’) Bede substitutes *negotiiis* (‘affairs’), which echoes the *Einsiedeln Computus* 7a (ed. Loevenich 26.1–3). Cf. Isidore, *Etym.* 5.31.1, ed. Urquiola and Santos 101, and *DNR* 2.1, ed. Fontaine 181, trans. Kendall and Wallis 114 (eyes); *De divisionibus temporum* II.8.17 (eyes), and *Munich Computus* 9, ed. Warntjes 28.2 (harming in general).

111 Virgilius Maro Grammaticus, *Epitomae* 11, ed. Löfstedt 234.147–50; see Bracken, ‘Virgil the Grammarian’ 13. This second etymology is also found in the *Einsiedeln Computus* 7a (ed. Loevenich 26.29–31), *De ratione computandi* 25 (ed. Ó Cróinín 131.3–132.5), and the Cologne *De numero* 27.1 (fol. 21v).

112 The quotation from is Vergil, *Aeneid* 2.250–1, but the immediate source is Isidore *Etym.* 5.31.2, ed. Urquiola and Santos 101.

113 Song of Solomon 2:16–17.

However, because the interposition of the Earth's mass blocks the Sun's splendour from us according to the location of the regions through which its path passes, that shadow, which is the very essence of night (*quae noctis natura est*), is projected so far upwards that it appears to reach to the stars. Appropriately, <Solomon> signified that, by the opposite change, that is, the rising of the light, *the shadows give way*, that is, night is suppressed and driven down. Philosophers say that this shadow of night extends upwards to the frontier between air and ether, and that the Moon, the lowest of planets, is occasionally touched and obscured by the shadow as it comes together into a point like a pyramid. No other star undergoes an eclipse, that is, the loss of its light, in this fashion, because the sunlight, diffused everywhere around the confines of the Earth, shines without impediment on those <stars> which are at a great distance from the Earth. Therefore /297/ <the Sun> makes the tracts of ether which are beyond the Moon to be always full of daylight, either by his own brightness or by that which beams from the stars.¹¹⁴ If, on a dark night, you are positioned at a distance from some blazing torches, you see some of the surrounding area suffused with their light, although the darkness of night is all about, and all you can see are the separate flames of the torches themselves. By the same token, they say that the empty space which is purest and closest to heaven is always lit up by the light of the stars, scattered everywhere. But to our vision, impeded as it is by the thicker air, the stars themselves appear to be shining lights, while the brightness which they radiate is not obvious.

But they say that when the Moon is full and seeks its lowest point,¹¹⁵ it

114 'However, because the interposition ... from the stars': cf. Bede, *In Gen.* 1.1.13–14, ed. Jones 15.422–8, trans. Kendall 80–1; Pliny, *HN* 2.8.51, ed. Rackham 1.200; Ambrose, *Hexaemeron* 4.3.11, ed. Schenkl 117.26–118.11; Isidore, *DNR* 28, ed. Fontaine 277–9, trans. Kendall and Wallis. 'Philosophers say ... loss of light, in this fashion ...': cf. Isidore, *DNR* 21.1, ed. Fontaine 251, trans. Kendall and Wallis 145; *Etym.* 3.58.1, ed. Gasparotto and Guillaumin 121. Following Isidore, *Etym.* 3.60.1 (ed. Gasparotto and Guillaumin 123), Bede seems to have thought that the stars, like the Moon and planets, shine with reflected light from the Sun; cf. *The Nature of Things* 11 (ed. Jones 201.2; trans. Kendall and Wallis 80). The Irish computists were more divided about the source of the Moon's light: see *Munich Computus*, Warntjes' note, 156–7.

115 *Lunam uero aiunt cum infimas sui circuli apsidas plena petierit ...* (ed. Jones 297.33–4). Normally Bede uses the term *apsida* to signify a planet's apogee: cf. *The Nature of Things* 14 (ed. Jones 205–6, esp. line 2; trans. Kendall and Wallis 82), an excerpt from Pliny, *HN* 2.13.63–4 (ed. Rackham 1.210–12). Here, however, he apparently uses the term to mean the Moon's descending node or variable distance from the ecliptic (the 'Melk Commentary' points out this departure from normal usage: ed. Jones, *BP* 34). The path of the Moon is

sometimes is obscured by a visible shadow until, having removed itself a little bit from the centre of the Earth,¹¹⁶ it is again exposed to the Sun. So that this does not happen at every full Moon, <the Moon's> orbit runs at variable altitudes (*diuersamque apsidarum altitudinem*) through the width of the zodiac, which is twelve degrees (*partes*) wide.¹¹⁷ For three things must occur together to make a shadow: light, a body, /298/ and a place on which the shadow is cast. And where the light is equal to the body, a shadow of constant <diameter> is thrown; where the light is smaller than the body, the shadow increases indefinitely; where the light is greater than the body, the shadow gradually diminishes and dies away.

They maintain that the Sun is larger than the Earth, though it seems small because it is so far away. Hence, because the shadow of night gradually decreases, it fades out before it reaches the ether.¹¹⁸ Blessed Ambrose calls to mind this shadow or night in the sixth book of the *Hexameron* in the following words: *But he* – that is, Moses – *did not think it necessary to discuss how far Earth's shadow extends into the air when the Sun retreats from us and takes away the day, illuminating the lower pole, or how the Moon, passing into the region of <Earth's> shadow, is eclipsed.*¹¹⁹

The shadow of night was given to mortals for the body's repose lest in its greed for work mankind faint away and perish from unremitting exertion. It was given as well to certain animals who cannot bear the light of the Sun, and likewise to those beasts who fear the presence of human beings, in order that they may have an opportunity to go about and seek their food. As the Psalmist sings in praise of God: *The Sun knew its setting;*

inclined at about 5° 9' to the ecliptic, or path of the Sun. It intersects the ecliptic twice during its monthly course; once as it is ascending towards the northern side of the ecliptic (its 'ascending node'), and once as it is descending towards the southern side (its 'descending node'). Lunar and solar eclipses occur only at the nodes, which are where the paths of the Sun and Moon cross, and a lunar eclipse can only take place when the Moon is full at one of the nodes. Contrary to Bede, lunar eclipses can occur at either node.

116 As the Laon Glossator points out (ed. Jones 297 *ad lineam* 35), 'centre' here refers to the axis of the Sun and the Earth. When the Moon is aligned on this axis on the far side of the Earth from the Sun it is full and, when this coincides with its crossing the ecliptic, an eclipse occurs.

117 'But they say that the Moon ... twelve degrees wide': cf. Pliny, *HN* 2.16.66, ed. Rackham 1.212–14. Note that here Bede again uses the term *apsida* to signify the varying distance between the Moon and the ecliptic (i.e. the zodiac).

118 Cf. Pliny, *HN* 2.7.51, ed. Rackham 1.200, Isidore, *DNR* 16.2–3, ed. Fontaine 231–2; trans. Kendall and Wallis 138). See ch. 27 below.

119 Ambrose, *Hexameron* 6.2.8, ed. Schenkl 209.1–4.

*You set out the shadows and made the night, in which all the beasts of the wood go forth, and so on.*¹²⁰

A wonderful forethought on the part of the Creator has so balanced matters (*temperavit*) that where <the climate> is colder because of the distance of the Sun, there the night is longer, in order that labour might be shortened and limbs kept warm.¹²¹ For winter <nights> are longer than summer <nights> everywhere throughout the world, and much longer in Scythia than in Africa. Likewise, the day shines much longer in summer in Scythia than in Africa, /299/ for were the day which scorches Libya not briefer in proportion as it is hotter, it would surely have consumed the whole country long ago.

There are, in fact, seven parts of the night: dusk, eventide, the first part of the night, dead of night, cock-crow, early morning, and daybreak. Dusk (crepusculum) is uncertain light, for we say that something doubtful is 'murky' (creperum), that is, between light and darkness. Eventide (vesperum) is when the star of the same name appears, of which the poet says:

*The evening star (vesper) would close the gates of Olympus
Against the day ...*

*The first part of night (conticinium) is when everything is hushed (conticescunt), that is, silent. Dead of night (intempestum) is midnight, when, in the deep sleep of peace, there is no time (tempus) for activity for any creature. Cock-crow is when the rooster lifts up its song. Early morning (matutinum) is between the departure of darkness and the arrival of dawn. Daybreak is when a bit of light first appears. Dawn lasts until sunrise.*¹²²

120 'The shadow of night ... and so on': cf. Isidore, *DNR* 17.3 (ed. Fontaine 235; trans. Kendall and Wallis 139–40), which makes an analogous argument about the alternating of the seasons, quoting ps.-Clement, *Recognitiones* 8.45 (1393A). The quotation is from Psalm 104.19–20 (103.19–20).

121 The source of this interesting observation has not been traced.

122 Isidore, *Etym.* 5.31.4–14, ed. Urquiola and Santos 101–5, from which the quotation from Vergil, *Aeneid* 1.374 is also derived; see also Isidore *DNR* 2.2–3, ed. Fontaine 182–3, trans. Kendall and Wallis 115, and Bede, *On Times* 3, ed. Jones 586.5–12, trans. Kendall and Wallis 108. Parallels in Irish *computus* texts include *Einsiedeln Computus* 7 (ed. Loevenich 22–5), *Munich Computus* 9 (ed. Warntjes 28.11–30.35), *De divisionibus temporum* II.8.19–27 (ed. Bisagni 76–7), and *De ratione computandi* 25 (ed. Ó Cróinín 132.5–133.35).

8. THE WEEK

Hebdomada ['week'] is a Greek word which takes its name from the number seven.¹²³ Human custom restricts <the definition> to <a period of> seven days, but according to the authority of Sacred Scripture there are many notable kinds <of weeks>, all of which, if I am not mistaken, point to a single end: that is, they urge us to hope for endless peace in the grace of the Holy Spirit when all good works are accomplished. Thus the first /300/ week of all, unique in its kind, from which the others derive their form, is honoured by divine action, because the Lord, completing the adornment of the universe in six days, rested from His labours on the seventh.¹²⁴ We should note here that the number six is perfect, not because the Lord perfected the works of the universe in <six days>, but because (as St Augustine says) the Lord, who was capable of creating everything in an instant, deigned to do His work within this number, since it is a perfect number, in order that He might demonstrate the perfection of His achievement through this number, which is the first <number> to be formed of its factors, that is, of a sixth, a third, and a half – namely one, two, and three, and which together make six.¹²⁵

The second week was ordained to be observed by men according to the pattern of this divine week. The Lord said, *Six days shall you labour and do all you have to do; but on the seventh day, the sabbath of the Lord your God, you shall do no work. For in six days the Lord made heaven and earth, the sea and all that is therein, and He rested on the seventh day.*¹²⁶ In olden times, the people of God enumerated the week in this way: *the first <day> of the sabbath, or <day> one of the sabbath or sabbaths; the second of the sabbath; the third of the sabbath; the fourth of the sabbath; the fifth of the sabbath; the sixth of the sabbath; the seventh of the sabbath, or, the sabbath.*¹²⁷ Not that all days could be sabbaths or days of rest, but that the first <day>,

123 Cf. Isidore, *Etym.* 5.32.1, ed. Urquiola and Santos 105; *Munich Computus* 10 (ed. Warntjes 34.4–5) and other parallels cited in Warntjes' apparatus; *De divisionibus temporum* II.9.1 (ed. Bisagni 78).

124 Cf. Genesis 2:1–2.

125 Cf. Augustine, *De civitate Dei* 11.30, ed. B. Dombart and A. Kalb, CCSL 47–8 (1955), 350.1–12; Bede, *In Gen.* 1.1.31–2.1, ed. Jones 32.966–74, trans. Kendall 96.

126 Exodus 20:9–11.

127 *De divisionibus temporum* II.9.4 (ed. Bisagni 79); cf. Jones, *BOT* 395. It is also found in the *Munich Computus* 11 (ed. Warntjes 36.6–11) and *De ratione computandi* 27 (ed. Ó Cróinín 135.8–9).

the second, third and so on should be counted in their sequence from the day of rest, which took precedence because of its name and observance. Of course the Gentiles, when they learned to observe the week from the people of Israel,¹²⁸ subsequently twisted it around to the praise of their own gods, dedicating the first day to the Sun, /**301**/ the second to the Moon, the third to Mars, the fourth to Mercury, the fifth to Jupiter, the sixth to Venus, and the seventh to Saturn, consecrating their days to the same monstrosities to whom they had consecrated the planets, although in a different order.¹²⁹ For *they thought that they received spirit from the Sun, body from the Moon, ardour from Mars, wisdom and language from Mercury, moderation from Jupiter, pleasure from Venus, and slowness from Saturn.*¹³⁰ I believe that this came to pass because the Sun, positioned in the midst of the planets, seems to give heat to the whole universe and, as it were, to vivify it, as spirit does. Ecclesiastes bears witness to this, saying of it, *The spirit goes gyring in a gyre, and returns in its circle.* The Moon, by supplying moisture, nourishes growth in all bodies. The star Mars, being very close to the Sun, is fiery in colour and likewise in nature. By its perpetual circling on either side of (*circa*) the Sun,¹³¹ Mercury was deemed to radiate the inexhaustible

128 Cf. ch. 2 above.

129 Bede's allusion to the 'different order' refers to the difference between the physical arrangement of the planets in the heavens and the order of their corresponding weekdays in the pagan calendar, for which he ventures an explanation later in this chapter. This is a more plausible explanation than the one proposed by Jones (*BOT* 341), namely that Bede is referring here to different ancient notions of the order of the planets, e.g. the 'Egyptian' and 'Chaldaean' arrangements discussed by Macrobius, *Comm. in Somnium Scipionis* 1.19 (ed. Willis 73–8), or to the Hipparchan model of the perihelial orbit of Mercury and Venus, recorded in Chalcidius' commentary on the *Timaeus* of Plato 110 (ed. and trans. Béatrice Bakhouché, *Calcidius: Commentaire au Timée de Platon* [Paris: Vrin, 2011], 342–5), in Martianus Capella, *De nuptiis Philologiae et Mercurii* 8.880–2, ed. J. Willis (Leipzig: Teubner, 1983), 333–5, and extracted in medieval astronomical compilations. Cf. Bruce Eastwood, "'The Chaster Path of Venus'" (*orbis Veneris castior*) in the Astronomy of Martianus Capella', *Archives internationales d'histoire des sciences*, 32 (1982): 145–58, and 'Notes on the Planetary Configuration in Aberystwyth N.L.W. MS 735C, f.4v', *The National Library of Wales Journal*, 22 (1981): 129–40.

130 Isidore, *DNR* 3.4, ed. Fontaine 185.22–8, trans. Kendall and Wallis 116; cf. *Etym.* 5.30.8, ed. Urquiola and Santos 93.

131 Bede is not claiming that Mercury orbits the Sun; this position was advanced by some ancient astronomers and recorded in Martianus Capella, whom Bede had not read: see above, n. 129. Rather, the force of *circa* seems to be 'on either side of' (see Latham, *Dictionary*, s.v. *circa* 2), and refers to the fact that Mercury is never seen far from the Sun, though sometimes (as Bede explains) preceding the Sun at dawn and sometimes following it after sunset.

light of wisdom, so to speak. Jupiter is tempered on the one hand by the cold of Saturn, and on the other by the heat of Mars. In the loveliness of its light, which it receives from her proximity to the Sun, Venus attracts by its mein those who behold it. In that it is the highest [i.e. ‘farthest out’ from Earth], Saturn travels more slowly than the other planets,¹³² for it finishes its course through the zodiac in thirty years. After <Saturn> comes Jupiter in twelve years, third comes Mars in two years, fourth comes the Sun in 365¼ days; under the Sun comes Venus, /302/ called both Lucifer and Vesper, in 348 days, never departing from the Sun by more than forty-six degrees. The star of Mercury is close to <Venus>, its orbit shorter by nine days. It shines sometimes before sunrise and sometimes after sunset, and is never more than twenty-two degrees away <from the Sun>.¹³³ Finally, the Moon completes the zodiac in twenty-seven days and eight hours.¹³⁴

This, then, was the foolishness of the Gentiles, buttressed by faulty reasoning (*ratiocinatio*), for they sought to dedicate the first day of the week to the Sun by right, so to speak, because he is the greatest of the luminaries, and the second day to the Moon because it is the second luminary. Thereafter, following due sequence, they assigned the first star from the Sun to the third day, the first from the Moon to the fourth day, the second from the Sun to the fifth day, the second from the Moon to the sixth, and the third from the Sun to the seventh.¹³⁵ Pope Silvester was the

132 ‘Ecclesiastes bears witness ... more slowly than the other planets’: this entire passage is found *quasi verbatim* in *De divisione temporum* II.95 (ed. Bisagni 75). The quotation from Ecclesiastes 1:6 (*Gyrans gyrando uadit spiritus ...*) is not from the Vulgate, but rather that found in Jerome, *In Ecclesiasten*, ed. Elisabeth Birnbaum, CSEL *Extra seriem* (Berlin: De Gruyter, 2014), 56.23–4, in his *In Hezechielem* 1.1, ed. F. Glorie, CCSL 75 (1964), 20.481, and in Isidore, *DNR* 27.2, ed. Fontaine 277.10; trans. Kendall and Wallis 155; cf. Jones, *BOT* 341. See also p. 147 n. 60 above: Bede and his Irish source, like Augustine and Jerome, understand this verse of Ecclesiastes to refer to the Sun, whereas modern interpreters read *spiritus* as ‘winds’.

133 ‘The Moon, by supplying ... from the Sun’. Most of this information is contained in Pliny, *HN* 2.6.32–40, ed. Rackham 1.1.188–92, the last phrases being a direct quotation.

134 Pliny, *HN* 2.6.44, ed. Rackham 1.194.

135 This is Bede’s explanation for the fact, to which he alluded earlier, that the sequence of planetary weekday names is different from their physical order in the heavens. Naming the weekdays for the planets is a Roman practice, and was well established by the Augustan period. There were various explanations for the order of the days, but the most widely diffused was the astrological notion that the name of the day corresponds to the planet which ‘rules’ its first hour. There are seven planets, in the Ptolemaic descending order of (1) Saturn, (2) Jupiter, (3) Mars, (4) Sun, (5) Venus, (6) Mercury, (7) Moon. If the first hour of Sunday is ruled by the Sun, the second hour will be ruled by the next planet in sequence, namely

first to instruct the clergy to have *feriae* [weekdays].¹³⁶ <Clergy> are never permitted to involve themselves with worldly service or business, /303/

Venus, the third by Mercury and so on. The first hour of the following day, twenty-four hours later, will fall to the Moon, hence ‘Monday’. Like Bede, the Church Fathers explicitly linked the planetary weekday names to paganism, though not, it seems, to the ‘planetary hours’. See Ilaria Bultrighini and Sacha Stern, ‘The seven-day week in the Roman Empire: origins, standardization, and diffusion’, in *Calendars in the Making: The Origins of Calendars from the Roman Empire to the Later Middle Ages*, ed. Sacha Stern (Leiden: Brill, 2021), 22–58; Blackburn and Holford-Strevens, *Oxford Companion to the Year 566–8*; Daryn Lehoux, *Astronomy, Weather, and Calendars in the Ancient World* (Cambridge: Cambridge University Press, 2007), 40–1. Bede, if he knew about this at all, is silent on the subject: see Jones, *BOT* 342. He seems, rather, to have relied on Irish sources here. For the explanation for Sunday and Monday cf. *De divisionibus temporum* II.9.5, ed. Bisagni 80. The rest of his explanation is untraced, but is implied in ch. 28.1 of the Cologne *De numero* (Cologne, Dom- und Diözesanbibl. 83-II, fols 21v–22r: ‘They name the first day for the Sun, situated in the fourth heaven, which completes its course in 28 years; the second day for the Moon, positioned in the first heaven, which completes its course in eight years; the third <day> for Mars Lucifer, positioned in the third heaven, which finishes its course in nine years; the fourth for the planet Mercury, positioned in the second heaven which <does so> in twenty years; the fifth for Jupiter Phaeton, positioned in the sixth heaven, which <does so> in twelve years; the sixth for Venus Vesper which <does so> in fifteen years; and the seventh for the planet of Saturn, positioned in the seventh heaven, which completes its course in thirty years’ (*Primum diem dixerunt a sole posito. in quarto caelo qui cursum finit annos XVIII. II die a luna posita in primo caelo quae cursum suum finit annos VIII. uel etiam XII. Tercia stella martis lucifer positus in tercio caelo quae annos VIII. IIIa stella mercuris quae positus est in secundo caelo quae annos XX. V a stella iouis foeton positus in VI caelo quae annos XII. VIa stella ueneris uesper positus in V caelo, quae annos XV. VIIa stella saturni positus in VII caelo quae annos XXX suum cursum finit.*)’ It is possible that Bede found the *De numero* explanation in one of his Irish sources. Isidore, *Etym.* 5.30.8 (ed. Gasparotto and Guillaumin 93) is the source of the phrase ‘foolishness of the Gentiles’ (*stultitia gentilium*). *De numero* also specifies the pagan character of the day-names, but in less negative terms, merely observing that the Romans were bound by convention. Note Bede’s use of *ratiocinatio* to mean ‘rationalization’ (with its pejorative overtones) as distinct from *ratio*.

136 The ascription of this Christian style of day-naming to Pope Sylvester is Irish: cf. *Einsiedeln Computus* 8.2, ed. Loevenich 28.20–30.25, *Munich Computus* 11, ed. Warntjes 40.42–6, and *De divisionibus temporum* II.9.6, ed. Bisagni 80–1; see also Bede, *On Times* 4, ed. Jones 586.7–587.10, trans. Kendall and Wallis 108–9. This style was, however, promoted by some Fathers, e.g. Augustine, *Enarrationes in Psalmos* 93.3, ed. E. Dekkers and J. Fraipont, CCSL 39 (1961), 1302.5–1303.33; Caesarius of Arles, *Sermo* 193.4, ed. G. Morin, CCSL 104 (1963), 785–6; Martin of Braga, *De correctione rusticorum*, ed. Claude W. Barlow, *Opera omnia* (New Haven, CT: Yale University Press, 1950), 189. The word *feria* changed its meaning almost completely from classical to medieval usage. In the former, it meant ‘holiday’, and in the latter, ‘weekday’: see Bultrighini and Stern, ‘The seven-day week in the Roman Empire’ 60–1.

for they are devoted to God alone; as the Psalmist says, *Be still and know that I am God*,¹³⁷ and likewise the Apostle, *No one who fights for God entangles himself in worldly business*.¹³⁸ Now <Silvester> called the first day, on which light was created and also Christ's Resurrection celebrated, the Lord's Day. That this name was given to it in the earliest days of the Church is testified by John, who says in the Revelation, *I was in the spirit on the Lord's Day*.¹³⁹ To this, <Silvester> added the 'second *feria*', 'third *feria*', 'fourth', 'fifth', and 'sixth' on his own authority, and retained the sabbath from the ancient Scriptures. He did not dread the rods of those grammarians who decree that, like Kalends, Nones, and Ides, so also weekdays (*feriae*) should be designated strictly by a plural number.¹⁴⁰

A third kind of week occurs in the celebration of Pentecost; it is completed in 7 times 7 weeks, plus 1, which is 50 days.¹⁴¹ On this day Moses, climbing the fiery mountain, received the Law from heaven, and Christ sent the grace of the Holy Spirit from heaven in tongues of fire. The fourth week was that of the seventh month, which was almost entirely taken up by special ceremonies. Amongst these the Day of Atonement was of particular importance. Only on this day of the year did the High Priest, leaving the people outside, enter the Holy of Holies after the year's fruits of grain, wine, and oil had first been collected in order.¹⁴² This signifies that Jesus the great High Priest, having fulfilled the dispensation of the flesh through his own blood, prepares to enter the gates of the heavenly kingdom, in order that He might now appear before the face of God on our behalf who, still standing outside, remain at the ready and attentive for His coming.¹⁴³ /304/ It should be noted here that just as certain unclean persons are commanded by the Law to be purified on the first, third, and seventh

137 Psalm 46:10 (45:11).

138 2 Timothy 2:4.

139 Revelation 1:10; cf. *De divisionibus temporum* II.9.6, ed. Bisagni 81.

140 The Laon Glossator (ed. Jones 303) reads this passage to mean that the grammarians hold that the noun *feria* should always be plural (*feriae*) like *kalendae*, *nonae*, and *ides*.

141 Exodus 19:18. On Bede's patristic sources for this numerical reading see Jones, *BOT* 342–3.

142 Leviticus 16:29–34.

143 Cf. Hebrews 9. Bede makes similar observations in *De tabernaculo* 2, ed. Hurst 71.1143–50, trans. Holder 79, and in *De templo* 1, ed. D. Hurst, CCSL 119A (1969), 171.984–95, trans. Sean Connolly (Liverpool: Liverpool University Press, 1995), 37.

day,¹⁴⁴ so the first, third, and seventh month are dedicated to particular ceremonies.

The fifth week is that of the seventh year, in which the entire people, by order of the Law, rested from agricultural labour. The Lord said, *Six years shall you sow your field*, and on the seventh you shall cease.¹⁴⁵ The sixth week is that of the *Jubilee year*, the year of remission, which is encompassed in seven weeks of years, that is, in forty-nine years.¹⁴⁶ When these were completed – that is, at the beginning of the fiftieth year – *trumpets* rang out loud and clear, and *everyone recovered their former possessions according to the Law*.¹⁴⁷

9. THE SEVENTY PROPHETIC WEEKS¹⁴⁸

The seventh kind of week is that employed by the Prophet Daniel, comprising (after the manner of the Law) seven years in each week,¹⁴⁹ but abbreviating these years by a new calculation (*ratione*); that is, /305/ he fixed each <year> at twelve lunar months, and did not include in the second or third years the embolismic months which normally accumulate from the eleven days of the epact of every year, as ancestral law decrees. Rather, he counted a whole year whenever the sum of twelve <lunar months> was reached.¹⁵⁰ He did this, not because he begrudged the knowledge of the truth to those who sought it, but in order to exercise the inquirers' intelligence, as is the manner of prophecy. At any rate, he preferred to hide his pearls

144 Cf. Numbers 19:11–12.

145 Leviticus 25:3.

146 Isidore, *DNR* 6.4, ed. Fontaine 195.31–2, trans. Kendall and Wallis 122. Cf. *Etym.* 5.37.3, ed. Urquiola and Santos 125–7.

147 Isidore, *Etym.* 5.37.3, ed. Urquiola and Santos 125, or *DNR* 6.4, ed. Fontaine 33–4, trans. Kendall and Wallis 122; cf. Leviticus 25:8–31.

148 On references to this chapter in Bede's commentary on Ezra and Nehemiah see Commentary. Cf. notes on ch. 66, *s.a.* 3468 and 3529 below.

149 Isidore, *DNR* 3.1 (ed. Fontaine 183; trans. Kendall and Wallis 115). Isidore specifically mentions the Seventy Prophetic Weeks as an example. The Irish *De divisionibus temporum* II.9.2 cites Isidore on this point, and proceeds to calculate the Seventy Prophetic Weeks as, in total, 490 years (ed. Bisagni 78). It is this assumption that Bede challenges.

150 Daniel's 'year', in short, is twelve ordinary lunar months, or 354 days. Normally, one or two such ordinary years are followed by an embolismic year of thirteen lunar months. This thirteenth month is formed by cumulating the eleven days by which the lunar year falls short of the solar year, over a period of three years.

away from his sons, so that they might seek them out with fruitful effort, rather than have them scattered abroad to be trodden underfoot by swine in contemptuous disdain.¹⁵¹

Now in order to explain this more clearly, let us look at the precise words of the angel to the Prophet. He says: *Seventy weeks are diminished upon your people and upon your holy city, to finish the transgression, and to make an end of sins and to wipe out iniquity and bring in everlasting righteousness, and to fulfil the vision and prophecy, and to anoint the most holy.*¹⁵² There is no question but that these words refer to the Incarnation of Christ, *who took away the sins of the world,*¹⁵³ *fulfilled the Law and the Prophets*¹⁵⁴ *and was anointed with the oil of gladness above his fellows,*¹⁵⁵ and that the 70 weeks /306/ multiplied by 7 years arrived at 490 years. But note that he claims that these weeks are not simply 'observed' or 'calculated' but 'diminished'; that is, he covertly impresses upon the reader that he should understand that the years indicated are shorter than usual.¹⁵⁶ *Know therefore and understand that from the rebuilding of Jerusalem until the Christ, the Prince, there shall be seven weeks and sixty-two weeks; in a brief space of time the street and the wall shall be built again.*¹⁵⁷ From Ezra's account we know that Nehemiah, when he was cup-bearer to King Artaxerxes, in the twentieth year of his reign, in the month of Nisan, obtained <the king's> permission to restore the walls of Jerusalem. The Temple had been constructed long before this by permission of Cyrus.¹⁵⁸ As it is said, he completed this work in a very short space of time; so hard-pressed was he by the neighbouring peoples, that it is written that each builder, girt about the loins with a sword, fought with one hand and repaired the wall with the other.¹⁵⁹

Calculate therefore seventy 'weeks' from this time until Christ the Prince, that is, /307/ 490 years of twelve lunar months, which make 475 solar years. Now the Persians ruled 116 years from the aforementioned twentieth year of King Artaxerxes until the death of Darius <II>. After

151 Cf. Matthew 7:6.

152 Daniel 9:24.

153 John 1:29.

154 Matthew 5:17.

155 Psalm 45:7 (44:8).

156 Cf. Augustine, *Ep.* 199.7.19–20, ed. Goldbacher, CSEL 57 (1911), 259–61.

157 Daniel 9:25.

158 Cf. Nehemiah 1:11–2:1.

159 Cf. *ibid.* 4:17–18.

that the Macedonians ruled three hundred years until the downfall of Cleopatra. Then the Romans held the monarchy fifty-nine years until the seventeenth year of Tiberius Caesar. Together these make, as we said, 475 years, and contain twenty-five nineteen-year cycles: 19 times 25 is 475. Because seven embolismic <months> accrue in each <nineteen-year> cycle, multiply 25 by 7 and it makes 175, which are the embolismic months in 475 years. If you wish to know how many lunar years these make, divide 175 by 12: 12 times 14 is 168, and therefore it makes fourteen years with seven months remaining.¹⁶⁰ Add these to the abovementioned 475, and together they make 489. Add the seven extra months, and the part of the eighteenth year of the Emperor Tiberius in which the Lord suffered, and you will find that from the prescribed time up to His Passion there are seven 'diminished weeks', that is, 490 lunar years.

At the time of His baptism, when He was anointed as the Most Holy One, the Holy *Spirit* /308/ *descending upon Him like a dove*,¹⁶¹ not only were the seven and sixty-two weeks completed, but a part of the seventieth week had begun. *And after threescore and two weeks shall Christ be cut off, and there will be none among the people to refuse him.*¹⁶² Christ was killed, not immediately after the sixty-two 'weeks', but at the end of the seventieth 'week'. Therefore, as far as I can see, <the angel> separated this week from the others because there was more to be related concerning it. For in it Christ was crucified, and refused by the faithless people, not only during His Passion, but in fact continuously, from the time when He began to be preached by John.

Now what follows – *And the people that shall come with the prince shall destroy the city and the sanctuary, and its end shall be devastation and after the end of the war a devastation shall be determined*¹⁶³ – does not pertain to the seventy weeks, for it was predicted that these weeks would extend up until the time of Christ's rule. But Scripture, having foretold His coming and His Passion, shows what would happen afterwards to the people who refused to receive Him. It calls Titus 'the prince who shall come', who in the fortieth year after the Lord's Passion, together with the

160 Cf. ch. 45, below.

161 Matthew 3:16, Mark 1:10, Luke 3:22, John 1:32.

162 Daniel 9:26.

163 *Ibid.* 9:26.

Roman people, so demolished the city and sanctuary that there did not remain one stone standing upon another.¹⁶⁴

After this foretaste by anticipation, <the angel> goes back to explain what will happen in the week he left out. *And he shall confirm the covenant with many for one week*¹⁶⁵ – that is, in that final week when either John the Baptist or the Lord or the Apostles by their preaching shall convert many to the faith. *And in the midst of the week the sacrifice and the oblations shall cease.*¹⁶⁶ The middle of this week was the fifteenth year of Tiberius Caesar when, commencing with the baptism of Christ, /309/ purification by sacrifices gradually began to be disdained by the faithful. Likewise what follows – *and in the temple shall be the abomination of desolation and the desolation shall continue until the consummation and the end*¹⁶⁷ – refers to the time following this, and the truth of this prophecy is attested both by the account of men of old and by the events of our own time.

Therefore, pondering the whole of the Prophet's testimony, we have explained it as much as our wit can devise, for we realized that this was unknown to many readers, and that they were much exercised by this special type of week. Those who think the Hebrews used this type of year are mistaken, for otherwise the whole sequence of the Old Testament would be destabilized (*uacillet*), nor would anyone's age be understood to be as long as it is written, but would be reduced to the course of the Moon.¹⁶⁸ Indeed, we read that the ancient Greeks, thinking that the year was 354 days long, according to the course of the Moon, always intercalated ninety days, *distributed into three months of thirty days, in the eighth year. These ninety days result when the quarter-day, plus the eleven days of the epacts, are multiplied by eight.*¹⁶⁹ But the Jews were never accustomed to insert a thirteenth lunar month (which we call embolismic) except in the second or third year, as the famous rule for calculating the fourteenth Moon of Easter plainly proves.¹⁷⁰

It should be noted that <Julius> Africanus thinks that the sequence of weeks, which we, following Eusebius' chronicle, have brought down to

164 Cf. Mark 13:2, Luke 21:6, Matthew 24:2. See also ch. 66 s.a. 4031.

165 Daniel 9:27.

166 *Ibid.*

167 *Ibid.*

168 Cf. *Letter to Plegwine* 11 (see below, pp. 587–8).

169 *Disputatio Chori et Praetextati* 13, ed. and trans. Leofranc Holford-Strevens (Turnhout: Brepols, 2019), 70–2 (= Macrobius, *Saturnalia* 1.13.8–10, ed. J. Willis (Leipzig: Teubner, 1970), 62.23–63.10).

170 Cf. Paschasius of Lilybaeum, *Ep. ad Leonem papam* 2, ed. Krusch, *Studien* I 248–9.

the seventeenth or eighteenth year of Tiberius Caesar – the year in which we believe the Lord suffered¹⁷¹ – is complete in the fifteenth year of that emperor. /310/ Beginning where we do, he thinks that by the fifteenth year of the said emperor – the year in which *he* thinks that Christ suffered – there had been one hundred and fifteen years of Persian rule, three hundred of Macedonian rule, and sixty of Roman. The careful reader should choose <the version> he thinks preferable.¹⁷²

10. THE WEEK OF THE WORLD AGES¹⁷³

The eighth kind of week, unvarying and unique in that it does not come back again to its beginning, is composed of the unstable (*labentibus*) Ages of this world, and follows in all respects the pattern of the first week. For on the first day,¹⁷⁴ light was created, and in the First Age man was placed in the beauties of paradise. When light was divided from darkness, evening was made, and evil came about from the seed of the sons of God who defected. Not long after, when the giants were born, the whole earth was corrupted; at that point the Creator, regretting that He had made man, determined to destroy the world by a flood.¹⁷⁵

On the second day, the firmament was suspended in the midst of the waters; in the Second Age, the Ark was borne up in the midst of the waters, at once carried aloft on the fountain of the deep, and deluged by the cataracts of heaven.¹⁷⁶ The evening of this day was when the sons of Adam, making their way from the east, conspired to build the tower of vainglory;

171 Bede opts for the eighteenth year of Tiberius in ch. 66, *s.a.* 3984, where his source is Jerome's translation of Eusebius' chronicle (see below, p. 337).

172 'It should be noted ... thinks preferable': cf. Jerome, *In Daniele* 3.9.24, ed. F. Glorie, CCSL 75 (1964), 867.190–5; Jerome's translation of Eusebius, *Demonstratio evangeliorum* 8.2 (PG 22.81).

173 The analogy between the World-Ages and the week was deeply important to Bede. He will repeat it in the prologue to the chronicle in ch. 66 and use it as the basis of his great peroration in ch. 71. On the other hand, the analogy posed some dangers, because it implied that each age was equal in length, and hence supported speculation about dating the End Times. For discussion see Commentary.

174 For the narrative of the six days of Creation see Genesis 1–2.

175 Genesis 6.

176 Genesis 7–8.

they were punished by the division of languages, and scattered from one another.¹⁷⁷

On the third day, when the waters were gathered together, dry land appeared, adorned with woods and grasses; and in the Third Age, when the nations were rooted in the worship of demons, Abraham the patriarch, leaving his people and his homeland, was made fruitful in the seed of the saints. The evening came when /311/ the Hebrew people, beset by wicked men, acted against the will of God and demanded a king of their own, who, as soon as he was set upon the throne, butchered the priests of the Lord and the Prophets. Afterwards, he and all his clan perished by the sword of foreigners.¹⁷⁸

On the fourth day the heaven was adorned with lights; in the Fourth Age this people, renowned for its heavenly faith and glorying in the rule of David and Solomon, won fame throughout the whole world for the splendour of its most holy Temple. But it too had its evening: because sin increased, that realm was shattered by the Chaldeans, the Temple demolished and the whole nation carried off to Babylon.

On the fifth day the fishes and birds came forth from the water; the former remained in their native waves, while the latter flew over air and land. In the Fifth Age the people of Israel multiplied in Chaldea; some of them sought out Jerusalem, fledged in the plumage of heavenly yearnings, and others abode amongst the rivers of Babylon, lacking all powers of flight. The evening arrived when, with the Saviour's advent imminent, the Jewish people were made tributary to the Romans because of the magnitude of their wicked deeds, and moreover was oppressed by foreign-born kings.

On the sixth day the earth was filled with its living creatures, and the first man was made in the image of God; subsequently, woman was fashioned from a rib taken from his side while he slept. In the Sixth Age, as the Prophets foretold, the Son of God appeared, who would recreate man in the image of God.¹⁷⁹ As he slept upon the Cross, water and blood flowed from his side, from which he would consecrate the Church to himself. The

177 This is the Tower of Babel: Genesis 11:1–9.

178 The Jews demand a king: 1 Samuel 8. Their first king was Saul. His slaughter of the priests (1 Samuel 22:11–19) did not, as Bede implies here, occur at the outset of his reign, but after the break with David: see Bede's *In I Samuelem* 3, ed. Hurst 206–11, trans. DeGregorio and Love 425–31. The death of Saul and his family is recounted in 1 Samuel 31 and 2 Samuel 4.

179 Cf. John 19:34.

evening of this Age, darker than all the others, will come in Antichrist's persecution.¹⁸⁰ /312/

On the seventh day, when His labours were ended, God rested; blessing that day, he bade it be called 'sabbath', and we do not read that it had an evening. In the Seventh Age the souls of the righteous, when the excellent labours of their lives are finished, will rest forever in another life which will never be blemished by any sorrow,¹⁸¹ but rather will culminate in the greater glory of the Resurrection. For man, this Age began when the first martyr Abel, his body having been laid to rest in the earth,¹⁸² entered in spirit into the sabbath of perpetual rest. It will be complete when the saints, having recovered their bodies, shall possess a double measure in their land,¹⁸³ and everlasting joy shall be theirs. This is the Eighth Age, concerning which the sixth Psalm was written.¹⁸⁴ I believe that in the Six Ages of this world we ought to pray for the Seventh or Eighth Age of that world. Because the just shall receive joy, but the wicked punishment, the Psalm concerning this Age begins, proceeds, and ends in great fear: *O Lord, rebuke me not in your anger, etc.*¹⁸⁵

11. THE MONTHS

The months (*menses*) take their name from the measure (*mensura*), by which each of them is measured.¹⁸⁶ But it is more correct <to say that they take their name> from the Moon, which *in the Greek language is called 'mene'*, for the Greeks call the months 'menes'.¹⁸⁷ Jerome says that amongst

180 Cf. ch. 69, below.

181 An echo of Wisdom 3:1; see also ch. 71 below.

182 Genesis 4:1–16.

183 Cf. Isaiah 61:7.

184 Bede is referring here to the rubric of Psalm 6: *In finem in carminibus pro octava Psalmus David*. He will revisit this reference in ch. 71 (see below, p.392). Cf. *In Gen.* 1.1.2, ed. Jones 32.995–33.1002, trans. Kendall 97, and C.W. Jones, 'Some Introductory Remarks on Bede's Commentary on Genesis', 196–7; Augustine, *Enarrationes in Psalmos* 6.1–2, ed. Dekkers and Fraipont, CCSL 38 (1956), 27.1–28.48.

185 Psalm 6:1.

186 Virgilius Maro Grammaticus, *Epitomae* 11.155–6, ed. Löfstedt 235; see Bracken, 'Virgil the Grammarian and Bede' 14. Also found in the near-contemporary 'Burgundian Didactic Dialogue of 725', ed. Borst, *Schriften* 2.357 (who notes its Irish pedigree).

187 Isidore, *Etym.* 5.33.1, ed. Urquiola and Santos 107. It is also found quoted or paraphrased in Irish texts, e.g. *Einsiedeln Computus* 9a, ed. Loevenich 30.8–9, *Munich Computus* 12, ed.

the Hebrews as well, the Moon, which they call *iare*, gives its name to the month.¹⁸⁸ /313/ Hence Jesus son of Sirach, who undoubtedly wrote in Hebrew, says, in speaking of the Moon, that *the month is called after her name*.¹⁸⁹

The ancients customarily calculated their months not by the course of the Sun, but by that of the Moon. Hence whenever Holy Scripture (whether <referring to a time> under the Law or before the Law) indicates a day of the month on which something was said or done, it signifies nothing other than the age of the Moon.¹⁹⁰ The Hebrews, to whom the oracles of God are entrusted, have never ceased to observe the months after the ancient custom of their fathers. They call the first month of the new fruits, which is dedicated to the rites of Passover, Nisan. Because of the fluctuating course of the Moon it sometimes falls in March, sometimes in April, and occasionally encroaches on some days of May. But it is properly assigned to April, and always either begins, ends or is totally included within it, provided that the rule we discussed above¹⁹¹ is observed: when the fifteenth day of the Moon follows the equinox, it constitutes the first month of the new year, and when it comes before the equinox, it constitutes the last month of the preceding year, and so on in sequence. Following a similar logic, their second month, Iyyar, corresponds to May; their third, Sivan, to June; their fourth, Tammuz, to July; their fifth, Av, to August; their sixth, Elul, to September; their seventh, Tishri, to October, which they call the new year, because then the harvest is gathered and special festivities held;¹⁹² the eighth, Marheshvan, /314/ to November; the ninth, Kislev, to December; the tenth, Tevet, to January; the eleventh, Shevat, to February; and the twelfth, Adar, to March.¹⁹³ Because the lunar orbit comprises

Warntjes 44.7–8, *De ratione computandi* 28, ed. Ó Cróinín 135.2–136.5, *De divisionibus temporum* II.10.1, ed. Bisagni 81.

188 Jerome, *In Amos* 2.4.7.8–9, in *Commentarii in prophetas minores* I. M. Adriaen, CCSL 76 (1969), 264.275.

189 Ecclesiasticus 43:8.

190 Cf. Bede, *In Ezram* 1, ed. Hurst 269.1109–13, trans. DeGregorio 49.

191 In ch. 6.

192 Cf. *In Ezram* 263.880–2, trans. DeGregorio 40, and 270.1166–72 (51); *Homeliae* 2.24, in *Opera homiletica*, ed. Hurst 33.187–94.

193 The Hebrew months are found in Irish textbooks, e.g. *De ratione computandi* 41, ed. Ó Cróinín 150. However, Bede's immediate source is probably Polemii Silvii, *Laterculus*, ed. David Paniagua Aguilar, *Polemii Silvii Laterculus* (Rome: Istituto storico italiano per il medio evo, 2018). The *Laterculus* is an annotated Julian calendar; each month contains the names of the corresponding Hebrew, Egyptian, Athenian, and Greek months: see *ed.*

twenty-nine and a half days, these months alternate between thirty and twenty-nine days, and in the second or third year they intercalate an extra month made up from the days of the eleven epacts from each year.

Hence I have some misgivings about how our predecessors calculated the day on which the Law was given – which is the third day of the third month – as being the fiftieth day after the slaying of the <Paschal> lamb. They count seventeen days left over from the first month (because the first thirteen had elapsed before Passover), thirty in the second month, and three in the third. Together these make fifty days, even though it is agreed that two lunar months finish, not in sixty, but in fifty-nine days. Therefore if, /315/ having calculated the Paschal month at thirty days, one retains the seventeen days of its course which follow Passover, the second month ought to end not in thirty, but in twenty-nine days. By this calculation no more than forty-nine days will be found at the end of the specified time, unless one considers that the whole is construed from the part by synecdoche, a very common rule in Holy Scripture.¹⁹⁴

But however these things were done or reckoned, it is obvious that the Hebrews were accustomed to observe their months according to the course of the Moon. When Noah is said in the book of Genesis to have gone into the Ark with his folk on the seventeenth day of the second month, and to have left it on the twenty-seventh day of the same month after the Flood, the only correct way of understanding this is that a whole solar year, that is, 365 days, is signified.¹⁹⁵ For the Moon, which this year, for instance,¹⁹⁶

cit. 234–94; Jones, ‘Polemios Sylvius, Bede, and the Names of the Months’, *Speculum*, 9 (1934): 50–6. For a cognate list of Hebrew month names cf. Eucherius, *Instructionum ad Salonium libri duo* 2.7, ed. C. Wotke, CSEL 31 (1894), 153.10–19.

194 By ‘predecessors’ Bede is referring to Augustine, *Ep.* 55.30, ed. Goldbacher, CSEL 34 (1898), 204.12–205.4; *Quaestiones in Heptateuchum* 70, ed. J. Fraipont, CCSL 33 (1958), 102.1123–30. Cf. ch. 8, above. The passage where the date of the giving of the Law is specified is Exodus 19:10–11. On the frequency of synecdoche in Scripture see also ch. 5 above.

195 Since Noah’s months are lunar, and he left the Ark one lunar year and eleven days after he entered it, he therefore spent 354 + 11 days in the Ark, or one solar year of 365 days. Cf. Bede, *In Gen.* 28.15–18, ed. Jones 126.1926–127.1946), trans. Kendall 188–9. Bede’s source seems to be Ambrose, *De Noe*, ed. C. Schenkl CSEL 32.1 (1897), 456.1–4, but see Kendall’s critique, 188 n. 314. The chronology of Noah’s stay in the Ark remained a matter for discussion for many centuries: C. Philipp E. Nothaft, ‘Noah’s Calendar: the Chronology of the Flood Narrative and the History of Astronomy in Sixteenth and Seventeenth-Century Scholarship’, *Journal of the Warburg and Courtauld Institutes*, 74 (2011): 191–211 (on Bede’s influence: 194–5).

196 This passage must have been composed in 722, when the calculated Moon would have

is in its seventeenth day on the Nones of May [7 May] will next year be twenty-seven days old on the day before the Nones of May. /316/

Note well that those who say that the month ought to be defined, or was *defined by the ancients*, as *the length of time in which the Moon traverses the zodiacal circle*, make a serious mistake.¹⁹⁷ As more painstaking inspection of natural matters has taught, the Moon plainly completes the zodiac in twenty-seven days and eight hours, but its own course is twenty-nine days and twelve hours,¹⁹⁸ setting aside what is reckoned for the 'leap <of the Moon>'.¹⁹⁹ Therefore it is more accurate to define a lunar month as the circuit and reintegration of the lunar light from new Moon to new Moon.²⁰⁰ The solar month is the passage of the Sun through a twelfth part of the zodiac, that is, the circle of the signs, which is accomplished in thirty days and ten and a half hours. It is longer than a lunar month by twenty-two and a half hours, and from this the eleven and a quarter days of the epacts annually accrue, for 12 times 22 makes 264, which it is easy to see are the number of hours in eleven days, because 11 times 24 makes the same total. Then, 12 times one half makes 6, which is the number of hours in a quarter-day in each year. Now if the Moon has twelve months, which (as we said) are, when cumulated, /317/ shorter by eleven and a quarter days than <twelve> solar months, nonetheless it illuminates the path of the zodiac thirteen times in the course of these <twelve solar> months.²⁰¹

been seventeen days old on 7 May.

197 Isidore, *DNR* 4.1, ed. Fontaine 185.5–6, trans. Kendall and Wallis 117, quoting Hyginus, *De astronomia* 4.19, ed. Ghislaine Viré (Stuttgart: Teubner, 1992), 157. Cf. Pliny, *HN* 2.6.44–5, ed. Rackham 1.194–6. Isidore does not actually endorse this error.

198 The sidereal lunar month of approximately $27\frac{1}{3}$ days is the length of time necessary for the Moon to depart from and return to the same point in relation to the backdrop of the constellations, i.e. the zodiac. The synodic month (what Bede calls its 'proper course') is the period from new Moon to new Moon, about $29\frac{1}{2}$ days. This is longer than the sidereal month, because by the time the Moon returns to the point where it was last in conjunction with the Sun, the Sun will have moved into the next sign of the zodiac. It will take the Moon about two days to catch up with the Sun and achieve conjunction again.

199 On the *saltus* see below, ch. 42. The calculated lunar month of $29\frac{1}{2}$ days is slightly too long; over nineteen years this excess is cumulated into a whole day, which is deducted ('leapt over') in reckoning the length of the final lunar month of the nineteen-year cycle.

200 Cf. Isidore, *DNR* 4.1, ed. Fontaine 186, trans. Kendall and Wallis 117; also quoted in *De divisionibus temporum* II.10.2, ed. Bisagni 81, and *Munich Computus* 12, ed. Warntjes 44.8–10.

201 Twelve synodic months, each calculated as $29\frac{1}{2}$ days, are less than a solar year by eleven days, plus the quarter-day for the leap-year increment; twelve sidereal months of $27\frac{1}{3}$ days is 328 days, or more than thirty-seven days shorter than the solar year. That means that

But in reckoning both months, custom or authority or at least convenience of calculation prevails over nature. For not only are lunar months reckoned as thirty and twenty-nine days long, as the necessity of calculation demands, but also most people intercalate the extra Moon, which according to the logic of nature ought to be intercalated at the end of the year, in any place they please. And what is worse, the computists are in such disagreement with each other that frequently on one and the same day one of them will say that the Moon should be reckoned as in its fourteenth day, and another, that it is in its fifteenth, and another, in its sixteenth, /318/ and each nation measures the solar months throughout the year by a very divergent rule and in a different order. Therefore, because *the course of the Moon is swift*, and *lest an error* in calculation be occasioned *by that swiftness*, the *Egyptians were the first* to begin to calculate their months *according to the course of the Sun*, whose *slower motion could more easily be apprehended*.²⁰² Starting in the autumn, they set up these months to comprise thirty days each. The first month, Thoth, began on the fourth Kalends of September [29 August]; the second, Phaophi, on the fourth Kalends of October [28 September]; the third, Hathyr, on the fifth Kalends of November [29 October]; the fourth, Choiac, on the fifth Kalends of December [27 November]; the fifth, Tybi, on the sixth Kalends of January [27 December]; the sixth, Mecheir, on the seventh Kalends of February [26 January]; the seventh, Phamenoth, on the fifth Kalends of March [25 February]; the eighth, Pharmouthi, on the sixth Kalends of April [27 March]; the ninth, Pachons, on the sixth Kalends of May [26 April]; the tenth, Payni, on the seventh Kalends of June [26 May]; the eleventh, Epiaph, on the seventh Kalends of July [25 June], and the twelfth, Mesore, on the eighth Kalends of August [25 July]. This <last month> ends on the tenth Kalends of September [23 August], and they call the remaining five days *epagomena* – ‘intercalated’ or ‘added’. Every fourth year, they add a sixth day to these <five>, made up from the quarter-days.²⁰³ Hence it

the Moon can go once more around the zodiac before the end of the solar year, for a total of thirteen zodiacal revolutions. Cf. chs 16–18 below, and Commentary. Bede could draw on Isidore, *DNR* 1.5, ed. Fontaine 179–81, trans. Kendall and Wallis 114, Dionysius Exiguus, *Epistola ad Petronium*, ed. Krusch, *Studien II* 65.28–66.4, as well as Irish *computus* texts, see Warntjes’ note, *Munich Computus* 136–7.

202 Isidore, *Etym.* 5.33.2, ed. Urquiola and Santos 107.

203 The information that the Egyptian year comprised twelve months of thirty days, with a five-day intercalation at the end, is found in Isidore, *DNR* 1.5, ed. Fontaine 180, trans. Kendall and Wallis 114; and *Disputatio Chori et Praetextati* 21, ed. Holford-Strevens

happens that their first year following the leap year /319/ begins on the third Kalends of September [30 August], but the other years on the fourth Kalends of that month [29 August]. Their leap years end on the fourth Kalends [29 August], and the other years on the fifth [28 August].²⁰⁴ Now, the discrepancies which we say arise in leap years from the time of the intercalated day, in computing the age of the Moon or in the festivities of those days, cannot be brought into harmony with the course of our year until the time when we make the intercalation, which is on the sixth Kalends of March [24 February]; rather, the same calendar date on the same day of the Moon, for example the seventh, which we calculate as falling on a Monday, they calculate as falling on a Tuesday, and so on for the rest.²⁰⁵

12. THE ROMAN MONTHS

In the debate of Chorus and Praetextatus,²⁰⁶ we read of the reason why the Romans have months of varying length. *When Romulus, with his shrewd but rustic intellect, was organizing the government of his realm, he set the beginning of every month /320/ on the day on which the new Moon had happened to be seen. Because it did not automatically appear on the*

86.307–13 (= Macrobius, *Saturnalia* 1.15.1, ed. Willis 69.12–32); see below, n. 206. See also *De ratione computandi* 68, ed. Ó Cróinín 176.5–12, and discussion in Warntjes' apparatus of *Munich Computus* 66–7. The names of the Egyptian months are found in Polemios Silvius (see above, p. 173 n. 193). The names of the Egyptian months, as well as the Hebrew and Greek ones, form a separate chapter in the Cologne *De numero* 29.7 (fol. 23r).

204 Cf. Isidore, *DNR* 4.7, ed. Fontaine 191, trans. Kendall and Wallis 120.

205 That is, the Egyptian and Julian calendars will be out of phase by one day between September (when the Egyptians insert their leap-day) and the end of February, when the Romans do so.

206 Edited with a textual and historical introduction by Leofranc Holford-Strevens, *The Disputatio Chori et Praetextati*. The *Disputatio* is a modified extract from Macrobius, *Saturnalia* 1.12–15. It is found in Bede's 'Sirmond' *computus* anthology, Oxford, Bodleian Library Bodley 309, fols 101r–105v, and also in the related codices Vatican Reg. lat. 586, fols 117v–125r, and Tours 334, fol. 41v; Jones, 'The "Lost" Sirmond Manuscript' 217, and *BOT* 348. Bede also used it in *On Times* 6, ed. Jones 589, trans. Kendall and Wallis 109–10. It was probably created in Ireland, and features in Irish textbooks such as the *Einsiedeln Computus* 11a, ed. Loevenich 30–8; *Munich Computus* 12, ed. Warntjes 48–50; and *De ratione computandi* 28–9, ed. Ó Cróinín 137.16–141.23). See also Alexander Arweiler, 'Zu Text und Überlieferung einer gekürzten Fassung von Macrobius Saturnalia, 1. 12,2–1., 15, 20', *Zeitschrift für Papyrologie und Epigraphik*, 131 (2000): 45–57.

same day,²⁰⁷ but for a variety of reasons appeared sometimes earlier and sometimes later, it happened that when it occurred later, more days were allotted to the previous month, and when it was earlier, fewer were. But <Romulus> gave to each month a fixed number of days corresponding to the first instance,²⁰⁸ which it retained in perpetuity. This is how it came about that some were allotted thirty-one days, others twenty-nine.²⁰⁹

<Romulus> dedicated the first month to Mars, whose son he wished to be taken for, because it was thought that in this month Juno gave birth to Mars in Phrygia.²¹⁰ That this month was thought to be the first month of the year is shown by the fact that the seventh, eighth, ninth, and tenth months preserve from of old a name derived from a number <counted> from <March>.²¹¹ The second month they called April, 'opening' (*aperilem*) so to speak, because then the heavens, the earth, and the sea are opened up to sailors, farmers, and those who observe the hours (*horoscopes*),²¹² when the clouds, hailstorms, and tempests of winter are driven away. Trees and herbs also begin to open up into bud, and every living thing to open in bringing forth its young.²¹³ <Romulus> placed May as the third and June as

207 I.e. at regular intervals.

208 I.e. corresponding to the lunations as they happen to have occurred in the first year of his lunar calendar.

209 *Disputatio Chori et Praetextati* 23, ed. Holford-Strevens 88.330–7 [= Macrobius, *Saturnalia* 1.15.5–6 (70.8–18)]. Note that, in the last sentence, Macrobius and the *Disputatio* both read 'twenty-nine' rather than 'thirty'; cf. *Munich Computus* 66, Warntjes' apparatus.

210 Cf. Macrobius, *Saturnalia* 1.12.5, ed. Willis 54.20–2; not in *Disputatio Chori et Praetextati*. This and subsequent explanations for the Roman month names are also found in Isidore, *DNR* 4.2–4, ed. Fontaine 187.7–189.31, trans. Kendall and Wallis 117–18; *Etym.* 5.33.3–11, ed. Urquiola and Santos 107–13; and Augustine, *Contra Faustum* 18.5, ed. J. Zycha, CSEL 25.1 (1891), 494.5–17.

211 Isidore, *DNR* 4.2, ed. Fontaine 187.8–10, trans. Kendall and Wallis 117.

212 *Horoscopus* properly designates the point on the eastern horizon where a constellation rises and, by extension, a horoscope in the astrological sense. This term is not found in Macrobius or Isidore, but it seems that Bede – or his source – thought that a *horoscopus* was a person who, like the farmer or sailor, would benefit from a clear sky. If Bede interpreted the word to mean 'someone who investigates the hours', he could simply be suggesting that the heavens are clear enough in April to permit the telling of the hours by sundial during the day, and by the stars at night. Latham's *Dictionary of Medieval Latin from British Sources* records *horoscopus* as a term for the monk charged with keeping time day and night, but the sources are from the thirteenth/fourteenth centuries, while Ælfric uses it in the sense of 'astrologer': *The Homilies of Ælfric: a Supplementary Collection*, ed. John C. Pope, Early English Text Society 259 (Oxford: Oxford University Press, 1967), 176.

213 *Disputatio Chori et Praetextati* 4, ed. Holford-Strevens 58.65–70, rearranged [=

the fourth month in commemoration of the 'elders' (*maiorum*) and 'juniors' into which he had divided the populace, so that one section should protect the state by arms and the other with counsel. Others contend that Maia, the mother of Mercury, gave her name to May, and substantiate this largely from the fact that in this month all merchants sacrifice to Maia, /321/ and likewise to Mercury.²¹⁴ The month of June is either named after a segment of the populace, as we said, or as Cingius²¹⁵ thinks, was previously called 'Iunonius' by the Latins.

This appellation for the month lingered for a long time amongst the men of old, but from 'Iunonius' it was called 'Iunius' after some of the letters fell out. The shrine of Juno Moneta was dedicated on the Kalends of June.²¹⁶ The month of July took the name 'Quintilis' because of its number, which it preserved even after two months were inserted before March. But afterwards it was called 'Julius' in honour of the dictator Julius Caesar by a law brought in by the consul Mark Antony, son of Mark, because Julius was born in that month, on the fourth ides of Quintilis. The month of August was formerly called 'Sextilis' until this honour was bestowed upon Augustus by decree of the Senate, because on the very first day of that month he defeated Antony and Cleopatra and established his rule over the Roman people.²¹⁷ The months of September, October, November, and December retain their original designations,²¹⁸ signifying by their name the number of the month from spring, that is, from March, or else because the rains²¹⁹ arrive in these <months>.

Macrobius, *Saturnalia* 1.12.14, ed. Willis 56.11–20]. See also Isidore *DNR* 4.2, ed. Fontaine 187, trans. Kendall and Wallis 117, and cf. *Einsiedeln Computus* 11a, ed. Loevenich 34.44.

214 *Disputatio Chori et Praetextati* 5, ed. Holford-Strevens 58.73–60.83, with gaps [= Macrobius, *Saturnalia* 1.12.16–19, ed. Willis 56.24–57.13].

215 A Roman grammarian and antiquary; his works on the history of the Roman calendar, now lost, are known to us only through Macrobius' references. Bede is again following the text of the *Disputatio* more closely than, e.g., *Munich Computus* 18: see Warntjes' apparatus on p. 58.

216 *Disputatio Chori et Praetextati* 6, ed. Holford-Strevens 60.87–62.9 [= Macrobius, *Saturnalia* 1.12.30, ed. Willis 59.14–23].

217 *Disputatio Chori et Praetextati* 7–8, ed. Holford-Strevens 62.100–63.114, with gaps [= Macrobius, *Saturnalia* 1.12.34–35, ed. Willis 60.5–11].

218 *Disputatio Chori et Praetextati* 9, ed. Holford-Strevens 64.116, 121. [= Macrobius, *Saturnalia* 1.12.36, ed. Willis 60.24–5, 61.2–3].

219 *imbres*, from *imber*, *-bris* e.g. *September*, *-bris*, etc. This etymology is from Isidore, *DNR* 4.4, ed. Fontaine 187.23–4, trans. Kendall and Wallis 118. It appears in some Irish texts, e.g. *Munich Computus* 21, ed. Warntjes 62.2–3. Cf. Isidore, *Etym.* 5.33.11, ed. Urquiola and

This was the measure of the year ordained by Romulus: it established a year of ten months, having three hundred and four days. He arranged the months so that four of them – March, May, Quintilis and October – would have thirty-one days; the other six would have thirty days.²²⁰ The former have their Nones on the fifth day of the month, the latter on the /322/ seventh. In those with the Nones on the seventh, the Kalends are counted back from the Ides to the seventeenth day, while for those which have their Nones on the fifth, the beginning of the Kalends goes back to the eighteenth day.²²¹

But since that number [i.e. 31 or 30 days] corresponds to neither the course of the Sun nor to the reckoning of the Moon, it sometimes happened that cold <weather> occurred in the summer months, and conversely, hot <conditions> in the winter months. When this happened, a number of days not ascribed to any month was added to that season of the year until the position of the heavens was seen to be appropriate for that particular month.²²² But <Romulus's> successor Numa added fifty days, so that the year was extended to 354 days, which he believed comprised twelve revolutions of the Moon. To these days added by himself, Numa also added another six taken away from those months which had thirty days – one day from each month – and made fifty-six days. He divided them equally into two new months, and the first of the two he called January. He wished it to be the first of the year, the month of the two-faced god, as it were, looking backwards at the end of the bygone year and forward to the beginning of the one to come.²²³ Some think that January got its name because it is the threshold and door (ianua) of the year.²²⁴ The second he called after Februus, that is, Pluto, who was believed to rule over purificatory sacrifice. /323/ In that month, in which <Numa> ordained that

Santos 111, or Cassiodorus, *Variae* 1.35, ed. A.J. Fridh, CCL 96 (1973): 40.11–13: *quod ab ipsis quoque mensibus datur intelligi, quando ex numero imbrium futurorum competenter nomina susceperunt* ('which may be understood from the very months themselves, when they fittingly derive their names from the rains which are in the offing'). Cf. Jones, *BOT* 348.

220 *Disputatio Chori et Praetextati* 10, ed. Holford-Strevens 64.122–5 [= Macrobius, *Saturnalia* 1.12.38, ed. Willis 61.4–8].

221 *Disputatio Chori et Praetextati* 1, ed. Holford-Strevens 54. 30–3 [= Macrobius, *Saturnalia* 1.12.4, ed. Willis 54.16–19].

222 *Disputatio Chori et Praetextati* 10, ed. Holford-Strevens 64.125–65.130 [= Macrobius, *Saturnalia* 1.12.39, ed. Willis 61.8–14].

223 *Disputatio Chori et Praetextati* 11, ed. Holford-Strevens 66.131–40 [= Macrobius, *Saturnalia* 1.13.1–3, ed. Willis 61.15–62.4].

224 Isidore, *Etym.* 5.33.3, ed. Urquiola and Santos 109.

*justice be done to the gods of the underworld, the city was obliged to make purificatory sacrifices.*²²⁵

But the Christian religion altered this custom of purificatory sacrifice for the better, when in that same month, on the feast of St Mary, the whole populace with the priests and ministers goes on procession through the churches and the city neighbourhoods, all singing devout hymns, and carrying in their hands burning candles given them by the bishop. As this good custom grew, it provided a model for the conduct of other feasts of the blessed Mother and perpetual Virgin as well, not in the five-year lustration of a worldly empire, but in the everlasting memory of the heavenly kingdom where, according to the parable of the wise virgins, all the elect shall go out to meet the Bridegroom, their King, with the lamps of their good deeds alight, and then shall enter into the heavenly city with Him.²²⁶

*Shortly afterwards Numa, in honour of the odd number, added a day, which he gave to January, so that both in the year and in the individual months, the odd number would be preserved; the exception is February, as if both diminution and an even number were fitting for the infernal regions.*²²⁷ *Thus the Romans, following this arrangement of Pampilius, calculated*

225 *Disputatio Chori et Praetextati* 11, ed. Holford-Strevens 66.140–2 [= Macrobius, *Saturnalia* 1.13.3, ed. Willis 61.28–62.4]. The identification of Februus with Pluto is from Isidore, *Etym.* 5.33.4, ed. Urquiola and Santos 109.

226 Jones (*BOT* 348–9) claims that this very early description of the Feast of the Purification is original to Bede. A sermon ascribed to Ildefonsus of Toledo (d. 667), *Sermo* 10 (PL 96.277), replicates Bede's statement closely, but is possibly copied from *The Reckoning of Time*. Ps.-Eligius, *Homelia* 2 (PL 87.597–603), which likewise echoes Bede, is also described as a post-Bedan text. But see I Deug-Su, 'La festa della purificazione in occidente (secoli IV–VIII)', *Studi medievali*, ser. 3, 15 (1974): 143–216, who accepts the Ildefonsus and Eligius texts as genuine, but also credits *The Reckoning of Time* with the earliest description of the Candlemas procession; see esp. 146–9, 147 n. 10 and 168–82 for parallels in Bede's sermons. Certainly, Bede is the first writer to suggest that the Purification was instituted to supplant a pagan festivity, probably Lupercalia. Even in the seventh century this ancient fertility rite, along with the celebration of the New Year on 1 January, remained a stubbornly ineradicable vestige of the ancient Roman civic calendar: see Michel Meslin, *La fête des kalendes de janvier dans l'empire romain*, Collection Latomus 115 (Brussels: Latomus, 1970), ch. 3. For the parable of the wise virgins see Matthew 25:10.

227 *Disputatio Chori et Praetextati* 12, ed. Holford-Strevens 68.146–9 [= Macrobius, *Saturnalia*, 1.13.5–5, ed. Willis 62–63.24, with gaps]. The Romans considered even numbers unlucky: cf. Vergil, *Eclogues* 8.75, ed. Wendell Clausen (Oxford: Clarendon Press, 1994), 23, where it is stated that the gods rejoice in odd numbers (*numero deus impare gaudet*). The Laon Glossator furnishes an interesting Christian variation on this theme: God particularly likes odd numbers because He himself is 'odd', having no equal: ed. Jones 323 *ad lineam* 84.

their year according to the course of the Moon like the Greeks, and so they were obliged to institute an intercalated month after the fashion /324/ of the Greeks. Now the Greeks, when they observed that they had carelessly ordained their year at 354 days – for it was evident from the course of the Sun, which completes its course through the zodiac in 365¼ days, that 11¼ days were missing from their year – decided to intercalate by a fixed rule (*statuta ratione*), so that every eighth year they intercalated ninety days, which they counted as three months of thirty days. The Romans took it into their heads to imitate this method, but to no avail, for they forgot the one day which we mentioned above, added by themselves to the Greek figure in honour of the odd number. For that reason, the number and order could not coincide after eight years.²²⁸

He who wishes to know what error arose and how it was overcome may find it in the aforementioned disputation of Chorus and Praetextatus, from which we have made these excerpts.

At last *Julius Caesar*, imitating the Egyptians, instituted a year according to the measure of the Sun, such as has been maintained to this day, by adding ten days to the old observations, so that the total came to 365 days, /325/ the period of time in which the Sun lights up the zodiac. And lest the quarter-day be wanting, he ordained as well that in the fourth year, the priests, who were responsible for months and days, should intercalate one day in the same month and place where men of old had intercalated the month, that is, before the fifth day from the end of the month of February; and he ordered that it be called the *bissextus*.²²⁹ Every intercalation was assigned to the month of February, for this was the last month of the year. They did this in imitation of the Greeks, for they inserted the extra days in the last month of their year. But on one point they differed from the Greeks, for while they intercalated after the end of the last month, the Romans intercalated, not at the end of February, but after its twenty-third day, that is, when the *Terminalia* was over. Then they added the remaining days of February, which were five, after the intercalation. They were following, I believe, the ancient custom of their religion so that March would follow directly upon February.²³⁰

228 *Disputatio Chori et Praetextati* 13, ed. Holford-Strevens 70.160–72.176, with gaps [= Macrobius, *Saturnalia*, 1.13.8–11, ed. Willis 62.23–63.15].

229 *Disputatio Chori et Praetextati* 18, ed. Holford-Strevens 80.252–57; the reference to Caesar imitating the Egyptians is from *Disputatio* 17, ed. Holford-Strevens 78.240 [= Macrobius, *Saturnalia*, 1.14.3, (ed. Willis 66.7–14), and 6 (66.26–67.7)].

230 *Disputatio Chori et Praetextati* 14, ed. Holford-Strevens 72.186–74.195 [= Macrobius, *Saturnalia* 1.13.14, ed. Willis 64.1–3, 6–12].

13. KALENDS, NONES, AND IDES

In olden times, the responsibility for observing the first appearance of the new Moon and of announcing its sighting to the royal sacrificing-priest was delegated to a minor priest. /326/ Then, after a sacrifice had been offered by the priest-king and the minor priest, the priest, summoning (kalata) the people of the Capitoline to the Curia Calabra, very near the house of Romulus, announced the number of days from Kalends until Nones. He proclaimed <that the interval was> five days by saying 'kalo' five times, and that it was seven days by repeating it seven times. The word 'kalo' is Greek and means 'I call', so it seemed good to name the day which was the first of those 'called out' the 'Kalends'. Hence also the same name, 'Calabra', was given both to the court where they were announced and to the assembly in this court to which all the people were summoned. Thus the minor priest announced the number of days until the Nones by calling (kalando), for the populace who worked out in the fields had to gather in the town on the ninth day after the new Moon to receive from the priest-king occasion for a holiday, and to inquire of the priests what ought to be done during that month. Hence some people think they were called 'Nones' because it was the beginning of a new (noua) observance, or because nine (nouem) days were always counted from that day until the Ides.

Now it pleased them to call the day which divided the month the 'Ides', for in the Etruscan language 'iduarē' means 'to divide'. Hence an 'uidua' (widow) is, as it were, truly 'idua', that is, truly divided, or else 'uidua' means 'a uiro diuisa' [i.e. divided from a man]. Some prefer to think that 'Ides' comes from the Greek word for 'face', which they call 'idea', because on that day the Moon shows its full face.²³¹ Notice that when we read of the Kalends in Holy Scripture, we should take it simply to mean the appearance of the new Moon, as in the Book of Numbers: *For at the Kalends, /327/ that is, at the beginning of the months, you will offer holocausts to the Lord.*

231 *Disputatio Chori et Praetextati* 24–5, ed. Holford-Strevens 90.346–94.375, with gaps [= Macrobius, *Saturnalia* 1.15.9–13 (70.27–71.24), 16–17 (72.7–18)]. Bede's text treats the *Disputatio* rather freely here. Irish *computus* texts often abbreviated the *Disputatio*, or interjected phrases from Isidore: cf. *Einsiedeln Computus* 13, ed. Loevenich 42.8–44.17 and 20–3, *Munich Computus* 25–7, ed. Warntjes 72–6. For parallels in other Irish and Carolingian *computus* texts see Warntjes' commentary, 72–3.

For as we mentioned above,²³² the Hebrews knew no other beginning of the month save the new Moon.²³³

14. THE GREEK MONTHS

Neither the Greeks nor the Egyptians, of whom we spoke above, observed the distinction of Kalends, Nones, and Ides in their months. Instead, they counted forward in the sequence of days from the beginning of the month until its end, simply and without error. We discussed the year and the months of the Egyptians above. Although the Greeks, when all the convolutions of the aforementioned calculations had been adjusted and corrected according to the circumstances, determined that the circle of the revolving year should be fixed at twelve months (many of them starting their year on the Kalends of December)²³⁴ and with the same number of days used by the Romans in calculating their months, they nonetheless took no heed, as we said before, of the Romans' Kalends, Nones, and Ides, but counted each and every month from the first to the last day in regularly increasing number.

Amongst the Greeks, December was called Apellaios; /328/ January, Eudymios [i.e. Audnaios]; February, Peritios; March, Dystros; April, Xanthicos; May, Artemisios; June, Daisios; July, Panemos; August, Loios; September, Gorpiaios; October, Hyperberetaios; November, Dios.²³⁵ The

232 Ch. 11.

233 'Notice that ... new Moon'. Cf. Jerome, *Ep.* 121.10, ed. Hilberg, CSEL 56.1 (44.15–16); the biblical quotation is from Numbers 28:11.

234 The assertion that the 'Macedonians' begin their year in December is found in the expanded version of *De diuisionibus temporum* printed in PL 90.662C. Bisagni, *From Atoms to the Cosmos* 18, identifies this as a Carolingian confection that includes material from *The Reckoning of Time*. *Munich Computus* 24 (ed. Warntjes 68.22–4) says that the Macedonians begin their year in November.

235 Compare to *De ratione computandi* 40, ed. Ó Cróinín 149.1–150.2 (without Roman equivalents) and *Munich Computus* 24, ed. Warntjes 68.22–6. It should be noted that Bede calls these months 'Greek', though Anatolius (see below) correctly identifies them as Macedonian, as does *De ratione computandi*. Jones argues that this is because Bede's source, Polemius Silvius, first lists the Athenian months, and then designates these month-names as those employed by 'the other Greeks (*apud Graecos alios*)' (Polemius Silvius 52, ed. Paniagua Aguilar 234).

enumeration of their calendar,²³⁶ recently transmitted to us from Rome,²³⁷ shows in what order they observed the year or the months. And the canons ascribed to the Apostles teach the same thing as the ancient writings when they observe that the twelfth day of the month Hyperberetaios is the fourth Ides of October [12 October]. From this we can infer that the two months begin together, because they both have the same twelfth day.²³⁸ The book which the holy father Anatolius wrote about Easter supports this, when it says: *Therefore in the first year, the beginning of the first month, which is the starting-point of the nineteen-year cycle, is on the 26th day of the Egyptian month Phamenoth, on the twenty-second day of the Macedonian month Dystros, and according to the Romans, on the eleventh Kalends of April* [22 March].²³⁹ Now in pointing out that the twenty-second day of the month Dystros is the equivalent of the twenty-second day of March, /329/ <Anatolius> shows plainly that both months begin together.²⁴⁰ Should anyone claim that Anatolius did not write ‘eleventh Kalends’, but rather ‘eighth Kalends’ [25 March], he would prove thereby that <March> was not the same as the Egyptian month Phamenoth, whose twenty-sixth day is on the eleventh, and not the eighth Kalends of April. Both of them – that is, those who read ‘eighth Kalends’ in Anatolius and those who read ‘eleventh Kalends’ – understand this day to refer to the twenty-sixth day of the Egyptian month. According to what we have stated above in our description of the Egyptian year, this date is established beyond doubt as falling on the eleventh Kalends of April.²⁴¹

236 *computus eorum annalis*: Jones (*BOT* 350) argues that the word *annalis* designates a calendar with these month-names inscribed, such as the one in Polemius Silvius’ *Laterculus*: compare to *The Reckoning of Time* ch. 23, where it is used as a substantive with this sense. Bede only uses *computus* or *computare* to denote enumeration or calculation, save in ch. 66, *s.a.* 4338, where he records that Theophilus ‘wrote his Paschal *computus*’ (see below, p. 359 and Introduction n. 12).

237 If Bede is referring to the *Laterculus* of Polemius Silvius, this must have been a relatively recent acquisition by the library of Wearmouth-Jarrow, as there is no hint of its presence in *On Times*.

238 ‘And the canons ... twelfth day’. Cf. Dionysius Exiguus, *Codex canonum ecclesiasticarum* ‘Regulae ecclesiasticae sanctorum apostolorum’ 38 (PL 67.145D).

239 Anatolius 2, as cited in Rufinus’ trans. of Eusebius, *Historia ecclesiastica* 7.32.14, ed. Mommsen 723.10–14; cf. Bede, *Letter to Wicthed* 2.

240 Cf. Bede, *Letter to Wicthed* 9.

241 Bede is referring to ch. 11, where he showed that the Egyptian month Phamenoth began on the 5th Kalends of March (24 February). As all Egyptian months are thirty days long, 26 Phamenoth falls on 22 March. Bede’s reference to those who ‘misquote’ Anatolius refers

15. THE ENGLISH MONTHS

In olden time the English people – for it did not seem fitting to me that I should speak of other nations’ observance of the year and yet be silent about my own nation’s – calculated their months according to the course of the Moon. /330/ Hence, after the manner of the Greeks and the Romans, <the months> take their name from the Moon, for the Moon is called *mona* and the month *monath*.

The first month, which the Latins call January, is Giuli; February is called Solmonath; March Hrethmonath; April, Eosturmonath; May, Thrimilchi; June, Litha; July, also Litha; August, Weodmonath; September, Halegmonath; October, Winterfilleth; November, Blodmonath; December, Giuli, the same name by which January is called. They began the year on the eighth Kalends of January [25 December], when we celebrate the birth of the Lord. That very night, which we hold so sacred, they used to call by the heathen word *Modraniht*, that is, ‘mothers’ night’, because (we suspect) of the ceremonies they enacted all that night.²⁴² Whenever it was a common year,²⁴³ they gave three lunar months to each season. When an embolismic year occurred (that is, <a year> of thirteen lunar months) they assigned the extra month to summer, so that three months together bore the name ‘Litha’; hence they called <the embolismic> year ‘Thrilithi’. It had four summer months, with the usual three for the other seasons. But originally, they divided the year as a whole into two seasons, summer and winter, /331/ assigning the six months in which the days are longer than the nights to summer, and the other six to winter. Hence they called the month in which the winter season began Winterfilleth, a name made up from ‘winter’ and ‘full Moon’, because winter began on the full Moon of that month.

to the *Liber Anatolii* 2, ed. McCarthy and Breen 46.36–8; cf. *Munich Computus* 55, ed. Warntjes 212:5–12, and Warntjes’ note, 210–13. Bede also make this point in the *Letter to Wicthed* 11 (see Appendix 3C).

242 Eleanor Parker remarks that ‘This is the only surviving reference to “Mothers’ Night” from Anglo-Saxon England or anywhere else. As often when Bede comments on such matters, his knowledge seems limited, and here he admits he’s speculating (“we suspect”). However, it’s been suggested that he may be describing some form of survival of the Romano-British veneration of groups of mother goddesses, which is well attested in the first half of the millennium’: *Winters in the World: a Journey through the Anglo-Saxon Year* (London: Reaktion, 2022), 69. This suggestion was made by Audrey L. Meaney, ‘Bede and Anglo-Saxon Paganism’, *Parergon*, 3 (1985): 1–29. For further discussion see Commentary.

243 I.e. a year with twelve lunar months.

Nor is it irrelevant if we take the trouble to translate the names of the other months. The months of Giuli derive their name from the Sun's change of direction in lengthening the day, because one of these months precedes and the other follows. Solmonath can be called 'month of cakes', which they offered to their gods in that month. Hrethmonath is named for their goddess Hretha, to whom they sacrificed at this time.²⁴⁴ Eosturmonath has a name which is now translated 'Paschal month', and which was once called after a goddess of theirs named Eostre, in whose honour feasts were celebrated in that month. Now they designate that Paschal season by her name, calling the joys of the new rite by the time-honoured name of the old observance. Thrimilche²⁴⁵ was so called because in that month the cattle were milked three times a day; such, at one time, was the fertility of Britain or Germany, from whence the English nation came to Britain. Lida means 'gentle' or 'navigable', because in both these months the calm breezes are gentle, and they were wont to sail upon the smooth sea.²⁴⁶ Weodmonath means 'month of tares', /332/ for they are very plentiful then.²⁴⁷ Halegmonath means 'month of sacred rites'.²⁴⁸ Winterfilleth can be called by the invented composite name 'winter-full' (*hiemiplenium*). Blodmonath is 'month of immolations', for then the cattle which were to be slaughtered were consecrated to their gods. Good Jesu, thanks be to thee, who hast turned us away from these vanities and given us <grace> to offer to thee the sacrifices of praise.²⁴⁹

16. THE SIGNS OF THE TWELVE MONTHS

Each of the months has its own <zodiac> sign in which it receives the Sun: April <the sign> of Aries; May, Taurus; June, Gemini; July, Cancer; August, Leo; September, Virgo; October, Libra; November, Scorpio;

244 On Salmonath, Hrethmonath, and Eosturmonath see Commentary.

245 Cf. *The Old English Metrical Calendar (Menologium)*, 78, ed. Kazutomo Karasawa (Cambridge: D.S. Brewer, 2015), 76.

246 See commentary in Parker, *Winters in the World* 185–7.

247 Also found in *Menologium* 135, ed. Karasawa 80; see Parker, *Winters in the World* 202–3.

248 Parker, *Winters in the World* 205, notes that Bede declines to provide an explanation for this month's name; she suggests it is connected to harvest rituals.

249 *Sacrificia laudis*, an echo of Psalms 50:15 (49:14), 50:23 (49:23), and 107:22 (106:22).

December, Sagittarius; January, Capricorn; February, Aquarius; March, Pisces. As one of the ancients explained in heroic verse: /333/

*The Phrygian Ram looks back on the Kalends of April.
May marvels at the horns of Agenor the Bull.
June sees the Laconian pair travel the heavens.
At the solstice July brings in the constellation of fiery Cancer.
Burning Leo scorches the month of August with flame.
O Virgo, September swells Bacchus under your star.
In the sowing season, October balances Libra.
The diving Scorpion bids wintry November come in.
The Archer brings his sign to a close in mid-December.
The tropic of Capricorn marks off the commencement of January.
The star of stout Aquarius stands in the midst of Numa's month.
The twin Fish go forth in the season of Mars.²⁵⁰*

He shows that what he states explicitly about December should be understood of the others in every case, namely, that each sign ends in the middle of its month and begins in the middle of the previous month. I beseech those who are knowledgeable not to consider it an imposition to instruct those who do not know concerning the precise position <of the signs>. The gyre of the heavens, perfectly round at every point, is bound by the line of the zodiacal circle, like the discrete settings of twelve gems adjacent to each other on a sort of girdle wrapped around a very large sphere.²⁵¹ /334/ They

250 Ausonius, *Ecloga* 16, ed. Sextus Prete (Leipzig: Teubner, 1978), 108–9. Bede derived the eclogue and its introduction from a text entitled *De causis quibus nomina acceperunt duodecim signa*, ed. Jones, *BOD* 665–7. This edition omits the poem proper, but it is included in Jones' earlier transcription in *Bedae pseudepigrapha*, 103. This same text was the primary source for *The Nature of Things* 17. Its presence in the 'Bobbio computus' (Milan Ambrosiana H 150 inf; PL 129.1324–5) suggests an Irish channel of transmission. On this, and other possible sources for this chapter, see Jones, *BOT* 351–2. It should be noted that Bede has rearranged the poem to begin in April rather than January. This deliberate displacement away from the civic calendar and towards the natural phenomenon of the equinox may reflect the positive attraction of Easter for the computist.

251 Bede's image of the zodiac signs as jewels or, more precisely, as a belt studded with jewels, each in its own mount, is striking. He may have been thinking of the twelve jewels in the foundations of the New Jerusalem (Revelation 21:19–21), which were closely connected with the twelve gates of the city, facing the four cardinal directions (*ibid.* 21:13). These twelve gates are also described as 'pearls' (*ibid.* 21:21). However, Bede did not compare the foundations or gates of the New Jerusalem to the zodiac in his *Expositio Apocalypseos*, and there is no indication that his immediate lapidary sources would have suggested such a link: see notes in Wallis, *Bede: Commentary on Revelation* 267–77.

are of such great size that they cannot rise or set or move from a position in less than two hours. Thirty parts are ascribed to each <sign>, because of the thirty days in which the Sun illuminates each of them. *The ten and one half hours left over are not added in right away*,²⁵² because they do not make up a full measure of twenty-four hours. Nonetheless, since the full solar year is finished, not just in 360 days, but with an additional five and a quarter days, it is evident that this <period of ten and one-half hours>, multiplied by 12 and making up $5\frac{1}{4}$ days, has been added to the thirty parts.²⁵³

Now *the first sign of Aries begins* in that part of the heavens where the Sun stands *in the middle of March*.²⁵⁴ It ends in that part which the Sun has traversed in the middle of April. Therefore it indicates the location of the vernal equinox, according to some, in its eighth part,²⁵⁵ but according to *the Egyptians, who are skilled in calculation beyond all others*,²⁵⁶ <the equinox> is more correctly in the fourth part.²⁵⁷ The second <sign>, Taurus, starting from that part of the celestial circle where the Sun is borne about in mid-April, finishes in <the part> which <the Sun> occupies in mid-May. Gemini, the third <sign, starts> in the part of the zodiac where the Sun is in mid-May. The fourth <sign>, Cancer, begins in that <part> which it illumines in the middle of June. Therefore, according to some, it receives the solstice in its eighth part, /335/ but in fact, if one follows a more careful

252 *De causis quibus nomina acceperunt duodecim signa*, 667.60–1.

253 This is an interesting illustration of a basic principle of calendar construction: one cannot calculate with less than a whole day. The Sun actually spends thirty days and $10\frac{1}{2}$ hours in each zodiac sign – as is evident from the length of the tropical year – but if one is going to mark its entry into each sign on a calendar, one will have to choose one or another day, not a part of a day. In this chapter Bede only states that the Sun enters each zodiac sign ‘in the middle’ of the calendar month, but his main source, *De causis quibus nomina acceperunt duodecim signa*, gives the exact dates, taking into account the gradual accumulation of extra days from the excess $10\frac{1}{2}$ hours, and the varying length of the months. We have included these in our reconstruction of Bede’s solar calendar in Appendix 1.

254 *De causis quibus nomina acceperunt duodecim signa*, ed. Jones, *BOT* 666.49–50.

255 Bede refers to those who date the vernal equinox to 25 March, i.e. eight days after the Sun enters Aries on 18 March, e.g. Isidore, *Etym.* 5.34.3, ed. Urquiola and Santos 115; Pliny, *HN* 2.17.81, ed. Rackham 1.224.

256 Dionysius Exiguus, *Ep. ad Petronium*, ed. Krusch, *Studien II* 65.22.

257 I.e. on 21 March; see ch. 6.

line of research, it is a few parts earlier. From this point, <the Sun> takes a downward course towards the bottom of the zodiac,²⁵⁸ that is, the circle of the signs. The fifth <sign>, Leo, <begins> in the part where the Sun is in the middle of July; the sixth, Virgo, from where it is in the middle of August. The seventh <sign>, Libra, begins to rise from where <the Sun> orbits in the middle of September; hence according to common opinion it furnishes a place in its eighth part for the autumn equinox,²⁵⁹ but to a more unclouded judgement it occurs rather before this. Then, as the zodiac tips towards the winter region, the eighth sign, Scorpio, <begins> from where <the Sun is> in the middle of October; the ninth, Sagittarius, from where it is in the middle of November. The tenth <sign>, Capricorn, takes its start from where the Sun is in mid-December. Hence it consecrates a mansion for the winter solstice in its eighth part, as is commonly believed; but as *Egypt, the mother of the arts*,²⁶⁰ teaches, it is a few days before this. Then, when the course of the zodiac returns to higher regions, the eleventh constellation, Aquarius, <starts> from the Sun's position in the middle of January. The twelfth <sign>, Pisces, beginning in that same part of February, comes to an end in the middle of March, where Aries, following after, shows the beginning of its rise. As all the signs agree in the fashion in which they are measured and in the conjunction of their zones²⁶¹ – albeit not in their visible form – the poet has said of them:

*thus the golden Sun holds sway over the sphere,
divided into fixed sections, by the twelve stars.*²⁶²

258 The 'bottom' of the zodiac (*ad inferiora situ zodiaci*) comprises the signs through which the Sun will pass from summer solstice to winter solstice – that is, from the point at which its daily orbit will begin to travel southwards, towards its lowest point in the sky, closest to the horizon.

259 Bede is again referring to the opinion of writers like Isidore and Pliny: see above, n. 255.

260 *Disputatio Chori et Praetextati* 21, ed. Holford-Strevens 86.308 [= Macrobius, *Saturnalia* 1.15.1, ed. Willis 69.13–14]. Cf. Proterius, *Ep. ad Leonem* 2 (ed. Krusch, 271), who refers to the Egyptian church *quae mater huiuscemodi laboris extitit*.

261 *regionum tamen suarum coniunctione*: Jones thinks that this obscure phrase refers to the meeting-point of Pisces and Aries and cites in this regard Hyginus 3.29. But Bede clearly states that 'all the signs' (and not just Pisces and Aries) 'agree' in this. What is meant is not exactly clear: one possibility is that Bede means to say that all the signs are of the same width.

262 Vergil, *Georgics* 1.231–2; cf. *Letter to Wicthed* 6.

/336/ The zodiac touches the Milky Way in Sagittarius and Gemini.²⁶³ Much can be said about this, but it can be done to better effect by someone speaking than through the written word.

Because we discussed above²⁶⁴ the order and periodicity (*tempore*) of the planets which course through the zodiac, we will merely repeat here that the Sun illumines the circuit of the zodiac in 365 days and six hours, the Moon in twenty-seven days and eight hours. The Sun slips through each of the signs in thirty days and ten and one-half hours, the Moon in two days and six and two-thirds (*bisse*) hours. Should you ask what *bisse* means, I shall now repeat briefly what I stated in the beginning of this little work about measures.²⁶⁵ A *bisse* is smaller than a whole hour in the same proportion as eight is smaller than twelve, twenty than thirty, ten than fifteen. Take away a third part, and two parts remain every time; these two parts are called the *bisse*, and the third is called *triens*. Therefore they are mistaken who say that the Moon traverses as much of the heavens in thirty days as the Sun does in 365 days, since (as we stipulated earlier) the plain truth demonstrates that the Moon is held to complete as much of the course in twenty-seven and one-third days as the Sun completes in 365¼ /337/ days, and that the Moon covers as much territory in one of its <synodic> months as the orbit of the Sun does in thirteen of its months.²⁶⁶

17. THE COURSE OF THE MOON THROUGH THE SIGNS

Every day the Moon either retreats from the Sun by four *puncti* with respect to <its location on> the preceding day when it is waxing, or approaches the Sun by four *puncti*, when waning. As we observed above,²⁶⁷ every sign has

263 Cf. *The Nature of Things* 18 (ed. Jones 210; trans. Kendall and Wallis 83) which draws on the same source, namely Pliny, *HN* 18.69.281, ed. Rackham 5.367.

264 Ch. 8.

265 Ch. 4.

266 It is Isidore who is in error: *DNR* 19.1, ed. Fontaine 247.5–8, trans. Kendall and Wallis 144, and *Etym.* 5.36.3 (ed. Urquiola and Santos 123). But so also is Ambrose, *Hexameron* 4.5.24, ed. Schenkl 131.17–21; cf. ch. 18 below. The Moon returns to the point in the zodiac where it was new in 27⅓ days, but must ‘catch up’ to the Sun, which has meanwhile moved into the next zodiac sign, before conjunction can take place. Hence, as Bede puts it, the zodiacal distance covered by a synodic month is the equivalent of thirteen solar months.

267 Ch. 3.

ten ‘*puncti*’, that is, two hours,²⁶⁸ for five ‘*puncti*’ make one hour.²⁶⁹ So if you want to know what sign the Moon is in, take whatever <day of the> Moon /338/ you wish – the fifth, for example. Multiply it by 4,²⁷⁰ which makes 20. Divide by 10²⁷¹ (10 times 2 is 20); therefore the fifth Moon is separated from the Sun by two signs. Then again, take the eighth <day of the> Moon. Multiply by 4 and that makes 32. Divide by 10: 3 times 10 yields 30, with 2 remaining. Therefore the eighth Moon is separated from the Sun by three signs and two *puncti*. You know that two *puncti* equal six *partes*, that is, the distance covered by the Sun in its journey through the zodiac in six days. A *punctus* has three *partes*, because each sign has ten *puncti* or thirty *partes*. Once again, take the nineteenth Moon. Multiply by 4, which makes 76. Divide by 10: 7 times 10 yields 70 with 6 remaining. Therefore, on the journey which it began away from the Sun, the Moon has parted company with it by seven signs, plus one hour, which is half a sign and a *punctus*, that is, three *partes*. And lest you suspect a faulty argument, look for the point of the heavens diametrically <the Sun>, which no one doubts the Moon occupies when fifteen days old. Multiply 15 by 4, which makes 60. Divide by 10: 60 divided by 10 is 6. Now the fifteenth Moon can always be seen six signs away from the Sun, that is, half of the celestial sphere away, whether you look ahead or behind.

Therefore you see the orb of the Moon to be completely full whenever it is opposite the Sun; you see it low <in the sky> when the Sun is high, and high when it is low.²⁷² For to be sure, when the Sun is in the summer circle [i.e. tropic of Cancer], the Moon, when it is full, is in the winter circle; when it is full and the Sun has dipped down into the winter circle, the longest night <of the year> sends <the Moon> forth to climb up the <summer> solstitial circle. And when the Sun keeps to one equinox, the

268 ‘every sign ... hours’: *De causis quibus nomina acceperunt duodecim signa*, 667.64–5. What Bede means is that each sign represents one-twelfth of the daily revolution of the heavenly sphere around the Earth, or in other words, two hours.

269 *De causis quibus nomina acceperunt duodecim signa* 667.64–5. Note that Bede is speaking of ‘lunar *puncti*’ here; ordinarily, an hour has four *puncti*, as he points out in ch. 3.

270 I.e. the number of *puncti* by which the Moon advances towards or retreats from the Sun each day.

271 I.e. the number of *puncti* in a zodiac sign.

272 ‘Therefore you see the orb ... when it is low’. Cf. ch. 6. What Bede means (and which he explains in the remainder of this paragraph) is that when the Sun is farthest to the north (i.e. ‘high’ in the sky, or closest to zenith) at the summer solstice in Cancer, the Moon at full will be in Capricorn, ‘low’ in the sky to the south, and vice versa. See ch. 26 and Commentary.

Moon, when she is full, keeps to the other. And the distance by which the Sun has passed the equinox or solstice which it has most recently illumined obviously corresponds to the distance by which the full Moon has passed the opposite solstice or equinox.²⁷³

18. MORE ON THE COURSE OF THE MOON, FOR THOSE WHO ARE IGNORANT OF THE SIGNS

Anyone who is ignorant of the <zodiac> signs, but who wishes nonetheless to discover the course of the Moon, should know that every day the Sun completes one part of the zodiac – for we should understand that the ‘parts’ of the zodiac are nothing but the daily advances of the Sun in the heavens – and that every day the Moon completes thirteen parts of the same zodiac, that is, four *puncti* and one part. Because the Sun completes one part while <the Moon> completes thirteen, the result (as we taught earlier) is that <the Moon> in its daily progress distances itself from the Sun exactly four *puncti*, that is, twelve parts.²⁷⁴

Let <the reader> choose, then, where he wishes to calculate the <position of> Moon – say, on the Kalends of January [1 January]. The first <Moon>, when a night and a day has passed, /340/ occupies that position in the sky which the Sun does on the thirteenth day of the same month. When it is the second <day of the> Moon, multiply 2 by 4, which is 8. Then, so that you may proceed from *puncti* to parts, multiply 8 by 3,²⁷⁵ which makes 24. The Moon will occupy that part of the sky on the fourth Nones of January [2 January] in which the Sun will on the twenty-fourth day thereafter. When it is the third <day of the Moon>, multiply 3 by 4, which makes 12. Divide by 10: 10 times one is 10, with two *puncti* (that is, six parts) left over. Therefore the third Moon occupies that part of the sky which the Sun

273 ‘For to be sure ... solstice or equinox’. Cf. Anatolius 2, as reported in Rufinus’ trans. of Eusebius, *Historia ecclesiastica* 7.32.18, ed. Mommsen 725.8–14; and Victor of Capua, *De pascha*, ed. J.B. Pitra, *Spicilegium Solesmense* (Paris: Firmin Didot, 1852), 1.296–301. On the relationship of Bede’s text to that of Victor of Capua and Anatolius see Jones, *BOT* 353.

274 It will be recalled from ch. 17 that every zodiac sign contains ten *puncti*. Since it also is divided into thirty parts (what we would call ‘degrees’), this means that each *punctus* contains three parts. Therefore four *puncti* plus one part equals thirteen parts. Therefore the Moon advances each day thirteen parts along the zodiac. Since the Sun advances by one part, this means that the Moon’s net gain on the Sun is four *puncti*.

275 There are three parts in one *punctus*.

will <occupy> when a whole month and six days have passed from the third Nones of January [3 January],²⁷⁶ that is, at the end of the sixth day following the third Nones of February [3 February]. When it is the fourth <day of the Moon>, multiply by 4, which makes 16. Divide by 10: 10 times one is 10, with six *puncti* remaining, that is, eighteen parts. Therefore the fourth Moon will occupy that part of the heavens which the Sun will when a month and eighteen days have passed after the second Nones of January [4 January]. When it is the fifth <day of the Moon>, multiply 5 by 4, which makes 20. Divide by 10: 2 times 10 is 20. Therefore when two months are over, that is, on the Nones of March [5 March] the Sun will arrive in the part of the sky which the Moon occupies when five days old. When the eighth <day of the Moon> is on the sixth Ides of January [8 January], multiply 8 by 4, which is 32. Divide by 10: 3 times 10 is 30 with two *puncti*, that is six parts, remaining. On the sixth Ides of January, the Moon eight days old will occupy that part of the sky which the Sun will arrive at three months and six days thence, that is, on the sixth day after the sixth Ides of April [8 April]. When the nineteenth Moon falls on the fourteenth Kalends of February [19 January], /341/ multiply by 4, which makes 76. Divide by 10: 7 times 10 is 70, with six <*puncti*> remaining. Multiply by 3 and they make 18 <parts>. On the fourteenth Kalends of February, the nineteenth Moon circles around that part of the heavens where the Sun will be seven months and eighteen days thence, that is on the eighteenth day after the fourteenth Kalends of September [19 August], or the eighth Ides of September [6 September].

In case you are worried about a fallacious argument, apply <this formula> to the diameter of the year: rare is the person who does not know that the Moon is in this position when it is fifteen days old.²⁷⁷ Multiply 15 by 4, which makes 60. Divide by 10: 6 times 10 is 60. When six months are over, that is, when half his journey through the circuit of the year is complete, the Sun will enter that part of the heavens in which the Moon is borne about when fifteen days old. Because this takes place on the fifteenth day of January, without doubt the Sun will arrive at that part on

276 Ten *puncti* equal thirty parts, or a whole zodiac sign. Therefore when the product exceeds ten, one must divide by ten to find the number of signs (i.e. months) distant the corresponding position of the Sun will be. The remainder, converted into parts, is the number of days in addition to these months.

277 The full Moon is in opposition to the Sun and is therefore at the exact opposite point of the zodiacal circle, i.e. where the Sun will be six months thence ('the diameter of the year').

the fifteenth day of July.²⁷⁸ And so that we may come to a conclusion, take the thirtieth <day of the> Moon, which will then be on the third Kalends of February [30 January]. Multiply by 4, which makes 120. Divide by 10: 12 times 10 is 120. The Moon when thirty days old runs in that part of the heaven where the Sun will be visible when twelve months are over, that is, when it has passed through the whole circle of the year. This is the very same part where it abides now /342/ and receives the Moon in conjunction.²⁷⁹

So that these matters might be more evident to everyone, even those of slower understanding, we have taken the trouble of carefully noting down, for each age of the Moon, how far distant from the Sun it is. So the Moon one day old, when its age is complete, is distant from the Sun by a space of twelve days;²⁸⁰ when two days old by a space of twenty-four days; when three days old by a space of one month and six days; when four days old by a space of one month and eighteen days; when five days old by a space of two months; when six days old by a space of two months and twelve days; when seven days old by a space of two months and twenty-four days; when eight days old by a space of three months and six days; when nine days old by a space of three months and eighteen days; when ten days old by a space of four months; when eleven days old by a space of four months and twelve days; when twelve days old by a space of four months and twenty-four days; when thirteen days old by a space of five months and six days; when fourteen days old by a space of five months and eighteen days; when fifteen days old by a space of six months; when sixteen days old by a space of six months and twelve days; when seventeen days old by a space of six months and twenty-four days; when eighteen days old by a space of seven months and six days; when nineteen days old by a space of seven months and eighteen days; when twenty days old by a space of eight months; when twenty-one days old by a space of eight months and twelve days; when twenty-two days old by a space of eight months and twenty-four days; when twenty-three days old by a space of nine months and six days; when twenty-four days old by a space of nine months and eighteen days; when twenty-five days old by a space of ten months; when twenty-six days

278 As Jones observes, Bede's formula is very approximate, and works on the assumption that a Julian month is always thirty days long: see *BOT* 354.

279 The Moon when thirty days old is in conjunction with the Sun – that is, in the same part of the zodiac. The Sun will be in that same part of the zodiac again after one solar year.

280 I.e. the thirteen days of the Moon's progress, minus the one day of the Sun's progress in the same direction.

old by a space of ten months and twelve days; when twenty-seven days old /343/ by a space of ten months and twenty-four days; when twenty-eight days old by a space of eleven months and six days; when twenty-nine days old by a space of eleven months and eighteen days; when thirty days old by a space of twelve months.

19. MORE ON THE SAME SUBJECT, FOR THOSE WHO DO NOT KNOW HOW TO CALCULATE

Should someone rather less adept at calculation nonetheless be curious about the course of the Moon, we have also for his sake devised a formula (*argumentum*) adapted to the capacity of his intelligence, so that he might find what he seeks. Thus we have marked out each day of the twelve-month annual circuit <in the calendar>²⁸¹ by means of alphabets, so that the first and second <alphabetical> sequences each comprise twenty-seven days, while the third <sequence> has one <day> more, namely that which accrues from three repetitions of the eight superfluous hours. In order that there might be enough letters for the days we wish to indicate, we have not placed them against every day, /344/ but against every other day. Hence it is not necessary to take the alphabet beyond the letter O.

At the beginning of this same work²⁸² we have included the Table of Regulars (*Paginam regularum*), which contains nineteen alphabets like those described above, each beginning with a different letter, for all the years of the nineteen-year cycle, together with the twelve names of each of the months and signs, arranged in this sequence according to the number of days in which the Moon traverses the zodiac. Along its length, the table has twenty-seven rows, with the names of the signs noted on the left and the names of the months on the right, so that someone unfamiliar with the signs can find what he wants by noting the months. Across its width it has nineteen columns; the order of the nineteen-year cycle is shown by the number of years noted at the top.

281 See the solar calendar in Appendix 1: Bede is referring to the alphabetical sequence A–O in the far left column.

282 I.e. the calendar.

So if you wish to know²⁸³ what sign or what part of the month the Moon is in on any given day of any year, with the <calendar>-codex open,²⁸⁴ take note the letter prefixed to that day. Then, turning to the Table of Regulars in which the sequence of letters is laid out, and having found the year²⁸⁵ from the inscription at the top, find the letter pertaining to that day which you were seeking. Then, looking forwards and backwards,²⁸⁶ you will discover what month and sign the Moon is in from its position. Reader, we will give you something to serve as an example. Suppose you are looking for the location of the Moon on the Kalends of April in the sixth year of the nineteen-year cycle. Open the <calendar> codex and look up that particular date. You will find written in front of it the letter E. Turn to the Table of Regulars. Look at the sixth year and find the letter E by looking through its alphabet. Now run your eye along to the margins. You will discover that the end of Gemini /345/ is noted on one side and the beginning of the month of June on the other.²⁸⁷ And reader, whether you are learned or unschooled, you will rejoice to have tracked down what you were looking for, right before your eyes. Moreover, during that whole year, on whatever days you find the letter E inscribed, you will know that the Moon, whether waxing or waning, is occupying that part of the sky. You cannot discover by this formula whether the Moon is waning /346/ or waxing, in conjunction with or in opposition to the Sun; but if you want to know this, refer to the formula of the Egyptians, handed down by ancient observance.²⁸⁸

283 'If you wish to know ... from its position'. This passage is closely modelled on Jerome's Preface to the Vulgate Gospels, *Nouum opus*. See Introduction, p. 67.

284 *aperto codice*. In *Historia ecclesiastica* 4.14. Bede tells the story of a young boy dying of plague, who learns in a vision of the apostles that he will die on the anniversary of the death of the saintly Northumbrian king Oswald. The clergy are to seek this date *in codicibus, in quibus defunctorum est adnotata dispositio*. After the boy relates his vision to the clergy, they duly look up the date *in annale* – that is, in the calendar (ed. Colgrave and Mynors 376–7). On *annalis* or *annalis libellus* as denoting the calendar see n. 235 above and ch. 23 below, n. 312.

285 That is, the year of the nineteen-year cycle. Bede gives a formula for translating *annus domini* into year of the nineteen-year cycle in ch. 47. Alternately, one could simply look it up in a Paschal table (Appendix 2).

286 That is, to the right (for the month) and to the left (for the sign of the zodiac).

287 That is, the Moon on 1 April is in the zodiac sign in which the Sun will be found in June.

288 Cf. ch. 24.

Table of Regulars²⁸⁹

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Aries	A			N H	C					K E					M G	B				April
Taurus		K E					M G	B				O I	D					L F		
Taurus	B			O I	D					L F	A				N H	C				May
Gemini		L F	A				N H	C					K E					M G		
Gemini	C				K E					M G	B				O I	D				June
Cancer		M G	B				O I	D					L F	A				N H		
Cancer	D				L F	A				N H	C					K E				July
Leo		N H	C					K E						M G	B			O I		
Leo	E				M G	B				O I	D					L F	A			
Leo		O I	D					L F	A					N H	C				K	August
Virgo	F	A			N H	C					K E					M G	B			
Virgo			K E					M G	B				O I	D					L	September
Libra	G	B			O I	D					L F	A				N H	C			
Libra			L F	A				N H	C					K E					M	October
Scorpio	H	C				K E					M G	B				O I	D			
Scorpio			M G	B				O I	D					L F	A			N		November
Sagittarius	I	D				L F	A				N H	C					K E			
Sagittarius			N H	C					K E						M G	B			O	
Sagittarius	K	E				M G	B				O I	D					L F	A		December
Capricorn			O I	D						L F	A				N H	C				
Capricorn	L	F	A			N H	C					K E					M G	B		January
Aquarius				K E						M G	B				O I	D				
Aquarius	M	G	B			O I	D					L F	A				N H	C		February
Pisces				L F	A					N H	C					K E				
Pisces	N	H	C					K E					M G	B			O I	D		March
Aries				M G	B					O I	D					L F	A			

289 This table, and the table of *litterae punctatae* discussed in ch. 24, never appear within the text of *Reckoning of Time*, save in the group of twelfth-century English manuscripts containing the ‘graphic glosses’ (Wallis, ‘Diagrams as Glosses’ 298–301). It is presented here for the reader’s convenience.

20. WHAT THE AGE OF THE MOON IS ON ANY FIRST DAY OF THE MONTH

In the first year of the nineteen-year cycle, in which the epact is nil,²⁹⁰ the Moon on the Kalends of January is nine days old; on the first of February, ten; on the first of March, nine; on the first of April, ten; on the first of May, eleven; on the first of June, twelve; on the first of July, thirteen; on the first of August, fourteen; on the first of September, sixteen; on the first of October, sixteen; on the first of November, eighteen; on the first of December, eighteen. Take these numbers as the ‘regulars’ of each month.²⁹¹ By adding the annual epacts to them, you will discover without error what the age of the Moon is on any given Kalends. If you wish to know the age of the Moon for the Kalends of January in the second year of the nineteen-year cycle, take the regular <of January> – 9 – and add the epact – 11 –²⁹² and that makes 20: it is the twentieth Moon. If you want to know what Moon it is on the Kalends of June in the third year, take the regular 12, add the epact for that year – 22 – and that makes 34. Subtract 30,²⁹³ and 4 remain; on the Kalends in question, the Moon is four days old.

Should anyone object that the order of either this or the preceding formula is shaky at any point (*alicubi ordinem uacillare*), then let him teach a more accurate and handy formula for investigating questions of this kind, and we will gladly and gratefully accept it. /347/ We have given the formula which we explained earlier to several people to be copied and have also recommended that it be prefixed to this present work.²⁹⁴ Indeed, let the present formula

290 The epact is the age of the Moon on 22 March; see ch. 50 below. The Moon is new on 22 March in year one, so the epact is zero; however, to avoid the potentially anachronistic connotations of this word, I have translated *nullae (epactae)* as ‘nil’.

291 The term ‘regular’ (*regularis*) refers to a numerical constant. In this case, Bede is referring to the ‘lunar regular’ – that is, the monthly constant which, when added to the annual lunar epact, will produce the age of the Moon on the first day of that month. As he explains, these monthly lunar regulars are based on the age of the Moon on the first of the month in the first year of the cycle.

292 Because the lunar year is 354 days long, or eleven days shorter than the solar year, the Moon on 22 March in year 2 of the nineteen-cycle will be eleven days old. Thus the epact of year 2 is eleven.

293 No calculated lunation can exceed thirty days, so, when the total exceeds this figure, thirty must be deducted.

294 The Laon glossator understood the *argumentum* referred to here as the *pagina regularum* from the preceding chapter (ed. Jones 346, *ad lineam* 18). However, as Jones points out (*BOT* 355–6), if it were a table it must have been one that showed the ages of the Moon on the Kalends of each month – i.e. a table corresponding to the formula explained in

that we set forth for finding the Moon on the Kalends suffice for learning and teaching, at least at this point. For when the age of the Moon on the Kalends is known, it will easily be seen what its age is on the other days of any month by reciting on one's fingers that month and its concurrents.²⁹⁵ However, there are three years in the nineteen-year cycle when this formula cannot preserve the stability of its course, namely the eighth, the eleventh, and the nineteenth. The cause of this discrepancy is the insertion, distributed throughout the year in various ways, of the embolismic <month>.²⁹⁶ Now in the eighth year, the Moon on the Kalends of May, according to the method (*rationem*) of this formula, is calculated as being in its twenty-eighth day, but because of the embolism inserted into the month of March, it is actually in its twenty-seventh. Again, according to the formula, the Moon ought to be in its thirtieth day on the Kalends of July, but because of the addition of the day which the superfluity of the embolism introduced, it is the twenty-ninth. Again in the eleventh year, because the Moon of the embolismic <month> is kindled on the day before the Nones of December [4 December], it makes the Moon on the Kalends of March to be in its twenty-eighth day, while the logic of the formula teaches that the Moon then is the twenty-ninth. Again in the nineteenth year, because the Moon of the embolismic <month> begins on the third Nones of March [5 March], it dictates that the Moon on the Kalends of May be calculated as in its twenty-eighth day, when according to the calculation of the formula /348/ it should be proclaimed as the twenty-ninth.

this chapter, and not a table showing the position of the Moon in the zodiac; his argument is supported by John Armstrong III, 'The Old Welsh Computus Fragment and Bede's *Pagina regularis*', *Proceedings of the Harvard Celtic Colloquium*, 2 (1982): 193. Curiously, Jones also claims that Bede is *refusing* to place this *argumentum* in front of the book (*BOT* 355), though the sense of the Latin suggests exactly the opposite: *et nonnullis ad transcribendum iam dedimus et in principiis huius nostri opusculi praefigendum esse censemus* (347.19–21). Moreover, Bede uses the term *argumentum* (i.e. algorithm, formula) here, not *pagina* or table. It is possible that he is alluding to the collection of lists of basic *computus* data which manuscripts from the Carolingian period onwards called the *Ratio calculi* or *computus Grecorum siue Latinorum*. The lists, often presented in table form, comprise (1) the divisions of Roman months into Kalends, Nones, and Ides, with the number of days in the month; (2) monthly solar regulars; (3) monthly lunar regulars; (4) sequence of leap years; (4) epacts across the nineteen-year cycle: see Wallis, 'An Eleventh-Century "Science Album"' 30.

295 Bede rather confusingly uses the term *concurrentes* here to mean 'successive days of the month'; cf. Jones, *BOT* 357. It has a more common computistical meaning, which is explained in the next chapter.

296 Embolismic lunar months are always thirty days long. As the (calculated) lunations alternate between 29½ and thirty days, the insertion of the embolism creates two thirty-day months in sequence, disrupting the count for the months which follow.

Moreover, in this <nineteenth> year the computation of the ‘leap of the Moon’, of which we shall say more later,²⁹⁷ vitiates the reliability of this formula. But if you start <to use> this formula at the month of September, after the manner of the Egyptians, whose year begins at that point, it is necessary that the Moon of July in that year have twenty-nine days and never more,²⁹⁸ one <day> having been removed because of the ‘leap of the Moon’. In consequence, the Moon of the Kalends of August, calculated as the second according to the rule of the formula, will be assigned as the third. But if, following what we taught above, you prefer to begin the formula in January, according to the same sequence the seventh day of the Moon will fall on the Kalends of December, which one would think ought to be the sixth according to the formula. This is because the Moon of the month of November loses a day and is considered complete with only twenty-nine <days> instead of the usual thirty.²⁹⁹ /349/ In truth, all this is easier to teach by oral explanation than in writing. However, do not overlook the fact that some people begin this formula from September, giving the regular five to September, five to October, seven to November, seven to December, and for the rest, as we give it above. Because of the authority of the Egyptians, they act in a thoroughly reasonable manner so as to imitate, in the calculation of the beginning of the year, those from whom the art of calculation took its origin. But to others it seems much more appropriate and efficient that all calculation, insofar as the demands of logic (*necessitas rationis*) present no obstacle, should start from the beginning of their year, and continue onwards to the end of the year in a fixed and inviolable course: <this is the case> even among the Latins.

21. WHAT DAY OF THE WEEK IT IS ON THE FIRST DAY OF THE MONTH

They³⁰⁰ provide a handy formula, similar to <the previous> one, for finding the <week>day of the Kalends, so that by simply using another set of

297 See ch. 42.

298 The lunation of July is normally a ‘full’ one of thirty days.

299 In other words, Bede is assuming the *saltus* will be applied to the lunation of November in year nineteen: see ch. 43 and Commentary on this chapter.

300 The ‘Egyptians’, presumably. Bede’s preference for the system of regulars and concurrents is a departure from the methods of the Irish masters, whose formulae for finding weekdays derived from 1 January and involved structuring calculations around the

regulars, you may find the day of the week through the concurrents³⁰¹ by means of this <formula>, just as you found <the age of the Moon> through the epacts in the <previous formula>. January has a <solar> regular of two; February, five; March, five; April, one; May, three; June, six; July, one; August, four; September, seven; October, two; November, five; December, seven. These regulars indicate specifically /350/ what the weekday of the Kalends is in the year to which seven concurrents are assigned. For the other years, you add the number of concurrents noted for that particular year³⁰² to the regulars of each month, and in this way you will find the day of the Kalends without a mistake. Remember that when a leap-year occurs, one of the concurrent days is dropped; however, you use the number which is going to be dropped in January and February, but on the first of March, you start to compute with that <number> contained in the solar cycle.³⁰³ So if you wish to find out, for example, the weekday of the Kalends of January, you say 'January, 2',³⁰⁴ and add the concurrent days of the week which occur in the year for which you are calculating, for instance, 3: this makes 5. The Kalends of January starts on the fifth weekday [Thursday]. Again, in a year which has six concurrents, take the 5 regulars for the month of March, add the 6 concurrents, and they make 11. Take away 7,³⁰⁵ and 4 remain. The Kalends of March is on the fourth weekday [Wednesday].

schema of days of each month which will share the same weekday; see, for example, *Munich Computus* 28–9, ed. Warntjes 80–6, and Warntjes' notes.

301 The concurrent is a number representing the weekday of 24 March. It is explained at greater length below, ch. 53. The concurrents function very much like the epacts – indeed, Bede also calls them 'solar epacts' – in that they can be used with a monthly 'regular' to determine the weekday of any date in the calendar. The 'regular' in this case is a number representing the difference between the weekday of 24 March and the weekday of the first day of the month in question.

302 These can be found in the Paschal table, or by using the formula given in ch. 54.

303 I.e. the 'official' concurrent for that year, as found in the Paschal table. The concurrent valid in January and February will be one less. The insertion of the extra day in February pushes the remaining dates of the year ahead by one weekday.

304 The solar regular for January is two.

305 In other words, should the sum of the concurrent and solar regular exceed the number of days in a week (i.e. seven), seven must be deducted; the remainder will be the weekday of the Kalends.

22. A FORMULA FOR ANY MOON OR WEEKDAY

There is an old formula devised for finding the Moon or the weekday not only for the Kalends, but for any day between the Kalends. It is somewhat more difficult to learn, but it was passed down to us by the authority of our elders, /351/ and so ought to be handed on conscientiously to our juniors. If you wish to know how old the Moon is on this or that day, count the days from the beginning of January up to the day you want, and when you know this, add in the age of the Moon on the Kalends of January.³⁰⁶ Divide the total by 59, and if more than 30 remain, subtract 30.³⁰⁷ What is left over is the day of the Moon you are seeking. Again, if you wish to know what the weekday is on such and such a day, calculate the days from the beginning of January up to the day in question, and when you have found out what <the total> is, add the <number of the> weekday on which the Kalends of January fell.³⁰⁸ If it is a leap year, remember also to add the leap year day after it has passed. Divide the total by seven and the remainder will show you what day of the week it is, in every case.³⁰⁹ This formula only works without difficulty if you are accustomed to reciting by heart the number of each of the months by Kalends, Nones, and Ides:

January: 1 on the Kalends, 5 on the Nones, 13 on the Ides;
 February: 32 on the Kalends, 36 on the Nones, 44 on the Ides;
 March: 60 on the Kalends, 66 on the Nones, 74 on the Ides;
 April: 91 on the Kalends, 95 on the Nones, 103 on the Ides;
 May: 121 on the Kalends, 127 on the Nones, 135 on the Ides;
 June: 152 on the Kalends, 156 on the Nones, 164 on the Ides;
 July: 182 on the Kalends, 188 on the Nones, 196 on the Ides;
 August: 213 on the Kalends, 217 on the Nones, 225 on the Ides;
 September: 244 on the Kalends, 248 on the Nones, 256 on the Ides;
 October: 274 on the Kalends, 280 on the Nones, 288 on the Ides; /352/
 November: 305 on the Kalends, 309 on the Nones, 317 on the Ides;
 December: 335 on the Kalends, 339 on the Nones, 347 on the Ides.³¹⁰

306 Using the formula given in ch. 20.

307 The synodic lunar month is 29½ days long, but as this is an awkward figure to compute with, the formula uses fifty-nine, the number of days in two synodic lunar months. Since no lunar month can be longer than thirty days, this figure must be deducted from the remainder if it exceeds thirty.

308 This can be ascertained using the formula described in ch. 21.

309 'Again, if you wish to know ... in every case': Dionysius Exiguus, *Argumenta titulorum paschalium* 10, ed. Krusch, *Studien II* 77. For discussion see Mosshammer, *Easter Computus* 105–6.

310 The source of this table is the *Liber Anatolii* 10, ed. McCarthy and Breen 50. It also

So for example, if you wish to know what the age of the Moon is on the Kalends of May in a year in which the Moon is nine days old on the Kalends of January, say ‘May: 121 on the Kalends’. Subtract the <day of the> Kalends, and 120 remains; add 9, and that makes 129. Divide by 59: 59 times 2 is 118. Subtract 118 and 11 remain. The Moon is eleven days old on the Kalends of May. If you want to know how old the Moon is on the fifteenth Kalends of June [May 18], say ‘June: 152 on the Kalends’. Subtract the 15 Kalends of June and 137 remain. Add 9, which makes 146. Divide by 59: 59 times 2 is 118. Subtract 118 and 28 remain. The Moon on the fifteenth kalends of June is 28 days old. If you want to know what the Moon is on the seventh Ides of December [December 7], say ‘December: 347 on the Ides’. Subtract the 7 Ides, and 340 remain. Add 9, and it makes 349. Divide by 59: 59 times 5 is 295. Subtract 295 and 54 remain. Subtract 30, and 24 remain. On the day in question, it is the 24th <day of the> Moon.

In using this formula, it is helpful if the calculator commits the products of the fifty-nine-times table to memory:

59 times 6 is 354
 59 times 5 is 295
 59 times 4 is 236
 59 times 3 is 177
 59 times 2 is 118
 59 times 1 is 59.³¹¹

Following the same procedure, you find the weekday for any date you wish by adding the <week>day of the kalends of January. For example, if you want to know /353/ what the weekday will be on the eighth Kalends of October [September 24] in a year in which the Kalends of January is celebrated on the fifth day of the week [Thursday], say ‘October: 274 on

appears in later *computus* anthologies in variant forms. One version begins in March rather than January (e.g. PL 90.706D, or the ‘Bobbio *computus*’ in PL 129.1279D–1282A), and this form came to be labelled as *secundum Dionysium*, on the assumption that Dionysius, the champion of Alexandrian reckoning, would have devised his table according to the Alexandrian custom of beginning the computistical year in March. Ironically, given his animus against Victorius, Bede’s version was baptised *secundum Victorium*, the logic being that Victorius championed Roman methods of *computus* against the Alexandrian, including beginning the year in January: Jones, *BOT* 358.

311 Bede gives the multiplication table only up to six, because this is the maximum number of times fifty-nine can be divided into 365.

the kalends'. Subtract the 8 <Kalends of October> and 266 remain. Add the fifth weekday on which the Kalends of January fell, and that makes 271. Divide by 7: 7 times 30 is 210, 7 times 8 is 56; 5 are left over. It is the fifth day of the week on the eighth Kalends of October.

23. FOR THOSE WHO DO NOT KNOW HOW TO CALCULATE THE AGE OF THE MOON

Should anyone be so lazy or slow-witted as to wish to know the course of the Moon without any of the trouble of calculating, he must rely on the alphabets which he sees, distributed according to the course of the Moon, in the calendar (*in annali libello*),³¹² where there are three alphabets, comprising two lunar cycles, that is, fifty-nine days.³¹³ Whatever letter is assigned to the Moon for a given age, <the Moon> will always have this same letter at the same age throughout the entire year, unless perhaps (but this happens rarely) the computation of the embolisms changes it.³¹⁴

For example, in the third year of the nineteen-year cycle, a lunation which will have thirty days always begins with a plain letter A; /354/ the second <day of the Moon> is on B, the third on C, likewise plain, that is, not marked with any point. Thus each letter shows the age of its Moon according to its position. Again, a lunation which will have twenty-nine days begins at L, with a point following; the second <Moon> is always on the M and third on the N, marked with the same sign. Thus the Moon, recurring in sequence, encodes its age in each letter.³¹⁵ To

312 Since the instructions are to look up the date in the *annalis libellus*, Bede is clearly referring to a manuscript calendar by the term *annalis libellus*, and not the table itself, *pace* Alfred Cordoliani, 'Un manuscrit de comput intéressant: Schaffhouse, Ministerialbibliothek 61', *Scriptorium*, 12 (1958): 251. See n. 235 above. On this manuscript see Appendix 5, no. 231.

313 See the calendar in Appendix 1. The alphabets to which Bede is referring are in the second column from the left.

314 As Bede explained in ch. 20, this occurs after the insertion of the embolismic month in the eighth, eleventh, and nineteenth years of the cycle.

315 Literally, 'changes its age back into each letter' (*suam cuique literae restituit aetatem*): ed. Jones 354.16–17.

make it easier to tell them apart, the ancients established that the first of the three alphabets /**355**/ should be unadorned, the second marked <with a point> afterwards and the third marked <with a point> in front, in order to distinguish them.³¹⁶

316 Though he is not explicit on this point, Bede undoubtedly expects this system of lunar letters to function with a table such as the one presented here. Indeed, it can only be worked with such a table, although there are pared-down versions of the table which simply list the nineteen years with the letters for the full and hollow lunations (C., .M etc.): see the example in Oxford, St John's College 17, fol. 11r: https://digital.library.mcgill.ca/ms-17/folio.php?p=11r&showitem=11r_3ComputusTablesTextsI_9JewishMonths_10Full_and_HollowMonths1. Like the *Pagina regularum*, the 'pointed letter' (*litterae punctatae*) table was a regular feature of the calendar section in *computus* albums and, not infrequently, this chapter of *The Reckoning of Time* was excerpted to accompany it (examples are listed in Appendix 5). For a discussion of this table, its history, and variant versions see Jones, *Bedae pseudepigrapha* 65–8, and Theodore von Sickel, 'Die Lunarbuchstaben in der Kalendarien des Mittelalters', *Sitzungsberichte der Akademie der Wissenschaften zu Wien*, Phil.-hist. Kl. 38 (1861), esp. 159. It is not infrequently ascribed (falsely) to Jerome. It definitely predates Bede, for it is found in the Calendar of Willibrord (Paris, Bibliothèque nationale lat. 10837) written ca. 703–717: see facsimile and transcription in H.A. Wilson, *The Calendar of St. Willibrord*, Henry Bradshaw Society 55 (London: Harrison, 1918). Cf. Jones, *BOT* 358.

Table of *litterae punctatae*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	.m	.a	a	.i	s.	.r	.f	p.	.o	.c	m.	.l	u.	.t	.h	r.	.q	.e	o.
2	.n	.b	b	.k	t.	.s	.g	q.	.p	.d	n.	.m	.a	a	.i	s.	.r	.f	p.
3	.o	.c	c	.l	u.	.t	.h	r.	.q	.e	o.	.n	.b	b	.k	t.	.s	.g	q.
4	.p	.d	d	.m	.a	a	.i	s.	.r	.f	p.	.o	.c	c	.l	u.	.t	.h	r.
5	.q	.e	e	.n	.b	b	.k	t.	.s	.g	q.	.p	.d	d	.m	.a	a	.i	s.
6	.r	.f	f	.o	.c	c	.l	u.	.t	.h	r.	.q	.e	e	.n	.b	b	.k	t.
7	.s	.g	g	.p	.d	d	.m	.a	a	.i	s.	.r	.f	f	.o	.c	c	.l	u.
8	.t	.h	h	.q	.e	e	.n	.b	b	.k	t.	.s	.g	g	.p	.d	d	.m	.a
9	a	.i	i	.r	.f	f	.o	.c	c	.l	u.	.t	.h	h	.q	.e	e	.m	.b
10	b	.k	k	.s	.g	g	.p	.d	d	.m	.a	a	.i	i	.r	.f	f	.o	.c
11	c	.l	l	.t	.h	h	.q	.e	e	.n	.b	b	.k	k	.s	.g	g	.p	.d
12	d	.m	m	a	.i	i	.r	.f	f	.o	.c	c	.l	l	.t	.h	h	.q	.e
13	e	.n	n	b	.k	k	.s	.g	g	.p	.d	d	.m	m	a	.i	i	.r	.f
14	f	.o	o	c	.l	l	.t	.h	h	.q	.e	e	.n	n	b	.k	k	.s	.g
15	g	.p	p	d	.m	m	a	.i	i	.r	.f	f	.o	o	c	.l	l	.t	.h
16	h	.q	q	e	.n	n	b	.k	k	.s	.g	g	.p	p	d	.m	m	a	.i
17	i	.r	r	f	.o	o	c	.l	l	.t	.h	h	.q	q	e	.n	n	b	.k
18	k	.s	s	g	.p	p	d	.m	m	a	.i	i	.r	r	f	.o	o	c	.l
19	l	.t	t	h	.q	q	e	.n	n	b	.k	k	.s	s	g	.p	p	d	.m
20	m	a	u	i	.r	r	f	.o	o	c	.l	l	.t	t	h	.q	q	e	.n
21	n	b	a	k	.s	s	g	.p	p	d	.m	m	a	u	i	.r	r	f	.o
22	o	c	b	l	.t	t	h	.q	q	e	.n	n	b	a	k	.s	s	g	.p
23	p	d	c	m	a	u	i	.r	r	f	.o	o	c	b	l	.t	t	h	.q
24	q	e	d	n	b	a	k	.s	s	g	.p	p	d	c	m	a	u	i	.r
25	r	f	e	o	c	b	l	.t	t	h	.q	q	e	d	n	b	a	k	.s
26	s	g	f	p	d	c	m	a	u	i	.r	r	f	e	o	c	b	l	.t
27	t	h	g	q	e	d	n	b	a	k	.s	s	g	f	p	d	c	m	a
28	u	i	h	r	f	e	o	c	b	l	.t	t	h	g	q	e	d	n	b
29	a	k	i	s	g	f	p	d	c	m	a	u	i	h	r	f	e	o	c
30	b	l	k	t	h	g	q	e	d	n	b	a	k	i	s	g	f	p	d
1	c	m	l	u	i	h	r	f	e	o	c	b	l	k	t	h	g	q	e
2	d	n	m	a	k	i	s	g	f	p	d	c	m	l	u	i	h	r	f
3	e	o	n	b	l	k	t	h	g	q	e	d	n	m	a	k	i	s	g
4	f	p	o	c	m	l	u	i	h	r	f	e	o	n	b	l	k	t	h
5	g	q	p	d	n	m	a	k	i	s	g	f	p	o	c	m	l	u	i
6	h	r	q	e	o	n	b	l	k	t	h	g	q	p	d	n	m	a	k
7	i	s	r	f	p	o	c	m	l	u	i	h	r	q	e	o	n	b	l
8	k	t	s	g	q	p	d	n	m	a	k	i	s	r	f	p	o	c	m
9	l	u	t	h	r	q	e	o	n	b	l	k	t	s	g	q	p	d	n
10	m	a	u	i	s	r	f	p	o	c	m	l	u	t	h	r	q	e	o
11	n	b	.a	k	t	s	g	q	p	d	n	m	a	u	i	s	r	f	p
12	o	c	.b	l	u	t	h	r	q	e	o	n	b	.a	k	t	s	g	q
13	p	d	.c	m	a	u	i	s	r	f	p	o	c	.b	l	u	t	h	r
14	q	e	.d	n	b	.a	k	t	s	g	q	p	d	.c	m	a	u	i	s
15	r	f	.e	o	c	.b	l	u	t	h	r	q	e	.d	n	b	.a	k	t
16	s	g	.f	p	d	.c	m	a	u	i	s	r	f	.e	o	c	.b	l	u
17	t	h	.g	q	e	.d	n	b	.a	k	t	s	g	.f	p	d	.c	m	a
18	u	i	.h	r	f	.e	o	c	.b	l	u	t	h	.g	q	e	.d	n	b
19	.a	k	.i	s	g	.f	p	d	.c	m	a	u	i	.h	r	f	.e	o	c
20	.b	l	.k	t	h	.g	q	e	.d	n	b	.a	k	.i	s	g	.f	p	d
21	.c	m	.l	u	i	.h	r	f	.e	o	c	.b	l	.k	t	h	.g	q	e
22	.d	n	.m	.a	k	.i	s	g	.f	p	d	.c	m	.l	u	i	.h	r	f
23	.e	o	.n	.b	l	.k	t	h	.g	q	e	.d	n	.m	.a	k	.i	s	g
24	.f	p	.o	.c	m	.l	e	i	.h	r	f	.e	o	.n	.b	l	.k	t	h
25	.g	q	.p	.d	n	.m	.a	k	.i	s	g	.f	p	.o	.c	m	.l	u	i
26	.h	r	.q	.e	o	.n	.b	l	.k	t	h	.g	q	.p	.d	n	.m	.a	k
27	.i	s	.r	.f	p	.o	.c	m	.l	u	i	.h	r	.q	.e	o	.n	.b	l
28	.k	t	.s	.g	q	.p	.d	n	.m	.a	k	.i	s	.r	.f	p	.o	.c	m
29	.l	u	.t	.h	r	.q	.e	.o	.n	.b	l	.k	t	.s	.g	q	.p	.d	n

24. THE NUMBER OF HOURS OF MOONLIGHT

The ancients also hand down a formula by which one can ascertain for how many hours the Moon of any given age will shine. Since, they say, the first Moon shines for four *puncti*, this figure is added every day from the second Moon up until the full Moon, and then deducted in equal measure as the Moon wanes.³¹⁷ And so if you wish to know how many hours the second Moon shines, multiply 2 by 4, which makes 8 <*puncti*>. Divide by 5, because five *puncti* make one hour;³¹⁸ 5 times 1 is 5, and 3 remain. Therefore the second Moon shines for one hour and three *puncti*. Again, multiply 3 by 4, which makes 12. Divide by 5: 2 times 5 is 10, with 2 left over. The third Moon shines for two hours and as many *puncti*. Again, when you come to the tenth Moon, multiply by 4, which makes 40. Divide by 5: 5 times 8 is 40. The tenth Moon shines for eight hours.

And lest you perhaps think this formula is questionable, take fifteen (they say), and find out where the Moon shines all night long.³¹⁹ Multiply by 4, which makes 60. Divide by 5: 5 times 12 /356/ is 60. The fifteenth Moon traverses twelve hours, that is, the whole night. Again, if you wish to know how many hours the sixteenth Moon, the seventeenth, and the rest from then onwards shine, determine how much less than thirty each one is, and devise from this a basis for calculation. For example, if you want to know how long the twenty-fifth Moon will shine, declare how much less this is than thirty; obviously, it will be five. Multiply by 4: 4 times 5 is 20. Divide by 5: 5 times 4 is 20. Therefore the twenty-fifth Moon sheds its radiance for four hours, just like the fifth Moon.

To be sure, this formula functions smoothly at the time of the equinox, because it was established on the basis of this prescribed position. However, in the very long nights of winter, or again in the very short ones of summer, it is plain that the space of twelve <equal> hours, which according to this calculation we believe the Moon shines, far surpasses the one, and cannot fill up the other,³²⁰ for otherwise we might think that we ought not to understand these to be equinoctial hours, and divide each and every night into twelve equal parts, according to its length or brevity, and call these 'hours'. /357/

317 Cf. ch. 17 above.

318 On the difference between ordinary *puncti* and lunar *puncti* see ch. 4 above.

319 A Moon fifteen days old will be full. Being in opposition to the Sun, it will rise at sunset and set at dawn, thereby illuminating the entire night. Cf. ch. 6.

320 I.e., winter nights are longer than twelve equinoctial hours, and summer nights shorter.

25. WHEN AND WHY THE MOON APPEARS TO BE FACING UPWARDS, FACING DOWNWARDS, OR STANDING UPRIGHT

Those who have attempted to investigate the upper air say that whenever a new Moon is seen with the crescent lying flat out, it portends a stormy month, and when it is upright, a fair one.³²¹ Natural reason (*naturalis ratio*) shows that this is far from the case. How is this so? Is it really credible that the position of the Moon, which remains fixed in the ether, could be altered under the influence of a change in the winds or clouds which lie beneath it, and that it should lift up its horns any higher than nature (*naturae ordo*) dictates, as if it dreaded bad weather to come, particularly when such a blast of wayward wind would not occur all over the earth? The rotation of the Moon's position ought to be constant with respect to its varying degree of separation from the Sun. As St Augustine says in his exegesis of Psalm 10, *they say that <the Moon> does not have its own light, but is lit up by the Sun. But when it is <in conjunction> with <the Sun>, it turns towards us the part which is not lit up, and so no light can be seen. But when it begins to draw away from <the Sun>, it is lit up in the part which faces the earth, beginning (as it must) with a crescent, until the fifteenth Moon is in opposition to the Sun. At that point, <the Moon> rises when the Sun sets, so that anyone [358] who is observing the setting Sun, if he turns to the east when he can no longer see <the Sun>, may see the Moon rise. Then, when it begins to approach the Sun in the opposite direction, <the Moon> turns towards us that part which is not lit up, until it is reduced to a crescent. Eventually, it does not appear at all, because the part which is lit up is the upper part, the one facing towards the heavens, and the part which the Sun cannot shine upon is facing towards the Earth.*³²²

321 Bede's immediate source is not known, but Jones assembled probable classical and post-classical references (*BOT* 360). Isidore in *DNR* 38 relates weather superstitions about the Moon, but not this particular one. The same is true of Vegetius, *Epitoma rei militaris* 4.40–1, ed. Michael D. Reeve (Oxford: Oxford University Press, 2004), 153–5. Bede certainly had access to Vegetius – see ch. 28 below. Note that the Irish computists were likewise interested in the orientation of the crescent moon but did not connect this to weather prognostication: see esp. *Munich Computus* 48, ed. Warntjes 164, and Warntjes' notes.

322 Augustine, *Enarrationes in Psalmos* 10.3 (ed. Dekkers and Fraipont, 76.30–42), where this is one of a number of explanations advanced; cf. Augustine, *Ep.* 55.6–7 (ed. Goldbacher, CSEL 34, 175.15–177.16), where he is rather more committed to the explanation proposed here.

So when the Sun gradually ascends from the southern climes to the northern regions, and daylight increases, it is necessary that the Moon which appears at that time³²³ should precede the Sun towards the northern signs at a more leisurely gait. Therefore the new Moon which is seen about to set after sunset is situated, without a doubt, not beside the Sun, but above the Sun, by which it is lit up from below. <The Moon's> horns extend virtually parallel, and it seems to move along flat on its back, like a ship.³²⁴ But after the summer solstice, when the Sun's course turns back downwards towards the south, the Moon born in these months must likewise make haste towards the lower regions <of the sky>. Hence it happens that when <the Moon> is about to set in the southern regions, where the Sun has just set, without doubt it will not still appear above <the Sun>, but beside it, positioned towards the south, when it first appears after sunset. Thus <the Moon's> northern flanks, facing the Sun, will seem to advance in an erect position, for with its horns turned away from the Sun, /359/ the Moon always presents its round part to <the Sun>.³²⁵

According to this line of reasoning (*ordine rationis*) it follows that the longer the day is, the higher the new Moon will be; and the shorter and more inclined towards the south the day is, the lower down the new Moon will be seen. Hence the opinion of the untutored came to the conclusion that when the new Moon appeared higher up and supine, it betokened whirlwinds of storm, and when erect and lower down towards the south, fair weather.

323 That is, the crescent Moon on the first day of the lunation.

324 Bede's explanation can be paraphrased as follows. In the northern hemisphere, the crescent Moon at sunset at the spring equinox will be to the north of the celestial equator. Since the equator slants to the south, this means that the Moon will seem to be directly above the setting Sun. The Moon's underside – that is, the side directly opposite the horizon – will be illuminated from below by the setting Sun. The crescent will look like a boat, with the two horns pointing up. For illustration see Commentary. The likeness of the 'prone' crescent Moon to a ship, though the image seems intuitive, may come from Augustine, *Ep.* 55.6 (ed. Goldbacher 175.17–176.5), where Augustine is arguing against a Manichean notion that the Moon when waxing fills up with the divine principle liberated from the material world; when waning, this liberated divine principle is poured back into the Sun, like cargo being transferred from one boat to another.

325 'for with her horns ... round part to him': cf. Augustine, *Ep.* 55.7, ed. Goldbacher, 176.20–177.7. What Bede is saying is that, at the autumn equinox, the crescent Moon at sunset is to the south of the celestial equator. Since in the northern hemisphere the equator slants to the south, this means that the crescent Moon will seem to be to the south and left of the setting Sun. Its northern side will be illuminated, forming a crescent standing upright on one of its horns. See Commentary.

For such, indeed, is the condition of the revolving year: the motion of the atmosphere is much more gentle in the six months during which the day decreases than during the other six. The same logic explains why the waning Moon in its morning rising appears now upright, and now supine. It also explains why it will often emerge during the day bent downwards (*prona*),³²⁶ since the rays of the Sun, of course, are striking its upper part. Therefore the alteration of the Moon, which is natural and fixed, cannot portend the condition of the month to come. But those who are inquisitive about this sort of thing will often pronounce on atmospheric conditions by the colour of <the Moon> or sun, or from the heavens themselves, the stars or the shifting shapes of clouds, or other omens. Hence they claim that if the fourth moon is unblemished and its horns not blunted, it is a sign of fair weather for the rest of the month, and other things of this sort.³²⁷

26. WHY THE MOON, THOUGH SITUATED BENEATH THE SUN, SOMETIMES APPEARS TO BE ABOVE IT

It is no cause for marvel when we see that the Moon, as it passes through the southern signs, /360/ is much lower down and closer to the Earth³²⁸ than the Sun is when it tarries in its journey through these same regions. This is because the Moon travels within the frontier region separating this agitated atmosphere and the pure ether,³²⁹ for in fact it is much lower not only than the Sun, but also than Venus and Mercury, the lowest of the stars. Hence many philosophers say that *the Sun's distance from the Moon is nineteen times the distance from the Moon to Earth. Pythagoras, a man of keen perception, deduced that it is 126,000 stadia from the Earth to the Moon, double that to the Sun, and three times that to the zodiac.*³³⁰

But anyone may with good reason ask, and wonder in puzzlement why the Moon, when it is travelling in the solstitial circle [i.e. in the Tropic of Cancer] seems to ride as much higher above the summer Sun as the shadows <the Sun> makes seem to be shorter. Hence it has been intimated

326 That is, with the horns pointing downwards, like an eyebrow.

327 Isidore, *DNR* 38.3 (ed. Fontaine 301.27–8, trans. Kendall and Wallis 165–6); Pliny, *HN* 2.48.128 (ed. Rackham 1.268).

328 That is, to the horizon: for a fuller explanation see Commentary.

329 Cf. Pliny, *HN* 2.7.48 (ed. Rackham 1.198).

330 *Ibid.*, 2.19.83 (2.236).

by some that this progress of the Moon beyond the Sun in both regions of the sky, the north and the south, extends the whole width of the zodiac. Indeed in the south, the Moon's own depression contributes to this. The zodiac itself is three hundred and sixty-five and one quarter degrees long about the circuit of the heavens, but twelve degrees wide. The Sun usually wanders through the two middle <degrees>, but the Moon <travels> through them all.³³¹ /361/ When the Moon comes to the southern part of the zodiac, it occasionally appears lower than the winter Sun, not only because it is closer to the Earth, but because it is perhaps five or sometimes six degrees from the line of the Sun's path through the middle <of the zodiac>. The further it penetrates into the southern zone, the lower it appears from our point of view, who look upon it from the north. But when <the Moon> climbs into the solstitial circle, it frequently appears to be higher than the summer Sun, for although it is closer to the Earth than the Sun is, it sometimes travels beyond the limits of the Sun by five or even six degrees, and so from our point of view, standing on the Earth and looking at both stars from underneath, the further it moves towards the north, the more loftily it seems to seek the summits of heaven.

This will be demonstrated by the following example. At night-time, you go into a very large hall, certainly a church, immense in its length, breadth, and height, and ablaze with countless lamps burning in honour of a martyr's feast-day. Amongst these are two very large lamps of marvellous workmanship, hanging by chains from the ceiling, but the one which is nearer to you when you enter is also closer to the floor. However the hall is so vast, and the height of those distant lamps so great, that with your night-vision (*nocturno uisu*) you can make out the light and rays of flame more than you can the vessel itself which contains the fire. Now indeed,

331 Cf. *ibid.* 2.13.66–7 (1.212–14). Bede's statement that the Sun travels 'in the two middle <degrees>' (*harum duas tantum medias sol ... peruagare consuevit*) is, on the face of it, incorrect: the Sun's path never deviates from the centre of the ecliptic, because it defines the ecliptic. However, it seems to be an attempt to paraphrase a rather obscure statement in Pliny: *sol deinde medio fertur inter duas partes flexuoso draconum meatu* ('then the Sun travels unevenly in the middle of the zodiac between the two halves with a wavy serpentine course': Rackham's trans. 1.215). It is possible that Bede meant to say that the Sun travels in the middle, between the two parts of the Zodiac, i.e. the six degrees to the north and the six degrees to the south of the ecliptic. Given his numerous statements elsewhere about the Sun's undeviating course, particularly in contrast to the Moon's, this construction would seem plausible, but it must be admitted that the Latin does not support it.

as you start to advance towards the lamps, looking straight at them,³³² and beyond them towards the ceiling or opposite walls, the lamp which is nearer appears higher to you. The closer you approach, the higher up the one which is lower will appear to you, until you see with greater certainty where they are all actually positioned. So /362/ likewise we, situated beneath the two great luminaries of heaven, see them both at the meridian in such a way that the one which is lower, in rising further and further to the north, seems ever higher and higher, and as we train our eyes upon them and through them to the heavens, the one which, by obvious reason, is patently riding lower down appears to be higher than the other.

27. ON THE SIZE, OR ECLIPSE, OF THE SUN AND MOON

Pliny relates the following information concerning the size or eclipse of the Sun and Moon in that most delightful book, the *Natural History*: *It is obvious that the Sun is obscured by the intervention of the Moon, and the Moon by the interposition of the Earth, and each affects the other. The Moon takes away by its interposition the very same rays of the Sun which the Earth takes away from the Moon. When <the Moon> makes its transit, <the Earth> is darkened by sudden gloom; the star [i.e. the Moon], on the other hand, is quenched by <Earth's> shadow. The darkness is nothing but the Earth's shadow. Both eclipses occur, not every month, but at intervals; this is due to the incline of the zodiac, and the twists and turns, as they say, of the Moon's course, for the movement of these stars [i.e. Sun and Moon] is not always matched down to the finest divisions. This theory draws mortal minds into the heavens, and discloses to their contemplation from this height, as it were, the magnitude of the dimensions of the three largest things in nature. /363/ Were the Earth larger than the Moon, it would not be possible for the entire Sun to be erased by the Moon when it comes between <the Sun> and the Earth.³³³ The Sun's magnitude is seen to be the largest of the three, nor would it be necessary <to demonstrate> that its size is something immense by the evidence of the eyes and the mind's induction, given that <the Sun> casts, from the mid-point of heaven, shadows of equal*

332 That is, keeping them aligned, one behind the other.

333 This is, of course, wrong, but no ancient author known to Bede other than Pliny discusses the size of the Moon relative to the Earth, though many compare the Moon to the Sun. Hence Bede never had occasion to question Pliny on this point.

length from trees spread out for any number of miles.³³⁴ And a little later, he says: *It is certain that a solar eclipse can only take place when the Moon is new or in its first day, what they call 'in conjunction'; <an eclipse> of the Moon on the other hand can only happen when the Moon is full, and always when it is as close as possible.*³³⁵ *There are eclipses of both stars below the Earth*³³⁶ *every year at the appointed days and hours, but even when they take place above the Earth they are not visible everywhere, sometimes because of cloud, and often because the globe of the Earth blocks out the dome of heaven. Two hundred years ago, this was discovered by the insight of Hipparchus.*³³⁷

But lest we seem to take up a whole chapter with the statements of a pagan, let us also ask the doctors of the Church what they think of this. St Jerome, interpreting the passage in the Gospels which states that darkness covered the whole Earth at the Passion, says: *Those who write against the Gospels suspect that the disciples, being ignorant men, were making sense of a solar eclipse, such as usually takes place in spring and autumn, by <ascribing it to> the Lord's Resurrection. But no one doubts that at the time of the Passover the Moon is at its fullest, even though a solar eclipse never happens except at the new Moon.*³³⁸

28. WHAT THE POWER OF THE MOON CAN DO

In the fourth book of the *Hexaemeron*, the blessed bishop Ambrose describes what the power of the Moon can do in this wise: *Similar things concerning the nature (ratione) of the Moon are in accord with what we have observed about her consort and brother [i.e. the Sun], since she assumes the same office as does her brother, so that she illuminates the darkness, makes seed to sprout and fruit to swell. Nonetheless, there are many things about her*

334 Pliny, *HN* 2.7.47–2.8.50, ed. Rackham 1.196–200. Bede also cites this passage in *The Nature of Things* 22, ed. Jones 214–15, trans. Kendall and Wallis 87–8.

335 I.e. to the path of the Sun.

336 I.e. in the opposite hemisphere.

337 *HN* 2.10.56–7, ed. Rackham 1.204.

338 Jerome, *In Evangelium Matthei* 4.27.45, ed. D. Hurst and M. Adriaen, CCL 77 (1959), 273.1751–6; cf. Augustine, *De civitate Dei* 3.15, ed. Dombart and Kalb 78.10–18, and his *Ep.* 199.10, ed. Goldbacher, CSEL 67 (1911), 273.18–274.2. A similar reading is put forward by the mid-seventh-century 'Irish Augustine', *De mirabilibus sacrae scripturae* 3.13, PL 35. 2199.

which are different from her brother. All day his heat dries out the moisture which the dew restores in the space of a brief night, for the Moon herself is said to abound in dew. Consequently, they say that when the night is clear and the Moon full, a greater quantity of dew bathes the lilies. Many who sleep in the open air claim that the more moonlight there is, the more dampness collects upon their head. Hence in the *Canticle*, Christ says to the Church, 'For my head is full of dew, and my hair with the drops of the night.'³³⁹ Then again, <the Moon> waxes and wanes, so that it is small when it appears as a new Moon, but though reduced in size, it grows. There is a great mystery in this, for the elements respond in sympathy to her diminution, and as she grows, those things which were depleted increase in size, for example the humid brains of sea animals. For they say that as the Moon grows to fullness, oysters and many other such creatures are found to be larger. Those who have learned about this from their own experience claim that the same is true of the inner parts of trees.³⁴⁰ The art of the architects and their daily experience confirms these words of St Ambrose. They teach that one should take particular note that the trees from which sailing ships are to be fashioned, /365/ or any public works to be constructed, be felled between the fifteenth day of the Moon and the twenty-second. For only timber felled during these eight days will remain immune from rot, but wood felled on the other days will turn to dust within a year, consumed from within by the destructive action of worms. They also take care to fell timber after the summer solstice, that is, from the month of July and August up to the Kalends of January, for in these months, with the moisture dried up, the wood is dryer and therefore stronger.³⁴¹ The Persian selenite stone demonstrates the effect of the Moon's power in a marvellous fashion. Containing the image of the Moon, it shines with a snowy white

339 Song of Songs 5:2.

340 Ambrose, *Hexaemeron* 4.7.29, ed. Schenkl 134.13–135.6.

341 'The art of the architects ... therefore stronger'. Almost verbatim from Vegetius, *Epitoma rei militaris* 4.35.3, ed. Reeve, 148.8–10. *The Reckoning of Time* is, however, not mentioned by Christopher Allmand, *The 'De re militari' of Vegetius: the Reception, Transmission and Legacy of a Roman Text in the Middle Ages* (Cambridge: Cambridge University Press, 2011). Gregory Hays remarks in his review in *Speculum* (October 2012, p. 1157) that Allmand's explanation of why monks copied Vegetius (that it was an allegory of struggle against sin) is not persuasive: 'the work was copied because it was seen as a potential aid to the reading of Old Testament war books like Joshua, Kings, and Maccabees, or of the Latin Josephus.' We might also add that it was of scientific interest. Vegetius survives in over 300 medieval manuscripts. For other classical and patristic expressions of the same notion see references in Jones, *BOT* 362.

glow, and it is claimed that it *increases or diminishes day by day, following the course of that star*.³⁴² In the sixth book of the *Hexaemeron* Basil, the very reverend bishop of Caesarea, writes to corroborate these claims, saying: *For I think that in the generation of animals, and in everything else which the Earth produces, formation is conferred in no small degree by the changes of the Moon. When she grows old, their bodies seem weaker and empty, and when she waxes, they are whole and full; for in a hidden fashion she pours a certain humour, mixed with warmth, into their inward parts. Those who sleep under the open sky when the Moon is shining, prove that this is true when they wake up afterwards and find their head drenched with very heavy dew. Fresh meat, if it lies out under the Moon, is quickly corrupted by a damp rot. The same thing is shown by the brains of cattle, and even by the viscera of sea creatures, which are quite moist, and by the pith of trees also. And a little later: But the movement of the atmosphere is controlled by these very same variations, as is proved by the new Moon, which when it follows a long period of very fine weather stirs up heaps of cloud, and disturbances [366] <of the air>. This also presages a receding current in channels, or even a reflux of the sandbanks which are found hard by the ocean; they say that these, following the phases of the Moon, are violently shifted to regions nearby. Currents in both directions are also wont to change their usual gentle flow for the remainder of this period; for when the Moon is new they cannot lie still, but rage with fierce turmoil until the Moon appears again to bestow calm upon the agitated waves*.³⁴³

342 Pliny, *HN* 37.67.181 (ed. Rackham 310); cf. Isidore, *Etym.* 16.4.6 (ed. Féans Landiera, 45.10–47.1) and 16.10.7 (123.2–5)), as well as Augustine, *De civitate Dei* 21.5.1 (ed. Dombart and Kalb 765.30–2). See below, ch. 43, where Bede, quoting the *Epistola Cyrilli*, again invokes the selenite, this time as an experimental test for establishing the true Paschal computation. Bede's use of the phrase 'it is claimed' here may hint at a slight scepticism on his part; likewise, the passage in ch. 43 is more a rhetorical gesture than a claim to factuality (i.e. even if the rule established by the Nicene Council did not exist to justify the orthodox *computus*, the selenite stone would prove it right – but, of course, the Nicene rule *does* exist ...). It should be noted that Pliny also expresses some reservations about the selenite, though Isidore and Augustine do not. This may indicate that Bede had access to all or part of Book 37 of *HN*.

343 Basil, *Hexaemeron* 6.10–11, trans. Eustathius, ed. Amand de Mendieta and Rudberg 85. 25–86.5 and 8–18. Jones' apparatus suggests that the translation here might be by Bede himself, but it is definitely by Eustathius.

29. THE HARMONY OF THE MOON AND THE SEA

But more marvellous than anything else is the great fellowship that exists between the ocean and the course of the Moon.³⁴⁴ For at <the Moon's> every rising and setting, <the ocean> sends forth the strength of his ardour, *which the Greeks call 'rheuma'*,³⁴⁵ to cover the coasts far and wide; and when it retreats, it lays them bare. The sweet streams of the rivers it abundantly mingles together and covers over with salty waves. When the Moon passes on, <the ocean> retreats and restores the rivers to their natural sweetness and level, without delay. *It is as if <the ocean> were dragged forwards against its will by certain exhalations of the Moon*, and when her power ceases, *it is poured back again into his proper measure*.³⁴⁶

For as we taught above,³⁴⁷ the Moon /367/ rises and sets each day four *puncti* later than it rose or set the previous day; likewise, both ocean tides, be they by day or by night, morning or evening, never cease to come and go each day at a time which is later by almost the same interval. Now a *punctus* is one-fifth of an hour, and five *puncti* make an hour. Because the Moon in two lunar months (that is, in fifty-nine days) goes around the globe of the earth fifty-seven times,³⁴⁸ therefore the ocean tide during this same period of time surges up to its maximum twice this number of times, that is, 114, and sinks back again to its bed the same number of times. For in the course of twenty-nine days, the Moon lights up the confines of Earth twenty-eight times, and in the twelve hours which are added on to make up the fullness of the natural month, it circles half the globe of the Earth, so that, for example, /368/ the new Moon which emerged <from conjunction> last month above the Earth at noon, will this month meet up with the Sun to be kindled at midnight beneath the Earth. Through this length of time, the tides will come twice as often, and fifty-seven times

344 Cf. ps.-Isidore, *Liber de ordine creaturarum* 9.4, ed. Manuel C. Díaz y Díaz (Santiago de Compostela: Universidad de Santiago, 1972), 148.28–30; Virgilius Maro Grammaticus, *Epitomae* 4, ed. Löfstedt 122.106–11.

345 Vegetius 4.42.2, ed. Reeve, 152.14. Bede also uses *rheuma* in this sense in his prose *Life of Cuthbert* 17, ed. Bertram Colgrave, *Two Lives of St Cuthbert* (Cambridge: Cambridge University Press, 1940), 214. By contrast, Isidore uses the word *rheuma* only in its medical sense of 'morbid discharge': *Etym.* 4.7.11.

346 Ambrose, *Hexameron* 4.7.30, ed. Schenkl 136.3–5; cf. Isidore, *DNR* 40.1, ed. Fontaine 307.8–11, trans. Kendall and Wallis 148.

347 Ch. 17.

348 See n. 351 below.

*the high seas swell,
breaking their barriers and once again retreat unto themselves.*³⁴⁹

Because the Moon in half a month (that is, in fifteen days and nights) circles about the Earth fourteen times, and once besides around half the earth, it happens that it is in the east at evening when it is full, while earlier it was in the west at evening when it was new. In this period of time, the sea ebbs and flows twenty-nine times. Just as the Moon in fifteen days (as we said) is flung back by its natural retardation towards the east from its position in the west at evening,³⁵⁰ <so that while it> occupies the east today at morning, it will be in the west at morning fifteen days from now, so also the ocean tide which now occurs at evening, will after fifteen days be in the morning. On the other hand, the morning tide, impeded by this daily drag, will then rise at evening. And because the Moon in one year (that is, in twelve of its months, which makes 354 days) circles the globe of the Earth twelve fewer times (that is, 342 times), /369/ so the ocean tide within the same period washes up against the land and recoils 684 times.³⁵¹

The sea reflects the course of the Moon not only by sharing its comings and goings, but also by a certain augmenting and diminishing of its size, so that the tide recurs not only at a later time than it did yesterday, but also to a greater or lesser extent. When the tides are increasing, they are called *malinas*, and when they are decreasing, *ledones*.³⁵² In alternating periods of seven or eight days, they divide up every month among themselves in their fourfold diversity of change. Sometimes by equal shares both fill up

349 Vergil, *Georgics* 2.479–80.

350 The Moon moves across the sky in two ways. Each day, it rises in the east and sets in the west: from the medieval perspective, this is because it is borne about by the daily east–west rotation of the outermost heavenly sphere. But the Moon also progresses eastwards around the zodiac once each month. Bede imagines the Moon ‘falling behind’ the daily rotation of the outmost heavenly sphere, so that it rises each day a little later. The Moon that rose and set with the Sun at conjunction rises and sets twelve hours later, and at the opposite side of the heavenly sphere, when it is full.

351 Bede imagines that the Moon every day ‘runs ahead’ of the Sun by four *puncti*, or four-fifths of an hour (forty-eight minutes), so that it can meet up with the Sun at conjunction 29½ days later (cf. ch. 17). Over 354 days, this fifty-minute advance amounts to about twelve days ($50 \times 354 = 17,700$ minutes $\div 60 = 295$ hours $\div 24 =$ approximately 12 days). The ‘gain’ is therefore about one day each month. Hence, as Bede said earlier, the Moon circles the earth twenty-eight times each twenty-nine days, fifty-seven times each fifty-nine days etc. From a modern heliocentric perspective, we would say that the Earth rotates twenty-nine times, but the retardation of the Moon means that it seems to circle our planet one less time.

352 On the meaning of *ledo* and *malina* see Commentary.

their course in seven and a half days; sometimes they will arrive earlier or later, or be more or less strong than usual when they are pushed onwards or forced back by the winds, or by the pressure of some other phenomenon or natural force, with the result that sometimes their order is upset, and the *malina* tide claims more in this month, and less in the next. Hence both movements will begin now in the evening, now in the morning. Indeed, when an evening tide occurs at the full or new Moon, it will be a *malina*, and for the next seven days this same *malina* tide will be greater and stronger than the morning tide. Similarly if a *malina* tide starts in the morning, the morning tide for days afterwards will cover /370/ the land with more sea. The evening tide, confined to the boundaries laid down by the morning tide, refrains from extending its course further, although in some months both tides grow at utterly different rates.

The more the stronger tide covers the shore and lands and fills up the rivers and straits, the more it is wont to leave these same coastlines empty and bare as it recedes. So let him who is capable see if what Philip says is true or no: *There are those who claim and affirm that an enormous outpouring of the ocean takes place in all the streams of every region and land at one and the same time.*³⁵³ But we who live at various places along the coastline of the British Sea know that where the tide begins to run in one place, it will start to ebb at another at the same time. Hence it appears to some that the wave, while retreating from one place, is coming back somewhere else; then leaving behind the territory where it was, it swiftly seeks again the region where it first began. Therefore at a given time a greater *malina* deserts these shores in order to be able all the more to flood other <shores> when it arrives there.

This can easily be grasped from the Moon's course. For example, positioned at about the winter sunrise or at the <summer> solstice sunset, the Moon at any given age, whether it be above the earth or beneath it, will pull at the tide here, but will repel it when she is positioned at winter sunset or summer solstice sunrise. But the Moon which signals the rise of the tide here, signals its retreat in other regions far from this quarter of the heavens. And there is more: those who live north of me on the same coastline usually receive and give back each tide sooner than I do, and those /371/ to the south much later. In every region, the Moon holds to whatever rule of fellowship with the sea it received in the beginning. Hence we have ascertained that the *malina* often begins about five days before

353 Philippus Presbyter, *Commentarii in librum Job* 38 (PL 26.752C).

the new or full Moon, and the *ledones* the same number of days before the half Moon. Near the two equinoxes, the tide rises higher than usual, and is much lower at the winter and summer solstices.³⁵⁴ The Moon always *exerts less force when she is in the north and at her highest point away from the Earth*³⁵⁵ *than when she ventures into the south and treads closer*. Natural reason obliges the tides to flow according to the pattern of the Moon's cycle of nineteen years; hence the course of the sea returns *to the beginning of its movements and to equal increments*.³⁵⁶

30. EQUINOXES AND SOLSTICES

On the subject of the equinoxes and solstices, the opinion of many learned men, both worldly <philosophers> and Christians, is straightforward: the equinoxes are to be observed on the eighth Kalends of April [25 March] and the eighth Kalends of October [24 September], the solstices on the eighth Kalends of July [24 June] and the eighth Kalends of January [25 December].³⁵⁷ Thus Pliny, who was both an orator and a philosopher, says in the second book of his [372] *Natural History*: *Now the Sun itself has four turning-points: twice when the night is equal to the day, in spring and autumn, when it arrives at the mid-point of the Earth in the eighth degree of Aries or Libra, and twice when the proportions <of day and night> are*

354 Pliny, *HN* 2.99.215, ed. Rackham 1.344. Based on Pliny, Bede corrects his own *On the Nature of Things* ch. 39 on this point (see Kendall and Wallis' commentary, 159–60). On the Irish *De ordine creaturarum* 9.7 as a source of this chapter (and how Bede corrects it) see Marina Smyth, 'The Seventh-Century Hiberno-Latin Treatise *Liber de ordine creaturarum*. A Translation', *The Journal of Medieval Latin*, 21 (2011): 137–222 at 140–2 and 188–9. *De ordine creaturarum* ch. 9 implies a lunar month of thirty-one days (it measures the length of the *ledo* or *malina* at seven days, twelve hours and a quarter-day) and it positions the strongest tides at both the equinoxes and the solstices – the error Bede makes in *DNR* and corrects here.

355 By 'Earth', Bede means 'horizon'; cf. ch. 26.

356 Pliny, *HN* 2.97.215–16, ed. Rackham 1.344. However, Pliny proposes an eight-year cycle for the tides. Bede accepted this model in *The Nature of Things* 39 but modifies it here.

357 Cf. Isidore, *DNR* 8.1, ed. Fontaine 205.1–5, trans. Wallis and Kendall 126; *Etym.* 5.34.2–3, ed. Urquila and Santos 113–15. Bede reproduces this opinion in *On Times* 7 (ed. Jones 590; trans. Kendall and Wallis 110), but implicitly retracts it in ch. 10, where he provides the 'Egyptian' date for the vernal equinox, 21 March (ed. Jones 593; trans. Kendall and Wallis 112). The validity of the older Roman dates was still being debated in the tenth century, as we see from Helerpic, *De computo* (PL 137.40C): see Warntjes' commentary on *Munich Computus* 107.

reversed: in winter, in the eighth degree of Capricorn, when the days grow longer, and in summer, in the same <eighth> degree of Cancer when the nights grow longer. Since an equal part of the universe is above and below the Earth at all times, it is the angle of the zodiac which is the cause of this inequality. The signs which are upright when they rise hold their light for a longer time; those which rise at an angle, pass on in a briefer period of time.³⁵⁸

Hippocrates the master physician (*archiater*), writing to King Antigonus on how he should watch over himself during the course of the year in order to prevent illness, says this: *Let us begin therefore with the solstice, that is, with the eighth Kalends of January [25 December]. From this day forward up until the spring equinox, a period of ninety days, moisture increases in bodies. This season activates a man's phlegm, [373] so that people frequently incur catarrh, <suffer from> dripping of the uvula, pain in the side, weakness of vision, and ringing in the ears, and cannot smell anything. At such a season, take high-quality food, hot and seasoned with assafoetida, with pepper and mustard. Wash your head seldom. However, purge without ceasing. Indulge in wine and do not stint on sex for the first forty days. Ninety days follow from the above-mentioned day until the vernal equinox. From the above-mentioned eighth Kalends of April [25 March], until the eighth Ides of May [8 May], there are forty-five days. In these days the sweet humours (that is, blood) increase in man. Eat food that is fragrant and very pungent. Again, from the eighth Ides of May [8 May] until the eighth Kalends of July [24 June] are forty-five days. In these days the bitter bile (that is, red choler) increases. Eat sweet foods, indulge in wine, abstain from sex, and fast very little. The summer seasons begins on the eighth Kalends of July [24 June]. At that time, the increase of red bile falls off, and black bile waxes; it is held that this occurs until the autumn equinox, that is, until the cold season. For ninety days, use all such foods as are sweet, fragrant, and somewhat cold, and which act gently upon the stomach. From the autumn equinox, which is from the eighth Kalends of October [24 September], until the eighth Kalends of January [25 December], the bitterness of the black bile wanes and the density of*

358 Pliny, *HN* 2.17.81, ed. Rackham 1.224. Because of variations in the angle formed by the intersection of the ecliptic and the horizon (see Commentary on ch. 25), some zodiac signs will rise more or less 'upright' – i.e. perpendicular to the horizon – while others will rise at an angle to the horizon. The former will require less time to clear the horizon than the latter, and thus will 'hold their light for a longer time'.

the <phlegmatic> humour increases. Use all such foods as are hot and very pungent, abstain from sex and wash little. From the above-mentioned <date> /374/ until the Vergiliae [i.e. Pleiades] set (that is, until the sixth Ides of February [8 February]) there are forty-six days, and then the Pleiades set. From that hour blood increases in men. It behoves one, therefore, to eat food that is very pleasant, and to indulge in wine and sex. There are forty-seven days in winter.³⁵⁹

This is what some of the pagans say; and a great many of the Church's teachers recount things which are not dissimilar to these about time, saying that our Lord was conceived and suffered on the eighth Kalends of April [25 March], at the spring equinox, and that he was born at the winter solstice on the eighth Kalends of January [25 December]. And again, that the Lord's blessed precursor and Baptist was conceived at the autumn equinox on the eighth Kalends of October [24 September] and born at the summer solstice on the eighth Kalends of July [24 June]. To this they add the explanation that it was fitting that the creator of eternal light should be conceived and born along with the increase of temporal light, and that the herald of penance, who must decrease, should be engendered and born at a time when the light is diminishing.³⁶⁰ But because, as we have learned in connection with the calculation of Easter, the judgement of all the men of the East (and especially of the Egyptians, who, it is agreed, were the most skilled in calculation) is in particular agreement that the spring equinox is on the twelfth Kalends of April [21 March], we think that the three other

359 Ps.-Hippocrates, *Ad Antigonum regem* 8–9, ed. E. Liechtenhan, J. Kollesch and D. Nickel, in *Marcelli de medicamentis liber*, ed. M. Niedermann, 2nd ed. *Corpus medicorum latinorum* 5 (Berlin: Akademie-Verlag, 1968), 1.18–25.

360 For the 'very many' doctors of the Church (principally Augustine, but also Caesarius of Arles) see Jones, *BOT* 366. John the Baptist's statement 'he must increase, but I must decrease' comes from John 3:30. Bede himself takes up this theme in his commentary on Luke 1, ed. Hurst 28.344–67, trans. Kendall and Wallis 127–30. His immediate source here is an anonymous fifth-century treatise entitled *De solstitia et aequinoctia conceptionis et nativitatis Domini nostri Jesu Christi et Iohannes Baptistas* (E. Dekker, *Clavis patrum latinorum* 3rd ed. no. 2277), printed in PL Supplementum 1.557–67. It formed part of a collection of sermons ascribed to John Chrysostom, though only some were authentic: see Rosalind Love, 'Bede and John Chrysostom', *Journal of Medieval Latin*, 17 (2007): 76–8. Various theological justifications were advanced for the traditional dates of the equinoxes and solstices: see *Munich Computus*, Warntjes' note 106–7. For echoes in Ælfric's homily on the Nativity of St John see Parker, *Winters in the World* 174–5.

turning-points of the seasons ought to be observed a little before <the dates> given in the popular treatises.³⁶¹

So let us speak briefly about the spring equinox, which is the chief of the four annual changes we mentioned, as the Creation of the world indicates.³⁶² The rule of the Church's observance, confirmed at the Council of Nicaea, holds that Easter Day /375/ is to be sought between the eleventh Kalends of April [22 March] and the seventh Kalends of May [25 April]. Again, the rule of Catholic teaching commands that Easter is not to be celebrated before the passing of the spring equinox.³⁶³ Therefore he who thinks that the eighth Kalends of April [25 March] is the equinox is obliged either to declare that it is licit to celebrate Easter before the equinox, or to deny that it is licit to celebrate Easter before the seventh Kalends of April [26 March], and also to confirm that the Pasch which our Lord kept with his disciples on the night before he suffered was either not on the ninth Kalends of April [24 March] or was before the equinox.³⁶⁴ For a doctrine not only of our own day but also of the Mosaic law decrees that the day of the Paschal feast cannot be celebrated before this equinox has passed. Anatolius declares: *It is plain that Philo and Josephus teach thus; thus did their elders Agathabolus, and Aristobolus of Panaeda his student, who was one of the seventy elders sent by the priests to King Ptolemy to translate the Hebrew books into the Greek tongue, and who answered many <questions> about the traditions of Moses which the king proposed and asked particularly. So these men, when they explained the questions*

361 The reference to the Egyptians comes from Dionysius' letter to Petronius, ed. Krusch, *Studien II* 65.12–23. Abbot Ceolfrith's letter to King Nechtan (*Historia Ecclesiastica* 5.21, ed. Colgrave and Mynors 542) also associates the 21 March date with the Egyptians – i.e. the Alexandrians. Bede is not interested in fixing the dates of the autumn equinox or the solstices, as they are of no computational consequence. For a signal exception see *Letter to Wicthed* 6 Appendix 3c p. 599.

362 See above, ch. 6.

363 Cf. Dionysius Exiguus, *Ep. ad Petronium*, ed. Krusch 65.13–27; *Prologus Cyrilli* 10, ed. Mosshammer 120.

364 The traditional historic date of the Passion was 25 March (see Introduction pp. 15–16); therefore Christ's Last Supper could not have been a Passover meal (as the Synoptics indicate) if the equinox were on the 25th, since Passover must follow the equinox. Cf. *Letter to Wicthed* 12, pp. 603–4 below. Bede is more categorical about the dates of the solstices and equinoxes than are Irish sources such as *Einsiedeln Computus* 16 (ed. Loevenich 54.3–56.12), *Munich Computus* 38 (ed. Warntjes 102–6) and *De ratione computandi* 47 (ed. Ó Cróinín 157), which list both 'Greek' and 'Roman' dates for solstices and equinoxes as equally valid, for different reasons.

about Exodus, said that the Pasch could not be sacrificed before the spring equinox had passed.³⁶⁵

Hence it is necessary, in order to preserve the rule of truth, that we state clearly both that the Pasch is not to be sacrificed before the equinox and before the darkness has been overcome, and that this equinox is rightfully to be assigned to the twelfth Kalends of April [March 21], as we are instructed not only by the authority of the Fathers, but also by examining the sundial (*horologica consideratione*).³⁶⁶ /376/ But the other three termini of the seasons are, by an analogous reasoning, to be observed the same number of days before the eighth Kalends of the following <months>.

31. THE VARYING LENGTH OF DAYS AND THE DIFFERENT POSITION OF THE SHADOWS

While the equinox falls on the same day, and that day is of the same length, everywhere in the world, the solstice and all the other days are of different lengths because of disparate climates, and the shadows <cast by the Sun>. The books composed through the efforts of both gentiles and Christians, and competent observers hailing from both regions (that is, north and south) show this plainly. For St Ambrose, discussing the seasons and the path of the Sun in the fourth book of his *Hexaemeron*, says, amongst other things: *A shadow is shorter at midday than it is either at the beginning of the day or at the end, and this is true where we live, in the west. There are those in southern climes who have no shadow at noon on two days of the year; having the Sun directly overhead, they are illuminated all around on every side. Hence they are called 'shadowless' [ascii] from the Greek [ἄσκιος]. Many claim that the Sun is so high in the sky that through the narrow mouth of a well, they can see the water glinting in the depths. In the south there are said to be people called 'amfiscii'*³⁶⁷ [*'shadowed all about'*] *because they cast a shadow on both sides.*³⁶⁸ And a little later: *In this part of the world in which we live, there are people dwelling in the south who*

365 Anatolius 2 as recorded in Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.32.16–17, ed. Mommsen 725.1–8; the identical passage is found in the *Liber Anatolii*, ed. McCarthy and Breen 46.46–52.

366 See Commentary, pp. 464–8. A similar statement appears in Ceolfrith's letter to King Nechtan of the Picts in *Ecclesiastical History* 5.21, ed. Colgrave and Mynors 542–3.

367 From the Greek ἀμφίσκιος.

368 Ambrose, *Hexaemeron* 4.5.23, ed. Schenkl 130.11–20.

seem to cast a shadow towards the south. This is said to happen in high summer, when the Sun travels towards the north.³⁶⁹ Basil himself writes things which are similar to this in his commentary on Genesis.³⁷⁰

But /377/ Pliny also, in a book which is not religious, yet not to be condemned, expounding these matters at greater length, writes as follows: *Sundials cannot be used everywhere because the Sun's shadows change every three hundred, or at most five hundred stadia. Hence in Egypt at noon on the equinox, the shadow of the pin, which they call the gnomon, is a little more than half the length of the gnomon. In the city of Rome the shadow is one-ninth shorter than the gnomon, in the town of Ancona it is longer by one thirty-fifth, and in the region of Italy they call Venetia the shadow at the same hour is equal to the gnomon. Likewise they report that in the town of Syene, which is five thousand stadia upstream from Alexandria, no shadow is cast at noon on the solstice, and that a well, constructed for the sake of this experiment, is illuminated from top to bottom. From this it would appear that the Sun is straight overhead in that region, and Onesicretus writes that this occurs at the same time in India above the river Hypasis. They say that in Berenice, the city of the Trogodytes, and 4820 stadia away in the same region in the town of Ptolomais, which was built on the shores of the Red Sea for the first elephant hunts, this same thing occurs forty-five days before the solstice, /378/ and forty-five days after, and after those ninety days the shadows fall to the south. Again, in Meroe, an inhabited island in the Nile River and the capital of the Ethiopian people five thousand stadia from Syene, the shadows disappear twice each year, when the Sun reaches the eighteenth degree of Taurus and fourteenth of Leo. In the midst of the Indian tribe of the Oretes there is a mountain called Maleus; near it, the shadows in summer fall to the south and those in the winter to the north; the north <celestial pole> appears there on only fifteen nights. In the famous port of Patalia in India, the sun rises on the right and the shadows fall to the south. When Alexander stayed there, it was noticed that the north <celestial pole> could be seen only during the first part of the night. His guide Onesicretus wrote that in those parts of India where there are no shadows, the north <celestial pole> cannot be seen, and therefore these parts are called shadowless, and the hours are not reckoned there. And Eratosthenes relates that over the whole land of the Trogodytes the shadows fall in the wrong direction for ninety days*

369 *Ibid.* (131.4–7).

370 Basil, *Hexaemeron* 6.8, trans. Eustathius, ed. Amand de Mendieta and Rudberg 80–1.

out of the year. Thus it happens that, due to variation in the increment of daylight, the longest day in Meroe measures twelve equinoctial hours and eight parts of an hour, but in Alexandria fourteen hours, in Italy fifteen, and in Britain seventeen, where the bright nights of summer confirm what reason compels us to believe: /379/ that when the Sun is climbing closer to the topmost point of the world during the <summer> solstice, the lands which lie beneath <the Pole>, because of the narrow circuit of light, have continuous day for six months, and then <continuous> night, when <the Sun> has withdrawn towards the winter regions. Pytheas of Marseilles writes that this happens on the island of Thule, which is six days by ship from Britain.³⁷¹

In writing about these matters concerning the varying length of the solstitial days, Pliny leaves the length of the winter days in those regions to be inferred. But he makes it equally clear what the length of the night in both seasons is, because it is necessary that the days, be they of whatever length, make up, together with the night, a space of twenty-four hours. But it should be noted that Solinus writes these things about Thule in another vein: *In uttermost Thule, when the Sun passes at the summer solstice through the star Cancer, there is no night, and likewise no day at the winter solstice.*³⁷² Nor does Pliny overlook this in his seventh book: *The uttermost place of all they call Thule, in which we have indicated that there are no nights at the solstice when the Sun passes through the sign of Cancer, and on the other hand no days at the winter <solstice>. Some are of the opinion that this happens for six months.*³⁷³

32. WHY THE SAME DAYS ARE UNEQUAL IN LENGTH

The reason why the same <calendar> days are of unequal length is the roundness of the Earth, for not without reason is it called ‘the orb of the world’ on the pages of Holy Scripture³⁷⁴ and of ordinary literature. It is,

371 Pliny, *HN* 2.74.182–2.77.187, ed. Rackham 1.314–18. ‘Thus it happens that ... by ship from Britain’: cf. Bede, *On Times* 7, ed. Jones 591; trans. Kendall and Wallis 110–11.

372 Solinus, *Collectanea rerum memorabilium* 22.9, ed. Th. Mommsen (Berlin: Weidmann, 1895), 101.11–102.2; cf. Isidore, *Etym.* 14.6.4, ed. Spevak, 103.

373 Pliny, *HN* 4.16.104, ed. Rackham 2.198. All the MSS agree that Bede refers to the seventh book of Pliny, though the quotation comes from the fourth. The simplest explanation is a misreading of ‘IIII’ as ‘UII’ by an early copyist.

374 E.g. Job 37:2; Psalm 17:16, 18:5, 48:2 (49:2), 71:8 (72:8), 97:7 (98:7); Wisdom 1:14, 5:21,

in fact, a sphere set in the middle of the whole universe. It is not merely circular like a shield <or> spread out like a wheel, but resembles more a ball, being equally round in all directions, but not in a mass of equal magnitude – although I would believe that the enormous distance of mountains and valleys neither adds to it nor diminishes it any more than a finger would a playing ball.³⁷⁵

The Earth being thus shaped and given to mortals as their habitation, the orbit of the Sun, which is always shining in this universe, gives daylight to one place and leaves another in night on the firm evidence of God's law [*certa ratione constitutionis Dei*]. And because, as Ecclesiastes says, *the Sun rises and sets and returns to its place*,³⁷⁶ when it is being reborn there, it circles through the south and inclines towards the north.³⁷⁷ When orbiting in the morning through eastern regions before western ones on the same latitude, it necessarily brings noon and evening in its train. Nonetheless, through the whole year it makes days as well as nights to be of equal length in both <regions>. Again, it is necessary that *the fiery Sun mount up the middle orb of heaven*³⁷⁸ at one and the same point in time through the whole circle of the year for all who are placed facing one another in the same <vertical> line under the northern or the southern clime. However, it does

6:26, 7:17; Luke 4:5 etc.

375 'The reason why ... playing ball': cf. Pliny, *HN* 2.64.160, ed. Rackham 2.294–6. The seemingly ineradicable belief that medieval people thought the world to be flat, and considered it heretical to think otherwise, was refuted by C.W. Jones in 'The Flat Earth', *Thought*, 9 (1934): 296–307, by Jeffrey Burton Russell's *Inventing the Flat Earth: Columbus and Modern Historians* (New York: Praeger, 1991), and, more recently, Louis M. Bishop, 'The Myth of the Flat Earth', in *Misconceptions about the Middle Ages*, ed. Stephen Harris and Byron L. Grigsby (New York: Routledge, 2007), 97–101. Nevertheless, as Marina Smyth points out, some Irish cosmographers of the seventh century were ambivalent or confused about the difference between 'round' and 'spherical': *Understanding the Universe* 271–8. Belief in the spherical Earth was confirmed by increased exposure to classical and Patristic literature. Bede and his readers knew these Irish sources, and were probably exposed, *via* Greek materials from Canterbury, to the flat-earth model of Kosmas Indicopleustes: see Faith Wallis, 'Bede's Eye: Number and Experience as a Grammar of Science in the Early Middle Ages', in *La Conoscenza scientifica nell'alto medioevo. Atti della LXVII Settimana di Studio del Centro italiano di studi sull'alto medioevo* (Spoleto: Centro Italiano di Studi sull'Alto Medioevo, 2020), 690–1, esp. n. 56. Hence perhaps his determination to hammer home the point about sphericity.

376 Ecclesiastes 1:5 (Vulgate); cf. nn. 60 and 132 above.

377 That is, when the days are lengthening (the Sun is being reborn'), the Sun is in the southern sky, but day by day edging northward.

378 i.e. cross the equator. The phrase is from Vergil, *Aeneid* 8.97.

not rise and set at the same moment or hour for both, /381/ but travelling through the southern zone in wintertime, it rises earlier and sets later for those who inhabit the southern regions of Earth than <it does> for us who, situated towards the north, with the globe of the earth blocking the way, receive its rising later, and its setting earlier. But on the other hand, in summer the Sun rises very much earlier for us who live under the same latitude, and seems to remain much longer on the point of setting <with us> than with those who dwell on Earth's southern flank.³⁷⁹ They are denied an earlier sight of <the Sun> by the imposition of the Earth, and then are obliged to renounce it sooner. Therefore they have shorter days in summer than we do, but longer ones in winter.

This can be known not only from the orbit of the Sun, but also from the location of all the stars which take their courses beneath the different regions of the pole. Indeed, it is because of this same sphericity of the Earth that many of the most brilliant stars of the southern region are never seen by us. On the other hand, our northern stars are to a large degree concealed from them. Hence, the *Troglodyte and his Egyptian neighbour* do not see those *polar stars* which are straight over our heads, and which never set.³⁸⁰ In fact, not only we in Britain, but even the Italians cannot see their brightest star Canopus, which once was worshipped under the name of a god. This is not because the light of the stars is withdrawn by gradually fading, and fails entirely for those at a greater distance, but because the mass of the Earth standing in the way prevents our seeing. All this can easily be proved by any very large mountain with settlements all around it.

33. IN WHAT PLACES THE SHADOWS OR DAYS ARE EQUAL

Because earlier on we demonstrated, through the statements of Pliny, the difference in the solstitial days for peoples which dwell far from one another to the north or to the south, /382/ it seems appropriate that we state these matters at greater length in the words of the same man, and also

379 *in meridiano terrae sinu* (ed. Jones 381.30–1). Since Bede vehemently denies the existence of human inhabitants of the antipodes in ch. 34 one must presume that he is referring here to those who dwell further south on the Earth's flank, but still in the northern hemisphere.

380 Pliny, *HN* 2.71.178, ed. Rackham 1.310; cf. ch. 31.

<discuss how> the days correspond for those who dwell in any part of the world that lies beneath the same east–west line.

Writing on this subject in the sixth book of the *Natural History*, he says: *The world has a number of segments, which our writers call ‘circles’ and the Greeks ‘parallels’. The first runs from southern India through Arabia and the neighbourhood of the Red Sea. In it are contained the Gedrosi, the Carmani, the Persians, the Elamites, the Parthians, Naria, Susiana, Mesopotamia, Babylonian Seleucia, Arabia up to the rocks, Syria Coele, Pelusium, lower Egypt (called Chora), Alexandria, coastal Africa, all of the towns of Cyrene, Thapsus, Hadrumentum, Clupea, Carthage, Utica, both Hippos, Numidia, both Mauritanias, the Atlantic Ocean, and the Pillars of Hercules. Under this belt of the heavens, the pin of a sundial (called a gnomon) which is seven feet long casts a shadow no more than four feet long at noon on the equinox. The longest night and the longest day have fourteen equinoctial hours; on the other hand, the shortest ones have ten. The next circle begins from western India, and travels through the Medes and the Persians, Persepolis, the part of Persia closest to us, hither Arabia, /383/ Judaea, and the vicinity of the mountains of Lebanon; it includes Babylon, Idumea, Samaria, Jerusalem, Ascalon, Joppa, Caesarea, Phoenicia, Ptolemais, Sidon, Tyre, Beirut, Botris, Tripoli, Byblos, Antioch, Laodicea, Seleucia, coastal Cilicia, southern Cyprus, Crete, Lilybaeum in Sicily, and the northern parts of Africa and Numidia. At the equinox a pin thirty-five feet long casts a shadow of twenty-three feet.³⁸¹ The longest day and night are fourteen equinoctial hours plus two-fifths of one hour. The third circle starts from the part of the Indies nearest the Himalaya mountains. It extends over the region of the Caspian, the hither part of Media, Cataonia, Cappadocia, Taurus, the Amanus range, Issus, the Cilician Gates, Soli, Tarsus, Cyprus, Pisidia, Pamphylia, Sida, Lycaonia, Lycia, Patara, Xanthus, Caunus, Rhodes, Cos, Halicarnassus, Cnidos, the Doric towns, Chios, Delos, the central Cyclades, Cythnos [i.e. Gythium], Malea, Argos, Laconia, Elis, Olympia, Messana [i.e. Messina] in the Peloponnese, Syracuse, Catanina, central Sicily, southern Sardinia, Carteia, and Cadiz. All cast a shadow on the sundial of thirty-eight inches.³⁸² The longest day is fourteen and a half equinoctial hours plus the thirtieth*

381 ‘23 feet’ is the reading in all codices collated by Jones, save Karlsruhe, Landesbibliothek Aug. perg. 167 (Reichenau, s. IX¹: see Appendix 5, no. 95), which reads ‘24 feet’ (*BOD* 383). This latter is the reading of Rackham’s edition, 2.496–7.

382 Bede’s copy of Pliny seems corrupt here: Pliny says that on this parallel, a 100-inch gnomon casts a shadow seventy-seven inches long: 6.39.214, ed. Rackham 2.496.

part of an hour. /384/ Those lands lie under the fourth circle which are on the other side of the Himalayan range: southern Cappadocia, Galatia, Mysia, Sardis, Smyrna, Sipulus, Mount Imolus [i.e. Tmolus], Lydia, Caria, Ionia, Trallis, Colophon, Ephesus, Miletus, Chios, Samos, the Icarian Sea, the northern Cyclades, Athens, Megara, Corinth, Sicyon, Achaia, Patras, the Isthmus, Epirus, northern Sicily, the eastern part of Narbonese Gaul, coastal Spain from New Carthage, and thence westward. Shadows of sixteen feet correspond to a gnomon of twenty-one feet. The longest day has fourteen and two-thirds equinoctial hours. In the fifth segment are included, beginning from the entrance of the Caspian Sea, the Bactri, Hiberia [i.e. Georgia], Armenia, Mysia, Phrygia, the Hellespont, Troas, Tenedos, Ab<d>ios, <S>Cepsis, Ilium, Mount Ida, Cyzicus, Lampsacus, Sinope, Amisus, Heraclea in Pontus, Paphlagonia, Lemnos, Imbros, Thasos, Cassandra, Thessaly, Macedonia, Larissa, Amphipolis, Thessalonica, Pella, Edesus, Beroea, Pharsalia, Carystum <belonging to> Euboea, Boeotia, Chalcis, Delphi, Acarnania, Aetolia, Apollonia, Brindisi, Tarentum, Thuri, Locri, Reggio, the Lucani,³⁸³ Naples, Puteoli, the Tuscan Sea, Corsica, the Balearic Islands, and central Spain. A gnomon of seven feet casts a shadow of six <feet>. The extent of the longest day is fifteen equinoctial hours. The sixth band, in which the city of Rome is contained, includes the Caspian races, /385/ the Caucasus, northern Armenia, Apollonia on the Rhyndacus, Nicomedia, Nicaea, Chalcedon, Byzantium, Lysimachea, the Cheronese, the gulf of Melas, Abdera, Samothrace, Maronea, the Aenus River, Bessi<c>a, Thrace, Maedica, Paenonia, the Illyrians, Durazzo, Canosa, the borders of Apulia, Campania, Etruria, Pisa, Luna, Lucca, Genoa, Liguria, Antibes, Marseille, Narbonne, Tarragona, central Tarragonean Spain, and hence through Lusitania [i.e. Portugal]. A gnomon of nine feet casts a shadow of eight <feet>. The longest day is fifteen and one-ninth hours, or as Nigidius would have it, fifteen and one-fifth. The seventh division begins on the far shore of the Caspian Sea, and extends over Callatis, the Bosphorus, the Dnieper, Stomos [i.e. Tomos], the northern [literally: 'rear'] part of Thrace, the Trivalli, the rest of Illyria, the Adriatic Sea, Aquileia, Altino, Venice, Nicetia [i.e. Vicenza], Padua, Verona, Cremona, Ravenna, Ancona, the Picenum, the territory of the Marsi, the Peligni, and the Sabines, Umbria, Rimini, Bologna, Piacenza, Milan, and everything from the Apennine range, and beyond the Alps, Gaul, Aquitaine, Vienne, the Pyrenees, and Celtiberia. A sundial pin of thirty-five <feet> casts a shadow of thirty-six, although in parts of the Veneto the shadow

383 A people of southern Italy.

*is equal to the gnomon. The longest day is fifteen and three-fifths hours. /386/ Hitherto we have recorded the measurements of the ancients. The most assiduous of those who have followed them divide what remains of the Earth into three segments: from the Don, through Lake Meotius [i.e. Sea of Azov] and the Sarmatians up to the Dnieper, and thence through the Dacias and part of Germany, and Gaul on the shores of the encircling Ocean, which has sixteen hours <on its longest day>, and a second through the Hyperboreans and Britain which has seventeen. The last one <goes through> Scythia from the Riphean Mountains into Thule where, as we said, there are alternating periods of continuous day and night. Also, they place two circles before the point where we began: the first through the island of Meroe and Ptolemais on the Red Sea, constructed for the elephant hunt, where the longest day is greater by half an hour than twelve hours; the second running through Syene in Egypt, which has thirteen hours.*³⁸⁴ These excerpts from the writings of Pliny deserve to have a place in our work.

34. THE FIVE CIRCLES OF THE UNIVERSE AND THE PASSAGE OF THE STARS UNDER THE EARTH

When we discuss time, we are occasionally obliged /387/ to refer to the circles or zones – equinoctial, summer solstice, or winter solstice – and we have decided to speak about these in greater detail.³⁸⁵ For the philosophers customarily distinguish by these terms the inequalities of the seasons or the annual circuits of the Sun, so that they call that zone or region of the heavens through which the Sun circles the world around the time of the equinoxes, the ‘equinoctial’,³⁸⁶ and that through which it circles the world at the summer solstice, the ‘<summer> solstitial’,³⁸⁷ and that <in which it is found> in winter, the ‘winter <solstitial> circle’.³⁸⁸ They are called zones or circles because they are made by the orbit of the Sun. The equinoctial, which is the middle zone,

384 Pliny, *HN* 6.39.211–20, ed. Rackham 2.494–502.

385 The circles are the equator, tropics, and Arctic and Antarctic circles. Projected onto the heavens, the two tropics constitute the boundaries of the Sun’s annual journey to the southern sky in winter, and to the northern sky in summer. The Sun crosses the equator at the equinoxes. Projected onto the Earth, these five lines form five parallel zones or bands running around the sphere of the Earth. These form the five climates of Earth.

386 I.e. the Equator.

387 I.e. the Tropic of Cancer.

388 I.e. the Tropic of Capricorn.

encircles the lands with an equal space above and below it, but the <summer> solstitial circle passes under the Earth by as much as the winter solstitial circle passes above it.³⁸⁹ Likewise the winter <solstitial circle>, which on the upper side of the Earth is circumscribed, has a circuit on the underside of the Earth of the same amplitude as the summer solstitial circle has on the top side. For undoubtedly, the Sun at the equinox passes the same amount of time at night under the Earth³⁹⁰ as it does by day above the Earth. Everywhere in the north, <the Sun> is concealed by an intervening distance equal to that by which its course is visible when it turns to the south. And indeed, in winter it is borne about far and wide through the underside of the Earth³⁹¹ the same distance as it circles the upper parts of the Earth in its far and wide orbit at the <summer> solstice. Similarly, when travelling through the summer (that is, solstitial) circle, /388/ <the Sun's> disappearance by night under the northern parts of the Earth is as brief as the ascent it makes on winter days over the southern parts. For just as any given night in the revolving year lasts as long as the day did six months before and will do six months after, so the Sun travels every night under the Earth the same distance as it travelled by day six months ago and will travel six months hence, revolving now by night towards the north as much as it will then do by day towards the south. When six months have run their course, all the stars travel by day through the same field of the heavens as they illumined by night six months previously, and to which they will revert in the same number of months. At night, according to their accustomed watches, they traverse <a path> beneath the Earth as wide proportionally as that above the earth is narrow; this also shortens their journey beneath in proportion as it lengthens their journey above. Hence it happens that during the solar year Arcturus, Orion, and the Dog, but also the Milky Way and all the rest of the army of heaven (*militia caeli*) circle the Earth once more often than does the Sun itself.³⁹²

389 We cannot see the entire celestial circle of the Tropic of Cancer, or of the Tropic of Capricorn projected onto the dome of heaven overhead. What Bede means is that the segment of the Tropic of Cancer which is invisible to us at our latitude is equal to the segment of the Tropic of Capricorn which is visible to us. With some exceptions noted below, Bede understands 'top' and 'upper' to mean 'visible to us at this latitude'; 'bottom' and 'lower' mean 'invisible to us'.

390 I.e. in the opposite hemisphere.

391 I.e. the southern hemisphere.

392 *militia caeli* as epithet for the heavenly bodies: e.g. Deuteronomy 17:3; 2 Kings 17:16, 21:3; 2 Chronicles 33:3; Isaiah 34:4; Jeremiah 8:2. The constellations were called the 'fixed stars' because, unlike the planets, they never change their position with respect to the

Besides /389/ these three circles of the Sun, they posit two more circles, one in the north and one in the south. The northern one³⁹³ is always visible to us. It is not <an orbit> of the Sun, but of Arcturus and the stars close to it. Because it lacks proximity to the Sun, it never ceases to be cold. The southern circle³⁹⁴ is like it: frozen because the Sun is so far off, it is always hidden from us because the Earth blocks it out.³⁹⁵ Of the two of them it is said, in praise of God, <that He> *made Arcturus and Orion and the Hyades, and the chambers of the south*,³⁹⁶ and elsewhere, <that He> *stretches out the north over nothing*.³⁹⁷ The poet also calls these to mind:

*The heaven holds five zones of which one glows
red with the blazing Sun and ever swelters in his flame.*³⁹⁸

This is the equinoctial circle, which, because the Sun shines upon it directly, or close to it on one side or the other, is scorched beyond a doubt, *stripped bare by flames and baked by steam*.³⁹⁹

*At the extremities of the world, <two zones> extend around to right and left,
locked fast in ice and black tempests.*⁴⁰⁰

backdrop of the dome of heaven. This dome was imagined as a hollow sphere, rotating from east to west around the earth, once each day, and carrying the stars, Sun, and other planets along with it. However, the planets also seem to move slowly in the opposite direction, from west to east, around the zodiac. The Moon, as we have seen, does this every 27²/₃ days, while the Sun makes this reverse journey once a year. The Sun thus seems to ‘run ahead’ of the sphere of the fixed stars, much as the Moon seems to ‘run ahead’ of the Sun (cf. ch. 29). As the Sun moves eastward day by day along the ecliptic, the dome of the stars edges a bit more above the eastern horizon night by night. In one solar year, this dome will have made a complete revolution, and the Sun will return to the same position with respect to the fixed stars (i.e. it will be in the same degree of the same zodiac sign) as it was a year before. Thus, as Bede observes, the dome of the stars makes one more revolution each year around the Earth than does the Sun.

393 I.e. the Arctic circle.

394 I.e. the Antarctic circle.

395 The chapter to this point is based on Pliny, *HN* 2.68.171–2 (ed. Rackham 1.304–6), and 2.71.177–9 (1.310–12); Isidore, *DNR* 10, ed. Fontaine 209–12, trans. Kendall and Wallis 128–30, and *Etym.* 3.43, ed. Gasparotto and Guillaumin 105–9, and 13.6, ed. Gasparotto 32–6; cf. Bede, *The Nature of Things* 9.

396 Job 9:9.

397 Job 26:7.

398 Vergil, *Georgics* 1.233–4; quoted in Isidore, *DNR* 10.1, ed. Fontaine 209.5, trans. Kendall and Wallis 128.

399 Pliny, *HN* 2.68.172, ed. Rackham 1.306.

400 Vergil, *Georgics* 1.235–6; not quoted by Isidore (see n. 398 above).

Here he speaks of the northern and southern <circles>. All that lies beneath them, due to the absence of the Sun and the milder constellations, *is gripped by hostile stiffness and everlasting cold*, as that frozen sea bears witness which is distant by one day's sail to the north from the island of Thule.⁴⁰¹
/390/

*The two regions that lie between these
were given by divine gift to frail mankind.*⁴⁰²

Here he means the <circles of> the summer and winter solstices, which, placed near both the torrid zone and the frozen regions, are tempered by their power. Therefore both are called habitable, that is suitable for habitation, nor do they impede the advance of mortal men by excessive heat or cold.

However, it can only be proved that one of them is inhabited; no credence whatever should be given to fables about the antipodes, nor does any historical writer claim to have seen, heard, or read of any who have followed the winter Sun to southern climes, so that, with this <region> behind their backs, and having traversed the scorching heat of Ethiopia, they have discovered, beyond these, temperate lands that are habitable by humans, with heat on this side and cold on the other.⁴⁰³ Therefore consider what Pliny, that most astute researcher into natural matters – who does not deny that *although the Earth is shaped like a pine cone, it is nonetheless inhabited all over*⁴⁰⁴ – says when he writes about these zones: *Only two are temperate between the one that is scorching and the others that are frozen, and these two are not accessible to each other because of the heat of the heavenly body.*⁴⁰⁵

Indeed, an illustration of these zones which is quite easy to grasp is furnished by people who in the icy cold of winter warm themselves at an oblong hearth. Like the middle zone, the fire itself, as well as whatever is near to it, cannot be touched because of the heat, while things placed at some

401 Pliny, *HN* 2.68.172 (ed. Rackham 1.306) and 4.16.104 (2.198); cf. Solinus 22.9, ed. Mommsen 101.11–102.3).

402 Vergil, *Georgics* 1.237–8; quoted in Isidore, *DNR* 10.4, ed. Fontaine 213.26–7, trans. Kendall and Wallis 130.

403 Cf. Augustine, *De civitate Dei* 16.9, ed. Dombart and Kalb 510.83–511.2; Isidore, *DNR* 10.2–4, ed. Fontaine 209–13, trans. Kendall and Wallis 128–30; *Etym.* 9.2.133, ed. Reydellet 117.

404 Pliny, *HN* 2.65.161, ed. Rackham 1.296.

405 *Ibid.* 2.68.172 (1.306).

distance from the flames on either side grow stiff with the ambient cold. But those which are between /391/ the two are tempered and appropriately positioned to be warmed, whether they who construct this hearth for themselves for light and warmth under the sky in the dark of a cold night care to stand on one side of the fire or the other. Could the fire move around in a circle like the Sun, it would undoubtedly produce five bands. Since it stands still, it makes five lines: one blazing hot in the middle, two frozen at the outsides, and two temperate ones in between these.

35. THE FOUR SEASONS, ELEMENTS, AND HUMOURS

There are four seasons in the year, in which the Sun, by taking its course through the different regions of the sky, tempers the globe which lies beneath it, according to the universal solicitude of Divine Wisdom, so that by not always remaining in the same place, it does not devastate Earth's lovely vesture by its devouring heat. Rather, travelling through diverse regions by gradual stages, it preserves regular conditions (*temperamenta*) for sprouting and ripening the fruits of the Earth.⁴⁰⁶

The *seasons (tempora)* take their name from this regularity (*temperamento*);⁴⁰⁷ or else they are rightly called *tempora* because they turn one into the other, being tempered one to another (*contemperata*) by some qualitative likeness. For winter is cold and wet, inasmuch as the Sun is quite far off;⁴⁰⁸ spring, when <the Sun> comes back above the Earth,⁴⁰⁹ is wet and warm; summer, when it waxes very hot, is warm and dry; autumn, when it falls to the lower regions, dry and cold. And so it happens that with each <season> embracing what is on either side of it, through the moderating mean, the whole is linked up to itself like a sphere.⁴¹⁰ /392/ It is

406 Bede is revisiting a theme discussed in *The Nature of Things* 4 and *On Times* 8. There, as here, his main source is Isidore, *DNR* 7.1–3, ed. Fontaine 199–201, trans. Kendall and Wallis 123–4, and *Etym.* 5.34, ed. Gasparotto and Guillaumin 97.

407 Cf. ch. 2 above, p. 137–8 and n. 18.

408 I.e. in the south.

409 I.e. it is higher in the sky for people in the northern hemisphere.

410 Bede seems to have in mind a circular diagram of the type called *syzygia elementorum*, showing the seasons 'holding hands', so to speak, through shared qualities; cf. Isidore, *DNR* 7, ed. Fontaine 202 *bis*, trans. Kendall and Wallis 125. For a more elaborate version, showing the seasons, elements, and humours, see *ibid.* 11, ed. Fontaine 216 *bis*, trans. Kendall and Wallis 132. This schema was very widely diffused and appears in a number of contexts: see

also said that the very elements of the universe are distinguished by these divergent qualities, and that they are knit into a company with each other, but each to each. For earth is dry and cold, water cold and wet, air wet and warm, fire warm and dry, and therefore the first is likened to autumn, the next to winter, the next to spring, and the last to summer.⁴¹¹ And man himself, who is called ‘microcosm’ by the wise, that is, ‘a smaller universe’, has his body tempered in every respect by these same qualities; indeed each of its constituent humours imitates the manner of the season in which it prevails.⁴¹² For blood, which increases in spring, is moist and warm; red bile, which <increases in> summer, is hot and dry; black bile, which <increases in> autumn, is dry and cold; and phlegmatic humours, which <increase in> winter, are cold and moist. Indeed, blood is at its most active in children, red bile in young people, melancholia (that is, gall mingled with the dregs of black blood) in the middle-aged, and phlegmatic humours dominate in the elderly. Moreover, blood makes those in whom its potency is greatest cheerful, joyous, tender-hearted, much given to laughter and speech; red bile makes people lean, even though they eat a lot, swift, bold, irritable and agile; black bile makes them stolid, solemn, set in their ways and cunning; phlegmatic humours produce people who are slow, /393/ sleepy and forgetful.⁴¹³

However, different people place the beginnings of the seasons at different times. Bishop Isidore the Spaniard said that winter begins on the ninth Kalends of December [23 November], spring on the eighth Kalends of March [22 February], summer on the ninth Kalends of June [23 May],

Peter Vössen, ‘Über die Elementen-Syzygien’, in *Liber Floridus. Mittelalterliche Studien Paul Lehmann ... gewidmet* (St Ottilien: Eos-Verlag, 1950), 33–46; Ernest Wickersheimer, ‘Figures médico-astrologiques des IXe, Xe et XIe siècles’, *Janus*, 19 (1914): 157–77; L. Pressouyre, ‘Le cosmos platonicienne de la cathédrale d’Anagni’, *Mélanges d’archéologie et d’histoire de l’École française de Rome*, 78 (1966): 551–93; Eric Ramírez-Weaver, “So that you can understand this better”. Art, Science, and Cosmology for Courtiers in William of Conches’ *Dragmaticon Philosophiae*’, in *Diagramm und Texte. Diagrammatische Strukturen und die Dynamisierung von Wissen und Erfahrung*, ed. Eckart Conrad Lutz, Vera Jerjen, and Christine Putzo (Wiesbaden: Reichert Verlag, 2014), 321–48.

411 Cf. Isidore, *DNR* 11.2–3, ed. Fontaine 215.14–217.37, trans. Kendall and Wallis 131–2; Ambrose, *Hexaameron* 3.4.18, ed. Schenkl 71.16–72.14.

412 Cf. Isidore, *Etym.* 4.5.3.

413 Cf. Vindicianus, *Epistola ad Pentadium*, ed. V. Rose, *Theodori Prisciani Euporiston libri III* (Leipzig: Teubner, 1894): 487.5–489.2. Bede also draws on Vindicianus in his *Commentary on the Gospel of Luke*: see trans. by Kendall and Wallis, Introduction 54–5.

and autumn on the tenth Kalends of September [23 August].⁴¹⁴ But the Greeks and Romans, whose authority on these matters, rather than that of the Spaniards, it is generally customary to follow, deem that winter begins on the seventh Ides of November [6 November], spring on the seventh Ides of February [6 February], summer on the seventh Ides of May [8 May], and autumn on the seventh Ides of August [7 August]. Noting that summer and winter begin with the evening or morning rising and setting of the Pleiades, they place the commencement of spring and autumn when the Pleiades rise and set around the middle of the night.⁴¹⁵ Then again, in the finest and most noteworthy books of the cosmographers, we find the same seasons clearly distinguished, with the rising of the Pleiades observed at the seventh Ides of May [8 May] and their setting at the seventh Ides of November [6 November]. And Pliny the Elder in the second book of his *Natural History* judges that they are to be divided in the same manner.⁴¹⁶

But that man of the Church St Anatolius, in his work about Easter, when he argues with great subtlety about the solstices and equinoxes, and about the increments of hours and *momenta*, ends his argument, and at the same time, his book, in this wise: /394/ *But you ought not to be unaware of the fact that although these four aforementioned frontiers of the seasons are close to the Kalends of the following months, nevertheless each one contains within itself the mid-point of the seasons, that is, spring, summer, autumn, and winter, and the beginnings of the seasons do not occur where the Kalends of the months begin. But each season is to begin at such a point that the equinox divides the spring season <in half, beginning> from the first day; summer is similarly divided at the eighth Kalends of July [24 June], autumn at the eighth Kalends of October [24 September], and winter at the eighth Kalends of January [25 December].*⁴¹⁷ Scripture bears witness to where the people of God placed these beginnings of the seasons in the law which it commands in these words: *Observe the month of the new fruits, and the first of the spring season, and make the Passover unto the Lord your God.*⁴¹⁸ From what their most learned bishop Proterius says, the Egyptians appear to have followed this: *One should take note that they make a great mistake who place the beginning of the first month of the lunar course on the twenty-fifth day of*

414 Isidore, *DNR* 7.5, ed. Fontaine 203.46–51; trans. Kendall and Wallis 125.

415 Vindicianus, *Epistola*, ed. Rose 487.2–9.

416 Pliny, *HN* 2.47.122–5, ed. Rackham 1.262–6.

417 *Liber Anatolii* 14, ed. McCarthy and Breen 53.241–7.

418 Deuteronomy 16:1.

the month of Phamenoth, which is the twelfth Kalends of April [21 March], because then it appears that the beginning of spring is fixed beforehand by those who wish, with all diligence, to find it here.⁴¹⁹

Spring (ver) is so called because /395/ everything is verdant then, that is, it flourishes (virescant). Summer (aestas) <takes its name> from heat (aestu) which in <summer> is bestowed for the ripening of crops; autumn, from the increasing (autumnatione) of the crops which are gathered then, while 'winter' is interpreted by learned men as 'cold'⁴²⁰ and 'sterility'. And indeed, these names for the seasons agree with our climate. They say that the Indies, where the heavens show another face, and the stars have other points of rising, has two summers and two harvests each year, with winter in between them, because of the blowing of the Etesian winds, and they relate that while we have winter, there there are gentle breezes and the seas are navigable.⁴²¹ Egypt is said to have fields all aflower with herbs and orchards laden with fruit in the middle of our winter.

36. NATURAL YEARS⁴²²

The word 'year' (annus) derives either from the renewal (innouando) of all things which pass away according to the natural order, or from the cycle of time, for the ancients were accustomed to use 'an' for 'circum' – as Cato says in the *Origins*, 'oratorum an terminum', that is 'circum terminum' – and to say 'ambire' for 'circumire'.⁴²³

There is a lunar year and a solar year, a separate year for <each of> the wandering stars,⁴²⁴ and one for all of the planets, which is particularly

419 Proterius, *Ep. ad Leonem* 8, ed. Krusch, *Studien I* 276.

420 Bracken ('Virgil the Grammarian and Bede' 11) points to Virgilius Maro Grammaticus (*Epitomae* 11.162–4, ed. Löfstedt 235) as the source. Irish computus texts favour the similar passage from Isidore, *Etym.* 5.35: *Einsiedeln Computus* 10 (ed. Loevenich 40.10–15), *Munich Computus* (ed. Warntjes 32–5), *De ratione computandi* 43.9–11 (ed. Ó Cróinín 152).

421 Pliny, *HN* 6.21.58, ed. Rackham 2.380.

422 Bede also addresses this theme in *On Times* 9, where his main source is Isidore, *DNR* 6, ed. Fontaine 193–7, trans. Kendall and Wallis 120–3. His sources for this chapter, however, seem to be the Irish computus texts: see discussion in Commentary.

423 *Disputatio Chori et Praetextati* 17, ed. Holford-Strevens 80.250–1 (= Macrobius, *Saturnalia* 1.14.5, ed. Willis 66.24–26. On the popularity of this etymology in Irish computus texts see *Munich Computus* 31, ed. Warntjes 88.2–4, and Warntjes' note on 89.

424 I.e. the planets, so called because they 'wander' around the zodiac, unlike the 'fixed' stars.

called the ‘great year’.⁴²⁵ But ‘lunar year’ is taken in four ways. The first is when the Moon, /396/ traversing the zodiac in twenty-seven days and eight hours, returns to the sign from which it set out. The second is two days and four hours longer, and is customarily called a month; after twenty-nine days and twelve hours, the now waning Moon seeks the Sun from which it departed when it was new. The third is when the Moon completes twelve of these months, that is 354 days; this is called a common year, because two of them usually fall together. The fourth, which is called by the Greek name ‘*embolismic*’ (that is, ‘*augmented over and above*’),⁴²⁶ has thirteen months, that is, 384 days. The Hebrews begin both these years at the commencement of the Paschal month, but amongst the Romans they have their beginning and end with the lunation that begins with the month of January.⁴²⁷

Again, the Sun’s year is <complete> when it returns to the same place with respect to the fixed stars after 365 days and six hours, that is, a quarter of a whole day.⁴²⁸ The fraction, multiplied by four, makes it necessary to interpolate one day, which the Romans call the *bissextus* [i.e. leap-year day], so that the Sun is brought back into the same cycle. The fourth year of the solar cycle is bissextile, and one day longer than the other three. When it is finished, the Sun returns to all the places of the zodiac at the same time of day or night as it did four years previously.

The year of the wandering stars is that in which each of them lights up the circuit of the zodiac, of which /397/ we spoke above.⁴²⁹ The Great Year is when all the planets return at one and the same time to the very positions which they once simultaneously held.⁴³⁰ Josephus, describing the longevity of the earliest human beings in the first book of the *Antiquities*,

425 Cf. Isidore, *Etym.* 5.36.3, ed. Urquiola and Santos 123.

426 Isidore, *Etym.* 6.17.23, ed. Chapparo Gómez 105; quoted in *Munich Computus* 59 (ed. Warntjes 244:23–4), *De ratione computandi* 77 (ed. Ó Cróinín 186.1–3).

427 Bede’s decision to begin the lunar year at the commencement of the Paschal lunation goes against Dionysius (*Epistola Dionysii*, ed. Krusch *Studien II* 84) who begins it on the fifteenth day of this lunation – see ch. 42 below, p. 250. However, it is a view shared by Irish compututists, e.g. *Munich Computus* 53, ed. Warntjes 204.5–6, and Warntjes’ note. The Roman January commencement, in Bede’s view, is the rationale behind the nineteen-year ‘lunar cycle’ (cf. ch. 56 below, and Commentary).

428 Cf. *Disputatio Chori et Praetextati* 17, ed. Holford-Strevens 78.242–80.245 (= Macrobius, *Saturnalia* 1.14.4, ed. Willis 66.14–19), and Isidore, *Etym.* 5.36.1, ed. Urquiola and Santos 121; see analogues in *Munich Computus* 31 (ed. Warntjes 88). Bede, however, is unique in adding in the quarter-day: see Warntjes’ note on p. 88, and cf. *On Times* 9.

429 Ch. 8.

430 Cf. also ch. 6, p. 157.

speaks of this as follows: *However, nobody who compares the life of the ancients to modern life and the brief span of years which we now live, would think what is said about them false, nor would they refuse to believe that they reached that length of life simply because such length of life has not extended <to our day>. They lived for so many years because they were pious and fashioned by God; and because there existed at that time nourishment provided for them in advance, more apt for longer periods of time. Therefore, because of the virtues and glorious advantages which they constantly studied, that is, astronomy and geometry, God granted them a greater span of life. Now they would scarcely have been able to learn this had they not lived to be 600, for the Great Year completes its circuit in this many years.*⁴³¹

*The Hebrews begin the civil year, that is, the solar year, from the spring equinox, the Greeks from the solstice, the Egyptians in the autumn, and the Romans in the winter.*⁴³²

37. THE DIFFERENT YEARS OF THE ANCIENTS

So much for natural years; as for the rest, St Augustine teaches that ancient peoples of different nations erred in various ways as regards the observation of the year. /398/ In the fifteenth book of *The City of God* he argues against those who *think* that Holy Scripture *has computed the years* from the beginning of the world *in a different way (that is, it is believed that <their years> were so short that one of our years equals ten of theirs [i.e. of the biblical writers])*, and who say that *when one hears or reads that someone lived nine hundred years, it ought to be understood as ninety, for ten of our years is one of theirs, and ten of ours make a hundred of theirs*). He says, amongst other things: *Lest it seem incredible that a year should be calculated in a different way then, they add that among many writers of history it is found that the Egyptians had a year of four months, the Acarnians of six months, and the Lavinians of thirteen months. Pliny, although he records that it is related in documents that someone lived to be one hundred and fifty-two, and another person ten years longer, and*

431 Josephus, *Antiquitates* 1.3.9, ed. Blatt 136.24–137.2. See above, ch. 6, p. 157. Note that the Irish texts give quite different figures, e.g. thirty years in *Munich Computus* 31 (ed. Warntjes 92.23–5) and *De ratione computandi* 46 (ed. Ó Cróinín 154.7–155.9).

432 Isidore, *DNR* 6.2, ed. Fontaine 193.10–13; trans. Kendall and Wallis 121.

that others had a life of two hundred years and others of three hundred, or that some reached five hundred, others six hundred and a few eight hundred, judges that all these arise from ignorance of chronology (*inscitia temporum*). 'Some indeed', he says, 'start one year in the summer, and another in the winter, others at the four seasons, so that their years are three months long, like the Arcadians.' He adds, moreover, that the Egyptians, whose short years, as we said above, were four months long, finished a year at the end of the Moon [i.e. lunar month]. 'Therefore amongst them', he says, 'it is claimed that men live a thousand years.'⁴³³

38. THE CALCULATION OF THE LEAP-YEAR DAY⁴³⁴

I have no wish to contrive anything new concerning the calculation of the leap-year day, but rather to incorporate into this little work what I once said in a letter responding to a friend's inquiry.⁴³⁵ There, after an appropriate introduction, I added this: I said, that just as the anticipated place and time of the appearance of <the new Moon> which they call the 'leap of the Moon' is produced over a period of nineteen years,⁴³⁶ so in the opposite way the leap-year day is produced by nothing other than a retardation of the Sun's course.⁴³⁷ Some people are so clever at computation that they understand without any difficulty how many fractions of the growing leap-year day are relentlessly added on each year, or month, or even week or day.⁴³⁸ Nonetheless, they would not be able to say how this same fraction

433 Augustine, *De civitate Dei* 15.12, ed. Dombart and Kalb 468.48–50, 469.36–51. The issue is the longevity of the Patriarchs recorded in Genesis. The passage from Pliny is from *HN* 7.48.155, ed. Rackham 2.608–10.

434 This chapter is an expanded version of *On Times* 10, and possibly inspired by the anonymous text on leap year in the 'Sirmond Manuscript', MS Bodleian Library, Bodley 309, fols 74r–76r (Jones, *BOT* 371; see Introduction, p. 59).

435 Bede is referring to his *Letter to Helmwald* (Appendix 3b).

436 Cf. Bede, *On Times* 12, ed. Jones 595.2–3; trans. Kendall and Wallis 113. See below, ch. 42.

437 See Commentary on ch. 42. Cf. Ambrose *Hexaemeron* 4.5.24 (ed. Schenkl 1.131), and Isidore *DNR* 19.2, ed. Fontaine 201; trans. Kendall and Wallis 144, where the shortfall of the lunar year is contrasted to the excess of the solar year.

438 'Some people are so clever ...': Jones argues (*BOT* 371) that Bede is referring to a particular text here. It might be an Irish *computus* treatise such as the *Munich Computus* 41, which works out the amount of the leap-year increment down to the level of a day (ed. Warntjes 136.80–8).

increases, or what is its cause, or how the increase is calculated, or what troublesome error is engendered if the leap-year day is not intercalated in its sequence in the necessary way. For the leap-year day is made up from the calculation of quarter<-days> (*quadrantes*) over four years. It is customary to call a quarter of something – for example money, time or space – a *quadrans*,⁴³⁹ and therefore the fourth part of a day (which with its night is completed in twenty-four hours), that is, six hours, is usually called a *quadrans*, /400/ and it is from this *quadrans* that a whole day is collected over four years and intercalated in its place.

The reason for this calculation is because the Sun is held to complete its annual circuit of heaven (that is, the twelve conspicuous signs of the zodiacal circle) not in <exactly> 365 days, but in six hours more. Hence it happens that if, for example, the Sun now enters the equinoctial part of the sky⁴⁴⁰ when it rises in the morning, it will return to that point next year at noon, in the third year at evening, in the fourth at midnight, and in the fifth at daybreak again, that is, with the course of a whole day completed. We should therefore bear in mind that the extra day should be inserted at some point, and that it is to be added to the total sum of the fourth year.⁴⁴¹ The Egyptians are accustomed to solemnly intercalate it at the end of their year, that is, on the fourth Kalends of September [29 August], but the Romans do it on the sixth Kalends of March [24 February], whence they call it *bissextus*.⁴⁴² For should any computist neglect to make <this intercalation>, and think that all years ought to have only 365 days, he will subsequently discover that a great shortfall occurs in the course of the year; after a certain number of years have come and gone, the erring computist will be aghast to encounter spring time in the summer months, winter in the spring months, autumn in the winter months, and summer in the autumn months.⁴⁴³

439 See above, ch. 4. On the ambiguities of *quadrans* and *quadras* see ch. 6, n. 106.

440 I.e. crosses the equator at the spring equinox.

441 'Hence it happens ...': cf. Bede, *Letter to Wicthed* 3, p. 598. For cognates in Irish *computus* literature see Warntjes' note, *Munich Computus* 124.

442 I.e. 'twice six', because the sixth Kalends of March is doubled in leap years, and the second day is designated *bis sextus kal. mar.* Cf. Isidore, *DNR* 6.7, ed. Fontaine 197.50–2; trans. Kendall and Wallis 122–3. Irish *computus* texts proposed a number of possible leap-year days: see Warntjes' note, *Munich Computus* 130–1.

443 Cf. Augustine, *De Trinitate* 4.4.57–9 (ed. Mountain and Glorie, CCSL 50, 171): *quattuor enim quadrantes faciunt unum diem quem necesse est intercalari excurso quadrennio quod bissextum uocant ne temporum ordo turbetur*. Just how the 'order of the seasons would be perturbed', however, is not specified. While Irish *computus* texts also argued that neglect of the leap-year would disrupt the seasons, they were also unclear what

Should anyone perchance not know what we have truthfully and succinctly stated concerning the zodiac and the circuit of the heavens,⁴⁴⁴ it has been our care to gratify him with commonplace and perhaps rather concise and straightforward reckoning (*ratione*), so that one who did not learn to recognize the constellations in his elementary schooling /401/ can at least discover what he needs to know by the lines of the sundial on the ground.⁴⁴⁵ He should know, then, that the Sun is the agent of the Creator's work in supplying this quarter-day to the year by brief delays and daily retardation. Closer inspection shows that the Sun cannot be completely carried back to the same line on the sundial in 365 days. But if this year, for instance, at the <time of the> spring equinox (*which according to the Egyptians, who bear the palm as computists, ordinarily comes on the twelfth Kalends of April* [21 March]),⁴⁴⁶ the Sun rises in the mid-point of the east,⁴⁴⁷ on the same day a year later it will rise a little lower down.⁴⁴⁸ In the third, fourth, and fifth years, it will augment this decline, according to the natural measure of its course, to such a degree that unless the bissextile day is inserted beforehand according to custom, <the Sun> will then rise at the mid-point of the east to make the equinox on the eleventh Kalends of April [22 March], while at the same time continuing a consistent pattern of retardation in its other risings and settings throughout the whole year.

this would mean. *Munich Computus* 41 (ed. Warntjes 132:55–61) states that such neglect would actually change the seasons. *Einsiedeln Computus* 17.5 (ed. Loevenich 76.73–78.82) is somewhat more ambivalent, though it does state that 'the seasons would fall forwards (*predecissent*) into (the place of) the seasons in front of them (99)'. Warntjes (132, note) comments that '[i]n these discussions, the perspective and the clear distinction between a calendrical and a factual season apparently posed some difficulties. Bede is very precise by arguing that spring time would occur under the name of summer, i.e. factual spring in calendrical summer.'

444 Jones (*BOT* 372) thinks that Bede must be referring here not to *The Reckoning of Time* but to another tract composed by himself. He suggests that this is the text beginning *Primo igitur anno praeparationis bissexti* ... ('In the first year leading up to the leap year ...') ed. Jones, *BOD* 649–53. This tract matches Bede's description, in that it discusses the leap-year increment in terms of the timing of the Sun's entrance into the various zodiac signs. To students unfamiliar with the zodiac it would have been challenging.

445 On the 'sundial on the ground' see Commentary on ch. 31.

446 Bede, *Historia ecclesiastica* 5.21, ed. Colgrave and Mynors 524; cf. *On Times* 10, ed. Jones 593.14–15; trans. Kendall and Wallis 112–13; Dionysius Exiguus, *Ep. ad Petronium*, ed. Krusch 65.20–2.

447 I.e. on the celestial equator.

448 I.e. towards the south.

39. MEASURING THE LEAP-YEAR INCREMENT

But lest you find what we said concerning the measure of the leap-year increment obscure, we say that one quarter of that same day – that is, six hours – accumulates each year: one hour every two months, /402/ half an hour in every natural solar month, and indeed the fourth part of an hour (that is, a *punctus*) in half a month. For we know that the Sun goes around the zodiacal circle, that is, the twelve signs of the horoscope, in 365 days and six hours,⁴⁴⁹ and covers each sign of the same zodiac, according to its natural course, in thirty days and ten and one-half hours, and traverses half a sign in fifteen days and five and a quarter hours. As for those who say that only three hours accrue to the *bissexthus* every year, as if ascribing nothing to the night, we do not think that their judgement is to be accepted at all. If this were so, the whole day which accumulates would not be complete before the passage of eight years.⁴⁵⁰ For even the base herd (*uulgi ignobile*) know that a whole day, that is, <a day> together with its night, has twenty-four hours. If they do not deny that the whole <day> is filled up in four years, why do they deny that one-fourth is filled up by each of the four years?

In fact, should anyone think our position on this issue ought to be rejected, let him read the fourth book *On the Trinity* of the blessed Aurelius Augustine. In his discussion of the perfection of the number six in which the world is made, he does not neglect to mention this quarter-day – nay rather, he teaches that it was made and ordained by the Creator's omnipotent wisdom for the sake of a certain hidden meaning. He says: *For one and two and three make six, which /403/ number is said to be perfect because it is made up of its parts. For it has three <parts>: a sixth, a third, and a half. Nor is any other part found in it whose number can be expressed. One sixth of it is one, one third, two, and one half, three; and one and two and three total six. Holy Scripture commends its perfection to us, particularly because God finished his work in six days, and on the sixth day, man was made in the image of God. And in the sixth age of the human race, the Son of*

449 See above, ch. 16.

450 See Commentary, pp. 475–6. The algorithm which lies at the root of this misconception is found in *Einsiedeln Computus* 17.1 (ed. Loevenich 70.4–72.9), *Munich Computus* 41 (ed. Warntjes 12.2–5 and 138.92–106) and *De ratione computandi* 52 (ed. Ó Cróinín 164.5). Only the Einsiedeln author denounces the formula as incorrect and misleading: Loevenich and Warntjes, 'Theodore of Tarsus' 21. See also Warntjes's notes, *Munich Computus* 120–1 and 138–9.

God came and was made the Son of Man, that he might reshape us into the image of God. Now one year, if one considers twelve whole months of thirty days, (for the ancients observed a month of this length, which manifests the orbit of the Moon) abounds in the number six. Six produces six in the first rank of numbers, which we know arrives at ten by units; it produces sixty in the second rank, which we know arrives at one hundred by tens. Therefore sixty is the number of days in a sixth part of a year. And shortly thereafter he says: Likewise the sixth of the second rank is multiplied by the sixth of the first rank, and six times sixty makes 360 days, which are twelve whole months. But as the orbit of the Moon marks the month for men, /404/ so the year is indicated by the circuit of the Sun. So there remain five and a quarter days until the Sun can complete its course and the year come to an end. For four quarter-days make one day that must be intercalated in the course of the fourth year, and which they call the 'bissexus', lest the order of the seasons be perturbed. But if we consider these five and a quarter days, we see that the number six works mightily within them. First, since it usually happens that the whole is computed from the part, there are now not five days but rather six, so that this quarter-day is counted as a day; whence, because in these five days, there is the sixth part of a month. The quarter-day itself has six hours, for the whole day with its night has twenty-four hours, whose fourth part, which is a quarter-day, is found to be six hours. Thus in the course of a year the number six is particularly prevalent.⁴⁵¹

It was a pleasure to excerpt these words from the writings of such a great author, so that in rereading the views of my insignificant self on the nature of the *bissexus*, you might understand, out of the mouth of this most learned expositor, not only that the *bissexus* grows each year by six hours, but also the many-sided perfection of this number six, by which the year itself is constituted.

451 Augustine, *De Trinitate* 4.4, ed. Mountain and Glorie 169.3–170.12; 171.44–172.3. On the use of this passage in Irish *computus* texts see Warntjes' note in *Munich Computus* 134–5.

40. WHY IT IS INTERCALATED ON THE SIXTH KALENDS OF MARCH

The Romans saw fit to intercalate the leap-year day in the month of February because it is shorter than the others, and because it was the last month of the year. Yet they did so when the month was not yet over, for they did not wish to do this when the year had totally run its course as the Egyptians and Greeks do, /405/ lest their old rule that they should join the beginning of March to the end of February be broken. Moreover they would not intercalate before the sixth Kalends of March [24 February], for out of devotion to the god Terminus, they had instituted the sacred Terminalia on the twenty-third day of the same month, and they certainly did not dare change it to another day. For a long time they inserted as many days as were required after this <feast> had been duly celebrated. However as their expertise increased over the centuries, they inserted one day every four years.⁴⁵²

Alas, what wretches those fools were, who did not know Him *whose kingdom will have no end*,⁴⁵³ and who said, I am *the beginning, which I also declare unto you*,⁴⁵⁴ but believed that Terminus should be honoured with divine worship, and sacrifices and rites offered to him. But much more wretched are the demented men who, having the promise of the heavenly kingdom, prefer to cling to those things which will earn them punishment in the end, being themselves on the road to destruction, rather than to hasten towards eternal things, like those destined for victory.

41. THE MOON SHOULD ALSO HAVE ITS QUARTER-DAY

While we are on the subject, the computist should remember that the lunation of the month of February has twenty-nine days in the other years, but in leap year is counted as thirty <days long>, whether it happens to end before or after the intercalated quarter-day. By the addition of this day, it

452 Up to this point, Bede is drawing on *Disputatio Chori et Praetextati* 14 (ed. Holford-Strevens 72–4), and 15 (74.209–76.215) [= Macrobius, *Saturnalia* 1.13.14–16, 19, ed. Willis 63.22–64.18, 64.29–65.7]. See the similar passage in ch. 12, p. 182.

453 Bede is quoting from the Nicene Creed, the ‘confession of faith’ pronounced, *inter alia*, by candidates for baptism: see *In Ezram* 1, trans. DeGregorio 60 n. 1.

454 John 8:25.

comes to pass that the lunar year is completed in 355 days if it is common and 385 days if it is embolismic. For it is obvious that the quarter-day of which we are speaking is applicable not only to the course of the Sun, /406/ but also to the course of the Moon. If you refuse to take the Moon's quarter-day into account, and apply to February in leap year a lunar month of the same length as you were wont to do before, it will mean that the fourteenth Moon of Easter of the same year will arrive the day before it should, and therefore the Easter reckoning will waver, and then the course of the year will reel, and that ever-inviolable state of the nineteen-year cycle, being more and more perturbed, will be overthrown. Therefore, just as the calculation of the quarter-day in the fourth year (which we call bissextile) dictates, we ought to place on one and the same line the weekday for the sixth Kalends of March, for example the third and the fourth, so that we might then remember to count in the Moon as well (likewise, for example, the third and fourth). Take heed with constant zeal, that although we shall cause the Moon of the month of February to have one more day than usual, nonetheless on the first day of March, the Moon will retain the age it did before, with the sole exception of the eleventh year of the nineteen-year cycle.⁴⁵⁵ /407/ For we issue a particular warning that the quarter-day be attributed to the Moon, lest, being further advanced than it ought to be on the first day of March, it deflect the calculated course of the Paschal observance from the correct path.⁴⁵⁶

455 The eleventh year is an exception to the rule that a lunar month 'belongs to' the calendar month in which it ends. In that year the lunar month of January ends on 1 February and the lunar month of February ends on 2 March: see Commentary on ch. 20; cf. Jones, *BOT* 375. If a leap year falls on any other year of the nineteen-year cycle, the extra lunar day is absorbed by the extra calendar day, namely the extra sixth kalends of March, and so the lunar age of 1 March is not affected. But since, in year eleven, 1 March is still within the lunation of February, that lunation will still be carrying the extra leap-year day on 1 March. Therefore, if year eleven is a leap year, the Moon will be thirty, not twenty-nine days old on 1 March.

456 Bede's suggestion that the computist annotate the solar calendar as a reminder of the additional day to be added to the lunar reckoning was taken up by hundreds of medieval manuscript calendars, whose February pages bear the following admonition: 'Remember in leap year to compute the Moon of February as one of 30 days [the February Moon was normally 'hollow', or 29 days], so that the Moon of March will still be one of 30 days, as usual, lest the Easter reckoning waver.' (*Memento quod anno bissextili luna februarii XXX dies computes ut tamen luna martii XXX dies habeat sicut semper habet ne paschalis lunae ratio uacillet*). For examples see Francis Wormald, *English Kalendars Before A.D. 1100*, Publications of the Henry Bradshaw Society 72 (London: Harrison and Sons for the Society, 1934), 45, 59, 87, 101.

By what and how many particles of time this same lunar quarter-day accrues demands more extensive investigation, for the frequent interposition of the embolisms and also the calculation of the 'leap <of the Moon>' interferes, so that it is impossible to distinguish the whole measure of the lunar course with perfect precision.

42. THE 'LEAP OF THE MOON'⁴⁵⁷

Concerning this 'leap <of the Moon>', it seems to be true that it is produced when the place and time of the appearance of the new Moon comes more quickly than is ordinarily supposed. For how could it be that over <the course of> nineteen years it becomes necessary to subtract one from the usual number of lunar days, were it not that a certain acceleration of the lunar orbit gradually brings it into effect over the whole period of the nineteen-year cycle? In the same way, but in the opposite sense, the course of the Sun is demonstrably affected by retardation, so that one day is added to its course over the four years of its cycle.⁴⁵⁸

Although it is not easy to perceive the process (*ordo*) of <the Moon's> acceleration, and if I may put it thus, of this 'advance', its measure is by no means a mystery. For it is agreed that the diminution and removal of one day, /408/ regardless of how this takes place, is assembled over nineteen years, augmented each year by one hour, one *punctus*, and one-nineteenth of one *punctus*. For the day has twenty-four hours, of which five remain when you distribute nineteen <hours> over the same number of years of the nineteen-year cycle. Multiply these by four (because there are four *puncti* in one hour) and that makes twenty. Give one <*punctus*> to each year, and there is one left over. Divide this by nineteen, and you will see, as we said, that one adds one hour, one *punctus* and one-nineteenth of one *punctus* each year to make up the 'leap of the Moon'.

Therefore the appearance of the new Moon is not observed at one and the same point in time, or region in the heavens, but it always arrives somewhat sooner than in the previous month, whence it is that it springs over one day in the nineteenth year.⁴⁵⁹

457 For discussion of Bede's sources for this chapter see Commentary.

458 Cf. ch. 38, n. 437.

459 Cf. Bede, *On Times* 12, ed. Jones 595–6, trans. Kendall and Wallis 113–14. On the implications of this gradual advance see below, ch. 43.

Now various computists have thought that this ‘leap of the Moon’ should be interposed at various points in the nineteen-year cycle; that is, that a lunar month which in other years normally has thirty days should have twenty-nine. The natural method (*ratio ... naturalis*) for calculating this readily, is to assign the beginning and end of all augmentations and diminutions of this type, both of the Sun and of the Moon, /409/ to the equinoxes wherein their beginning and end were first created: that of the Sun at the spring, and that of the Moon at the locus of the autumn equinox.⁴⁶⁰ Therefore Anatolius, who rightly perceived that *the beginning of the months and the starting-point and end-point of the whole cycle is the spring equinox*,⁴⁶¹ did not himself place this change of the Moon at the beginning or end of his decennovenal cycle, but in its fourteenth year, which is the last one of the <Alexandrian> *ogdoas*, making <the epact> rise from eight to twenty at the <spring> equinox.⁴⁶² On the other hand, Victorius /410/ considered that this insertion should be made in the third year before the end of the *ogdoas*, changing the Moon<’s age> on the Kalends of January from four to sixteen.⁴⁶³ But then the Egyptians, to whose judgement the catholic Church now gives its consent, fix the change in the first year of the nineteen-year cycle, making the annual lunar epact, whose locus is the eleventh Kalends of April [22 March],⁴⁶⁴ to jump from eighteen to nil.⁴⁶⁵ Hence this same year, if it is not a leap year, is finished /411/ in 353 days.

Dionysius seems to touch upon this in his letter, when he says: *For instance from the fifteenth Moon of the Paschal feast in the preceding*

460 Cf. ch. 6 above, pp. 152–3, and the *Letter to Wicthed* 5 (Appendix 3c below), p. 599.

461 Anatolius 2, as reported by Rufinus in his ed. of Eusebius, *Historia Ecclesiastica* 7.32.15, ed. Mommsen 723.15–19; cf. *Letter to Wicthed* (Appendix 3c), p. 597.

462 Bede is referring to the *Liber Anatolii* 11 here. The *ogdoas* is the first eight years of the nineteen-year cycle. In Krusch’s edition of the *Liber Anatolii* (*Studien I* 324–5), year thirteen is marked ‘saltus’, and the Moon on the equinox (the beginning of the fourteenth year) jumps from eight to twenty, as Bede says. But in McCarthy and Breen’s edition (p. 51, trans. p. 68, discussion p. 100), the *saltus* is in Anatolian year nineteen; however, as their apparatus makes plain, all MSS agree with Krusch, so this version is probably the one that Bede read. Jones (*BOT* 377) suggests that Bede’s attempt to deduce the relationship between the *Liber Anatolii* cycle with the nineteen-year cycle indicates that he thought he knew when the *Liber Anatolii*’s table began – i.e. in the thirteenth year of the Alexandrian nineteen-year cycle. Bede’s date for Anatolius in the chronicle in *Reckoning of Time*, ch. 66 is AM 4230, or AD 279, which happens to fit this criterion: cf. Jones, *BOT* 377.

463 On the problems connected to Victorius’ *saltus* see Introduction, pp. 36–7.

464 Cf. ch. 50 below; *On Times* 12, ed. Jones 598.25–32; trans. Kendall and Wallis 114.

465 I.e. there is no epact in the first year of the cycle: see above, p. 199.

year until the fourteenth in the following year there are 354 days if it is a common year and 384 if it is embolismic. If there is one day more or less, it is a manifest mistake except in the first year of the oft-mentioned nineteen-year cycle, which it is our concern to calculate from the fourteenth Moon of the last (that is, the nineteenth) year, up to the fourteenth Moon of this first year. Because of this, that last year, containing an epact (that is, a lunar increment) of eighteen, concedes twelve days, and not the usual eleven, to the first year. And because <the epacts> run out at the end of thirty days, the epact of nil is placed at the beginning of this cycle, but the second year takes an epact of eleven. And therefore, as we said, from the fifteenth Paschal Moon of the first <year> of the cycle up to its end, there is no doubt that we find the days as established above in common and embolismic years.⁴⁶⁶

Divergence of just this kind compels Victorius to calculate a Moon that matches ours in age only for the first six years of the nineteen-year cycle, for thereafter because of the inserted alteration of the 'leap', his Moon never ceases to be greater by one day than ours, up to the point where we make the insertion at the end of the cycle. Undoubtedly, it seems that this 'leap' /412/ can be positioned at no better place in the year than on the twelfth Kalends of April [21 March], because, of course, of the starting date of the creation of the stars [i.e. Sun and Moon] which we mentioned before,⁴⁶⁷ so that the Moon of the month of March which finishes on the twenty-ninth day is thenceforward changed to a new Moon. But there are those who aver that we ought rather to do this in the Moon of the month of November,⁴⁶⁸ so that they can begin the new year with a computation that is free from the other <year>, complicating factors of this kind having been cancelled out by the ending of the previous year. This follows the example of the Egyptians, who are said to have done this in the last month of their year, which is our July. But whether you do it here, there, or anywhere else,

466 Dionysius Exiguus, *Ep. ad Bonifacium et Bonum* (ed. Krusch, *Studien II* 84.5–16). This passage is also quoted by *Einsiedeln Computus* 22.2 (ed. Loevenich 110.33–41), *Munich Computus* 59 (ed. Warntjes 240.4–242.13), and *De ratione computandi* 83.3–8 (ed. Ó Cróinín 190).

467 In ch. 6.

468 I.e. the lunar month ending on 25 November in the nineteenth year of the cycle. Bede did not actually endorse this date; indeed, his preference is clearly for the 'natural' date on the equinox. However, he does imply that he used it for his own calculations (e.g. in ch. 20): see Warntjes' note in *Munich Computus* 284.

it is always necessary, unless I am mistaken, to calculate three Moons of twenty-nine days together.⁴⁶⁹

43. WHY THE MOON SOMETIMES APPEARS OLDER THAN ITS COMPUTED AGE

It should be pointed out that the calculation of this lunar *saltus*, by its slowly compounding increase, causes the Moon sometimes to be visibly older than it is reckoned to be, to the point that even at sunset on the thirtieth day it does not appear as a thin line in the sky. And the farther the nineteen-year cycle has advanced, the more frequently <the Moon> will be subject to this, for the evident reason that the 'leap' of which we have spoken will then be fulfilled to its maximum extent. But in discussing a natural truth (*in naturalis assertione ueritatis*) which is also affirmed to be true by the Council of Nicaea, this rule is to be observed: that we recognize that the age of the Moon changes in the evening, and not <claim>, as some do, that it does so at noon or mid-afternoon.⁴⁷⁰ /413/ For to be sure, the Moon, which first rose upon the world at eventide, must always enter upon this or that phase <at eventide>, completing each <phase> in twenty-four hours, even as the Sun, which first arose in the morning, as the book of Genesis bears witness, completes one day from morning to morning.⁴⁷¹ Why should the change <of phases> of the Moon be calculated from the noon-tide hours, seeing that the Moon had not yet been placed in the heavens, nor gone forth over the Earth? On the contrary, none of the feast-days of the Law began and ended at noon or in the afternoon, but all did so in the evening. Or else perchance it is because sinful Adam was reproached by the Lord *in the cool of the afternoon*,⁴⁷² and thrust out from the joys of Paradise. In remembrance of that heavenly life which we changed for the tribulation of this world, the change of the Moon, which imitates our toil by its everlasting waxing and waning, ought specifically to be observed at the hour in which we began

469 The lunar months of the nineteen-year cycle alternate 'full' (thirty days) and 'hollow' (twenty-nine days). So, whether you begin the cycle in September or in January, the penultimate lunar month when the *saltus* takes place (July or November) is 'hollow'. Since the two months on either side are also 'hollow', this produced three 'hollow' months of twenty-nine days in a row.

470 Cf. above, ch. 6.

471 Cf. *Prologus Cyrilli* 19, ed. Mosshammer 126.136–8.

472 Genesis 3:8.

our exile, so that every day we may be reminded by the hour of the Moon's changing of that verse, *a fool changes like the Moon*⁴⁷³ while the wise man *shall live as long as the Sun*,⁴⁷⁴ and that we may sigh more ardently for that life, supremely blessed in eternal peace, when *the light of the Moon shall be as the light of the Sun, and the light of the Sun shall be sevenfold, as the light of seven days*.⁴⁷⁵ Indeed, because (as it is written) *from the Moon is the sign /414/ of the feast-day*,⁴⁷⁶ and just as the first light of the Moon was shed upon the world at eventide, so in the Law it is compulsory that every feast-day begin in the evening and end in the evening.⁴⁷⁷

The age of a new Moon is more appropriately calculated from the evening hour than from any other time, and it will retain the age which began in the evening until the following evening. Should it befall that the Moon is lit up by the Sun shortly before evening, it must be counted as, and it must be, the first Moon as soon as the Sun has set, and it will be the first Moon immediately after sunset, because it has reached the hour when first it began to shine forth upon the Earth. But if its light appears after sunset, the Moon will not yet have seen its first day before evening, but ought rather to be counted as the thirtieth Moon. Even if it remains illuminated for twenty-three hours after sunset, nevertheless it should retain the age which it had at sunset until the next sunset, lest the order of primal Creation be disturbed. Since it sometimes becomes visible six or seven hours after it is <first> illuminated, it is not surprising that as a new Moon, it can appear very conspicuous in the heavens, seeing that it has traversed so many hours. For particularly when the Moon is in Aries, it often happens that on one and the same day it will be seen both in the morning <as the old Moon> and in the evening <as the new Moon>, the action of illumination having been effected around noon.

Now if someone, pursuing this question more seriously, were to say that in the company of witnesses he had seen the new Moon, in the same year in which the 'leap' is inserted /415/ (that is, in the nineteenth year of the nineteen-year cycle), shine forth two days before the first <calculated Moon>, that is, on the fourth Nones of April [2 April], and since in that same year of the aforementioned cycle the fourteenth Moon of Easter is

473 Ecclesiasticus 27:11.

474 Psalm 72 (71):5.

475 Isaiah 30:26.

476 Ecclesiasticus 43:7.

477 Cf. Exodus 12:18, and ch. 5 above.

marked down for the fifteenth Kalends of May [17 April], and therefore the new Moon could not occur save on the day before the Nones of April [4 April], he would demand that we explain the cause of this. At this point, our insignificance, lest it be defeated by its weakness, will run for help to the Fathers', and indeed to God's, authority. We are bolstered by the aid of the authority of the Fathers when we follow the decrees of the Council of Nicaea, which fixed the fourteenth Moons of the Paschal feast with such firm stability that their nineteen-year cycle can never waver and never fail. There is no doubt on the part of any computist that within this cycle, the Paschal Moon of the year under discussion will be in its first day on the second Nones of April [4 April]. And therefore it is not proper for any of the faithful to say that it is otherwise. What then? Is it credible that no one amongst the three hundred and eighteen bishops who attended the Council of Nicaea saw that new Moon which we saw on the fourth Nones of April [2 April]? No one amongst that company of lesser clergy which was party to their deliberations and decisions? Should we not rather understand that when they proclaimed that the Paschal Moon of that year begins on the day before the Nones of April, their intention was to avoid by this means another and greater peril, namely, that if they discerned it otherwise, they would dissolve that indissoluble arrangement [*status*] of common /416/ and embolismic years which they recognized was to be observed by the authority of the divine Law given to the Hebrews? But we also defend the lunar observance to which we hold by means of the particular evidence of divine authority. For we read in the writings of the blessed Cyril, bishop of Alexandria, that *the monk Pachomius, famous for deeds of apostolic grace and founder of the monastic communities of Egypt, sent to the monasteries over which he presided letters which he had received at the dictation of an angel, in order that they should not make a mistake in calculating the Paschal solemnity, and so that they might know the Moon of the first month in the common and embolismic year.*⁴⁷⁸ In Cyril's account, we read that *had the Council of Nicaea not written down the lunar cycle of the first month, the cycle of the selenite stone in Persia, whose inner whiteness increases and decreases with the Moon of the first month, would suffice as a model for Paschal reckoning.*⁴⁷⁹ We read in what St Paschasinus, bishop

478 Cyril of Alexandria, *Epistola* 5, ed. Krusch, *Studien I* 346–7; cf. Gennadius, *De viris illustribus* 7, ed. Richardson 63.23–6, where the angel dictates a monastic, not a Paschal rule. See also ch. 66, s.a. 4113, below.

479 Cyril, *Epistola* 5, ed. Krusch, 348. Cf. ch. 28 above.

of Lilybaeum, wrote to the most blessed Pope Leo, that in the time of Pope Zosimus, although it was the last year of the nineteen-year cycle, and some refused to celebrate Easter on the tenth Kalends of May [22 April], celebrating instead on the eighth Kalends of April [25 March] (that is, taking it for a common instead of an embolismic year), the truth about the Paschal observance was made clear by a multiple miracle /417/ of supernal virtue. He says: *A certain very run-down estate called Meltinas is situated high in the mountains in the midst of thick woodlands. There is a church there, exceedingly poor and ramshackle; in its baptistery, on the most holy night of Easter at the hour when baptisms are held, the font is filled of its own accord, although there is no trough or pipe, nor any water at all in the vicinity. And when the few who are there are consecrated [i.e. baptized], the water disappears even as it came, of its own accord, though there is no drain. When therefore, under Pope Zosimus of blessed memory, the water did not appear, those who were to be baptized were not consecrated, and they went away. But on that night which dawned onto Sunday, the tenth Kalends of May [22 April], the holy font was filled up at the appropriate hour. Thus by this evident miracle it has been made clear what the error of the western lands has been.*⁴⁸⁰

So it is plain that this question of the age of the Moon is an old one, and at one point was even carefully investigated by the zeal of the holy Pope Leo. It is this very question which has caused the long and serious controversy between the churches of the East and of the West. This also convinced Pope Hilarus, long after the Council of Nicaea, to seek, and Victorius to construct, a new Paschal cycle. In this controversy the aforementioned Pope Leo, with Prosper <of Aquitaine> fighting at his side, a most learned and sagacious man,⁴⁸¹ and eager to win, eventually was glad to be honourably

480 Paschasinus of Lilybaeum, *Epistola ad Leonem papam* 2–3, ed. Krusch, *Studien I* 249–50. Paschasinus invoked the font to resolve a discrepancy between the old Roman *Supputatio* and the Alexandrian Easter for the year 417: see *Munich Computus* 202 (Warntjes' note). Miraculous fonts are frequently resorted to in such cases; see Gregory of Tours, *Libri historiarum X* 10.23, ed. B. Krusch and W. Levison, MGH Script. rer. mer. 1 (1951), 514.22–515.6, where he describes how, in 590, a year when Victorius' tables offered both a 'Latin' and a 'Greek' Easter, a miraculous spring confirmed that Gregory's choice of the 'Latin' date was correct. For another example from 577 see 5.16 (215.4–8), as well as Gregory's *In gloria confessorum* 68, ed. Bruno Krusch, MGH Script. rer. Mer. 1.2 (1885), 2nd ed., 1969, 338.

481 Prosper did indeed serve Leo as secretary and advisor on this issue: N.W. James, 'Leo the Great and Prosper of Aquitaine: a Fifth-Century Pope and his Adviser', *Journal of*

won over by the unanimity of those who stood by the decrees of the Nicene Council. Hence, on this same question, I seek for myself and for my people no better way of acting or speaking than what I know he did, /418/ who so far excels us in knowledge, merit and, authority – that is, to follow the sure judgement of the most reverend Fathers in those matters which are doubtful and unsure to us. It is not to be thought that we either understand the variation of the lunar course with greater acuity than the ancients, or that we are able more securely <than they> to distinguish what path it is preferable to follow in such variations.

44. THE NINETEEN-YEAR CYCLE

Eusebius, bishop of Caesarea in Palestine, first devised the sequence of the nineteen-year cycle in order to find the fourteenth Moons of the Paschal feast and the day of Easter itself, because after this period of time, a Moon of a given age will recur on the same day of the solar year.⁴⁸² Not that hitherto the Egyptian <church> or any of the other churches of Christ in the East did not know how to find the course of the Moon or the day of Easter in the correct way, but because these matters, which at that time used to be determined year by year, with much difficulty, and then promulgated throughout the world – <whence> arose many queries – could <now>, by being readily established in advance according to a cyclical principle, be observed in perpetuity and learned by heart without anxiety about disputes.⁴⁸³

Therefore it is claimed that from time immemorial it was delegated to the Church of Alexandria, by way of obligation, to take upon itself the task and duty of investigating /419/ the Paschal computation, so that when it announced <the same> to the Pontiff of the Apostolic See, the rulers of the churches might be informed through him of the date of Easter. Hence the blessed Pope Leo, when he asked the Emperor Marcian to refer to the

Theological Studies, 44.2 (1993): 563–6. James (563 n. 38) suggests that Bede's source was Victor of Capua, *De Pascha*, but no such information is found in Pitra's text.

482 Jerome, *De viris illustribus* 61.1, ed. Aldo Ceresa-Gastaldo (Florence: Narni, 1988), 162; cf. Isidore, *Etym.* 6.17.1, ed. Chapparo Gómez 86–8. Bede repeats this claim in *Historia Ecclesiastica* 5.21, in the letter of Ceolfrid to King Nectan (ed. Colgrave and Mynors 544). No such Paschal cycle has been found, and Eusebius himself never claims to have created one: Mosshammer, *Easter Computus*, 145–8.

483 Cf. Bede, *Historia ecclesiastica* 5.21, ed. Colgrave and Mynors 544–6.

Bishop of Alexandria the conduct of a careful investigation of the Easter <cycle> of St Theophilus,⁴⁸⁴ in which it appears that the eighth Kalends of May [24 April] is assigned to Easter Day, gave his judgement that the aforementioned day had not correctly been chosen by <Theophilus>. Amongst other things, he says: *The holy Fathers sought an opportunity to remove this error, delegating this entire responsibility to the bishop of Alexandria, for it seemed that skill in this calendrical computation had been handed down from of old amongst the Egyptians, and for many years the day of the aforementioned celebration would be indicated by <the bishop> to the Apostolic See, by whose writ a general announcement might reach churches in more remote lands.*⁴⁸⁵ Indeed, in order to avoid this kind of effort, the abovementioned man [i.e. Theophilus] composed a cycle now famous far and wide, containing the fourteenth Moons of the first month in sequence, that permitted anyone easily to find Easter Day, which will be on the very next Sunday. Proterius, bishop of Alexandria, giving a most lucid explanation of this cycle at the request of the holy Pope Leo, was found worthy to be praised by him in the course of his reply: *The letters of your well-beloved self, which our brother and fellow bishop Nestorius delivered out of pious courtesy, cause me joy. For it was fitting that such letters be sent to the Apostolic See from the bishop of the Alexandrian church, which <letters> would show what the Egyptians learned by the initial instruction of St Peter through his disciple St Mark, and which it is agreed the Romans believed.*⁴⁸⁶ /420/

45. EMBOLISMIC AND COMMON YEARS

This same cycle is divided into common and embolismic years,⁴⁸⁷ which it is agreed are also observed by virtue of the authority of the ancient Hebrews. It contains twelve common years, that is, <years> of 354 days, but seven embolismic years, that is, of 384 days. Now the first and second <years> are common, the third embolismic; the fourth and fifth are common, the sixth embolismic; the seventh is common, the eighth embolismic; the ninth

484 I.e. the nineteen-year cycle.

485 Leo the Great, *Ep.* 121 to Marcian, ed. Krusch, *Studien I* 258.

486 Leo the Great, *Ep.* 129, PL 121.1075A–B.

487 This chapter draws heavily on Dionysius Exiguus, *Ep. ad Bonifacium et Bonum, passim*.

and tenth common, the eleventh embolismic; the twelfth and thirteenth common, the fourteenth embolismic; the fifteenth and sixteenth common, the seventeenth embolismic; the eighteenth common, the nineteenth embolismic.⁴⁸⁸

Both <years>, as was said before,⁴⁸⁹ start from the beginning of the first month, which the Hebrews call Nisan; that is, they start from the illumination of the Paschal Moon. The beginning of this month ought to be observed according to this rule: so that the fourteenth Moon of Easter never precedes the vernal equinox, but correctly appears either on the equinox itself (that is, on the twelfth Kalends of April [21 March]) or after it has passed. Hence it is that these beginnings of the lunar year are to be looked for from the eighth Ides of March [8 March] up to the Nones of April [5 April]. Given that it falls on the twelfth Kalends of April [21 March] at the earliest and the fourteenth kalends of May [18 April] at the latest, /421/ this same fourteenth Moon makes us look for the day of the Paschal feast from the eleventh Kalends of April [22 March] up to the seventh Kalends of May [25 April]. As Dionysius says: *That calculation of the embolisms is demonstrably logical, which is seen to supply what is lacking to the common years so that the lunar course is equal to the solar period. For although the Moon traverses the annual circuit of the Sun every month, nonetheless it does not succeed in completing <the Sun's circuit> in twelve months. For this reason, the Moon is observed to fall short of the reckoning of the solar year by eleven days in common years; but in embolismic years, it is seen to exceed that same <solar> year by nineteen days.*⁴⁹⁰

Indeed the Hebrews, who recognized and observed in their law only lunar months of thirty or twenty-nine days according to the natural course of the Moon,⁴⁹¹ completed the twelve months in the common years, and in the second or third year, whenever it was appropriate, added a thirteenth

488 For this list cf. Isidore, *Etym.* 6.17.5, ed. Chapparo Gómez 589–91 and cognate passages in *Einsiedeln Computus* 22 (ed. Loevenich 108.12–30), *Munich Computus* 59 (ed. Warntjes 246.31–5), and *De ratione computandi* 80 (ed. Ó Cróinín 188.5–9).

489 See above, ch. 11.

490 Dionysius Exiguus, *Ep. ad Bonifacium et Bonum*, ed. Krusch, *Studien II*, 83.10–16.

491 The source of this statement is obscure. Jones (*BOT* 380) argues that Bede's claim that the ancient Hebrews alternated between full and hollow lunar months might come from the recension of the *Prologus Theophili* edited by Gilles Bouchier (Aegidius Bucherius), *De doctrina temporum* (Antwerp: ex officina Pantiniana Balthasari Moreti, 1633), 472, to which Bede may have had access.

embolismic month at the end of the year.⁴⁹² On the other hand /422/ the Romans, who have months of unequal <length>, do not wish to insert the embolisms into their calculation at positions chosen at random, but rather wherever in the midst of the year they could find a suitable empty interval between the Kalends <of one month and the next>.⁴⁹³ They said that the first embolismic moon begins on the fourth Nones of December [2 December], the second on the fourth Nones of September [2 September], the third on the day before the Nones of March [6 March], the fourth on the day before the Nones of December [4 December], the fifth on the fourth Nones of November [2 November], the sixth on the fourth Nones of August [2 August], and the seventh on the third Nones of March [5 March]. They shrewdly take every possible precaution so that whatever age the Moon might be on the Kalends, that same Moon should be ascribed to the same month.⁴⁹⁴ However, this does not always hold true because of the intervention of the Paschal Moon, whose final days not infrequently fall on the Kalends of May and can also last until the second or third day after the Kalends, but which is nonetheless the Moon of April and not of May, as it ought ever to be said to be.

46. THE *OGDOAS* AND THE *HENDECAS*

There is another division of the aforementioned <nineteen-year> cycle by which the years are separated into the *ogdoas* and the *hendecas*. This happens in the eighth and the eleventh year,⁴⁹⁵ because /423/ in the eighth and eleventh year <of the nineteen-year cycle>,⁴⁹⁶ the Paschal Moon reaches the furthest limits of its nativity,⁴⁹⁷ and in an anomalous manner, a single common year precedes the embolismic year in both cases. Or else, this came to pass because it seemed to the ancients that eight solar years

492 See above, chs 11 and 13.

493 I.e., to absorb the embolism entirely within the calendar month and make it 'invisible': see Introduction, pp. 25–6.

494 'Furthermore the Romans ... ascribed to the same month': cf. *De ratione embolismorum*, ed. by Jones, *BOD* 685–9.

495 Jones' text here (422.2) reads *id est in .iii. et in .vxi. distinguitur annos*, but this is clearly in error; indeed, in his edition in *BOT* 263.3, the text correctly reads *in viii et in xi*.

496 On the difference between the lunar cycle and the nineteen-year cycle see below, ch. 56.

497 I.e. the new Moon of Easter occurs on its latest possible calendar date.

equal the number of days in the same number of lunar years.⁴⁹⁸ Later on, more learned doctors proved that this is impossible unless eleven years were added. The entire cycle of the Moon is distributed through the *ogdoas* and the *hendecas* and demonstrates both observations. For at one time the Greeks, when they had computed eight common lunar years of equal length, intercalated three embolismic months and the ancient Romans are also said to have imitated <the Greeks in this practice>. For should you wish to calculate 8 times $11\frac{1}{4}$, you will make 90 days, that is, three months. In fact, there are now people who think that eight solar years equal eight lunar years, and similarly that eleven solar years make up the same number of lunar years, with an equal number of days.⁴⁹⁹

At this point it should be stated, first of all, without any contradiction, that if eight years of both planets correspond, then this must always be the case, /424/ and it is impossible for eleven years <of both planets> to correspond; but if eleven years of both planets begin and end together, they will always do so, nor will there be any time when the correspondence of eight years can be restored.⁵⁰⁰ In order to hit upon this number, it should be observed that eight solar years, excluding the leap-year days, make 2920 days, for 8 times 365 equals 2920. But note how many days that number of lunar years has – 8 times 354 is 2832 – and then add the 90 days of the three embolismic months, and these make 2922. But the two days lacking in the *ogdoas* of the Sun can anticipate being supplied from leap-year days. Let us look at the *hendecas* of both planets and see if perhaps there the Sun can summon the help of the leap-year day, for both periods of time [*ogdoas* and *hendecas*] must be bound by the same rule <concerning leap years>. Eleven times 365 makes 4015. Likewise 11 times 354 makes 3894. Add 120 days for the embolismic months, and it makes 4014. Take away the *saltus*, and there remains 4013. See, then, whether here the *hendecas* can make use of the assistance /425/

498 Bede is referring to the ancient eight-year cycle or *octaëteris* (see Introduction, pp. 26–9). The cycle was based on the premise that 8 solar years of 365 $\frac{1}{4}$ days = 2922 days, and 8 lunar years of 354 days, plus three intercalated lunar months of 90 days = 2922 days.

499 ‘The entire cycle of the Moon ... equal number of days’: based on *Disputatio Chori et Praetextati* 13, ed. Holford-Strevens 70–2 [= Macrobius, *Saturnalia* 1.13.8–10, ed. Willis 62.23–63.9].

500 That is, one cannot have both an eight-year and an eleven-year luni-solar cycle. Cf. *On Times* 11, ed. Jones 593–4, trans. Kendall and Wallis 113. A similar point is made by Irish computists, e.g. *Einsiedeln Computus* 23.3 (ed. Loevenich 114.35–116.50), *Munich Computus* 60 (ed. Warntjes 260.41–50; cf. his note on 261–3), and *De ratione computandi* 79 (ed. Ó Cróinín 187.8.12).

of the leap-year day, so that by adding two or three days, it will suffice to compensate the lunar *hendecas*. Certainly it does not need the help of the quarter-day in order to equal the lunar *hendecas*, for it already exceeds it by two days; rather, it replaces what is missing in the *ogdoas* by these excess days. So it is plain that in harmonizing their periods, leap-year days do not adversely affect anything, for however many occur in the nineteen-year cycle, they benefit both planets equally, as we have said.⁵⁰¹

Now to gut the bowels of this question! In the first year of the Paschal cycle the epact is nil, because the Moon finishes its course on the eleventh Kalends of April [22 March]. Again in the ninth year of the cycle, that is, after 2922 days, on the ninth Kalends of April [24 March] the Moon is thirty days old, which the sequence of the epacts (which are then 28) plainly shows. What good was it /426/ to add two days of the Sun's course – that is, the tenth and ninth Kalends of April [25 and 24 March] – in order to complete the lunar *ogdoas*, if two leap-year days could have completed them? Therefore the two days by which the *ogdoas* of the Sun lags behind the *ogdoas* of the Moon are not supplied by the intercalation of the leap-year days, but by the two days in which the Sun's *hendecas* exceeds the Moon's. Nor does the *saltus lunae* harm it, which indeed some place in the *ogdoas*,⁵⁰² but which we have stated should be placed in the *hendecas*. But wherever you position it, the question we posed will be solved at the same point. The nineteen-year cycle has 228 solar months and 235 lunar months, making 6935 days, excluding leap-year days: 19 times 12 is 228, plus 7 is 235; again 19 times 365 is 6935, and 19 times 354 is 6726, plus 210 days for the seven embolismic months, making 6936. Subtract one day for the lunar *saltus*, and you will see that in one and the same number of days, the nineteen-year cycle comprises the course of the Sun and of the Moon. Again, the *ogdoas* has 96 solar months and 99 lunar months; the *hendecas* /427/ has 132 solar months and 136 lunar months. The number of days is discussed above.

47. THE YEARS OF THE LORD'S INCARNATION⁵⁰³

To the first column (*uersus*) of the nineteen-year cycle is affixed the sequence <of years>, which the Greek computists designated as beginning

501 See above, ch. 41.

502 I.e. *Liber Anatolii*: see ch. 42 n. 462.

503 The main source for this chapter is Dionysius Exiguus, *Ep. ad Petronium*, Krusch,

from the time of the Emperor Diocletian. But *Dionysius*, a venerable *abbot of Rome*, and *one endued with no small knowledge of both languages (that is, of Greek and Latin)*, refused, as he himself attests, in composing his *Paschal cycles*, to link them to the memory of an impious persecutor, but chose instead to designate the years from the Incarnation of our Lord Jesus Christ, so that the source of our hope might be the more evident to us, and that the cause of man's restoration, that is, our Redeemer's Passion, might be more clearly manifest.⁵⁰⁴ Placing the 532nd year of our Lord's Incarnation at the beginning of his first cycle, he plainly taught that the second year of his cycle was the same as that when the mystery of the same most holy /428/ Incarnation began.⁵⁰⁵ For the lunar cycle is one of nineteen years, but the solar cycle is completed in twenty-eight years; multiplied together, they produce a total of 532 years. When at last it expires, the whole luni-solar sequence, going back to its beginning, revolves along the same track, producing the same years of the nineteen-year and lunar cycles, the same lunar epacts and also solar concurrents, the same fourteenth <Paschal> Moon, the same date for Easter Day, and the same Moon for that day, in sequence. Even Victorius proved this plainly by drawing up a cycle for that number of years, albeit he established Easter according to another doctrine.

Therefore, because the 533rd year from the Lord's Incarnation is complete in the second year of the cycle first composed by Dionysius, this is without doubt the one in which He deigned to become incarnate, as far as the revolutions of the stars are concerned. For this second year of the nineteen-year cycle is the eighteenth year of the lunar cycle, having eleven epacts and five concurrent days of the week, and a fourteenth Paschal Moon on the eighth Kalends of April [25 March]. All these things were exactly the same then, and had there been an Easter falling upon a Sunday at that time, after the Church's present custom, that day would have come in the way noted here on the sixth Kalends of April [27 March], and the Moon would have been /429/ sixteen days old. Therefore Dionysius himself in his Easter formulae demonstrates implicitly what we have said: in order

Studien II 63–8.

504 The continuator of Dionysius' tables, commonly identified as Felix Ghyllitanus: ed. Krusch, *Studien II* 87.

505 That is, year two of the cycle is equivalent to AD 1. Dionysius' cycle began in 532, so the previous cycle ended in 531, which means that it began in 1 BC. See Commentary on ch. 6, pp. 420–1.

to find *the year of the nineteen-year cycle, take the years of the Lord*, and before we *divide them by nineteen*, he commands us to *add one*,⁵⁰⁶ showing that when He became incarnate, one year of the nineteen-year cycle was already complete. Again, in order to know *what is the year of the lunar cycle*, he tells us to *take the years of the Lord, and always subtract two*, and then *to divide by nineteen*, so that the calculator, with the two years deducted which then remained, and dividing the rest by nineteen, might arrive at what should be the remainder.⁵⁰⁷ Then to discover *what the lunar epacts are*, *take in due manner the years of the Lord*, divide, and then *multiply*; again, he bids us divide without adding or subtracting anything, because the epacts, beginning in the second year of the nineteen-year cycle, never require that anything be added or subtracted from the year of the Lord in order to discover their <present> status, because they began with <the year of the Lord's Incarnation>.⁵⁰⁸ Again, *if we wish to know the solar increment, that is, the concurrents of the weekdays*, he bids us *take the years of the Lord*, and *having added one fourth, /430/* he teaches us always to add *four* regulars to these, and then finally *to divide by seven*.⁵⁰⁹ For the fact is that the concurrents were five in the year in which our Lord was born, and in order to arrive at a fixed sequence of computation, the calculator is obliged to add the four that went before.

These things being as they are, diligently seek out the year of the Lord's Passion; nor is the way of seeking it unknown, provided that the computation does not err at any point. If I am not mistaken, the faith of the Church holds that the Lord lived in the flesh, up until the time of the Passion, a little more than thirty-three years, **/431/** for he was baptized at the age of thirty, as the evangelist Luke attests,⁵¹⁰ and preached for three and a half years after his baptism, as John teaches, not only by reminding us of the time of the returning Paschal season in his Gospel,⁵¹¹ but also in his Revelation,⁵¹² and as Daniel also indicates in his visions.⁵¹³ That the holy Roman apostolic Church holds this belief is testified by the legends

506 Dionysius Exiguus, *Argumenta titulorum paschalium* 5, ed. Krusch, *Studien II* 76.15–18. For discussion see Mosshammer, *Easter Computus* 100–1.

507 *Ibid.* 6 (76.19–22).

508 *Ibid.* 3 (75.9–12).

509 *Ibid.* 4 (76.4–10).

510 Luke 3:23.

511 John 13:1.

512 Revelation 12:6, 12:14; cf. 11:3.

513 The key phrase is 'time, times and half a time', which appears in Daniel 7:25 and 12:7.

that it customarily inscribes, year by year, upon its candles. Recalling the time of the Lord's Passion to the memory of the people, it records a number of years which is always thirty-three less than what Dionysius laid down <as having passed> since the Incarnation. Hence, in the 701st year of His Incarnation (according to Dionysius), in the fourteenth indiction, our brothers who were then in Rome related that on Christmas day they saw, and copied down, the following inscription from the candles in St Mary's:⁵¹⁴ 'From the Passion of our Lord there are 668 years.'⁵¹⁵ Therefore, since the Paschal cycle revolves in 532 years, as we said above, add thirty-three to these, or rather thirty-four, so that you may arrive at the very year in which the Lord suffered, and it will make 566. This is the <year corresponding to the> year of the Lord's Passion and Resurrection from the dead. For just as the 533rd year corresponds to the first, so the 566th year corresponds to the thirty-fourth year of the luni-solar cycle. And so, with the cycles of Dionysius open before you, should you find in the 566th year from the Incarnation of the Lord that the fourteenth moon falls on /432/ Thursday the ninth Kalends of April [24 March], and Easter on Sunday the sixth Kalends of April [27 March], then give thanks to God, for He has granted that you find what you were looking for, just as He promised! For no Catholic may doubt that the Lord mounted the Cross on Friday, on the fifteenth day of the Moon, and rose from the dead on the first day of the week, that is, on Sunday, lest he appear not to believe in the Law which stipulates that the Paschal lamb be sacrificed on the fourteenth day of the first month in the evening, nor in the Gospel which asserts that the Lord, taken captive by the Jews on that same evening and crucified in the morning, it being Friday, and buried, rose on the first day of the week.

The opinion of many doctors of the Church that He was crucified on the eighth Kalends of April [25 March] and rose on the sixth Kalends of the same [27 April] is widely taken to be common knowledge. However, Theophilus of Caesarea, an ancient doctor, and one who lived close to apostolic times, in the synodical letter which he composed together with the other bishops of Palestine against those who celebrate with the Jews on the fourteenth day of the Moon, speaks as follows: *And is it not impious that*

and is reprised in Revelation (see preceding note). Cf. Bede's *Expositio Apocalypseos* 2 (on 12:6), ed. Gryson 391.82–4; trans. Wallis 192.

514 The Laon glossator specifies that this church was *ecclesia rotunda sanctae Marie* – i.e. the former Pantheon: ed. Jones 431 *ad lineam* 76.

515 For discussion of this episode see Commentary.

*the passion of the Lord – such a great sacramental mystery – be positioned outside the terminus. For our Lord suffered on the eleventh Kalends of April [22 March], on which night he was handed over by the Jews, and he rose on the eighth Kalends of April [25 March]. How can the three days be placed outside the terminus? It was decided in that /433/ synod that Easter ought to be observed from the eleventh Kalends of April [22 March] to the eleventh Kalends of May [21 April].*⁵¹⁶ And earlier on in the same book it is written: *For the inhabitants of Gaul always celebrate Easter on whatever day is the eighth Kalends of April [25 March], when Christ's Resurrection is said to have taken place.*⁵¹⁷ But if you are looking for such a year, and you are unable to find it in that place you thought <it would be>, blame the carelessness of the chronographers, or better yet, your own slowness, being very wary lest in defending the text of the chronicles you do not appear boldly to impugn the testimony of the Law and the Gospel by saying that our Lord and Saviour underwent the most holy mystery of the Cross in either the fifteenth or the sixteenth year of the Emperor Tiberius Caesar, or in either the twenty-ninth or thirtieth year of his age, when the Gospels plainly indicate that the forerunner of our Lord began to preach in the fifteenth year of Tiberius, and that this same <forerunner> subsequently baptized (amongst others) Jesus, *who was then at about the beginning of his thirtieth year.*⁵¹⁸

48. INDICATIONS

The second row (*ordo*) of the nineteen-year cycle contains the indictions, which always retrace their own footsteps in a cycle of fifteen years. We have learned that <indictions> were established by the ancient diligence of the Romans in order to guard against error which might perhaps arise concerning chronology. /434/ When, for example, a certain emperor lays down his life or his kingdom in the middle of the year, it might come about that one historian would assign that year to the time of that king, because he reigned during part of it, while another historian would consider that it ought rather to be assigned to his successor, in that he also ruled during part of it.⁵¹⁹ Lest an

516 (Spurious) *Acts of the Synod of Caesarea* 3–4, ed. Krusch, *Studien I* 310.

517 *Acts of the Synod of Caesarea* 1, ed. Krusch, *Studien I* 307.

518 Luke 3:23.

519 Note that Bede assumes the Romans used regnal years for dating and introduced

error be introduced into the chronology through discrepancy of this type, <the Romans> decreed the indictions, by which scribes and even the common people might readily preserve the integral flow of time. They wished as well that there might be fifteen <indictions> for the sake of ease of calculation, so that by a simple number, easy to multiply, the status of past time might more advantageously be reduced to memory. However, some think that because formerly, in republican times, the city of Rome used to be purified after the census was finished in the fifth year,⁵²⁰ indictions were created to indicate the third purification and census. Indictions begin on the eighth Kalends of October [24 September] and end on the same day.⁵²¹

49. FORMULA FOR FINDING THE INDICTION

By means of this formula, you will find what the indiction is for any year you wish to compute. *Take the years from the Incarnation /435/ of our Lord*, however many they may be: for instance, the present year 725. *Always add 3*, because according to Dionysius, the Lord was born in the fourth indiction;⁵²² *this makes 728. Divide this by 15*: 15 times 40 is 600, 15 times 8 is 120, and there are 8 left over. *It is the eighth indiction. If nothing is left over, it is the fifteenth indiction.*⁵²³

50. LUNAR EPACTS

The third column (*linea*) of the aforementioned cycle contains the lunar epacts, which every year habitually exceed the course of the Sun by eleven days. Hence <these days> are called by the Greek word ‘epacts’, that

indictions as a convenience for historians.

520 This is the *lustrum* – cf. Isidore of Seville, *DNR* 6.6, ed. Fontaine 195; trans. Kendall and Wallis 122; and *Etym.* 5.37.2, ed. Urquiola and Santos 124.

521 Dating the change of indiction to 24 September is peculiar to Bede; indictions in Bede’s day changed on 1 September, the beginning of the Byzantine year, but in the fourth century the changeover date may have been 23 September: Mosshammer, *Easter Computus* 22–3.

522 Indictions were not in use at the time of Christ’s birth. Dionysius’ Paschal table enabled retrojection of the indictions to the putative year of the Incarnation (see Appendix 2).

523 Dionysius Exiguus, *Argumenta titulorum paschalium* 2, ed. Krusch, *Studien II* 75. Note that this formula, as well as those in chs 52 and 54, indicate that the year of composition of *The Reckoning of Time* was 725. For discussion see Mosshammer, *Easter Computus* 100.

is, ‘additions’,⁵²⁴ for as we said, they are accumulated by the addition of eleven days every year; or else they are appropriately called ‘epacts’, that is ‘additions’, because in order to discover the age of the Moon on the Kalends <of the> twelve <months>, they are added together throughout the year, as we taught above.⁵²⁵

In fact, each day throughout the entire circle of the revolving year has its eleven lunar ‘additions’. For example, if as I write today the Moon is five days old, on this same day one year from now the Moon will be sixteen days old /436/; after two years, twenty-seven days old; after three years, eight days old; nor does it revert to what it is now until the cycle of nineteen years is finished. But the epacts noted in the nineteen-year cycle specifically stand for the age of the Moon on the eleventh Kalends of April [22 March], the beginning of the Paschal feast. The <epacts> always observe this rule in connection with <the Moon’s> course: whenever they are less than the number sixteen, they announce the Paschal lunation, but whenever they are more, they direct us to look for Easter in the next lunation. This is because the fullness of the Paschal Moon ought not to precede the equinox, but rather should follow it, as was ordained in the beginning of Creation when the Sun first rose at the beginning of the day, holding to the spring equinox, and the Moon therefore rose at the beginning of the night, occupying the sector of the autumn equinox.⁵²⁶

Hence it is plain that they make a great mistake who decide that the

524 Cf. Isidore, *Etym.* 6.17.29, ed. Chapparo Gómez 109; and Dionysius Exiguus’ prologue to his *De cyclo magno paschae*, ed. Krusch, *Studien II* 64. This is also a commonplace of Irish *computus* literature: e.g. *Munich Computus* 49 (166.2) and Warntjes’ note.

525 *uel certe quia ad inueniendas quotae sint lunas kalendarum XII per totum adiciuntur annum, ut supra docuimus ...* : (435.5–7). Bede’s reference to a previous discussion shows that he is referring to the formula explained in ch. 20 for finding the age of the Moon on the Kalends of each of the twelve months of the year, which uses annual epacts and monthly lunar regulars. Some medieval manuscripts corrected the figure XII to XI, thus transforming it into a date: the eleventh Kalends <of April>, or 22 March, i.e. the day from which the epacts are counted, and which Bede refers to a few lines later. Jones (*BOT* 385) also thought that Bede was referring to a date, but accepted the reading *kalendarum XII*, i.e. 21 March. In Jones’ view, this date reflects Bede’s idea that the beginning of the tropical year is the starting point of all astronomical calculation. Bede does allude to this ‘natural calculation’ from time to time in *The Reckoning of Time*, and it is a major theme in the *Letter to Wicthed*, where it helps to explain why the *Liber Anatolii* places the equinox on 22 March. But Bede deliberately left the awkward issue of Anatolius’ equinox out of *The Reckoning of Time* as it would have served only to confuse his students. Moreover, Jones’ hypothesis ignores the clause *ut supra docuimus* (‘as we taught above’).

526 Cf. chs 6 and 43.

inception of the Paschal lunation should be sought starting from the third Nones of March [5 March], because in fact the Moon which appears <as new> then will show a full Moon before the equinox.⁵²⁷ Hence it is not fit for the Paschal solemnity, in that, as we said, /437/ it is necessary that first the Sun and then the Moon rise in the position in which they were originally created, so that <the Sun> wins victory over the length of night by crossing the equinox, and <the Moon>, though she may be smaller, illuminates the whole length <of night> by her fullness. Virtually no one doubts that this refers to the sacrament of Christ and his Church. We referred to some of these matters at the beginning of this work:⁵²⁸ let us go back over a few of them now. Because (as they say) the Moon and stars do not shine with their own light, but take their light from the Sun, so also the Church and all the saints possess the good by which they live not by the merit of their own virtue but by the grace of the liberal Giver. And just as we maintain our fortitude not by the strength of our own will-power, but by His acceptance of us, whose mercy goes before us, nor are we capable of thinking anything on our own, as if from our own selves, but our capability comes from God, even so in the season wherein we celebrate the great events of our redemption, the perfection of solar splendour which illuminates ought to go before the lunar <splendour> which is illuminated.

51. HOW CERTAIN PEOPLE ERR CONCERNING THE BEGINNING OF THE FIRST MONTH⁵²⁹

But see whether the error of those who think otherwise seems to be confirmed and supported by the truth, at least in the eyes of those *who make wicked laws* of this sort, and *who in writing, write what is not just*.⁵³⁰ Victorius, who composed their cycles, writes in the prologue of this same work, amongst other things, as follows: *But the Latins, on the other hand, considered that <the period from> the third Nones of March [5 March] to the fourth Nones of April [2 April] – that is, twenty-eight days – ought to be*

527 The culprit here is Victorius of Aquitaine, *Prologus ad Hilarium archidiaconum* 4, ed. Krusch, *Studien II* 19.12–14.

528 Cf. ch. 6.

529 On the possible sources for this chapter, and particularly the text beginning *Constans igitur* ... incorporated into the 'Byrhtferth Glosses' to *The Reckoning of Time* (PL 90.499C–500C and 713–14), see Jones, *BOT* 386.

530 Isaiah 10:1.

observed <as the limits of the beginning of the Paschal lunation>, /438/ so that the beginning of the Paschal month falls on whatever day <within this period> there is a first Moon. If the fourteenth Moon of this <lunation> comes on a Friday, the following Sunday – that is, the sixteenth Moon – is assigned without any ambiguity to the Paschal celebration. But if it happens that the full Moon is on Saturday and the fifteenth Moon is found on the following Sunday, they said that Easter ought to be transferred to the next Sunday, that is, the twenty-second Moon, with a week having been passed over, lest they fix a Moon which is less than sixteen days old for the celebration of the mystery of that Sunday. Nor will they at any time accept a Moon that is more than twenty-two days old, but they would rather that the day of the Paschal feast be extended to the twenty-second day than ever to begin it on a Sunday before the fourteenth Moon. Furthermore, they assert that the fourteenth Moon of this month should be counted from the fifteenth Kalends of April [18 March] until the sixteenth Kalends of May [16 April].⁵³¹ And again at the end of the same prologue he says: *But when it happens that the twenty-seventh Moon falls on a Saturday, and in particular, on the Kalends of January without a leap-year day, Your Holiness should know that Easter is not to be found save either on the thirteenth Kalends of April [20 March] according to the Latins, which is never to be celebrated even if the Moon agrees, or on the eighth Kalends of May [24 April] /439/ according to the Egyptians, which is sometimes observed.*⁵³²

Let us see, therefore, in what manner Victorius commends his ‘Latins’. He says that they prefer to think that a new Moon which begins on the third Nones of March [5 March] is the start of the first month, and that Easter Sunday ought to be celebrated on the sixteenth Moon. And again he says that Easter is never to be celebrated on the thirteenth Kalends of April [20 March], as the Latins do, even if the Moon agrees, but rather on the eighth Kalends of May [24 April] as the Egyptians do. But he agrees that a Moon which was new on the third Nones of March [5 March] will be sixteen days old on the thirteenth Kalends of April [20 March]. Now I ask you, holy brother Victorius, if a new Moon on the third Nones of March [5 March] marks the beginning of the first month, why do we not celebrate Easter in this month, but instead put it off to the next month

531 Victorius of Aquitaine, *Prologus* 4, ed. Krusch, *Studien II* 19.12–20.4. Most manuscripts of Victorius read *XVII kal. mai.* in the last sentence, but all manuscripts of Bede used in Jones’ ed. save Melk Stiftsbibliothek 412 (370) read *XVI*.

532 *Ibid.* 12 (26.15–19).

– when the Law commands all who are capable of doing so to celebrate the Pasch in the first month, and that only those on a journey, or who are unclean, should celebrate in the second month?⁵³³ Why do you add, ‘without a leap-year day’? Perhaps because when the Kalends of January [1 January] is a Saturday, the thirteenth Kalends of April [20 March] will fall on a Sunday if it is not a leap year, but the same date will fall on a Monday if the leap-year day intervenes, and you wish to teach that when Monday the thirteenth Kalends of April [20 March] is the sixteenth Moon, then Easter ought rightly to be celebrated on the following Sunday, the seventh Kalends of April [26 March] at the twenty-second Moon? Indeed, even though on that same day – the thirteenth Kalends /440/ of April [20 March] – the Moon is sixteen days old, one cannot celebrate Easter then because the equinox has not yet passed. But neither <can one do so> on the following Sunday, because a Moon which is too old (that is, twenty-three days) falls on that day, and this necessity compels us to defer the solemnities of Easter until the second month. A wonderful instructor in computation you are! Your chief doctrine is that a new Moon on the third Nones of March [5 March] begins the first month; then, on the other hand, vanquished by this very calculation, you are forced to admit that unless the leap-year day intervenes, it is not at all the new Moon on that day, but rather the one which will be kindled twenty-nine days later which fits the Paschal feast. But if there is a leap-year day, then it becomes the first month of the following year, which without <the leap-year day> would be the last <month> of the preceding <year>. And what is this that you say: ‘Even if the Moon agrees, Easter is absolutely never to be celebrated on the thirteenth Kalends of April [20 March]’? But how can the Moon agree with the Paschal solemnities at a time when the Paschal solemnities are never to be celebrated? And if Easter is never to be celebrated on the thirteenth Kalends of April [20 March] even if the sixteenth Moon arrives, then patently the Latins are wrong when they claim that the Paschal lunation begins on the third Nones of March [5 March], since it is not permitted to celebrate Easter on the sixteenth or seventeenth day of this <lunation> because the equinox has not passed. Having spurned their observance, you rightly urge, along with the Egyptians, that Easter in that year ought to be postponed to the eighth Kalends of May [24 April]. If you think that what the Egyptians teach ought to be observed instead, why do you not opt for their science on all points? In fact, you choose not to do this, but to take

533 Numbers 9:10–11.

a middle course between the two, and to dispense the calculation of the Latins, which you despise, to your own people to be taught and followed, rather than that of the Egyptians which you prefer. We have learned to follow the Egyptian practice of computation in all things, which in your own judgement and by universal agreement of the Church seems to be truer. That is, the beginning of the first month is to be sought from the eighth Ides of March [8 March] to the Nones of April [5 April], the fourteenth Moon of Easter from the twelfth Kalends of April [21 March] until the fourteenth Kalends of May [18 April], Easter Sunday from /441/ the eleventh Kalends of April [22 March] to the seventh Kalends of May [25 April], and this from the fifteenth up to the twenty-first Moon.

Lest the friends of Victorius accuse us of attacking him wantonly, let them read the book of that most learned and holy man Victor, bishop of Capua, concerning the Easter which it was thought should be celebrated on the fifteenth Kalends of May [17 April] in the thirteenth indiction, in the ninth year of the proconsul Basilius, and they will discover how highly the prudent and catholic doctors of the Church thought of their teacher. His book begins as follows: *Although the venerable solemnity of Easter had been carefully sought by us with a view to the day upon which it should most properly arrive in this present year, the thirteenth indiction, and even though we declared according to the constitutions of the venerable Fathers that the Resurrection of our Lord should beyond a doubt be celebrated on the the eighth Kalends of May [24 April], our response was viewed by some as quite unreasonable because a certain Victorius fixed the Sunday of the Resurrection otherwise in the Paschal cycle which he published, although he also designated the <Sunday> which we declare ought to be celebrated.*⁵³⁴ And later in the work: *But now, order demands that I throw open to plain view the errors in the cycles which Victorius published, seeing that he does not know how to determine the proper day of Easter, so that as he was shown to have failed in this manner in the past, he may lack authority in the present and the future, and that he may renounce all occasion for evil persuasion.*⁵³⁵

534 An example of Victorius' policy of double dates for Easter in years where Roman and Alexandrian dates conflicted: see Introduction, pp. 36–7.

535 This passage from Victor of Capua is not among the fragments printed by Pitra in *Spicilegium Solesmense*.

52. FORMULA FOR FINDING THE NUMBER OF THE LUNAR EPACTS

If you want to know what the epacts are for any given year, take the number of years of the Lord, for example in the present eighth indiction, 725. Divide by 19: 19 times 30 is 570 and 19 times 8 is 152, with 3 left over. Multiply these by 11, which makes 33. Subtract 30, and the remainder is 3. The epact, that is, the lunar increment, is three.⁵³⁶ /442/

53. SOLAR EPACTS

In the fourth column (*tramite*) of the nineteen-year cycle the solar epacts are designated, that is, the concurrent days of the week, which for three years always increase by the addition of one, but during leap year by the addition of two, up to the number seven. Their cycle runs for four times seven, or twenty-eight years, because assuredly it cannot be completed until the leap-year day, which recurs in the fourth year, has fallen on every day of the week, that is, Sunday, Friday, Wednesday, Monday, Saturday, Thursday, Tuesday; it runs through them in this order.

Although every day of the year has its concurrents, those concurrents which are specifically attached to the <nineteen-year> cycle are those which designate the weekday of the ninth Kalends of April [24 March]. This is so that, being placed quite close to the beginning of the Paschal festivity, they may very readily display the day of the epacts, or what day of the week the fourteenth Moon <falls on>, and thereby smooth the way to the discovery of Easter Sunday. For every year, the same day of the concurrents will fall on the second Kalends of April [31 March], the seventh Ides of April [7 April], the eighteenth Kalends of May [14 April], and the eleventh Kalends of May [21 April]: it is helpful to the computist to memorize these.

The course of their cycle is such that whatever the concurrents are in leap year, they are the same five years earlier and six years later. Whatever they are in the first year after the leap year, they will be the same as those which occurred eleven years before, and those which will recur in six

536 Based on Dionysius Exiguus, *Argumenta titulorum paschalium* 3 (ed. Krusch, *Studien II* 75), but with data altered to correspond with AD 725. For discussion see Mosshammer, *Easter Computus* 99.

years. Those for the second year after the leap year are the same as those which occurred six years previously, and which will recur after eleven years. Those in the third year after leap year are the same as those which took place six years before, and which will revert after five years. And the regular pattern of this separation applies to all the days of the revolving years.

Take careful note of the fact that because of this solar cycle, which runs for twenty-eight years, it is necessary that twenty-eight nineteen-year cycles be completed before the identical sequence for the observation of Easter is repeated in all respects, so that every year of this <solar> cycle becomes the first year of a nineteen-year cycle, and similarly, that each year of the nineteen-year cycle follows as the first of this <solar cycle>. Thus the entire series of the Easter observance will be finished in no less than 532 years. /443/

54. FORMULA FOR FINDING THE NUMBER OF THE SOLAR EPACTS, AND WHEN LEAP YEAR WILL FALL

Since the sequence of the <solar> epacts, that is, of the solar increment, coincides and is closely connected with the leap year, learn by means of this formula what is the state of both simultaneously.

If you want to know when the leap year will be, take the year of the Lord 725, divide it by 4, and if there is no remainder, it is leap year; if there is a remainder of 1, 2, or 3, it is one, two or three years away from leap year.⁵³⁷ So, for instance, 4 times 100 is 400, 4 times 80 is 320, 4 times 1 is 4, with 1 left over, because <725> is the first year after the leap year. If you wish to know the solar increment, that is, the concurrent days of the week, take the number of years from the Lord's Incarnation, for instance 725 (which is the eighth indiction), and add to this one-fourth of these years, that is, at present, 181, which together <with 725> makes 906. Add 4 to this, which makes 910. Divide by 7: 7 times 100 is 700, 7 times 30 is 210, with no remainder. Therefore the solar epact or concurrent days of the week are seven.⁵³⁸

537 Dionysius Exiguus, *Argumenta titulorum paschalium* 8, ed. Krusch, *Studien II* 76.27–77.1. For discussion see Mosshammer, *Easter Computus* 101–2.

538 Dionysius Exiguus, *Argumenta titulorum paschalium* 4 (76.4–10). For discussion see Mosshammer, *Easter Computus* 100.

55. THE CYCLE OF BOTH EPACTS, AND HOW TO CALCULATE THEM USING THE FINGERS

Because anyone who has memorized the cycle of the Sun and Moon grasps very readily the day of Easter and the recurrence of the other dates, even if he does not know how to multiply and divide these cycles by nineteen and twenty-eight, every computist ought to remember that the same solar concurrents will follow in thirty years as will come next year, and in sixty years from now as will come in four years, and in 120 years from now as will come in eight years, and in 150 years from now as in ten years, and the others in like manner. And if you want to know the number of the concurrent for a year occurring at any interval, find out how many times thirty goes into that number <of years>, and with this thirtieth part doubled, you will know the harmony /444/ of the revolving years. For instance, 10 times 30 is 300, and hence the same concurrents occur in 300 years from now as will occur twenty years from now. If there is a remainder, add it in. In a similar manner, the order of the concurrents can be projected into the past. Likewise, because the lunar cycle is nineteen years long, the epact of the present year will occur twenty years from now; those for next year, forty years from now; those of the third year, sixty years from now; those of the fourth year, eighty years from now; those of the fifth year, 100 years from now; those of the sixth year, 120 years from now; those of the seventh year, 140 years from now; those of the eighth year, 160 years from now; those of the ninth year, 180 years from now; those of the tenth year, 200 years from now, and so on for the rest. This should be understood to apply to the fourteenth Moon of Easter and everything else that is included in the nineteen-year cycle. The diligent calculator will in this manner be able to observe the recurrence of sequential dates that are still more distant from him, and by this means of these, he will consistently remember to bring even dates in the past into accord.

But it seems worth recalling that some people, in order to simplify calculation, have transferred both cycles, the lunar and the solar, onto the joints of the fingers. Because the human hand has nineteen joints if we include the tips of the fingers, by applying each year to one of these joints, they begin the lunar cycle on the inside of the left hand, at the base of the thumb, and they finish it on the inside, at the tip of the little finger. Again, because the two hands together, if you do not count in the fingertips, have twenty-eight joints, they assign the years <of the solar cycle> to these, beginning at the little finger of the left hand and ending on the

thumb of the right. They do not do this, as in the lunar cycle, by proceeding through the fingers in numerical order, but because of the calculation of the quarter-day <of the leap year increment>, they mark out each four-year period by traversing the four fingers, so that the six joints of the little fingers contain all the leap years. Again, the six joints of the fingers next to the little fingers comprise all the years that follow immediately after the six leap years. By the same token, those of the second finger <from the little finger> embrace the second years, and those of the third finger the third years. On the other hand, the seventh leap year with the three years following it are appropriated to the four joints of the thumbs. Whether the computist wishes to avail himself of this or of some other system, the hands can nonetheless readily hold the cycles of both planets. But many aspects of this discipline, just as of the other arts, are better conveyed by the utterance of a living voice than by the labour of an inscribing pen. /445/

56. THE LUNAR CYCLE

The lunar cycle is contained in the fifth column (*regione*) of the nineteen-year cycle. It begins in the fourth year of that cycle, and ends in the third, and is linked to the month of January, and is Roman in origin. For just as every year of the nineteen-year cycle begins and ends with the Paschal <lunar> month because of the observation <prescribed in> the law of the Jews, so likewise this <lunar year>, as instituted by the Romans, begins with the Moon of the month of January and ends there. What applies to the former [i.e. to the nineteen-year cycle] also applies to this one: the first and second years are common, the third is embolismic; the fourth and fifth are common, the sixth is embolismic; the seventh is common, the eighth is embolismic. Also the *hendecas* of the lunar cycle, just like that of the nineteen-year cycle, has seven common years and four embolismic ones. The common years have twelve lunar months and 354 days, but the embolismic ones have thirteen lunar months and 384 days, minus one from the seventeenth year of this cycle, which is the first year of the nineteen-year cycle, from which one day is subtracted because of the 'leap of the Moon'. In order to make this plainer, let us look at the course of each year in order, and do for January what Dionysius has done for the Paschal month.

In lunar year 1 (nineteen-year cycle 4) running from the Kalends of January [1 January] to the thirteenth Kalends of January [20 December], there are 354 days, because it is common.

In lunar year 2 (nineteen-year cycle 5) running from twelfth Kalends of January [21 December] to the fifth Ides of December [9 December], there are 354 days because it is common.

In lunar year 3 (nineteen-year cycle 6) running from the fourth Ides of December [10 December] to the fifth Kalends of January [28 December], there are 384 days because it is embolismic.

In lunar year 4 (nineteen-year cycle 7) running from the fourth Kalends of January [29 December] to the sixteenth Kalends of January [17 December], there are 354 days because it is common.

In lunar year 5 (nineteen-year cycle 8) running from the fifteenth Kalends of January [18 December] to the eighth Ides of December [6 December], there are 354 days because it is common.

In lunar year 6 (nineteen-year cycle 9) running from the seventh Ides of December [7 December] to the eighth Kalends of January [25 December], there are 384 days because it is embolismic.

In lunar year 7 (nineteen-year cycle 10) running from the seventh Kalends of January [26 December] to the nineteenth Kalends of January [14 December], there are 354 days because it is common.

In lunar year 8 (nineteen-year cycle 11) running from the eighteenth Kalends of January [15 December] to the fourth Nones of January [2 January], there are 384 days because it is embolismic.

In lunar year 9 (nineteen-year cycle 12) running from the third Nones of January [3 January] /446/ to the eleventh Kalends of January [22 December], there are 354 days because it is common.

In lunar year 10 (nineteen-year cycle 13) running from the tenth Kalends of January [23 December] to the third Ides of December [11 December], there are 354 days because it is common.

In lunar year 11 (nineteen-year cycle 14) running from the second Ides of December [12 December] to the third Kalends of January [30 December], there are 384 days because it is embolismic.

In lunar year 12 (nineteen-year cycle 15) running from the second Kalends of January [31 December] to the fourteenth Kalends of January [19 December], there are 354 days because it is common.

In lunar year 13 (nineteen-year cycle 16) running from the thirteenth Kalends of January [20 December] to the sixth Ides of December [8 December], there are 354 days because it is common.

In lunar year 14 (nineteen-year cycle 17) running from the fifth Ides of December [9 December] to the sixth Kalends of January [27 December], there are 384 days because it is embolismic.

In lunar year 15 (nineteen-year cycle 18) running from the fifth Kalends of January [28 December] to the seventeenth Kalends of January [16 December], there are 354 days because it is common.

In lunar year 16 (nineteen-year cycle 19) running from the sixteenth Kalends of January [17 December] up to the Nones of December [5 December], there are 354 days because it is common.

In lunar year 17 (nineteen-year cycle 1) running from the Nones of December [5 December] up to the tenth Kalends of January [23 December], there are 384 days because it is embolismic.

In lunar year 18 (nineteen-year cycle 2) running from the ninth Kalends of January [24 December] up to the second Ides of December [12 December], there are 354 days because it is common.

In lunar year 19 (nineteen-year cycle 3) running from the Ides of December [13 December] up to the second Kalends of January [31 December], there are 384 days because it is embolismic.⁵³⁹

The computation of the seventeenth lunar year begins on the same day on which the previous year ended, and not on the day following, as do the others, for this reason: so that one day will not seem to be lacking in that year, because of the so-called ‘leap’ of the Moon. Dionysius, surveying the nineteen-year cycle in like fashion, taught the same thing: he brings the final year to a close on the same day on which the first year is to begin.⁵⁴⁰

57. FORMULA BASED ON THIS <LUNAR CYCLE> FOR FINDING THE AGE OF THE MOON ON THE KALENDS OF JANUARY⁵⁴¹

Anyone who wants to can make a formula from the lunar cycle in order to find the age of the Moon on the Kalends of January. Take any year of

539 Bede’s model here is the synchronization of nineteen-year cycle years and the lunar cycle years in Dionysius Exiguus, *Epistola ad Bonifacium et Bonum*, ed. Krusch, *Studien II* 85–6.

540 Cf. ch. 42.

541 This chapter is reflected in (ps.-) Dionysius Exiguus, *Argumentum* 13, ed. Krusch,

the lunar cycle, for instance, <year> 5. Multiply by 11, and that makes 55. Always add 1 regular, and that makes 56. Divide by 30, and the remainder is 26. In the fifth year of the lunar cycle, the Moon is twenty-six days old on the Kalends of January. Again, take <year> 8. Multiply by 11, and it makes 88. Add 1, and divide by /447/ 30, and 29 will be left over. In the eighth year of the lunar cycle, the Moon will be twenty-nine days old on the above-mentioned Kalends. Only remember to add two regulars in the seventeenth, eighteenth, and nineteenth years of this cycle, not one as in other years, and you will find the Moon on the Kalends without any mistake.

58. A FORMULA TO FIND WHAT YEAR OF THE LUNAR CYCLE OR OF THE NINETEEN-YEAR CYCLE IT IS

If you wish to know the year of the lunar cycle, take the year of our Lord, for instance 725, and always subtract two:⁵⁴² there remain 723. Divide these by 19, and there is a remainder of 1; it is the first year of the lunar cycle. But whenever there is no remainder, it is the nineteenth year.⁵⁴³ And because the nineteen-year cycle keeps the same course as the lunar cycle, but a bit behind it, if you wish to know what year of this <cycle> it is, take the year of the Lord, for instance 725, and always add one;⁵⁴⁴ this makes 726. Divide by 19, and there is a remainder of 4. It is the fourth year of the nineteen-year cycle. If there is nothing left over, it is the last year.⁵⁴⁵

59. THE FOURTEENTH MOON OF EASTER

The sixth section (*locus*) of the aforementioned cycle contains the fourteenth Moons of the first month, which indicate without any ambiguity the day

Studien II 78.9–15.

⁵⁴² Because the lunar cycle runs three years ahead of the nineteen-year cycle, but the nineteen-year cycle begins in 1 BC (see following *argumentum*), only two is deducted from the AD year.

⁵⁴³ Dionysius Exiguus, *Argumenta titulorum paschaliū* 6, ed. Krusch, *Studien II* 76.19–22. For discussion see Mosshammer, *Easter Computus* 101.

⁵⁴⁴ Because the nineteen-year cycle begins in 1 BC: see ch. 46 and Commentary.

⁵⁴⁵ Dionysius Exiguus, *Argumenta titulorum paschaliū* 5, ed. Krusch, *Studien II* 76.15–18. For discussion see Mosshammer, *Easter Computus* 100–1.

of the Lord's Pasch in every year; for the Sunday which comes after the fourteenth Moon is the Paschal day of the Lord's Resurrection. This fourteenth Moon manifests its progress over the Earth at sundown on the equinox,⁵⁴⁶ that is, the twelfth Kalends of April [21 March] at the earliest, and at the latest twenty-nine days later, that is, on the fourteenth Kalends of May [18 April]. It is agreed that in <accordance with> the time appointed by the Law the course of the Paschal observance is contained within these limits throughout the nineteen years <of the cycle>. Were it possible for this same fourteenth Moon to fall on Saturday every year, nothing would displace the time of our Paschal observance from the <time laid down in> the Law. For we, sacrificing according to the precept of the Law always on the fourteenth day of the Moon of the first month at sunset, and eating the flesh of the immaculate Lamb, and sprinkling its blood upon our doorposts to repel /448/ the destroyer (this is baptism), and celebrating the solemnities of the Paschal mass, would triumph over the spiritual [i.e. symbolic] Egypt. And at break of day on the fifteenth day of the Moon of that month, we would enter upon the first day of Unleavened Bread, and we would complete the seven appointed days of that festivity with due veneration from the morning of the fifteenth day to the evening of the twenty-first day of that first month, that is from Easter Sunday until the Sunday of the octave of Easter.

But because the same day of the Moon falls on different weekdays, it therefore comes to pass (given that we are taught to restrict the beginning of Easter to a Sunday because of the Resurrection of our Redeemer) that sometimes our festivity takes its beginning on the seventh day after the start of the <feast of> Unleavened Bread <prescribed by the> Law. However, it should never happen that our Paschal solemnity does not encompass one of the days of the Pasch <appointed by the> Law, but in many instances, all of them. On the other hand, those who think that Easter Sunday ought to be celebrated from the sixteenth to the twenty-second Moon⁵⁴⁷ labour under a double burden, because they never hold to the beginning of the Pasch prescribed by the Law, and because it often happens that they follow none of the days which are laid down by the Law for the observance of the Pasch. For they reject outright from their celebration both the evening

546 Cf. chs 6, 43. These parameters, apart from the equinox (Bede's particular obsession, probably because of Victorius) are listed in Irish *computus* treatises such as *Einsiedeln Computus* 20.3 (ed. Loevenich 104.36–46), *Munich Computus* 56 (ed. Warntjes 222.2–224.14), and *De ratione computandi* 92 (ed. Ó Cróinín 193.1–3), and 96–7 (201–3).

547 I.e. Victorius.

of the fourteenth day, when it was decreed that the Pasch was to begin, and the morning of the fifteenth day, when the appointed solemnity of the seven days of Unleavened Bread is to commence. And on top of it all, to exacerbate this sin, they command that the twenty-second day – which is never once mentioned by Moses in all his Paschal Law – be sanctified.

There are those⁵⁴⁸ who swerve from the way of truth in the other direction, but with no less error, even though Scripture commands them to travel by the royal road, and not to turn aside from it either to the left or to the right. By decreeing that Easter Sunday should be observed from the fourteenth day of the Moon until the twentieth, these people often pre-empt the beginning of the Pasch <laid down by the> Law, when they divert what is ordained for the fourteenth day of the Moon to the thirteenth day. And what is ordained concerning the twenty-first day, consecrating it as holy and illustrious, they utterly disdain, as if this <day> did not belong to Easter-tide at all.

Along with other defenders of catholic faith and action, Theophilus, bishop of the Church of Alexandria, defeated these people by plain reasoning [*manifesta ratione*]. Writing /449/ to the emperor Theodosius the Elder, he said: *But it sometimes happens that some folk fall into error concerning the fourteenth Moon of the first month, if this Moon should fall on a Sunday. When this happens, the fast would have to end on Saturday, when the thirteenth Moon is shown to arrive, and <thus> we start to do what is contrary to the Law. Hence it is appropriate to issue a vigorous warning that whenever the fourteenth Moon falls on a Sunday, we should instead postpone Easter until the following week, and this for two reasons: first, lest when the thirteenth Moon is found on a Saturday we end our fast <then>, which does not make sense, nor does the Law prescribe it, particularly since the light of the Moon itself is still seen to be imperfect in its own sphere; and then, lest we be obliged to fast on Sunday, as this constitutes the fourteenth Moon, thereby doing something unseemly and illicit, for this is the custom of the Manichean sect. Therefore, since we ought not to fast when the fourteenth Moon falls on Sunday, nor is it reasonable to end our fast if the thirteenth Moon occurs on Saturday, we assert that <Easter> ought to be put off until the following week, as is evident from what is immediately above, but nonetheless without perpetrating any transgression concerning the calculation of Easter from this delay. For just as the number ten includes nine, so also whenever the*

548 I.e. those who follow the eighty-four-year *lattercus* cycle.

*fourteenth Moon falls on a Sunday, because fasting is not permitted on that day, it is necessary to defer Easter to the following week. But no harm is done to Easter because of this, because the rest of the days which follow are contained <within it>.*⁵⁴⁹

60. A FORMULA FOR FINDING IT

The skilful computist ought to memorize the fourteenth Moons of the first month, just as he memorizes the annual lunar epacts. But if anyone wishes to find it by means of a formula, let him look at what the epacts are of the year /450/ he wishes to compute, and if they are fourteen or fifteen, let him know that the fourteenth Moon will come on the eleventh or twelfth Kalends of April [March 21 or 22]. For as has often been mentioned, the eleventh Kalends of this month is the proper date of all the epacts. If the epacts are less <than fourteen>, let him count upwards day by day until he reaches the number fourteen, and let him not doubt that he has there the fourteenth Moon of Easter. But if the epacts are more than fifteen, let him count upwards day by day up to thirty, which is the end of this month. Then, beginning at the first Moon and arriving in sequence at the fourteenth, he will find the day duly ordained for the Paschal rites. Note also that if it is a common year, the fourteenth Moon will recur eleven days earlier than in the previous year, and if it is an embolismic year, nine days later. There is, however, one exception: the first year of the nineteen-year cycle, in which, because of the 'leap of the Moon', it customarily precedes its course of the previous year by twelve days.⁵⁵⁰

549 Theophilus, *Prologus* 6–7, ed. Mosshammer 62–8 (Bede's text is closest to the Oxford–Geneva–Tours version in Mosshammer's edition). Bede's critique of the practice of celebrating Easter on the fourteenth day of the Moon, which was characteristic of the Insular 84-year cycle, is more concise but in the same vein as that of *Munich Computus* 63 (see Warntjes' commentary 290–5).

550 On the first method see Immo Warntjes' contribution to Folkerts and Hughes, 'The Latin Mathematics of Medieval Europe' 34. These two methods replace the formulae based on the age of the Moon on 1 January (and hence, 1 March) in Irish texts such as *Munich Computus* 56 (see Warntjes' commentary 226–7).

61. EASTER SUNDAY

Easter Sunday is contained under the seventh heading (*titulo*) of the nineteen-year cycle. It originates in the Sunday on which our Lord rose from the dead. For although in the Old Testament the Paschal season is ordained to be observed according to three formulaic criteria (*argumentorum indiciis*) – namely, it has to be celebrated after the equinox, in the first month, and in the third week of this <month>, that is, from sundown of the fourteenth Moon, which is the beginning of the fifteenth Moon, up to the evening of ending of the twenty-first Moon⁵⁵¹ – a fourth rule for its observance has been imposed upon us from the time of our Lord's Resurrection. Hence when we have seen the fourteenth moon of the first month rise in the evening (the equinox having been passed), we should not immediately jump up to celebrate Easter. Rather, waiting for that Lord's Day on which He himself deigned to make that Pasch – that is, the 'passing over' from death to life, from corruption to incorruption,⁵⁵² from punishment to glory, by his rising – let us celebrate upon that day the solemnities befitting Easter.

Should anyone /451/ object that the Lawgiver enjoined the remembrance not of the equinox but rather only of the first month and of the third week within that month,⁵⁵³ let him know that although <Moses> does not mention the equinox explicitly, nevertheless by the very fact that he orders the Pasch to be kept at the full Moon of the first month, he shows by thorough-going logic that the equinox has passed. For it is agreed beyond any doubt that the Moon of the first month is the first one to show its full orb after the equinox has passed. So on any occasion when we have a Sunday after the fifteenth Moon, our Easter season in no way disagrees with what is prescribed in the Law, although we honour the solemnities of this same Easter with other kinds of sacraments. For whenever Sunday occurs on the second or third or fourth or fifth or sixth or seventh day from this <fifteenth Moon>, we

551 Exodus 12:1–3 and 17–19. In fact, Exodus says nothing about the vernal equinox, but computists by Bede's day assumed that it defined the 'first month': see Introduction, pp. 19–24. The equinox criterion is particularly important to Bede and he stresses it repeatedly: see Warntjes' commentary on *Munich Computus* 56 (223).

552 Cf. I Corinthians 15:42–3. Bede refers to the etymology of the word 'Pascha' several times in his writings, e.g. *Hom.* 2.1 (ed. Hurst 186.78–83), 2.2 (195.80–93) and 2.5 (214.7–16), as well as *In Ezram* 2 (ed. Hurst 305.714–18; trans. DeGregorio 106, who points to Augustinian parallels in n. 2).

553 The supporters of Victorius could have used such an argument.

do not thus dismiss the Law and the prophets, but rather fulfil them in the sacraments of gospel grace. For as Theophilus (the venerable bishop of Alexandria I mentioned earlier) writes: *For indeed, our Saviour was betrayed on the fourteenth day of the Moon, the fifth after the Sabbath; and He was crucified on the fifteenth day of the Moon. On the third day He rose again, that is, on the seventeenth day of the Moon, which at that time seems to have fallen on a Sunday, as we learn by examining the Gospels. Therefore we have the assurance that we can rightly celebrate Easter, even though a delay has befallen because of an intervening necessity, so that whether the fourteenth Moon of the first month falls on a Saturday, or on other days before Saturday on the following week, we may celebrate Easter without any hesitation. But if it falls on a Sunday, let us always put it off until the following week, as has often been said, for the reasons we have mentioned above.*⁵⁵⁴ *These things, therefore, have been demonstrated and made plain. But there is also this to consider: in cases of necessity the Law often commands those who cannot celebrate the Pasch in the first month because of lack of time to do it in the second month.*⁵⁵⁵ *But it is better for those who find themselves in this necessity to follow what is higher than what is lower, for the lower is contained in the higher, but the higher is not included in a lower number. To repeat what we said earlier, [452] the number ten contains nine within it, but nine cannot contain ten. If the Law commands us to pass over to the second month if we cannot celebrate the Pasch in the first month because of some necessity, I do not understand why we ought not reasonably to delay Easter until the following week if the fourteenth Moon occurs on a Sunday, since it continues to be the case that it was in the first month and on the fifteenth day of the Moon that our Saviour was crucified, and also that it was the seventeenth day when He rose again after the three days.*⁵⁵⁶

However, when the Sunday of Christ's Resurrection took place is variously related.⁵⁵⁷ As we have mentioned above, some assert that it took place on the eighth Kalends of April [25 March], but others on the

554 In ch. 59.

555 Cf. Numbers 9:10.

556 *Prologus Theophili* 8–11, ed. Mosshammer 70–6. Theophilus, unlike earlier writers such as Julius Africanus, accepted the Synoptic chronology of the Passion, which held that Jesus was betrayed on 14 Nisan and crucified on 15 Nisan: see Mosshammer, *Easter Computus* 46.

557 Cf. ch. 47.

sixth and some on the fifth Kalends of the same month [27 or 28 March].⁵⁵⁸ Here it should be noted that if the Lord's Resurrection took place on the eighth Kalends [25 March], as the older <authorities> write, it would then assuredly have been the fifth year of the nineteen-year cycle, having seven as its concurrent and the fourteenth day of the Moon, as usual, on the eleventh Kalends of April [22 March].⁵⁵⁹ But if the Lord rose on the sixth Kalends of April [27 March], it would have been the thirteenth year of the aforementioned cycle, having five as its concurrent and the fourteenth Moon, as usual, on the ninth Kalends of April [24 March].⁵⁶⁰ On the other hand, if the Resurrection of Christ was celebrated on the fifth Kalends of the month [28 March], it being the second year of the nineteen-year cycle, then the year had four concurrents and the fourteenth Moon as usual was on the eighth Kalends of April [25 March].⁵⁶¹ All the mysteries of the seventeenth day of the Moon, wherein on a Sunday the first deeds of His most holy Resurrection took place, are set forth in unambiguous sequence. Only <let us be> extremely careful lest, by affirming as do some that this was accomplished on the sixteenth Moon,⁵⁶² we incur not only an inevitable loss to our computation, but a very great danger to the catholic faith.⁵⁶³

62. THE MOON OF THAT DAY

The Moons of Easter Sunday are shown in the final column (*meta*) of this oft-mentioned cycle, enclosed, because of variations in the occurrence of that Sunday, /453/ within a span of seven days, that is, from the fifteenth to the twenty-first <day of the lunation>. To be sure, these days are fixed in advance by a statement frequently <found> in the Law. There the Lord

558 Cf. *Cologne Prologue*, ed. Krusch, *Studien I* 230 (25 March); *Carthaginian computus of 455* 7 (*ibid.* 289) and Martin of Braga, *Tractatus paschalis* in *Opera omnia*, 4, 272.57 (27 March); Victorius of Aquitaine, *Prologus* 9, ed. Krusch, *Studien II* 25.7–8 (28 March).

559 I.e. AD 42.

560 I.e. AD 12. Both of Jones' editions of *De temporum ratione* read *XI kalendarum* here, but the older editions as well as the MSS I have consulted all read *IX kalendarum*, which is evidently correct (cf. Melk 412, p. 173ra).

561 AD 191 is the earliest year following the birth of Christ which fulfils these criteria.

562 The reference is to Victorius: see Krusch's ed. 25.5–8 and data on table p. 27.

563 A similar warning is issued in the *Cologne Prologue*, ed. Krusch, *Studien I* 230.

says: *In the first month, on the fourteenth day of the month, you shall eat unleavened bread until the twenty-first day at sundown. For seven days, no leaven shall be found within your houses.*⁵⁶⁴ Now the rule governing this first month, and the seven days of Unleavened Bread within it, is such that the fifteenth Moon that follows after the equinox is to be understood as belonging to the first month. And this <rule> will put forward whatever Sunday it finds within the seven days up to the twenty-first Moon as suitable for the joys of the Paschal feast. I repeat this frequently because there were certain people who, observing Easter Sunday, for instance, on the seventh Kalends of April [26 March], with the Moon twenty days old, would say: 'And what error in establishing the date of Easter can you show us, when no computist (*calculator*) ever forbade that Easter be celebrated on the seventh Kalends of April? Everyone agrees that the equinox is passed, and no one has denied that the twentieth Moon is appropriate for Easter Sunday'.⁵⁶⁵ To these people one should reply that Easter Sunday may indeed fall on the seventh Kalends of April when the Moon is in accord, and on the twentieth day of the Moon when an opportune date is favourable. But because the Moon which is twenty days old on the seventh Kalends of April was full before the equinox, it is not permitted to celebrate Easter Sunday on the seventh Kalends of April when the Moon is twenty days old. The Sunday following the full Moon which falls on or after the equinox will give the lawful Easter.

The same mistake gets the same response when these computists decree that Easter should take place on the eleventh Kalends of April [22 March] with a Moon sixteen days old, on the tenth Kalends of April [23 March] with Moon seventeen days old, on the ninth Kalends of April [24 March] with a Moon eighteen days old, on the eighth Kalends of April [25 March] with a Moon nineteen days old, on the seventh Kalends of April [26 March] with a Moon twenty days old, on the sixth Kalends of April [27 March] with a Moon twenty-one days old, or on the fifth kalends of April [28 March] with a Moon twenty-two days old. They often do this in a year when they have a Moon twenty-five days old on the Kalends of January. When they claim that the Moon on this date is twenty-seven days old, then they deviate quite far from the truth indeed, because undoubtedly they count the Moon which is new on the third Nones of March [5 March] as belonging to the

⁵⁶⁴ Exodus 12:18–19.

⁵⁶⁵ Their argument, and Victorius', is that the equinox is the terminus of Easter, not the terminus of the Easter full Moon: see ch. 51.

first month, which Moon is manifestly full three days before the equinox.⁵⁶⁶ And because /454/ it is not valid to celebrate Easter Sunday on the fifteenth, sixteenth, and seventeenth days <of the Moon>, since these <days> fell on the fourteenth, thirteenth, and twelfth Kalends of April [19, 20, 21 March] assuredly none of its remaining days can be suitable for the celebration of the Lord's Resurrection, even though they follow the equinox.

63. THE DIFFERENCE BETWEEN THE PASCH AND THE FEAST OF UNLEAVENED BREAD

Because we have been surveying some matters concerning the observance of Easter, it is proper to point out here that according to the text of the Law, the celebration of the Pasch is different from the celebration of Unleavened Bread.⁵⁶⁷ The single day of the Pasch, that is, the 'passing over', is the fourteenth day of the first month, when it is commanded to sacrifice the lamb at sundown. And then, in the night which followed, the Lord passed over, striking the firstborn of the Egyptians and exempting the houses of the children of Israel which had been marked with the blood of the lamb.⁵⁶⁸ But the seven days which follow, that is from the fifteenth to the twenty-first day of that same month, are properly called <the days> of Unleavened Bread.⁵⁶⁹ For it is written in Exodus, where it is commanded that the lamb be slain on the fourteenth day of the first month at sundown: *And you shall eat in haste, for it is the Pasch, that is, the Lord's Passover. And on that night I shall pass through the land of Egypt and strike every firstborn in the land of Egypt.*⁵⁷⁰ And shortly thereafter: *And when your sons shall say to you, what is this rite? you shall say, It is the sacrifice of the Lord's Passover, when He passed over the houses of the children of Israel*

566 The epacts in Victorius' table are keyed to 1 January. In years when the epact is twenty-five, a new lunation will begin on 7 March, and the Moon will be sixteen days old on 22 March, the earliest calendar date of Easter. But because the fourteenth Moon will fall on 20 March, before the equinox, in Bede's eyes this is not a valid Easter full Moon. The problem is even worse in years with a Victorian epact of twenty-seven, for then the lunation will begin on 5 March and the Moon will be fourteen days old on 18 March. This is the situation discussed in ch. 51.

567 Cf. Exodus 12:11. On the sources of this chapter see Commentary.

568 Bede, *In Gen.* 1.19, ed. Jones 19.561–20.582; trans. Kendall 84–5; Exodus 12:3, 12, 16.

569 Exodus 12:18.

570 Exodus 12:11–12.

*in Egypt, striking the Egyptians and exempting our houses.*⁵⁷¹ And again in Leviticus: *The Lord's Passover is in the first month, on the fourteenth day of the month at sunset. And on the fifteenth day of the month, it is the Lord's Feast of Unleavened Bread. For seven days you shall eat unleavened bread. The first day shall be for you most solemn and holy; on it, you shall do no servile work. But you shall offer a sacrifice in fire to the Lord for seven days.*⁵⁷² And lest anyone object that we have understood the words of the Law otherwise than truth would have it, let him see what Josephus, a man most learned in the legal writings and a priest,⁵⁷³ has to say about this. In the book of the *Antiquities*, he writes in this wise: the lamb is sacrificed *on the fourteenth Moon /455/ of the first month; and on the fifteenth day there follows the Feast of the Unleavened Bread, which is celebrated for seven days. And on the second day of the unleavened bread, which is the sixteenth day of the Moon, they offer the first-fruits which they have gathered.*⁵⁷⁴

It is the custom of the Church even now to imitate, not ignobly, the tradition of the sacred laws, observing principally the single night of the Lord's Passover, that is, of His resurrection from the dead, by which He deigned to save the faithful in triumphing over the impious, and in the shedding of whose blood – the blood of that immaculate Lamb – His people have been washed clean of every sin in the fountain of regeneration. And then we add on another seven days as a suitable festival in memory of the Lord's Resurrection. Indeed, because this day of the Pasch is also commanded to be free of leaven, the Gospel text also counts it as the first day of Unleavened Bread, saying: *And on the first day of Unleavened Bread, when they sacrifice the Passover, His disciples said to Him, Where do you wish that we should go and make ready for you that you may eat the Passover?*⁵⁷⁵ He calls that day – the fifteenth day of the first month in which the seven days of Unleavened Bread begin – by the name of <Passover> because of its proximity to Passover, when he says: *And they did not enter the praetorium, lest they be polluted and not be able to eat the Passover.*⁵⁷⁶ The Gospel text does not thereby contradict the Law, but

571 Exodus 12:26.

572 Leviticus 23:5–7.

573 An echo of Cassiodorus' praise of Josephus in the *Institutiones*: see Thacker, 'Bede, Ceolfrith and Cassiodorus' 156–8, esp. 157.

574 Josephus, *Antiquitates* 3.10.5, ed. Blatt 250.16–17, 20–2.

575 Mark 14:12.

576 John 18:28.

<says this> because it was concerned to inculcate in us more vividly, by this association of words, the mystery which befitted it.

But without getting into a more subtle discussion, we can understand that each of us enacts the mystical celebrations of Easter on the day of our baptism, in that we escape spiritual annihilation through the sign of the precious blood and pass over from spiritual darkness. But in the whole span of life as it advances, which we pass through in this pilgrimage, we should celebrate the seven days of the Unleavened Bread, in which we ought to *keep the feast, not with the leaven of malice and wickedness, but with the unleavened bread of sincerity and truth* as the Apostle teaches.⁵⁷⁷ And because in baptism we seek to pass over, as it were, from the power of Satan *to the portion allotted to the saints*,⁵⁷⁸ it is necessary to cling to sincerity and truth. Likewise for the whole time of our pilgrimage, which unfolds in the sevenfold number of the days⁵⁷⁹ /456/ we are enjoined to pass over to better things by daily progress, just as we are known to eat unleavened bread in the Passover season, and in the days of Unleavened Bread to make a spiritual Passover.

64. THE TYPOLOGICAL (*TYPICA*) INTERPRETATION OF EASTER

The time when Easter is ordained to take place, like the Paschal celebrations as a whole, is redolent with sacred mystery. In the first place, we are careful to wait until after the equinox to celebrate the Lord's Passover, according to the decree of the Law, so that the feast-day on which the Mediator between God and man, having destroyed the power of darkness, opened the way of light for the world, might show its inner <significance> by means of the order of time. And what the light of eternal beatitude promises us is most fully celebrated when the light of the Sun, progressing according to its yearly increase, wins its first victory over the shadow of night. Then we pay heed to the first month of the year, which is also called the month of

577 1 Corinthians 5:8.

578 Colossians 1:12.

579 For the comparison of seven days of the week to seven ages of human life and seven Ages of the World see chs 10 and 66. Bede compares the seven days of the Feast of Unleavened Bread to the totality of historic time in *In Ezram* 2 (ed. Hurst 306.726–40, trans. DeGregorio 106–7).

first-fruits, in which we celebrate Easter. For this is the month in which the world was fashioned and the first man installed in Paradise. Through the mystery of this feast we hope that we shall recover our primal robe and return once more to that primal realm of supernal joy from which we departed into a distant land.⁵⁸⁰ Of the glory of this kingdom the blessed apostle Peter writes: *Nevertheless we, according to his promise, look for new heavens and a new Earth, wherein dwelleth righteousness.*⁵⁸¹ And also John in his Revelation: *Then said he that sat upon the throne, Lo, I make all things new.*⁵⁸²

Then again, we observe Easter on the third week of the first month, which harmonizes in a most fitting fashion with the joys of our Lord's Resurrection. For His most holy Resurrection took place on the third day and in the third age of the world – that is, when by the advent of divine grace the entire dispensation in His flesh, which was consummated through the glory of the Resurrection, was manifested to the world.⁵⁸³ For He deigned to illumine the first age of the world by natural law through the patriarchs, the middle age by the written Law through the Prophets, and the final age by the gift of the spirit (*charismate spiritali*) through His own self.

But the revolution of the Moon also offers us a most lovely /457/ image of the heavenly sacrament, for the Moon, made in a round shape, takes its light from the Sun (as we said above)⁵⁸⁴ and thus is always lit up on the half of its sphere which is turned towards the Sun, but always dark on the other half. From the first Moon to the fifteenth, its light increases <on the side> toward the Earth, but it is eclipsed <on the side> toward the heavens; but from the fifteenth to the new Moon, the increase of its light gradually reverts from the earthward to the heavenward side. Without doubt, its revolution rightly signifies the mystery of our Easter rejoicing, in which we are taught to turn all the splendour of our mind away from visible delights

580 *in longinquam regionem*: an echo of the Parable of the Prodigal Son in Luke 15:13. Bede, drawing on Augustine's *Quaestiones euangeliorum*, compares the Prodigal's departure for a distant land to the Fall in his *Commentary on Luke*, ed. Hurst 288.2298–2313, trans. Kendall and Wallis 468–9.

581 2 Peter 3:13.

582 Revelation 21:5.

583 Cf. Augustine, *Ep.* 55.5, ed. Goldbacher, CSEL 34 (1895), 174.20–175.6, and Victor of Capua, *De pascha* 11, ed. Pitra 300. Bede is alluding here to the tripartite scheme of the World-Ages: before the Law, under the Law, under grace: cf. Augustine, *De Trinitate* 4.4.7, ed. Mountain and Glorie 170.26–7.

584 Ch. 6.

and transitory partialities and to fix upon the light of heavenly grace alone, through contemplation. Or if it pleases us to interpret both aspects of its revolution in a positive sense, we can understand the light of the Moon, increasing before human view, to signify the grace of the virtues by which our Lord, appearing in the flesh, illumined the world.⁵⁸⁵ Concerning these virtues it is said: *And Jesus increased in wisdom and stature and in favour with God and men.*⁵⁸⁶ Reaugmenting towards the heavenward side, the Moon denotes the glory of His Resurrection and Ascension, <a glory> which in itself has arrived at perfection, but which does not cease to increase in the soul of the faithful by discrete increments of its light until the end of time. For our Lord, rising from the dead, first showed Himself to one or two, but then to more, sometimes seven, sometimes eleven, sometimes twelve, sometimes to more than fifty brethren, and in the end to all the disciples together.⁵⁸⁷ To those who saw that He was about to ascend into heaven, He commanded that they be *witnesses* to His dispensation *in Jerusalem and in all Judaea and Samaria, even to the ends of the earth.*⁵⁸⁸ And indeed the Moon, as it increases in our sight, gradually recedes from the Sun, and when it increases on the side of the heavens, it returns <in the direction of the Sun> by equal stages. For this is what He Himself said: *I went forth from the Father, and came into the world; now I leave the world again and go to the Father.*⁵⁸⁹ And the Psalm says of Him: *His going forth is from the end of the heaven, and his circuit unto the ends of it.*⁵⁹⁰ Therefore the Moon, through the increase of its light which unfolds before our sight as it moves away from the Sun, signifies the doctrine and virtues of our Lord and Saviour /458/ while He was in the flesh up to the time of His Passion. However, when in returning to the Sun it gradually regains the face of heaven which is invisible to us, <the Moon> manifests the miracle of His Resurrection and subsequent glory, and so the Moon is deemed suitable for the joys of the Easter offering from the fifteenth day onwards.

To these indicators of the Paschal season, derived from the observation of the Law, we, the heirs of the New Testament, have added Sunday, which Scripture called 'one' or 'the first of the sabbath'.⁵⁹¹ Not without good

585 Augustine, *Ep.* 55.8, ed. Goldbacher 178.9–20.

586 Luke 2:52.

587 Cf. 1 Corinthians 15:5–7.

588 Acts 1:8.

589 John 16:28.

590 Psalm 19:6 (18:7).

591 See above, ch. 8.

reason: excellent by reason of the creation of the first light, and eminent because of the triumph of the Lord's resurrection, <Sunday> also remains ever desirable to us because of our own resurrection. Moreover, the seven days of the Moon, namely from the fifteenth to the twenty-first, through which this Sunday runs in natural order, openly proclaim the universality of the Church, which throughout all the world is redeemed by the Paschal mysteries. For Scripture often denoted universality by the number seven.⁵⁹² Thus what the prophet says – *Seven times a day shall I praise you*⁵⁹³ – can best be understood as *His praise is always in my mouth*.⁵⁹⁴ John bears witness that it particularly symbolizes the complete perfection of the catholic Church when, writing to the seven Churches of Asia, he unfolds the mysteries of the universal Church throughout the world.⁵⁹⁵ Hence in all the exhortations which he writes to each of the seven <Churches>, he takes pains to interweave this phrase: *Let him who has ears hear what the Spirit says to the Churches*,⁵⁹⁶ proving plainly that what the Spirit says to each one individually, it says to all the Churches.

No less does the Easter season offer us a moral meaning; in the word 'Passover', that we may daily make a spiritual passage over from vice to virtue; and also in the 'month of first-fruits', in which the mature fruit by its arrival proclaims that the old is finished, that we may by *driving out the old man and his deeds*,⁵⁹⁷ *be renewed in the spirit of our mind and put on the new man, created according to God in justice, holiness and truth*.⁵⁹⁸ Invigorated, as it were, by the variety of diverse virtues, and shaded by their leaves as by the shadow of a pleasant tree, /459/ let us sprout forth at the full Moon like happy and fruitful fields of corn, that we may be separated from the darkness of sin as we bear the perfect splendour of faith and understanding, and that when that same lunar light turns back to the heavenward side (which commences at the fifteenth Moon), we may be made humble in all things in the same measure as we are great, each one saying with the Apostle, *By the grace of God I am what I am*.⁵⁹⁹ Truly, because the grace of this supernal gift was openly poured out in the third age of the

592 Augustine, *Ep.* 55.5, ed. Goldbacher 175.2–6.

593 Psalm 119:164 (118:164).

594 Psalm 34:1 (33:2).

595 Cf. Bede, *Expositio Apocalypseos* 1, ed. Gryson 237.1–4; trans. Wallis 108.

596 Revelation 2:7; cf. *Expositio Apocalypseos* 1, ed. Gryson 251.22, trans. Wallis 118.

597 Colossians 3:9.

598 Ephesians 4:24.

599 1 Corinthians 15:10.

world, by the most lovely logic of symbolism, the light of the Moon in its third week, which hitherto had increased towards the Earth, now begins to increase towards the heavens. At Easter we are enjoined to observe this in a lovely manner, so that, never forgetting the grace we have received, we may remember to give thanks to Him who gives the gift, by obedience in every step of our spiritual passage. Again, the Moon, increasing towards men, shows us the symbol of the active life, and when turned back towards the heavens, of the speculative life. Or else it shows us in this phase love of our neighbour, and in that phase love of our Maker. Or else the increase of its light, turned in this direction, admonishes us to practice good works before others; turned in the other direction, it admonishes us to do the same good works solely in view of a heavenly reward. In this direction, it is so that our *light may so shine before men that they may see our good works*; in the other direction so that *they might glorify our Father who is in heaven*.⁶⁰⁰

By the first day of the week, which is the proper solemnity of the New Testament, we are taught to bear patiently every adversity, and even death itself, in this present time for Christ's sake, and in the hope of our future resurrection in Christ. For we hear from the Apostle: *For if His Spirit who raised Jesus from the dead lives in us, He who raised Jesus from the dead will give life to our mortal bodies as well, by the indwelling of His Spirit in us*.⁶⁰¹ Because the gift of this Spirit is sevenfold,⁶⁰² it can, not inappropriately, be understood by the number of the seven lunar days through which this aforementioned first day of the week – that is, Sunday – circulates. But if anyone wishes to know more about the mystery of the Paschal season, let him read the letter of St Augustine to Januarius on the rationale [*ratione*] of Easter.⁶⁰³ /460/

65. THE GREAT PASCHAL CYCLE

When the lunar and solar cycles are multiplied together, a Great Paschal Cycle is completed in 532 years. For whether you multiply 19 by 28, or 28 by 19, it makes 532. Hence this great cycle has twenty-eight nineteen-year lunar

600 Matthew 5:16.

601 Romans 8:11.

602 Cf. Galatians 5:22–3 where Paul lists the seven gifts of the Holy Spirit: love, joy, peace, longsuffering, gentleness, goodness, faith.

603 I.e. Augustine, *Ep.* 55.

cycles and nineteen solar <cycles> (which are completed in twenty-eight years); 19 times 7 leap-year days, that is, 133;⁶⁰⁴ 28 times 228 solar months, that is 6384; 28 times 235 lunar months, that is 6580;⁶⁰⁵ 28 times 6935 days (leap-year days excluded), that is 194,180; with the leap-year days added, 194,313. When it has completed this total through the sequence of months and days, it immediately returns upon itself, and recommences everything pertaining to the course of the Sun and Moon in exactly the same fashion as it happened before. Only the years of our Lord's Incarnation continue to increase in their particular column, and the indictions in the column in which they are listed do not affect in any way the course of the stars [i.e. Sun and Moon], and hence do not affect the order of the calculation of Easter. To make this clearer, it has pleased us to present this cycle, fully worked out, at the front of this present work.⁶⁰⁶ It takes its beginning from the 532nd year of the Lord's Incarnation, where Dionysius began his first cycle,⁶⁰⁷ and extends up to the year 1063 of this most holy Incarnation. Thus whoever reads them can, with unerring gaze, not only look forward to the present and future, but can also look back at each and every date of Easter in the past; and in order to clarify an ancient text, he can clearly identify all the years, since it sometimes is doubtful when and of what sort they were.
/463/

66. THE SIX AGES OF THIS WORLD

We have mentioned a few things about the Six Ages of this world, and about the Seventh and Eighth <Ages> of peace and heavenly life above, by way of comparison to the first week, in which the world was adorned.⁶⁰⁸ Here I will discuss the same subject somewhat more extensively, comparing it to the

604 Cf. *Munich Computus* 41, ed. Warntjes 140–1.

605 Jones' ed. reads 'v.dlxxx' here, but this is evidently a typographical error. The medieval codices furnish the correct figure: e.g. Melk 412 (370), p. 180b.

606 For a transcription of Bede's 532-year great cycle see Appendix 2.

607 It should be pointed out that the fact that Dionysius began his cycle in AD 532 has nothing to do with the 532-year Great Paschal Cycle. To begin with, Dionysius does not refer to this cycle; secondly, he seems to have taken over his chronology from accepted Roman sources, without much critical attention (cf. Introduction, pp. 38–9). Bede seems to have known better than to make anything of this coincidence.

608 In ch. 10.

ages of man, whom the philosophers are accustomed to call ‘microcosm’ in Greek, that is, ‘smaller universe’.

The first Age of this world, then, is from Adam to Noah, containing 1656 years according to the Hebrew Truth, and 2242 according to the Septuagint, and ten generations according to both versions. This <First Age> was wiped out in the universal Flood, just as the first age of every person is usually submerged in oblivion, for how many people can remember their infancy?

The Second Age from Noah to Abraham comprises ten generations and 292 years according to the Hebrew authority, but according to the Septuagint 272 [i.e. 1072] years⁶⁰⁹ and eleven generations. This was, so to speak, the childhood of God’s people, and therefore it is discovered in a language, that is, in Hebrew, because from childhood on, when infancy (*infantia*) is over – which is so called because an infant cannot speak (*fari*) – a person begins to learn to speak.⁶¹⁰

The Third, from Abraham to David, contains fourteen generations and 942 years according to both authorities. This <Age> was like the adolescence of the people of God, because from this age on, a person can reproduce.⁶¹¹ For this reason, the evangelist Matthew takes the beginning of the generations <of Christ> from Abraham,⁶¹² who was established as the father of the nations when he received his altered name.⁶¹³

The Fourth, from David up to the exile to Babylon has 473 years according to the Hebrew Truth, twelve more according to the Septuagint, and seventeen generations according to both texts. However, the evangelist Matthew /464/ puts these <generations> at fourteen, for the sake of a certain symbolism.⁶¹⁴ From this Age – youth, so to speak – the era of the

609 In *On Times* 18 (ed. Jones 602.2, trans. Kendall and Wallis 119), in the *Letter to Plegwine* 2 (Appendix 3a), and also in this chapter, *s.a.* 1693 and 1948, Bede’s figure for the Septuagint tally of the Second Age is 942 years, or 1072 if the generation of Kenan is added in. Nonetheless, the manuscripts of *The Reckoning of Time* invariably read 272 – possibly mistaking ‘mlxxii’ for ‘cclxxii’. Jones’ apparatus records that Mommsen, in his edition of ch. 66, emended 272 to 1072 against their consensus. Note that in the commentary on Luke 3:35–6 Bede says that the Septuagint tally is 1077 (ed. Hurst 90.2810–11; trans. Kendall and Wallis 208).

610 Cf. Isidore, *Etym.* 11.2.9, ed. Gasti 111, who in turn was drawing on Augustine, *Sermo* 190.3.

611 Cf. Isidore, *Etym.* 11.2.15, ed. Gasti 117.

612 Matthew 1:1–2.

613 Cf. Genesis 17:5.

614 Bede explains this below, *s.a.* 3065.

kings began among the people of God, for this age in man is normally apt for governing a kingdom.

The Fifth Age – old age, if you will – from the exile into Babylon until the coming of our Lord and Saviour in the flesh, extends for fourteen generations and 589 years. In this Age the Hebrew people were weakened by many evils, as if wearied by heavy age.

The Sixth Age, which is now in progress, is not fixed according to any sequence of generations or times, but like senility, this <Age> will come to an end in the death of the whole world.⁶¹⁵

By a happy death, everyone will overcome these Ages of the world, wretches as they are, and full of suffering; and when they have been received into the Seventh Age of perennial sabbath, they look forward to the Eighth Age of the blessed Resurrection, in which they will reign forever with the Lord.

In the First Age of the new-made world, on its first day, God made light, which he called 'day'.⁶¹⁶ On the second <day>, he balanced the firmament in the midst of the waters: these waters and the Earth, together with the upper heaven and the powers which praise the Creator therein, were created before the beginning of those six days. On the third day, when the waters that covered everything were gathered into their place, He commanded the dry land to appear. On the fourth <day> He placed the stars in the firmament of heaven; this day we now call the twelfth Kalends of April [21 March], inasmuch as we deduce that it was the equinox.⁶¹⁷ On the fifth <day> He created swimming and flying creatures. On the sixth <day> He

615 Cf. *On Times* 16, ed. Jones 600–1, trans. Kendall and Wallis 117–18, which Bede quotes in the *Letter to Plegwine* 4, ed. Jones 618.55–619.75, trans. Appendix 3a, pp. 583–4. Bede's explanation of the Six Ages in connection to the stages of human life amalgamates portions of Augustine, *De civitate Dei* 16.43 (ed. Dombart and Kalb 550.57–84) with *De Genesi contra Manichaeos* 1.23.35–41 (ed. Dorothea Weber, CSEL 91 (1998), 104–11). For the numerous other Augustinian texts on the same theme see Jones' *apparatus fontium* on this passage in *BOD*, as well as Elizabeth Sears, *The Ages of Man: Medieval Interpretations of the Life Cycle* (Princeton, NJ: Princeton University Press, 1985), 174, n. 5, and especially Auguste Luneau, *L'Histoire du salut chez les Pères de l'Église: la doctrine des âges du monde*, Théologie historique 2 (Paris: Beauchesne, 1964), ch. 12. Irish *computus* texts occasionally allude to the analogy in general terms, e.g. *Munich Computus* 42 (ed. Warntjes 140.7): 'Aetas aut hominis, ut infantia, aut mundi ...', citing Isidore, *Etym.* 5.38.5 (ed. Urquiola and Santos 129). On Bede's reiteration of this theme in *In Ezram* see DeGregorio's translation, 48 n. 2.

616 This summary of Creation is drawn from the first chapter of Genesis. It marks the beginning of what might be called Bede's second 'Introduction' to ch. 66.

617 Cf. ch. 6 above.

formed terrestrial creatures, and man himself, Adam. From his side, as he slept, He brought forth Eve, the mother of all. This day (for so it seems probable to me) is called the tenth Kalends of April [23 March]. Hence, unless some stronger argument should prevail, it should rightly be believed what blessed Theophilus, together with other bishops not only of Palestine but from many other regions, wrote when he debated the matter of Easter, <namely> that the Lord was crucified on that same tenth Kalends of April [23 March].⁶¹⁸ For it is fitting that not only on the same day of the week but on the same day of the month /465/ the second Adam, stricken by a living death for the sake of the salvation of the human race should, from the heavenly sacraments drawn from his own side sanctify the Church to himself as a bride. For on that <same> day He created the first Adam, father of the human race, and by removing a rib from his side, he fashioned woman, with whose aid <Adam> would propagate the human race.

130⁶¹⁹

Adam at the age of 130 begat Seth, and lived a further 800 years.⁶²⁰ The Septuagint in fact puts 230 years before the birth of Seth, and 700 after.⁶²¹ Seth means ‘resurrection’, signifying the Resurrection of Christ from the dead; Abel, which means ‘mourning’⁶²² and who was killed by Cain, signifies <Christ’s> death, which was brought about by the Jews.

235

Seth at the age of 105 begat Enosh and lived a further 807 years.⁶²³ But the Seventy <Translators> put 205 years before the birth of Enosh, and

618 Bede is alluding here to the spurious Acts of the Synod of Caesarea, ed. Krusch, *Studien* 1307. Bede’s concern to draw a theological analogy between creation and redemption is at odds with his reluctance to commit himself to a date for the historic Crucifixion: see ch. 61 and Commentary.

619 The reader is reminded that Bede, following Isidore, records the date of the *end* of the life or reign of the individual. On a few occasions, and notably for the birth of Christ, he departs from this pattern. Hence the year of Christ’s birth (3952) bears a lower number than the year attached to the reign of Augustus (3966) which precedes it in the text.

620 Genesis 5:3.

621 Cf. Isidore, *Chronica maiora* 4, ed. José Carlos Martín, CCSL 112 (2003), 8–11; Bede, *In Gen.* 2.5.3, ed. Jones 93.749–94.753, trans. Kendall 162–3.

622 These two etymologies are drawn from Jerome, *Liber interpretationis Hebraicorum nominum* 10 and 12, ed. P. de Lagarde, CCSL 72 (1959), 60.17 and 71.12–13. The etymology of Seth is also found in Bede, *In Gen.* 2.4.25, ed. Jones 91.650.651, trans. Kendall 160.

623 Genesis 5:6.

707 afterwards. Enosh means ‘man’,⁶²⁴ and of him it is well said, *he began to call upon the name of the Lord*.⁶²⁵ For it behoves men, mindful of their fragility, to invoke the aid of the Creator – at any rate, it behoves those who, living in the faith of Christ, rejoice to be sons of the Resurrection.

325

Enosh at the age of ninety begat Kenan, and lived thereafter 815 years.⁶²⁶ But the Septuagint puts 190 years before the birth of Kenan, and 715 afterwards.

395

Kenan at the age of seventy begat Mahalalel, and after his birth lived 840 years.⁶²⁷ The Septuagint says that there were 170 years before the birth of Mahalalel, and 740 afterwards.

460

Mahalalel at the age of sixty-five begat Jared and lived thereafter 830 years.⁶²⁸ The Septuagint puts 165 years before the birth of Jared, and 730 afterwards.

622

Jared at the age of 162 begat Enoch, and lived 800 years thereafter.⁶²⁹ With regard to this generation, the two codices are nowhere at variance. We find that this Enoch wrote certain things of a divine nature, as the Apostle Jude attests.⁶³⁰ But as St Augustine says: *Not /466/ in vain are these <books> not included in the canon of the Scriptures which was preserved in the temple of the Hebrew people by the diligence of a long line of priests. For these books were judged to be of doubtful reliability because they were very old, nor could it be discovered whether these were the things which <Enoch>*

624 Bede, *In Gen.* 2.4.26, ed. Jones 91.658–9, trans. Kendall 160.

625 Genesis 4:26; cf. Bede, *In Gen.* 2.4.26, ed. Jones 91.657–60, trans. Kendall 160. The etymology of Enosh is from Jerome, *Liber interpretationis Hebraicorum nominum*, ed. de Lagarde, 65.17. Bede may also have used Isidore, *Chronica maiora* 5, ed. Martin 10–11, although Isidore’s etymology is different. See also *Etym.* 5.39.2, ed. Urquiola and Santos 131.

626 Genesis 5:9.

627 Genesis 5:12.

628 Genesis 5:15.

629 Genesis 5:18–19.

630 Jude 14.

himself had written. Hence those things which are circulated under his name, and contain those fables about the giants – namely that they did not have human fathers – are rightly judged by the prudent as not to be attributed to him.⁶³¹

687

Enoch at the age of sixty-five begat Methuselah,⁶³² after whose birth <Enoch> walked with God for thirty years.⁶³³ The Septuagint puts 165 years before the birth of Methuselah, and 200 afterwards. And rightly in the seventh generation did God withdraw Enoch, whose name means ‘dedication’, from the company of mortal men,⁶³⁴ because the city of the elect, labouring on behalf of God in the Six Ages of this world, anticipates the splendour of dedication in the Seventh <Age> of the coming Sabbath. But because the reprobate are content merely with present happiness, Cain consecrated the city which he had founded not in the seventh generation, but in his firstborn son Enoch.⁶³⁵

874

At the age of 187, Methuselah begat Lamech, and lived thereafter 782 years, that is, until the Flood.⁶³⁶ The Septuagint puts 167 years before the birth of Lamech, and 802 thereafter. This number, as the reader will readily see, exceeds the time of the Flood by twenty years according to the Hebrew Truth, and according to <the Septuagint’s> own authority by fourteen years. The most learned fathers, Jerome in his book *On Hebrew Questions*⁶³⁷ and Augustine in the fifteenth book of *On the City of God*⁶³⁸ have debated this notorious question at great length.

631 Augustine, *De civitate Dei* 15.23, ed. Dombart and Kalb 491.112–20; cf. Isidore *Chronica maiora* 9, ed. Martin 12–13.

632 Genesis 5:21.

633 Genesis 5:22.

634 Cf. Augustine, *De civitate Dei* 15.19, ed. Dombart and Kalb 481.3–5.

635 Cf. *ibid.* 15.17 (480.47–52).

636 Genesis 5:25. Mommsen’s edition (p. 251), which Jones transcribes, reads 772 (LXXII) years, though one manuscript collated by Mommsen (Paris, BnF lat. 13403) reads DCCLXXXV, which could be a transcription mistake for DCCLXXXII. Other early manuscripts read 782, e.g. Cologne, Dom- und Diözeanbibliothek 103, fol. 142r. This is the correct figure, as 1656 (the year of the Flood) minus 874 is 782. See n. 638 below.

637 Jerome, *Hebraicae quaestiones in Genesios* 5.25, ed. P. de Lagarde, CCSL 72 (1959): 8.19–9.17.

638 Cf. Augustine, *De civitate Dei* 15.11, *passim*. This ‘notorious question’ (cf. Bede,

1056

At the age of 182, Lamech begat Noah, and lived thereafter 595 years.⁶³⁹ The Septuagint puts 188 years before the birth of Noah, and 565 afterwards. In this generation alone, the sum total is at odds, because Lamech is found to have lived twenty-four years longer /467/ in the Hebrew codices than in those of the Septuagint.

1656

The Flood arrived in the 600th year of Noah, in the second month, on the seventeenth day of the month.⁶⁴⁰ Indeed, should anyone chastise us for putting forth novel questions concerning the difference of years between the Hebrew authority and that of the Seventy Translators, let him read the works of the fathers named above, and he will see that this discrepancy is already quite well known. Because St Augustine had very astutely inquired into the origin of this gap, he stated in the thirteenth chapter of the work cited above, among other things: *One might plausibly suggest therefore that when these things began to be transcribed for the first time from the library of Ptolemy, something of this ilk might have been in one codex. But once it had been transcribed, what could have been a scribe's error would have been disseminated far and wide. It is not far-fetched to suppose that this is the case with respect to the question of Methuselah's life. And a little later: I would certainly not be justified in doubting that when a discrepancy is found between the two texts, and both cannot be true records of historical fact, one should place greater reliance in the language from which the translators made a version in another tongue.*⁶⁴¹

Letter to Plegwine 10, Appendix 3a, p. 587) was prompted by the fact that the tally of Methuselah's years (969) would date his death after the Flood, regardless of whether one is using the Hebrew or Septuagint chronology. Various attempts were made by earlier chronographers, such as Julius Africanus and Eusebius, to resolve this either by redating the Flood (Africanus) or lowering Methuselah's age at death (Eusebius), even though that meant his grandfather Jared had lived longer than he: Grafton and Williams, *Christianity and the Transformation of the Book* 157–8.

639 Genesis 5:28–30.

640 Genesis 7:11.

641 Augustine, *De civitate Dei* 15.13, ed. Dombart and Kalb 471.17–22, 472.89–93; cf. *Letter to Plegwine* 10 (Appendix 3a, p. 587). Bede is alluding to the controversy ignited by his recalculating of the *annus mundi* chronology based on the Vulgate figures for the length of the first two ages in *On Times*: see Introduction, pp. 8–11.

In the Second Age of the world, on the first day of this <Age>, being the twenty-seventh <day> of the second month, Noah went forth from the ark,⁶⁴² in which a few people, that is, eight souls, were saved from the water. Calling this to mind in his epistle, the blessed Apostle Peter took pains to explain it on the spot in a marvellous way, when he added, *Baptism, which corresponds to this, now saves you, not as a removal of dirt from the body but as an appeal to God for a clean conscience, through the Resurrection of Jesus Christ, who is at the right hand of God.*⁶⁴³ He teaches that baptism is symbolized by the water of the Flood, the Church and its faithful people by the ark and those it contained and the mystery of the Lord's Resurrection in the number eight of the souls.⁶⁴⁴

1658

Shem, at the age of 100, begat Arpachshad two years after the Flood.⁶⁴⁵ Jerome writes that the Chaldeans took their origin from Arpachshad.⁶⁴⁶ /468/ After the birth of Arpachshad Shem lived another 500 years, that is until fifty years after the birth of Jacob.

1693

At the age of thirty-five, Arpachshad begat Shelah.⁶⁴⁷ Here the Seventy Translators insert one generation more than does the Hebrew Truth, saying that when Arpachshad was 135 years old he begot Cainan, who himself begat Shelah when he was 130 years old. The evangelist Luke seems to follow their translation in this instance.⁶⁴⁸ Indeed the Greek chronographers, although they criticize this sequence of generations, and remove the one generation of Cainan, nonetheless did not take care to call into question the number of years in the generations according to <the Septuagint's> authority. Following their own authority, they gave to this age a sum total of years which is 130 less than that of the Seventy Translators, but 650

642 Genesis 8:14.

643 1 Peter 3:21–2. Cf. Bede, *In Epistolas VII catholicas*, ed. David Hurst, CCSL 121 (1983), 249.238–250.269.

644 Cf. Augustine, *Contra Faustum* 12.14.15, ed. Zycha 343.23–345.14.

645 Genesis 11:10.

646 Jerome, *Hebraicae quaestiones in Genesios* 10.22, ed. de Lagarde, 14.7.

647 Genesis 11:12.

648 Luke 3:36. See discussion in Kendall and Wallis, *Bede: Commentary on Luke*, Introduction, 4–10.

more than that of the Hebrew Truth,⁶⁴⁹ that is, 942. But Arpachshad lived 303 years after the birth of Shelah; nonetheless the Septuagint ascribes to him 430 years after the birth of Cainan, and to Cainan 438 <years> after the birth of Shelah.

1723

Shelah at the age of thirty begat Heber, and lived thereafter for 403 years.⁶⁵⁰ The Septuagint puts 130 years before the birth of Heber, and 330 after. The name and tribe of the Hebrews take their origin from this Heber.

1757

When Heber was thirty-four years old, he begat Peleg, and lived thereafter 430 years.⁶⁵¹ The Seventy Translators put 134 years before the birth of Peleg, and 270 after. Peleg means 'division' and his parents gave him this name because at the time of his birth the Earth was divided by the confusion of languages.⁶⁵² The rhetor Arnobius recalls this division in his commentary on Psalm 104: *To Shem, Noah's firstborn, was given the portion from Persia and Bactria all the way to India and to the Rinocoruras. This expanse of land comprised twenty-seven barbaric languages. Within these languages, the peoples form forty-six nations, not of diverse languages but, as I said, of diverse nations. /469/ For example, although Latin is a single language, there are under this single language diverse nations of Bruttii, Lucani, Apuli, Calabri, Picentes, Tusci and I could say the same of others like these. Ham the second son <received> from the Rinocoruras to Gadira, containing languages of Punic speech in the region of the Garamantes, Latin in the northern part, barbarian in the southern region of the Ethiopians and the Egyptians, and of various speech in the barbarous interior: twenty-two languages in 394 nations. But Japeth, the third <son took> from Media to Gadira and northwards. Japeth had the Tigris River, which divides Media and Babylonia: 200 nations, in twenty-three languages of different speech. Altogether these made seventy-two languages, and a thousand nations of the generations, located in this order throughout the threefold world.*

649 Bede is referring to Eusebius here: cf. *Letter to Plegwine* 6 (Appendix 3.1). 'At the age of thirty-five ... Hebrew Truth': this passage appears verbatim in Bede, *In Gen.* 3.11.12, ed. Jones 163.769–164.783, trans. Kendall 240.

650 Genesis 11:14.

651 Genesis 11:16.

652 Jerome, *Hebraicae quaestiones in Geneseos*, ed. de Lagarde, 18.18.

*Japeth, as I said, had the Tigris River, which divides Media and Babylonia, while Shem had the Euphrates and Ham the Geon, which is called the Nile.*⁶⁵³

1787

Peleg at the age of thirty begat Reu, and lived thereafter 209 years.⁶⁵⁴ The Septuagint puts 130 years before the birth of Reu, 208 thereafter.

*At this time, temples were first constructed, and certain rulers of the nations were adored as gods.*⁶⁵⁵

1819

At the age of thirty-two, Reu begat Serug, and lived thereafter 207 years.⁶⁵⁶ The Septuagint puts 132 years before the birth of Serug, 207 afterwards.

*The kingdom of the Scythians, where Tanaus was the first ruler, is said to have begun.*⁶⁵⁷

1849

Serug at the age of thirty begat Nahor, and lived thereafter 200 years.⁶⁵⁸ The Septuagint puts 130 years before the birth of Nahor, 200 after.

*It is said that the Egyptians inaugurated their empire, Vizoues being the first to reign over them.*⁶⁵⁹ /470/

1878

At the age of twenty-nine, Nahor begat Terah, and lived thereafter 119 years.⁶⁶⁰ The Septuagint puts seventy-nine years before the birth of Terah, and 129 after.

*The kingdom of the Assyrians and Sycinians begins. Belus was the first to rule over the former, and Aegialius over the latter.*⁶⁶¹

653 Arnobius, *In Psalmos* 104, ed. Klaus-D. Daur, CCSL 25 (1990), 159.60–160.80.

654 Genesis 11:18.

655 Isidore, *Chronica maiora* 24, ed. Martin 24–5.

656 Genesis 11:20.

657 Isidore, *Chronica maiora* 26, ed. Martin 26–7.

658 Genesis 11:22.

659 Isidore, *Chronica maiora* 28, ed. Martin 26–7.

660 Genesis 11:24.

661 Isidore, *Chronica maiora* 30, ed. Martin 26–9.

1948

Terah at the age of seventy begat Abraham, and lived thereafter 135 years.⁶⁶² The Second Age of the world extends to this point. Having passed its whole sequence in review, St Augustine in *The City of God*, Book 16, ch. 10, concludes as follows: *From the Flood to Abraham, then, there were 1072 years according to the conventional text, that is, <the text> of the Seventy Translators. But far fewer years are found in the Hebrew codices. They can give no reason for this, or only a very tortuous one.*⁶⁶³

2023

The Third Age of the world began with the birth of the Patriarch Abraham, who though he was seventy-five years old, left his native country at God's command and went to the land of Canaan, receiving the promise that a saviour would be born of his seed, in whom all the nations would be blessed, and that he himself would become a great nation.⁶⁶⁴ One of these promises was spiritual, the other carnal.

At this time, Ninus and Semiramis ruled over the Assyrians.⁶⁶⁵

2034

Abraham at the age of eighty-six begat Ishmael, from whom the Ishmaelites <are descended>.⁶⁶⁶ Ishmael begat twelve princes and lived 137 years.⁶⁶⁷

2048

This same Abraham at the age of 100 begat Isaac,⁶⁶⁸ who is the first and only person in the entire Old Testament who is said to have been circumcised on

662 Genesis 11:26.

663 *De civitate Dei* 16.10, ed. Dombart and Kalb 512.51–5.

664 Genesis 12:4; 13:15.

665 Jerome, *Chronicon*, ed. Rudolf Helm, *Eusebius Werke* 7.1, Die Griechischen Christlichen Schriftsteller 24 (Leipzig: J.C. Hinrichs, 1913): 20a.1–6, 17–18. In the *On Times* chronicle (ed. Jones 603; trans. Kendall and Wallis 120), Bede assigns Semiramis alone (with no mention of Ninus) to the Second Age; MacCarron (*Bede and Time*, 98–9) argues that this error was due to Bede's exclusive reliance on Isidore in *On Times* and its correction in *On the Reckoning of Time* to his use of Jerome.

666 Genesis 16:16.

667 Genesis 25:16–17.

668 Genesis 21:5.

the eighth day, which is a privilege given to the son of the promise, and not without profound mystery.

2108

Isaac at age sixty begat Esau and Jacob, patriarchs of the Idumean and Israelite peoples.⁶⁶⁹ After their birth he lived 120 years.

*At this time, Inachus first reigned over the Argives /471/ for fifty years, whose daughter Io the Egyptians worship under the altered name 'Isis'.*⁶⁷⁰

2238

At the age of 130, Jacob went down into Egypt together with seventy souls.⁶⁷¹

*At this time, Memphis was constructed in Egypt by Ape, king of the Argives.*⁶⁷²
*Sparta also was founded by Spartus, son of Phoroneus king of the Argives.*⁶⁷³

2453

*Now the sojourning of the children of Israel, who dwelt in Egypt, was 430 years, and at the end of the 430 years, on the very same day, all of the hosts of the Lord went out from the land of Egypt, as the book of Exodus testifies.*⁶⁷⁴ However, the chronographers calculate the sum of these years from the seventy-fifth year following the birth of Abraham, when he entered the Promised Land, following the version of the Seventy Translators which says: *The sojourning of the children of Israel, in which they and their fathers dwelt in Egypt and in Canaan for 430 years.* The Hebrew Truth itself shows that this <computation> must of necessity be followed, for it tells that Kohath, son of Levi, who, it claims, was born in the land of

669 Genesis 25:26.

670 Jerome, *Chron.*, ed. Helm 27b.10–15.

671 *Ibid.* 33a.4.

672 *Ibid.* 32b.22–3.

673 *Ibid.* 33b.18–20.

674 Exodus 12:40–1; Jerome, *Chron.*, ed. Helm 23b.15–25. Irish *computus* texts were intensely interested in the date of the Exodus, because it marked the first Passover, and hence could be used as a reference point for verifying the dates of historic Easters, and by extension test the validity of different tables. Following Victorius (*Prologus Victorii* 9 ed. Krusch, *Studien I* 24) they dated this to Thursday 25 March AM 3688: *Munich Computus* 64 (ed. Warntjes 298.2–6), *De ratione computandi* 85 (ed. Ó Cróinín 193.4–9). Warntjes (298–9) remarks that the rejection of Victorius diminished interest in this detail. However, since the date of the Exodus was also tied by Irish writers to the date of the Passion, using Vulgate chronology, Bede had additional reasons to avoid the issue.

Canaan,⁶⁷⁵ lived for 133 years, and his son Amram the father of Moses for 137 years,⁶⁷⁶ and Moses himself was eighty years old at the time of the departure from Egypt, and obviously the sum of these years cannot amount to 430. The Apostle also agrees with <the Septuagint> translation when he says, *Now to Abraham and his seed were the promises made. He does not say 'And to seeds', as <if referring to> many, but to one, 'And to your seed', which is Christ. And I say this so that the covenant God confirmed before, the law, which was 430 years after, cannot annul, to make what was promised to the fathers of no effect.*⁶⁷⁷

2493

Moses ruled over the people of Israel in the desert for forty years after their departure from Egypt.⁶⁷⁸ In the first year he built a tabernacle to the Lord and completing the work in seven months, he erected it on the first day of the first month of the second year.⁶⁷⁹ *Up to this point, as /472/ Eusebius observes, the five books of Moses contain the deeds of 3730 years, according to the translation of the Seventy Elders.*⁶⁸⁰ In his first book against Apion the grammarian, Josephus records the number of years which the Hebrew Truth contains: *Nor are there among us innumerable books, all disagreeing with one another, but only twenty-two books, which contain the sequence of all the ages, and which are also justly believed to be divinely inspired.*⁶⁸¹ *Of these, five are by Moses, containing the laws of life and the lineage of human succession down to the death of Moses himself, which they reveal to contain a little less than 3000 years.*⁶⁸²

2519

Joshua ruled over the people of Israel for twenty-six years, as Josephus teaches,⁶⁸³ for Scripture is silent on the number of years of his leadership.

675 Genesis 46:11.

676 Exodus 6:18–20.

677 Galatians 3:16–17.

678 Numbers 14:34.

679 Exodus 40:16.

680 Jerome, *Chron.*, ed. Helm 46a.1–6.

681 Mommsen's text reads 'qui et iustae creduntur diuinitus inspirati', which I emend to 'qui et iuste ...'; cf. Cologne, Dom- und Diözesanbibliothek 103, fol. 154v.

682 Josephus, *Contra Apionem* 1.38–9, *versio latina* ed. C. Boysen, CSEL 37 (1898): 11.7–13; cf. *Letter to Plegwine* 8.

683 Josephus, *Antiquitates* 5.1.29, ed. Blatt (320.22).

Later on, we will discuss why Eusebius puts it at twenty-seven years in his *Chronicle*.⁶⁸⁴ In the first year of the leadership of Joshua, in the first month, on the tenth day of the month, the people entered the Promised Land through the exposed channel of the Jordan.⁶⁸⁵ This year, as we find in the chronicles of the aforementioned Eusebius, was *the beginning of the fifty-first Jubilee according to the Hebrews*,⁶⁸⁶ that is, 2500 years had been completed since the beginning of the world, with each cycle of the Jubilee being assigned fifty years. But in fact our research has not been able to confirm that this is the sum total of this time. It is agreed that up to the Flood there were 1656 years; and from thence to Abraham (who was seventy-five years old when he received the promise) 292 years; 430 years of the promise, and forty years of Moses' leadership. Added together, this makes, not 2500 years, but seven less, that is 2493, as we said above.

2559

*By God's command, Othniel of the tribe of Judah was made the first judge over Israel, for forty years.*⁶⁸⁷ At the outset of his <rule>, the sons of Israel served Chushan-rishathaim, king of Mesopotamia, for eight years.⁶⁸⁸ /473/

2639

Ehud, son of Gera, son of Gemini, who used either hand like his right hand, <ruled> for eighty years. In his first years Israel served Eglon king of Moab for eighteen years, until <Ehud> freed them by slaying Eglon.⁶⁸⁹

*At this time the city of Cyrene was founded in Libya.*⁶⁹⁰

2679

*The prophetess Deborah of the tribe of Ephraim, together with Barak of the tribe of Naphtali <ruled> for forty years.*⁶⁹¹ At the beginning of their rule

684 Jerome, *Chron.* 46a.1–3. Bede discusses the reason for this discrepancy *s.a.* 2790, below. See also MacCarron, *Bede and Time*, 99–100.

685 Joshua 4:19.

686 Jerome, *Chron.*, ed. Helm 46a.4–8.

687 *Ibid.* 47a.7–9.

688 Judges 3:8.

689 Judges 3:15–30.

690 Jerome, *Chron.*, ed. Helm 52b.18–19.

691 *Ibid.* 53a.6–8. In ch. 19 of *On Times* (ed. Jones 603.12–13; trans. Kendall and Wallis 121) only Deborah is mentioned, as Bede was following Isidore here (MacCarron, *Bede and Time* 99).

Jabin, king of Canaan, who reigned in Hazor, oppressed the sons of Israel for twenty years. But when Sisera, captain of his army, was slain by Israel, he was at length humiliated and destroyed.⁶⁹²

*At this time, Miletus was founded.*⁶⁹³

2719

*Gideon of the tribe of Manasseh <ruled> forty years,*⁶⁹⁴ under whom Israel served the Midianites and the Amalekites seven years, but they were liberated by Gideon in battle.⁶⁹⁵

*Tyre was founded 240 years before the building of the Temple in Jerusalem, according to Josephus.*⁶⁹⁶

2722

*Abimelech, son of Gideon, <ruled> for three years, and he ruled in Shechem.*⁶⁹⁷

Hercules lays Troy waste.⁶⁹⁸

2745

*Tola, son of Puah, uncle of Abimelech, a man of Issachar, <ruled> twenty-three years; he dwelt in Shamir in Mount Ephraim.*⁶⁹⁹

*The battle of the Lapiths and the Centaurs, who (as Palaephatus writes in his first book *On Marvels*) were noble horsemen of Thessaly.*⁷⁰⁰

*In Troy, Priam ruled after Laomedontes.*⁷⁰¹

2767

*Jair of the tribe of Manasseh <ruled> twenty-two years.*⁷⁰²

692 Judges 4:2, 23–4.

693 Jerome, *Chron.*, ed. Helm 55b.3.

694 *Ibid.* 55b.5–6.

695 Judges 6:3, 14; Jerome, *Chron.* ed. Helm 55a.5–6, 10.

696 Jerome, *Chron.*, ed. Helm 55a.21–3.

697 *Ibid.* 57a.7–8.

698 *Ibid.* 57b.6–7.

699 Judges 10:1–2.

700 Jerome, *Chron.*, ed. Helm 57b.14–17.

701 *Ibid.* 57b.19–20.

702 Judges 10:3–5; Jerome, *Chron.*, ed. Helm 58a.17.

*Hercules establishes the Olympic Games, from which 430 years are reckoned up to the first Olympiad.*⁷⁰³

2773

Jephthah the Gileadite <ruled> six years. The Philistines and /474/ Ammonites oppressed Israel, and of these the Ammonites were defeated by Jephthah.⁷⁰⁴ *He says in the Book of Judges that from the time of Moses up to his own time there were reckoned 300 years.*⁷⁰⁵

2780

Ibzan of Bethlehem <ruled> seven years.⁷⁰⁶

*Agamemnon ruled over Mycenae for thirty-five years, and in the fifteenth year of his <reign> Troy was captured.*⁷⁰⁷

2790

Elon the Zebulonite ruled for ten years. This man, and these ten years, are not in the Septuagint.⁷⁰⁸ In order to make up for their omission, Eusebius records more years for Joshua son of Nun, Samuel and Saul (whose years Scripture does not declare) than can be read in Josephus, in order that he might arrive at the sum of 480 years, which Scripture declares <elapsed> between the departure of Israel from Egypt and the construction of the Temple.⁷⁰⁹

703 Jerome, *Chron.*, ed. Helm 59b.1–3.

704 Judges 11; Jerome, *Chron.*, ed. Helm 59a.22–3.

705 Judges 11:26; Jerome, *Chron.*, ed. Helm 60a.2–4.

706 Judges 12:8–9.

707 Jerome, *Chron.*, ed. Helm 59b.24–5.

708 Judges 12:11; Jerome, *Chron.*, ed. Helm 60a.17–20. See below, n. 726.

709 Eusebius records twenty-seven, not twenty-six years for Joshua, and forty years for Samuel and Saul, in order to arrive at a total of 480 years between the Exodus and the commencement of Solomon's temple recorded in 1 Kings 6:1: see further explanation below, n. 726. Bede also criticizes Eusebius' chronology of Samuel and Saul in *Retractatio in Actus Apostolorum* 13.21, ed. M.L.W. Laistner (Cambridge, MA: Mediaeval Academy of America Press, 1939), 131–3. He also revisited the topic at length in the Prologue to book 2 of *In Samuelem*, ed. Hurst 68–70; trans. DeGregorio and Love 203–7. In the *Letter to Plegwine* 14, Bede ascribes Eusebius' forty-year tenures for these two figures to an unnamed 'heresiarch chronographer' (see Appendix 3a, p. 590).

2798

Abdon of the tribe of Ephraim <ruled> eight years.⁷¹⁰

In his third year, Troy was captured, 375 years *after the first year of Cecrops, who first ruled over Attica*.⁷¹¹ 835 years <had passed> since the forty-third year of the reign of Ninus over the Assyrians.⁷¹²

After the death of Abdon, Israel served the Philistines for forty years.⁷¹³

2818

Samson of the tribe of Dan <ruled> for twenty years.⁷¹⁴ Up to this point, the Book of Judges has recorded a <period of> time comprising 299 years, and twelve judges.

*Aeneas ruled over the Latins, who were later called Romans, for three (or as some would have it, eight) years following the capture of Troy.*⁷¹⁵ *After him, Ascanius <ruled> thirty-nine years.*⁷¹⁶ *Prior to Aeneas, Janus, Saturnus, Picus, Faunus, and Latinus ruled in Italy for about 150 years.*⁷¹⁷ *Ascanius, the son of Aeneas, built the city of Alba.*⁷¹⁸

2858

*Eli was priest for forty years. In the Hebrew text we find forty years, in the Septuagint twenty.*⁷¹⁹ **475**

*The sons of Hector retook Troy, after the descendants of Antenor have been expelled; Helenus gave them refuge.*⁷²⁰

Silvius, the third son of Aeneas, reigned over the Latins for twenty-nine years. Because he was born after the death of his father and raised in the

710 Judges 12:14; Jerome, *Chron.*, ed. Helm 60a.18.

711 Jerome, *Chron.*, ed. Helm 61b.2–10.

712 *Ibid.* 61a.5–6.

713 Judges 13:1.

714 Jerome, *Chron.*, ed. Helm 62a.12.

715 *Ibid.* 62b.1–8.

716 *Ibid.* 62b.14–15.

717 *Ibid.* 62b.9–12.

718 *Ibid.* 62b.19–20.

719 *Ibid.* 63a.13–14, 14–17.

720 *Ibid.* 63b.17–19.

country, he took the names 'Silvius' and 'Posthumus', whence all the kings of Alba are called 'Silvius'.⁷²¹

*The kings of Sicyon died out, who from Aegealus to Zeuxippus had reigned 962 years. After them the priests of Carnus were established.*⁷²²

2870

*Samuel <ruled> twelve years, as Josephus teaches, but in Holy Scripture it is not evident how long he held pre-eminence.*⁷²³ From this point on, the time of the Prophets begins.

*Aeneas Silvius, the fourth <king> of the Latins, <ruled> thirty-one years.*⁷²⁴

2890

*Saul, the first king of the Hebrews, ruled twenty years.*⁷²⁵ We have recorded the duration of his reign from the *Antiquities* of Josephus, because it is not contained in the canonical Scripture.⁷²⁶

721 *Ibid.* 64b.9–13.

722 *Ibid.* 64a.15–26.

723 Josephus, *Antiquitates* 6.13, fol. 63v. See n. 726 below.

724 Jerome, *Chron.*, ed. Helm 66b.1–2.

725 Josephus, *Antiquitates* 6 fin., fol. 66r.

726 Bede wrestled with the chronology of this period of Jewish history in a number of his writings, notably his commentaries on Acts. In this case the issue was Paul's synopsis of Jewish history addressed to the synagogue of Antioch (Acts 13:16–41), where he said (13:21) that Saul reigned for forty years – a figure not recorded in the Old Testament. Bede's *Expositio Actuum Apostolorum* (ed. Laistner, 57.21–58.3; trans. Martin 119) corrects this figure, based on 1 Kings 6:1, which states that Solomon began construction of the Temple in the 480th year after the Exodus (see *s.a.* 2970 below). The period of the Judges totalled 396 years. So if one adds the forty years of David's reign and the four years of Solomon's reign prior to the beginning of construction of the Temple, the total is 440 years. There are still forty years lacking, and in Bede's view, following Eusebius (and Isidore), these are accounted for by assigning twenty years to Samuel and twenty to Saul. However, in his *Retractatio in Actuum Apostolorum* 13.21 (ed. Laistner, 131.17–132.13), Bede says that he checked Josephus' figures and found that Samuel had ruled for only twelve years, while Saul had indeed ruled for twenty. Bede argues that Eusebius added a year to Joshua's rule (see above, *s.a.* 2519) and eight years to Samuel's, to compensate for the ten-year term of the judge Elon that had dropped out of the Septuagint version of the Bible (see above, *s.a.* 2790), and produce the required 480 years at the time of the inception of the Temple. Bede recorded this corrected chronology in *On Times* 19 (ed. Jones 604.22, trans. Kendall and Wallis 122): see MacCarron, *Bede and Time*, 100.

*Eurystheus first ruled in Lacedaemonia for forty-two years, and Alethis first ruled in Corinth for thirty-five years.*⁷²⁷

The Fourth Age of the world begins not only with the inception of the rule of the tribe of Judah, but also with a renewal of the promise of Christian rule once given to the patriarchs, the Lord swearing *in truth to David, of the fruit of his body would He set upon his throne.*⁷²⁸

2930

*David, the first king from the tribe of Judah, <ruled> forty years.*⁷²⁹

*Latinus Silvius, fifth <king> of the Latins, <ruled> fifty years.*⁷³⁰

*Ephesus was founded by Andronicus.*⁷³¹

*Carthage was founded, as some would have it, by Carcedon of Tyre, but others <say> by his daughter Dido, 143 years after the Trojan War.*⁷³²

2970

*Solomon, son of David, <ruled> forty years.*⁷³³ *In the fourth year of his reign, and in the second month, he began to build a Temple for the Lord /476/ in Jerusalem, 480 years after the departure of Israel from Egypt, as is also the testimony of the Book of Kings.*⁷³⁴ <The Temple> was finished in seven years, and dedicated in the seventh month of the eighth year, as a symbol of the totality of time in which the Church of Christ, which is made perfect in the future <age>, is built up in this world.⁷³⁵

727 Jerome, *Chron.*, ed. Helm 66b.9–11.

728 Psalm 132 (131):11.

729 Jerome, *Chron.*, ed. Helm 67a.17–19.

730 *Ibid.* 67b.13–15.

731 *Ibid.* 69b.13–14.

732 *Ibid.* 69b.19–23.

733 *Ibid.* 69a.22–3.

734 *Ibid.* 70a.1–6, 70b.1–5; 1 Kings 6:1. Cf. Bede, *De templo* 1, ed. Hurst 157.393–158.451; trans. Connolly, 17–19.

735 1 Kings 6:38. Cf. Bede, *De templo* 2, ed. Hurst 196.189–197.234; trans. Connolly, 71–2. See also ch. 71 below, where Bede develops the theme of the seventh and eighth ages.

*Alba Silvius, son of Aeneas Silvius, sixth <king> of the Latins, ruled thirty-nine years.*⁷³⁶ The Queen of Sheba came to hear the wisdom of Solomon.⁷³⁷

2987

*Rehoboam son of Solomon <ruled> seventeen years.*⁷³⁸ Jeroboam of the tribe of Ephraim separated ten tribes from the house of David and from the Lord.⁷³⁹ He is a symbol of the heretics, who dissociate their followers from Christ and His Church.⁷⁴⁰ In <Rehoboam's> fifth year, *Shishak king of Egypt* came to Jerusalem and *looted the Temple*.⁷⁴¹

*Aegyptus Silvius, son of the previous king of Alba, <ruled> twenty-four years <as> seventh <king> of the Latins.*⁷⁴²

*Samos was founded and Smyrna was expanded into a city.*⁷⁴³

2990

Abijah son of Rehoboam <ruled> *three years*.⁷⁴⁴ He overcame Jeroboam when <Jeroboam> attacked him, and 15,000 of <Jeroboam's> soldiers were killed, because <the people of Judah> *relied on the Lord*.⁷⁴⁵

3031

Asa son of Abijah <ruled> *forty-one years*.⁷⁴⁶ Ben-Haddad king of Damascus in Syria advanced against Israel and smote all the land of Naphtali.⁷⁴⁷

736 Jerome, *Chron.*, ed. Helm 70b.14–15.

737 1 Kings 10:1.

738 Jerome, *Chron.*, ed. Helm 72a.5.

739 1 Kings 12:20.

740 Cf. Jerome, *Commentarii in prophetas minores: In Michaem* 1.1, ed. Marc Adriaen, CCSL 76 (1969), line 19.

741 2 Chronicles 12:2; Jerome, *Chron.*, ed. Helm 72a.18–20.

742 Jerome, *Chron.*, ed. Helm 72b.18–19.

743 *Ibid.* 72b.24–6.

744 1 Kings 15:2; Jerome, *Chron.*, ed. Helm 73a.8.

745 2 Chronicles 13:17–18.

746 2 Chronicles 16:13; Jerome, *Chron.*, ed. Helm 73a.15.

747 2 Kings 13:3; 2 Chronicles 16:4.

*Capys Silvius, son of Aegyptus the previous king, <ruled> twenty-eight years <as> eighth king of the Latins.*⁷⁴⁸

Asa destroyed the idols, purified the Temple, and overthrew Zara the Ethiopian, together with his army, when he went out against him. Omri king of Israel *bought the hills of Samaria from Shemer for two talents of silver and constructed <Samaria>.*⁷⁴⁹ *Hiel the Bethelite restored Jericho.*⁷⁵⁰

3056

*Jehoshaphat son of Asa <ruled> twenty-five years.*⁷⁵¹ /477/ Elijah the Tishbite withheld the rain for three and a half years because of the sins of Ahab and the people of Israel.⁷⁵² Amongst other mighty deeds, he anointed Elisha son of Shaphat of Abelmeholah to be a prophet in his place.⁷⁵³

*Carpentus Silvius, son of the previous king Capys, ruled as ninth <king> of the Latins for thirteen years.*⁷⁵⁴ *After him, his son Tyberinus Silvius <ruled> eight years, after whom the river Tiber is named, which was called Albula before.*⁷⁵⁵ *After him, his son Agrippa Silvius <ruled> forty years.*⁷⁵⁶

Jehoshaphat did what was right before the Lord.⁷⁵⁷

3064

*Jehoram son of Jehoshaphat <ruled> eight years.*⁷⁵⁸ Elijah is carried off into heaven (as it were) in a fiery chariot, and the bereaved Elisha, the heir of his prophetic power, cleanses the waters of Jericho in his first miracle.⁷⁵⁹ *In the days of Jehoram, Edom seceded lest it be subject to Judah, and set up a*

748 Jerome, *Chron.*, ed. Helm 74b.7–8.

749 1 Kings 16:24.

750 1 Kings 16:34.

751 Jerome, *Chron.*, ed. Helm 75a.26.

752 1 Kings 17:1.

753 1 Kings 19:16.

754 Jerome, *Chron.*, ed. Helm 75b.21–3.

755 *Ibid.* 76b.21–4.

756 *Ibid.* 77b.10–11.

757 1 Kings 22.

758 2 Kings 8:17; Jerome, *Chron.*, ed. Helm 77a.23.

759 2 Kings 2.

king for itself.⁷⁶⁰ Jehoram walked in the ways of the house of Ahab, for the daughter of Ahab was his wife.⁷⁶¹

3065

Azariah son of Jehoram <ruled> one year.⁷⁶² Jehonadab son of Rechab attained renown.⁷⁶³ The evangelist Matthew excluded Azariah from the genealogy <of Christ>, together with his son Joash and grandson Amaziah, because of the enormity of their crimes, and because neither father nor son had anything good about them.

3071

Athaliah mother of Azariah <ruled> six years.⁷⁶⁴ She, seeing her son Azariah killed by Jehu king of Israel, slew all the royal line of the house of Jehoram save Joash, son of Azariah, whom Jehoshabeath sister of Azariah and wife of the priest Jehoiada stole away from the midst of the kings' sons, when they were slain.⁷⁶⁵ In the Septuagint, Athaliah is said to have reigned seven years.

3111

Joash the son of Azariah <ruled> forty years.⁷⁶⁶ This <king>, who started off well and ended very badly, restored the Temple at the beginning of his reign; /478/ at the end, among other outrages, he ordered Zechariah, son of Jehoiada, who was once his guardian, and who made him king, to be stoned between the Temple and the altar.⁷⁶⁷ The Lord in the Gospel gives him the surname *son of Berachiah*,⁷⁶⁸ that is, 'blessed of the Lord', for the sake of his merits.

Aremulus Silvius, son of the previous king Agrippa, ruled for nineteen years as twelfth <king> of the Latins. He established the stronghold of the

760 2 Kings 8:20.

761 2 Kings 8:18.

762 2 Kings 8:24–5; Jerome, *Chron.*, ed. Helm 78a.9.

763 2 Kings 10:15; Jerome, *Chron.*, ed. Helm 78a.14–16.

764 2 Chronicles 22:12.

765 2 Chronicles 22:10–11.

766 2 Kings 12:1; Jerome, *Chron.*, ed. Helm 78a.24.

767 2 Chronicles 24:21.

768 Matthew 23:35, where Christ refers to the stoning of 'Zechariah son of Berachiah'. Mommsen's text reads 'Barachiae', which Jones unaccountably alters to 'Zarachiae' (*sic*). 'Barachiah' means *benedictus dominus uel benedictio domini*: Jerome, *Liber interpretationis Hebraicorum nominum*, ed. Lagarde, 49.21, 60.27.

*Albi in the hills where Rome now stands. His son was Julius, great-grandfather of Julius Proculus, who, migrating to Rome with Romulus, founded the Julian clan.*⁷⁶⁹

3140

*Amaziah son of Joash <ruled> twenty-nine years.*⁷⁷⁰ *Elisha the prophet died and was buried in Samaria.*⁷⁷¹ *Hazael king of Syria oppressed Israel.*⁷⁷²

*Aventinus Silvius, elder son of the previous king Aremlus, ruled as thirteenth king of the Latins for thirty-seven years. He died and was buried on the hill which is now a part of the city, and bestowed the name of 'eternal' on the spot.*⁷⁷³

3192

*Azariah, also called Uzziah, son of Amaziah, <ruled> fifty-two years.*⁷⁷⁴

*Thonos Concoleros, who in Greek is called Sardanapalus, thirty-sixth <king> of the Assyrians, built Tharsus and Anchiale, and when he was defeated in battle by Arbaces the Mede, he burnt himself to death in a fire.*⁷⁷⁵ *History relates that there were kings of Assyria up to this point in time, and that altogether <they ruled> 1197 years. All the years of the kingdom of Assyria from the first year of Ninus total 1240 years.*⁷⁷⁶

*Procas Silvius, son of Aventinus the previous king, ruled as fourteenth <king> of the Latins for twenty-three years.*⁷⁷⁷ *After him Amulius Silvius, the fifteenth <king>, ruled forty-three years.*⁷⁷⁸

Arbaces the Mede, having destroyed the empire of the Assyrians,

769 Jerome, *Chron.*, ed. Helm 79b.22–80b5.

770 2 Kings 14:2; Jerome, *Chron.*, ed. Helm 81a.6.

771 2 Kings 13:20.

772 2 Kings 13:22.

773 Jerome, *Chron.*, ed. Helm 81b.1–7.

774 2 Kings 15:1–2; Jerome, *Chron.*, ed. Helm 82a.25–6.

775 *Ibid.* 82a.1–3, 19–24.

776 *Ibid.* 83a.7–10. These figures revise those in Bede's *On Times* chronicle, which claims that the Assyrian kingdom lasted 1305 years (ed. Jones 605.16; trans. Kendall and Wallis 123). It is not known whence he derived this earlier figure, but his correction supports the likelihood that, between 703 and 725, Bede had gained access to Jerome's Chronicle: MacCarron, *Bede and Time*, 100.

777 *Ibid.* 83b.10–11.

778 *Ibid.* 84b.20–1.

*transferred sovereignty to the Medes, where he was the first to rule, for twenty-eight years.*⁷⁷⁹

*The kingdom of the Macedonians was established, whose first king, Caranus, ruled twenty-eight years.*⁷⁸⁰ *The kings of the Lacedaemonians died out,*⁷⁸¹ *and those of the Lydians began.*⁷⁸² /479/

3208

*Jotham son of Uzziah <ruled> sixteen years.*⁷⁸³

*Olympias was first founded by the Elisians 405 years after the capture of Troy.*⁷⁸⁴

*Mars and Ilia begat Romulus and Remus.*⁷⁸⁵

Amongst other good deeds, Jotham *built the uppermost gate of the house of the Lord,*⁷⁸⁶ which in the Acts of the Apostles is called ‘Beautiful’.⁷⁸⁷ All the gates of the Temple were <built> into the ground except the Beautiful Gate, which was suspended, and which the Jews called the gate of Jotham.

3224

*Ahaz son of Jotham <ruled> sixteen years.*⁷⁸⁸

Tiglath-Pileser king of Assyria came up and slew Rezin, king of Syria, and carried off the inhabitants of Damascus to Cyrene.⁷⁸⁹

*Rome was founded on the Palatine hill on the eleventh Kalends of May [21 April] by the twins Romulus and Remus, sons of Rhea Silvia, who was the daughter of Numitor, brother of king Amulius. She was a Vestal Virgin, but was ravished.*⁷⁹⁰ *In the third year after the foundation of the City, the*

779 *Ibid.* 83a.13–15, 11–12.

780 *Ibid.* 83b.21–3.

781 *Ibid.* 86b.2–3.

782 *Ibid.* 85b.24–5.

783 2 Kings 15:33; Jerome, *Chron.*, ed. Helm 86a.26.

784 Jerome, *Chron.*, ed. Helm 86a.7–8.

785 *Ibid.* 87b.1–2.

786 2 Kings 15:35.

787 Acts 3:2.

788 Jerome, *Chron.*, ed. Helm 87a.25; cf. 86a.25.

789 2 Kings 16:2, 5–9.

790 Jerome, *Chron.*, ed. Helm 88a.5–6; Eutropius, *Breviarium ab Urbe condita* 1.1, ed. C. Santini (Leipzig: Teubner, 1979), 3.1–5.

*Sabine women were carried off at the games of the Consualia.*⁷⁹¹ *Remus is killed with a rustic shovel by Fabius, Romulus' general.*⁷⁹²

3253

*Hezekiah son of Ahaz <reigned> twenty-nine years.*⁷⁹³ In his sixth year Shalmaneser king of Assyria, having captured Samaria, carried off Israel to Assyria, whose kingdom from the first year of Rehoboam had stood for 360 <years>.⁷⁹⁴

*After the death of Romulus, who reigned for thirty-eight years, the senators governed the republic for five days, and in this way one year was completed.*⁷⁹⁵ *After them, Numa Pompilius <ruled> forty-one years; he built the Capitol from its foundations.*⁷⁹⁶ /480/

3308

*Manasseh, son of Hezekiah, <ruled> fifty-five years.*⁷⁹⁷ On account of his crimes, he was carried off, chained and shackled, to Babylon, but was restored to his kingdom because of his penitence and prayers.⁷⁹⁸

*Tullus Hostilius, third <king> of the Romans, ruled thirty-two years. He was the first king of the Romans to use purple and the fasces,*⁷⁹⁹ *and he expanded the City by annexing the Caelian hill.*⁸⁰⁰

3310

*Amon, son of Manasseh, <ruled> two years.*⁸⁰¹ In the Hebrew Truth it is read that he ruled for two years, and in the Septuagint, for twelve.⁸⁰²

*Istrus, a city in Pontus, was founded.*⁸⁰³

791 Jerome, *Chron.*, ed. Helm 88a.11–12.

792 *Ibid.* 88a.7–8.

793 2 Chronicles 29:1; Jerome, *Chron.*, ed. Helm 89a.12–13.

794 2 Kings 18.9.

795 Jerome, *Chron.*, ed. Helm 91a.5–8.

796 *Ibid.* 91b.9–10.

797 *Ibid.* 91a.11–12.

798 2 Chronicles 33:11–13.

799 Jerome, *Chron.*, ed. Helm 93a.25–6.

800 *Ibid.* 94a.16–17.

801 2 Kings 21:19; Jerome, *Chron.*, ed. Helm 95a.3.

802 Jerome, *Chron.*, ed. Helm 95a.4–6.

803 *Ibid.* 95b.4.

Amon is slain by his servants.⁸⁰⁴

3341

Josiah son of Amon <ruled> thirty-one years.⁸⁰⁵ Having purified Judaea and Jerusalem, he restored the Temple, and after casting out the impurities of idolatry, he made a very celebrated Passover unto the Lord in the eighteenth year of his reign. When he went forth against Necho, king of the Egyptians, he was slain in the field of Megiddo,⁸⁰⁶ *which is now called Maximianopolis.*⁸⁰⁷

*Ancus Marcius, Numa's grandson by his daughter, <ruled as> fourth <king> of the Romans for twenty-three years. He added the Aventine hill and the Janiculum to the City, and founded Ostia on the seacoast sixteen miles from the City.*⁸⁰⁸ *After him Tarquinius Priscus ruled thirty-seven years. He built the Circus at Rome, augmented the number of senators, instituted the Roman games, built walls and sewers, and constructed the Capitol.*⁸⁰⁹

In the Hebrew <version of the Bible> Josiah is read to have reigned for thirty-one years, and in the Septuagint for thirty-two.⁸¹⁰ But Eusebius adds another year between his reign and that of Jehoiakim, taken from <the latter's> reign, on account of the two <periods> of three months in which Jehoahaz or Jehoiakin ruled.⁸¹¹ In fact, Jeremiah demonstrates what the <Hebrew> Truth would hold: he testifies that he prophesied for twenty-three years from the thirteenth year of Josiah to the fourth year of Jehoiakim. /481/

Nebuchadnezzar began to reign in the fourth year of Jehoiakim, and in the nineteenth year of his reign, Jerusalem was destroyed.⁸¹²

3352

804 2 Chronicles 33:24.

805 2 Kings 22:1; 2 Chronicles 34:1.

806 2 Chronicles 35.

807 Jerome, *In Zachariam* 3.12.11–14, ed. M. Adraien, CCSL 76A (1970), 869.335.

808 Jerome, *Chron.*, ed. Helm 96a.5–6, 97a.9–13.

809 *Ibid.* 97a.15–16, 99a.11–14, 97b.14–15.

810 2 Chronicles 34:1; Jerome, *Chron.*, ed. Helm 96a.24.

811 Jerome, *Chron.*, ed. Helm 98a.1–4.

812 Jeremiah 25:1; 2 Kings 25:8–10.

Jehoiakim son of Joash <ruled> *eleven years*.⁸¹³ After Josiah, Jehoahaz his son ruled for three months.⁸¹⁴ Necho defeated him and carried him off into Egypt, and set up Jehoiakim as king. In his third year, Nebuchadnezzar captured Jerusalem, and took many prisoners, among whom were Daniel, Ananias, Azarias, and Misael, and carried off part of the Temple vessels to Babylon.⁸¹⁵ Scripture computes the reign of Nebuchadnezzar from the fourth year of Jehoiakim, because from this point on, he began to rule not only over the Chaldeans and the Jews, but also over the Assyrians, Egyptians, Moabites, and countless other peoples. *Jehoiakin, also called Jeconiah*, son of Jehoiakim <reigned> for three months and eleven days.⁸¹⁶ When Jerusalem was surrounded by the Chaldeans, he went out to the king of Babylon together with his mother, and he was taken off to Babylon with his people in the eighth year of the reign of Nebuchadnezzar.⁸¹⁷

3363

Zedechiah, also called Mattaniah, son of Josiah, <ruled> eleven years.⁸¹⁸ In his eleventh year, and in the nineteenth year of the king of Babylon, Judaea was carried away captive into Babylon and the Temple of the Lord was burnt, 430 years after its foundation.⁸¹⁹ The Jews who were left behind took refuge in Egypt.⁸²⁰ Five years later, Egypt was smitten by the Chaldeans, and these people too were exiled to Babylon.

The Fifth Age of the world began after the exile of the kingdom of Judah, which lasted, in accordance with the prophecy of Jeremiah, for seventy years.⁸²¹

3377

813 2 Kings 23:36; Jerome, *Chron.*, ed. Helm 98a.4.

814 2 Kings 24:8.

815 2 Kings 25:1; Jerome, *Chron.*, ed. Helm 98a.11–16.

816 2 Chronicles 36:9; Jerome, *Chron.*, ed. Helm 99a.3–4.

817 2 Kings 24:10–12.

818 Jerome, *Chron.*, ed. Helm 98a.26–99a.1.

819 2 Kings 25:2–12. In the *On Times* chronicle (ch. 20, ed. Jones 606.1–2; trans. Kendall and Wallis 124), Bede does not provide a year for the destruction of the Temple. His source, Isidore's *Chronica Maiora*, states that the Temple was burned 454 years after its construction, but this is not compatible with the regnal chronology, which is perhaps why Bede omitted it here: MacCarron, *Bede and Time* 101.

820 2 Kings 25:26.

821 Jeremiah 25:11–12.

In the fourteenth year after the city was attacked, which was the twenty-fifth year of the deportation of King Jehoiakin, with whom Ezekiel was taken captive, this same Ezekiel, borne off in the visions of God to the land of Israel, saw the restoration of the city, and of the Temple and its ceremonies.⁸²²

*Servius reigned thirty years as twelfth <king> of the Romans. He added three /482/ hills to the City – the Quirinal, Esquiline, and Viminal – laid moats around the walls, and instituted the first census of the Roman people.*⁸²³

3389

In the twenty-sixth year after the overthrow of Jerusalem, which is the thirty-seventh year of the deportation of King Jehoiakin, Evilmerodach, king of Babylon, in the year that he began to reign, lifted up the head of Jehoiakin king of Judah from prison, and set his throne above the throne of the kings that were with him in Babylon.⁸²⁴ Jeremiah had in mind this time, but also the future, when he wrote as follows: *Behold, I will send and take all the families of the north, says the Lord, and Nebuchadnezzar the king of Babylon my servant, and will bring them against this land, and against its inhabitants, and against all these nations round about, and will utterly destroy them, and make them an astonishment, and a hissing, and perpetual desolation, and these nations shall serve the king of Babylon seventy years, and when the seventy years are over, I will visit their iniquity upon the king of Babylon and upon that nation (says the Lord), and upon the land of the Chaldeans, and will make it perpetual desolation.*⁸²⁵

And writing elsewhere to the exiles which Nebuchadnezzar carried off to Babylon with King Jeconiah, he says: *After seventy years are over at Babylon I will visit you, and perform my good word toward you, and return to this place, says the Lord.*⁸²⁶ Again, the words of the same man called to mind the days gone by as follows: *If any escaped from the sword they were carried away into Babylon to him and his sons until the reign of the king of Persia, and to fulfil the word of the Lord by the mouth of Jeremiah, until the land had enjoyed her sabbaths: for as long as she lay desolate she kept sabbath, until seventy years passed. Now in the first year of Cyrus king of Persia, so that the word of the Lord spoken by the mouth of Jeremiah might*

822 Ezekiel chs 40–43.

823 Jerome, *Chron.*, ed. Helm 101a.7–8, 10–14.

824 2 Kings 25:27–8.

825 Jeremiah 25:9, 11–12.

826 Jeremiah 29:10.

*be accomplished, the Lord stirred up the spirit of Cyrus king of Persia, and so on.*⁸²⁷ It is plain from these words that after Judea had been laid waste, the Chaldeans did not send in settlers, as the Assyrians <had done> /483/ in Samaria, but left the land deserted until the Jews themselves could return there after seventy years. Josephus agrees with this; he writes in his book of *Antiquities* that the Temple, and Jerusalem, and all of Judea remained desolate for seventy years. On the other hand, in enumerating the kings of Babylon (if indeed he wrote this, and a faulty codex is not in error) <Josephus> calculates almost a hundred years from the overthrow of Jerusalem to the overthrow of the kingdom of the Chaldeans. For he writes that after Nebuchadnezzar, who according to Holy Scripture lived twenty-five years after the overthrow of Jerusalem, his son Evilmerodach ruled eighteen years. After him, his son Hegesar ruled forty years, who was succeeded for nine months by his son Labosordach. Upon his death, the kingdom passed to Belshazzar, who is called Nabon: *when he had reigned seventeen years, Babylon was captured by Cyrus the Persian and Darius the Mede. And it goes on: Darius, son of Astiagis, who together with Cyrus his kinsman destroyed the realm of the Babylonians, was sixty-two years of age when Babylon was invaded. However, the Greeks call him by another name. Summoning Daniel the prophet, he carried him off to Media and bestowed every honour upon him.*⁸²⁸ Daniel himself calls to mind this Darius: *In the first year of Darius the son of Ahasuerus, of the seed of the Medes, who was made king over the realm of the Chaldeans, I Daniel understood by books the number of the years, whereof the word of the Lord came to Jeremiah the prophet, that seventy years would be accomplished in the desolation of Jerusalem.*⁸²⁹ Eusebius in the chronicle computes thirty years from the overthrow of Jerusalem to the beginning <of the reign> of Cyrus, king of the Persians, but Julius Africanus <computes> seventy <years>.⁸³⁰ Furthermore Jerome, in his commentary on the Prophet Daniel says this: *Concerning the seventieth year, in which Jeremiah said that the captivity of the Jewish people would be loosed, and of which Zechariah also speaks in the beginning of his book, the Hebrews recount a legend like this. Belshazzar, thinking that God's assurance was void and his promise*

827 2 Chronicles 36:20–2.

828 Josephus, *Antiquitates* 10.13 (Cologne 1534 ed., fols 109v–110v; quotation is on fol. 110v).

829 Daniel 9:1–2.

830 Jerome, *Chron.*, ed. Helm 100a.20–102a.12.

*false, turned it into a cause for merriment /484/ and made a great feast, insulting the hope of the Jews and the vessels of the Temple of God. But vengeance was executed immediately.*⁸³¹

3423

*Cyrus, first <king> of the Persians, reigned thirty years.*⁸³² In order that the word of the Lord from the mouth of Jeremiah might be fulfilled, in the first year of his reign he *loosed the captivity of the Hebrews. He caused about 50,000 people to return to Judaea,*⁸³³ and restored to them 5400 gold and silver vessels from the Temple of the Lord.⁸³⁴ Gathering in Jerusalem, they built an altar in the seventh month, and from the first day of the same month they began to offer burnt sacrifices unto the Lord. In the second year after their arrival, in the second month, they laid the foundation for the Temple, seventy-two years after its destruction according to Africanus, but thirty-two years according to the chronicle of Eusebius.⁸³⁵ But because of the obstruction of the Samaritans the work was interrupted until the second year of Darius <king of the Persians>.⁸³⁶ Even in the reigns of Ahasuerus and Artaxerxes <the Samaritans> wrote accusations against the Jews, and they wrote again to Artaxerxes that Jerusalem should not be rebuilt.⁸³⁷

*Tarquin, seventh <king> of the Romans, ruled thirty-five years.*⁸³⁸ *He was expelled from his kingdom on account of his son Tarquin the Younger, who violated Lucretia.*⁸³⁹

3431

*Cambyses, son of Cyrus <ruled> eight years.*⁸⁴⁰ When he had *conquered Egypt, he suppressed its rites and temples, for he utterly loathed its*

831 Jerome, *In Daniele* 2.5.2, ed. Glorie 821.30–7.

832 Jerome, *Chron.*, ed. Helm 102a.19–20.

833 *Ibid.* 120a.18–20; Ezra 2:64–5. The biblical text records 42,360 Israelites, plus 7,337 servants, for a total of 49,697. In his commentary on Ezra (ed. Hurst 257.627; trans. DeGregorio 31), Bede also rounds up the number to ‘nearly fifty thousand people’.

834 Ezra 1:11.

835 Jerome, *Chron.*, ed. Helm 102a.22.

836 Ezra 4:24.

837 Ezra 4:6–16.

838 Jerome, *Chron.*, ed. Helm 104a.11.

839 *Ibid.* 104a.5–8; Eutropius 1.8, ed. Santini 4.25–5.2.

840 Jerome, *Chron.*, ed. Helm 104a.11.

religion.⁸⁴¹ *He constructed Babylon in Egypt.*⁸⁴² *They say that the Hebrews call him a second Nebuchadnezzar. The history of Judith was written in his reign.*⁸⁴³

3432

*The Magi brothers <ruled> seven months.*⁸⁴⁴

*Joshua <was> the high priest and Zerubbabel the prince of the people.*⁸⁴⁵ *The Prophets Haggai, Zechariah, and Malachi were eminent.*⁸⁴⁶

*Pythagoras the natural philosopher was considered famous.*⁸⁴⁷

3468

*Darius <ruled> thirty-six years.*⁸⁴⁸ We find in the Chronicle /485/ of Eusebius that two Magi brothers ruled between Darius and Cambyses.⁸⁴⁹ In fact Jerome in his commentary on Daniel writes: *After Cambyses, Smerdes the Magus ruled. He took Panthaptes the daughter of Cambyses as his wife. After he had been killed by seven Magi, and Darius had taken over the kingdom in his place, Panthaptes married Darius and had a son by him, Xerxes.*⁸⁵⁰

In the second year of Darius, the seventy years of the captivity of Jerusalem were accomplished, according to Eusebius,⁸⁵¹ based on the testimony of Zechariah the prophet, to whom in the second year of Darius an angel said: *O Lord of hosts, how long will you not have mercy on Jerusalem and on the cities of Judah, against whom you have been indignant? Now is the seventieth year.*⁸⁵² Again in the fourth year of King Darius the same

841 Orosius, *Historiarum adversus paganos libri quinque* 2.8.2, ed. C. Zangemeister, CSEL 5 (1882), 99.17–100.2.

842 Josephus, *Antiquitates* 2.15.1, ed. Blatt 212.4–7.

843 Jerome, *Chron.*, ed. Helm 104a.12–15.

844 *Ibid.* 104a.23–4. In *In Ezram* 2, ed. Hurst 299.470–1, trans. DeGregorio 96, Bede rounds the length of their reign up to one year.

845 *Ibid.* 104a.16–18.

846 *Ibid.* 104a.21–2.

847 *Ibid.* 104b.12–13.

848 *Ibid.* 104a.25–6.

849 *Ibid.* 104a.23–4.

850 Jerome, *In Daniele* 3.11.2, ed. Glorie 898.834–37.

851 Jerome, *Chron.* 105b.5–22.

852 Zechariah 1:12.

prophet says: *When you fasted and mourned those seventy years, did you not fast unto me?*⁸⁵³ In the sixth year of Darius the building of the Temple was completed, on the third day of the month of Adar,⁸⁵⁴ which is forty-six⁸⁵⁵ years after its foundations were laid under Cyrus. Hence in the Gospel *the Jews say, Forty-six years was this temple in building.*⁸⁵⁶ For they began to build in the second year of Darius, in the sixth month, on the twenty-fourth day, and they finished, as was said, in the sixth year, in the twelfth month, on the third day. From which it appears that since the work on the Temple had been carried out to a considerable degree beforehand, the seventy years should be computed from its destruction until permission was granted for its full restoration.

*After the kings, who had ruled for 243 years, had been expelled from the city, Rome held sway barely up to the fifteenth milestone.*⁸⁵⁷ *After the kings were driven away, consuls were first instituted at Rome with Brutus, then the tribunes of the people and the dictators. The consuls ruled the republic for almost 464 years, up to Julius Caesar, who first seized exclusive power in the 183rd Olympiad.*⁸⁵⁸

3488

*Xerxes, son of Darius, <ruled> twenty years.*⁸⁵⁹ *He captured Egypt, which Darius had abandoned.*⁸⁶⁰ **/486/** *It is related that he set off to fight the Greeks with 70,000 soldiers from his kingdoms and 300 auxiliaries, 1200 beaked ships and 300 transport vessels. Nevertheless he was defeated, and fled back to his homeland.*⁸⁶¹

853 Zechariah 7:5.

854 Ezra 6:15. Bede's attention throughout this chapter to dating events concerning the Temple might be compared to his *Hom.* 2.24 (ed. Hurst 363.187–364.228), which recounts, with great chronological precision, the history of the three Jewish Temples from the time of Solomon to the time of Christ.

855 But see *In Ezram* 2, ed. Hurst 299.465–300.486, trans. DeGregorio 95–6, where Bede states that the Temple took forty-five years to rebuild. Both are historically inaccurate: see DeGregorio 96 n. 1.

856 John 2:20.

857 Jerome, *Chron.*, ed. Helm 106.13–15, 19.

858 *Ibid.* 106.20–6.

859 *Ibid.* 108.23.

860 *Ibid.* 108.25.

861 Orosius 2.9.1–2, 2.10, ed. Zangemeister 102.10–103.1, 105.3–107.15.

*Herodotus, writer of histories, <lived>.*⁸⁶²

*Zeuxis the painter won recognition.*⁸⁶³

3488

*Artabanus <ruled> seven months.*⁸⁶⁴

*Socrates was born.*⁸⁶⁵

3529

*Artaxerxes, also called 'Long-Hand' (that is, μακρόχειρ) <ruled> forty years.*⁸⁶⁶

In his seventh year, on the first day of the first month, Ezra the priest and scribe of the Law of God *went up from Babylon with the king's letters,*⁸⁶⁷ *and on the first day of the fifth month came to Jerusalem with 1700 men, and among other deeds of zeal, he chastised the sons of the exile because of their foreign wives.*⁸⁶⁸ In the twentieth year of the same <king>, Nehemiah the cupbearer, arriving from the fortress of Susa, rebuilt the wall of Jerusalem⁸⁶⁹ in fifty-two days, and was leader of the nation for twelve years.

*Up to this point Holy Scripture follows a chronological sequence. The deeds of the Jews which follow hereafter are recorded in the Books of the Maccabees, and in the writings of Josephus and Africanus, who survey the history of the world from the beginning up to Roman times.*⁸⁷⁰ Africanus calls to mind this time in the fifth book of his chronicle: *The work remained unfinished until Nehemiah and the twentieth year of Artaxerxes, at which time 115 years of Persian rule had passed. It was the 185th year following the capture of Jerusalem. Then Artaxerxes first commanded that the walls of Jerusalem should be erected, and Nehemiah presided over the work, and*

862 Jerome, *Chron.*, ed. Helm 110.2.

863 *Ibid.* 110.6.

864 *Ibid.* 110.15–16.

865 *Ibid.* 110.12.

866 *Ibid.* 110.18–21.

867 Ezra 7:9. See Bede's discussion of the identity of this king in *In Ezram* 2, ed. Hurst 307.783–91, trans. DeGregorio 109.

868 Ezra 10:10–11.

869 Jerome, *Chron.*, ed. Helm 112.24–113.3.

870 *Ibid.* 113.7–13.

*the street was built and the walls <were raised> around. And if you wish to count from that time, you will be able to find seventy weeks of years up to Christ.*⁸⁷¹

*Xerxes ruled two months.*⁸⁷² /487/ *After him Sogdianus <ruled> seven months.*⁸⁷³

*Plato was born.*⁸⁷⁴

*The physician Hippocrates was reputed famous.*⁸⁷⁵

3548

*Darius surnamed Nothus <ruled> nineteen years.*⁸⁷⁶ *Egypt broke away from the Persians.*⁸⁷⁷ When the Jews returned from captivity, it was priests and not kings who ruled over them up to the time of Aristobolus, who began to assume the royal title together with the priestly dignity.⁸⁷⁸

3588

*Artaxerxes, also known as Mnemon, son of Darius and Parysatidis, <ruled> forty years.*⁸⁷⁹ *The story of Esther was written under this king. This is he who is called Ahasuerus by the Hebrews and Artaxerxes by the Seventy Translators.*⁸⁸⁰

*The Athenians, although they hitherto had used only sixteen letters, began to use twenty-four.*⁸⁸¹

*The celebrated Carthaginian war <took place>.*⁸⁸² *The Gauls <called> Senones under their leader Brennus captured Rome except for the Capitol*

871 Jerome, *In Daniele* 3.9.24, ed. Glorie 867.173–81. On the ‘seventy weeks of years’ see ch. 9 above.

872 Jerome, *Chron.*, ed. Helm 115.15–16.

873 *Ibid.* 115.18.

874 *Ibid.* 115.13.

875 *Ibid.* 114.8–10.

876 *Ibid.* 115.19–20.

877 *Ibid.* 116.5–6.

878 *Ibid.* 148.6–10; Jerome, *In Daniele* 3.9.24, ed. Glorie 873.318–20; Augustine, *De civitate Dei* 18.36, ed. Dombart and Kalb 632.12–13, and 18.45 (642.45–7).

879 Jerome, *Chron.*, ed. Helm 116.23–117.2.

880 *Ibid.* 117.1–8.

881 *Ibid.* 117.23–6.

882 *Ibid.* 118.12–13.

and devastated the burnt <city> for six months.⁸⁸³ Military tribunes start to be proconsuls.⁸⁸⁴

Aristotle is Plato's disciple, being eighteen years of age.⁸⁸⁵

3614

Artaxerxes, who is called Ochus, <reigned> twenty-six years.⁸⁸⁶ He annexed Egypt to his empire and drove King Nectanebo into Ethiopia; with <Nectanebo> the kingdom of the Egyptians came to an end.⁸⁸⁷

The orator Demosthenes is renowned in the opinion of all.⁸⁸⁸

The Romans defeat the Gauls.⁸⁸⁹

Plato died; Speusippus was head of the Academy after him.⁸⁹⁰

3618

Arses son of Ochus <ruled> four years.⁸⁹¹ /488/ Jaddus, high priest of the Jews, was pre-eminent.⁸⁹² His brother Manasses built the temple on Mount Gezirim.⁸⁹³

Speusippus died, and was succeeded by Xenocrates.⁸⁹⁴

In the fourth year of Ochus, Alexander, son of Philip and Olympias, being twenty years of age, began to reign over the Macedonians.⁸⁹⁵

3624

Darius son of Arsamus <ruled> six years.⁸⁹⁶

883 *Ibid.* 118.16–18; Orosius 2.19.5.13, ed. Zangemeister 130.5–132.11.

884 Jerome, *Chron.*, ed. Helm 118.24–6.

885 *Ibid.* 120.17–18.

886 *Ibid.* 120.19–21.

887 *Ibid.* 121.18–21.

888 *Ibid.* 121.26–122.1.

889 *Ibid.* 122.2.

890 *Ibid.* 122.5–7.

891 *Ibid.* 122.17–18.

892 *Ibid.* 122.16–18.

893 *Ibid.* 123.1–3.

894 *Ibid.* 122.19–20.

895 *Ibid.* 122.17–18.

896 *Ibid.* 123.2–3.

Alexander waged war successfully against the Illyrians and the Thracians, overthrew Thebes, and took up arms against the Persians. After defeating their royal generals at the river Granicus, he captured the city of Sardis.⁸⁹⁷ When he had captured Tyre, he invaded Judaea. There he was received with favour, and made sacrifices to God, and bestowed many honours upon Jaddus priest of the Temple, after he had dismissed Andromachus as guardian of the <holy> places.⁸⁹⁸ In the seventh year of his reign he built Alexandria in Egypt.⁸⁹⁹ Immediately thereafter he captured Babylon and slew Darius, with whom the Persian empire, which had endured 231 years, died out.⁹⁰⁰

At this time, the Romans subjugated the Latins.⁹⁰¹

3629

Alexander reigned for five years after the death of Darius, and seven years before.⁹⁰² Alexander captured the Hyrcanians and the Mardi. Returning to Ammon, he built Paraetonium.⁹⁰³ He reached the Indian Ocean more by victories than by battles.⁹⁰⁴ Returning to Babylon, he died from a poisoned draught in the thirty-second year of his life and the twelfth of his reign.⁹⁰⁵ After <Alexander>, the empire was handed on to a number of men. Ptolemy son of Lagus held Egypt. Philip called Arideus, the brother of Alexander, <took> Macedon. Seleucus Nicanor reigned over Syria, Babylon, and all the kingdoms of the East, and Antigonus over Asia.⁹⁰⁶ These men are designated by Daniel as the four horns of the goat which smote the ram.⁹⁰⁷
/489/

3669

Ptolemy son of Lagus first ruled over Egypt for forty years.⁹⁰⁸

897 *Ibid.* 123.4–10.

898 *Ibid.* 123.16–20.

899 *Ibid.* 123.25–6.

900 *Ibid.* 124.1–3.

901 *Ibid.* 123.26–7.

902 *Ibid.* 124; cf. 1 Maccabees 1:7.

903 Jerome, *Chron.*, ed. Helm 124.13–15.

904 Orosius 3.19, ed. Zangemeister 179.14 *sqq.*

905 Jerome, *Chron.*, ed. Helm 124.25–6; *In Daniele* 3.11.3, 4a, ed. Glorie 899.860–1.

906 Jerome, *In Daniele* 2.8.5b–9a (854.835–9).

907 Daniel 8:8 *sqq.*

908 Jerome, *Chron.*, ed. Helm 125.1–5.

*Appius Claudius Caecus was held in eminence in Rome. He put the Claudian aqueduct in place and paved the Via Appia.*⁹⁰⁹

*Ptolemy brought Jerusalem and Judaea under his sway by fraud, and carried off many captives into Egypt.*⁹¹⁰

*Onias the son of Jaddus, high priest of the Jews, was pre-eminent.*⁹¹¹

*In the thirteenth year of Ptolemy, Seleucus Nicanor began to rule over Syria, Babylon, and the upper regions.*⁹¹² *The Hebrew history of the Maccabees reckons the kingdom of the Greeks from this point,*⁹¹³ *the Edessans also compute their chronology from this <point>.*⁹¹⁴ *Seleucus built the cities of Seleucia, Laodicea, Antioch, Apamia, Edessa, Beroea, and Pella.*⁹¹⁵ *Simon, son of Onias, a most devout and pious high priest of the Jews, was pre-eminent.*⁹¹⁶ *After him, his brother Eleazar received the office of ministry in the Temple; his son Onias was passed over because he was only a little boy.*⁹¹⁷ *Seleucus deported the Jews into the cities he had built, granting them citizenship rights and municipal government on a par with the Greeks.*⁹¹⁸

3707

*Ptolemy Philadelphus ruled thirty-eight years.*⁹¹⁹ *Sostratos of Cnidos built the lighthouse of Alexandria.*⁹²⁰ *Ptolemy allowed the Jews who were in Egypt to go free, and gave Jerusalem to the High Priest Eleazar, along with many vessels as gifts for the Temple. He sought out the Seventy Translators, who turned Holy Scripture into the Greek language.*⁹²¹ *Aratus gains recognition.*⁹²² *After Eleazar, his uncle Manasses takes over the priesthood*

909 *Ibid.* 125.6–8.

910 *Ibid.* 125.17–19.

911 *Ibid.* 125.20–1.

912 *Ibid.* 126.16–20.

913 *Ibid.* 126.16–18.

914 *Ibid.* 126.24–5.

915 *Ibid.* 127.8–10.

916 *Ibid.* 127.16–18.

917 *Ibid.* 128.21–4.

918 *Ibid.* 128.15–19.

919 *Ibid.* 129.7–9.

920 *Ibid.* 129.10–11.

921 *Ibid.* 129.15–23.

922 *Ibid.* 130.18.

of the Jews.⁹²³ *It is said that the power of this Ptolemy Philadelphus was so great /490/ that he outstripped his father Ptolemy, for the histories recount that he had 200,000 foot soldiers, 20,000 cavalry, 2000 chariots, 4000 elephants (which he was the first to import from Ethiopia), etc.*⁹²⁴

3733

*Ptolemy Evergetes, brother of the previous king, <ruled> twenty-six years.*⁹²⁵ The Egyptians called him Evergetes because *when he had captured Syria and Cilicia and then all of Asia, he brought back, amongst the innumerable pieces of silver and precious vessels which he captured, the <cult statues of the Egyptian> gods which Cambyzes had carried off into Persia after the capture of Egypt.*⁹²⁶

*Onias, son of Simon the Just, High Priest of the Jews, was pre-eminent.*⁹²⁷ His son Simon enjoyed no less glory; under him, Jesus son of Sirach wrote the Book of Wisdom, which they call Panareton, and even mentioned Simon in it.⁹²⁸

3750

*Ptolemy Philopator son of Evergetes <ruled> seventeen years.*⁹²⁹ Antiochus king of Syria annexed Judaea after the defeat of Philopator.⁹³⁰ *Onias, son of Simon, high priest of the Jews, is pre-eminent, to whom King Arius of the Lacedaemonians sent ambassadors.*⁹³¹

3774

*Ptolemy Epiphanes son of Philopator <ruled>.*⁹³²

The second Book of the Maccabees contains the events which took place

923 *Ibid.* 131.22–4.

924 Jerome, *In Daniele* 3.11.5b, ed. Glorie 901.912–902.916.

925 Jerome, *Chron.*, ed. Helm 132.8–10. Ptolemy III Evergetes was actually the son of Ptolemy II Philadelphus.

926 Jerome, *In Daniele* 3.11.7–9, ed. Glorie 904.975–905.982.

927 Jerome, *Chron.*, ed. Helm 132.10–13.

928 *Ibid.* 133.16–22.

929 *Ibid.* 134.9–12.

930 *Ibid.* 135.4–5.

931 *Ibid.* 135.8–11.

932 *Ibid.* 135.14–16.

amongst the Jews at this time.⁹³³ Onias the priest fled into Egypt, taking many of the Jews with him. He was honourably received by Ptolemy, and given the region called Heliopolis. With the king's permission, he constructed a temple in Egypt similar to the Temple of the Jews. This temple endured for 250 years, until the reign of Vespasian.⁹³⁴ Because of the favourable circumstances <created by> Onias the priest, a huge number of Jews took refuge in Egypt at this time, and Cyrene was filled with their multitude.⁹³⁵ /491/ The reason why Onias and the others went to Egypt was that during the conflict between Antiochus the Great and the generals of Ptolemy, the parties in Judaea were divided into opposing camps, some favouring Antiochus and others Ptolemy.⁹³⁶

3809

*Ptolemy Philometor ruled thirty years.*⁹³⁷

*Aristobolus the Jew, a Peripatetic philosopher, gained recognition; he wrote commentaries on <books of> Moses for Ptolemy Philometor.*⁹³⁸

*Antiochus Epiphanes, who ruled after Seleucus Philopator, reigned eleven years in Syria. He offended against the law of the Jews, filling everything with the obscenities of idols, and set up a statue of Olympian Jupiter in the Temple. But he also built a shrine to Jupiter Peregrinus in Samaria on the top of Mount Gerizim; the Samaritans themselves asked him to do this. However Mattathias the priest vindicated the ancestral laws, taking up arms against the generals of Antiochus.*⁹³⁹ After his death, his son Judas Maccabeus took on the leadership of the Jews, in the 146th year of the Greek kingdom, in the twentieth year of Ptolemy, in the 155th Olympiad.⁹⁴⁰ As soon as he had expelled the generals of Antiochus from Judaea, he purified the Temple of images and after three years restored to his fellow countrymen their ancestral laws.⁹⁴¹ After the withdrawal of Onias the priest into Egypt (of which we spoke above) and the death of Alchymus,

933 *Ibid.* 137.7–9.

934 Jerome, *In Daniele* 3.11.14b, ed. Glorie 908.1054–60.

935 *Ibid.* 3.11.14b (908.1062–909.1065).

936 *Ibid.* 3.11.14b (908.1051–54).

937 Jerome, *Chron.*, ed. Helm 138.18–19.

938 *Ibid.* 139.1–6.

939 *Ibid.* 139.22–3; 140.3–12.

940 *Ibid.* 141.10–11.

941 *Ibid.* 141.3–8.

who though unworthy attempted after the flight of Onias to usurp his pontificate, *the priesthood was conferred upon Maccabeus with the assent of all the Jews.*⁹⁴² After his death his brother Jonathan, having been chosen by lot, ministered for nineteen years with great zeal.⁹⁴³

3838

*Ptolemy Evergetes <II ruled> twenty-nine years.*⁹⁴⁴

*Jonathan, leader and high priest of the Jews, made an alliance with the Romans and Spartans.*⁹⁴⁵ After he had been killed by Tryphon, *his brother Simon was elevated to the priesthood, /492/* in the seventh year of the reign of Evergetes.⁹⁴⁶ After exercising this office with great energy for eight years, he relinquished it to his son John.⁹⁴⁷ This man *waged war against the Hyrcani, and received the name 'Hyrcanus'.* Petitioning the Romans for the right of alliance, he was enrolled amongst the allies by a decree of the Senate.⁹⁴⁸ He levelled Samaria (which in our time is called Sebaste) after having captured it by siege alone. Afterwards Herod restored it, and wanted to name it Sebaste in honour of Augustus.⁹⁴⁹

3855

*Ptolemy Physcon, also called Soter, <ruled> seventeen years.*⁹⁵⁰

*Cicero was born at Arpinum; his mother was Helvia, his father being of a family of equestrian rank from the territory of the Vulsci.*⁹⁵¹

*Aristobolus succeeded Hyrcanus in the priesthood, which <Hyrcanus> held for twenty-six years, for one year. He was the first among the Jews to wear the diadem as king as well as priest, 484 years after the Babylonian captivity.*⁹⁵² After him Janaeus called Alexander <reigned> for

942 *Ibid.* 141.23–5.

943 *Ibid.* 142.5–8.

944 *Ibid.* 144.3–5.

945 *Ibid.* 144.6–8.

946 *Ibid.* 144.13–15.

947 *Ibid.* 145.18.

948 *Ibid.* 146.17–21.

949 *Ibid.* 146.24–147.4.

950 *Ibid.* 147.7–9.

951 *Ibid.* 148.1–3.

952 *Ibid.* 148.5–10.

*twenty-seven years; he also exercised the office of priest, and ruled his fellow-citizens most cruelly.*⁹⁵³

3865

*Ptolemy, also called Alexander, <ruled> ten years.*⁹⁵⁴

In the eighth year of his reign, Syria came under Roman sway when Philip was captured by Gabinus.⁹⁵⁵ *Expelled from the kingdom by his mother Cleopatra, Ptolemy Physcon withdrew to Cyprus.*⁹⁵⁶

3873

*Ptolemy, who had been ejected by his mother for eight years, returned from exile and gained control of the kingdom, for the citizens had expelled Alexander (who preceded him) for killing his mother.*⁹⁵⁷

*Sulla plunders the Athenians.*⁹⁵⁸

3903

*Ptolemy Dionysius <ruled> thirty years.*⁹⁵⁹

From the fifth year of <Ptolemy's reign>, *Alexandra, wife of the high priest Alexander, /493/ ruled the Jews for nine years* following his death. *From this time forward, confusion and diverse calamities weighed heavily upon the Jews.*⁹⁶⁰ After her death, *Aristobolus and Hyrcanus her sons fought with one another for the rulership, and this furnished an opportunity for the Romans to invade Judaea. Thus Pompey, advancing on Jerusalem, captured the city. Opening up the Temple, he penetrated all the way to the Holy of Holies. He carried off the defeated Aristobolus with him, and confirmed Hyrcanus as priest. Then he made Antipater, son of Herod*

953 *Ibid.* 148.11–14.

954 *Ibid.* 149.6–8.

955 *Ibid.* 150.4.

956 *Ibid.* 149.9–11.

957 *Ibid.* 150.14–18. The Ptolemy referred to in this passage is Ptolemy IX Soter, i.e. the king whose reign is recorded in the entry *s.a.* 3855, and whose reign was interrupted by that of Ptolemy X Alexander I. The Ptolemy Alexander who was assassinated by the citizens of Alexandria after killing his own mother was actually Ptolemy XI Alexander II, who succeeded Ptolemy IX.

958 *Ibid.* 151.3.

959 *Ibid.* 151.23–4.

960 *Ibid.* 152.8–10, 11–14.

*of Ascalon, procurator of Palestine. And Hyrcanus remained priest for thirty-four years.*⁹⁶¹

*Vergilius Maro was born in a country district called Andes, near Mantua, in the consulate of Pompey and Crassus.*⁹⁶²

*Pompey, after the capture of Jerusalem, makes the Jews tributaries.*⁹⁶³

*Vergil pursues his studies in Cremona.*⁹⁶⁴

*Caesar takes Germany and Gaul and Britain as well, where before the name of Roman was not even known. After taking hostages, he made <these peoples> tributaries.*⁹⁶⁵

3925

*Cleopatra, sister of Ptolemy, <ruled> twenty-two years.*⁹⁶⁶

*When civil war broke out between Caesar and Pompey, Pompey fled to Alexandria, and there he died, struck down by Ptolemy himself, from whom he had hoped for assistance. Subsequently Caesar came to Alexandria, and again Ptolemy wished to prepare an ambush. War was declared against him, and he was defeated and perished in the Nile. Caesar, now in possession of Alexandria, gave the kingdom to Cleopatra, with whom he had had illicit sexual relations.*⁹⁶⁷ *In the third year of her reign, <Caesar> first obtained sole rule over the Romans; the princes of the Romans are called Caesars after him.*⁹⁶⁸ *Cleopatra entered the City with a royal entourage.*⁹⁶⁹

961 *Ibid.* 153.13–23.

962 *Ibid.* 153.1–3.

963 *Ibid.* 154.7–8.

964 *Ibid.* 154.21.

965 *Ibid.* 155.19; Eutropius 6.17, ed. Santini 38.19–23, 38.26–39.2.

966 Jerome, *Chron.*, ed. Helm 155.21. The three entries which follow disrupt the chronological sequence. After the end of the Jewish kingdom, Bede's chronology follows, first, the line of the Ptolemaic rulers of Egypt, and thereafter the succession of the Roman emperors. Bede breaks the sequence at this point in order to dovetail the two chronologies by recording (a) the death of Julius Caesar (which occurred after the death of the last Ptolemy, Cleopatra) and (b) the birth of Christ (which occurred before the death of Augustus, the first Caesar). The Roman sequence resumes in 3979, with the death of Tiberius Caesar.

967 Cf. Eutropius 6.19, 21, ed. Santini 39.15–25, 40.7–15.

968 Jerome, *Chron.*, ed. Helm 156.1–4.

969 *Ibid.* 156.20–1.

3910

*Four years and six months after he began to reign, Caesar, because of his arrogance, was killed, stabbed in the Curia by sixty or more Roman senators and knights /494/ who had taken an oath against him.*⁹⁷⁰

*Cassius, having captured Judaea, sacked the Temple.*⁹⁷¹

3966

*Octavian Caesar Augustus, second <emperor> of the Romans, ruled for fifty-six years and six months. The kings of the Romans are called 'Augusti' after him.*⁹⁷² Fifteen years of his reign were during the lifetime of Cleopatra, and forty-one after.

*In the eleventh year of Augustus the rule of the priests in Judaea came to an end. Herod, who did not belong to their <line>, but rather was the son of Antipater of Ascalon and his mother Cypros of Arabia, received the government from the hands of the Romans; he held it for thirty-six years.*⁹⁷³ This man, lest it be proven that he was baseborn and not of Jewish stock, burnt all the books inscribed with the pedigrees of the Jewish people and preserved in the Temple, so that he could be believed to belong to <the nobility>, for want of proof <to the contrary>.⁹⁷⁴ Moreover, in order to mix his own progeny with their royal race, he cast off Dosis, a woman of Jerusalem whom he had privately married and by whom he had his son Antipater, and took to himself Mariamne, the daughter of Alexander and granddaughter of Aristobolus the brother of Hyrcanus, who before him had been king of the Jews.⁹⁷⁵ She bore him five sons, two of which – Alexander and Aristobolus – he himself killed in Samaria.⁹⁷⁶ And very shortly thereafter he slew their mother by a similar act of villany, though he loved her more than anything else.⁹⁷⁷ Of these <sons>, Aristobolus had

970 Eutropius 6.25, ed. Santini 41.13–22; Jerome, *Chron.*, ed. Helm 156.5.

971 Jerome, *Chron.*, ed. Helm 157.3.

972 *Ibid.* 157.18–20.

973 *Ibid.* 160.1–9.

974 Cf. Rufinus' trans. of Eusebius, *Historia ecclesiastica* 1.7.13, ed. Mommsen 61.2–13.

975 Cf. Hegesippus, *Hegesippi qui dicitur historiae libri quinque* 1.36.2 ed. V. Ussani, CSEL 66 (1932), 70.8–25.

976 Cf. *ibid.* 1.42.1 (101.11–13).

977 Cf. *ibid.* 1.37.6 (77.6–28); 1.42.2 (101.14).

a son Herod by Berenice. We read in the Acts of the Apostles that he was struck down by an angel.⁹⁷⁸

After the third war broke out between Augustus and Antony, *Antony, who held Asia and the East, repudiated the sister of Augustus and took Cleopatra as his wife*. After their defeat, Antony and Cleopatra killed themselves.⁹⁷⁹ It is from this point on that some reckon *the first year of the monarchy of Augustus*.⁹⁸⁰ /495/ *Hitherto the Lagids, as they were called, had ruled in Egypt for 295 years*.⁹⁸¹

3952

*In the forty-second year of Caesar Augustus, and the twenty-seventh <year> after the death of Cleopatra and Antony, when Egypt was turned into a <Roman> province, in the third year of the 193rd Olympiad,⁹⁸² in the 752nd year from the foundation of the City <of Rome>,⁹⁸³ that is to say the year in which the movements of all the peoples throughout the world were held in check, and by God's decree Caesar established genuine and unshakable peace,*⁹⁸⁴ Jesus Christ, the Son of God, hallowed the Sixth Age of the world by his coming.

In the forty-seventh year of Augustus, *Herod died in a suitably horrid way from a disease <which produced> water under the skin and worms which teemed throughout his whole body*.⁹⁸⁵ Augustus set up <Herod's> son Archelaus in his place, and he ruled for nine years, up till the end of the reign of Augustus.⁹⁸⁶ *Then the Jews, who could stand no more, denounced his ferocity before Augustus, and he was exiled to the city of Vienne in Gaul*.⁹⁸⁷

978 Acts 12:23.

979 Eutropius 7.3, ed. Santini 43.7–17; Jerome, *Chron.* 162.12–15, 21–2.

980 Jerome, *Chron.*, ed. Helm 163.7–9.

981 *Ibid.* 163.1–3.

982 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 1.5.2, ed. Mommsen 45.24–7; cf. Jerome, *Chron.*, ed. Helm 169.9–10. Eusebius-Jerome's Olympiad date is 194.

983 Orosius 6.22.1, ed. Zangemeister 426.17–427.2, and 7.3.1 (437.18).

984 *Ibid.* 6.22.1, 5 (426.17–427.2, 428.3–5).

985 Jerome, *Chron.*, ed. Helm 170.1–3. Cf. Rufinus' trans. of Eusebius, *Historia ecclesiastica* 1.8.5, ed. Mommsen 65.18–22; Josephus, *Antiquitates* 17.9 (Cologne 1534, fol. 181r). The phrase 'worms which teemed throughout his whole body' (*scatentibus ... uermis*) which Bede quotes from Jerome echoes Acts 12:23, where it describes the death of Herod Agrippa.

986 Jerome, *Chron.*, ed. Helm 170. 9–10, 6–7.

987 Josephus, *Antiquitates* 17.17–19 (Cologne 1534, fols 185v–187v); Rufinus' trans. of Eusebius, *Historia ecclesiastica* 1.9.1, ed. Mommsen 71.18–72.2.

To reduce the power and subdue the insolence of the Jewish kingdom, his four brothers *Herod, Antipater, Lysias, and Philip* were made *tetrarchs* in his place.⁹⁸⁸ Of these Philip and Herod (previously called Antipas) had already been appointed as tetrarchs during the lifetime of Archelaus.⁹⁸⁹

3989

*Tiberius the stepson of Augustus, that is to say the son of the latter's wife Livia born of a previous marriage, ruled for twenty-three years.*⁹⁹⁰

In the twelfth year <of his reign> *Pilate* was sent by him as *procurator of Judaea*.⁹⁹¹

*Herod the tetrarch, who ruled over the Jews for twenty-four years,*⁹⁹² *founded Tiberias* in honour of Tiberius and *Livias* in honour of his mother Livia.⁹⁹³ /496/

3981

In the fifteenth year of <the reign of> Tiberius, the Lord, after <receiving> the baptism preached by John, proclaimed the kingdom of heaven to the world. As Eusebius indicates in his chronicle, this happened in the 4000th year from the beginning of the world according to the Hebrews, for he observes that that the sixteenth year of Tiberius was *the eighty-first Jubilee, according to the Hebrews*.⁹⁹⁴ Why our computation calculates nineteen fewer years may easily be discovered by reading the previous parts of this book.⁹⁹⁵ According to that chronicle which Eusebius composed from

988 Jerome, *Chron.*, ed. Helm 170.9–10.

989 Hegesippus 2.3.2, ed. Ussani 135.23–136.2.

990 Jerome, *Chron.*, ed. Helm 171.17; Hegesippus 2.3.2, ed. Ussani 136.5–7.

991 Jerome, *Chron.* 173.4–5.

992 *Ibid.* 171.11–16.

993 *Ibid.* 173.9.

994 *Ibid.* 174.7–11. In fact, Eusebius (Jerome) nowhere states that the baptism took place in AM 4000; he merely states that the 81st Hebrew Jubilee began on the following year. Since the Jubilee occurs every fifty years, Bede arrived at AM 4000 by multiplying eighty by fifty. The closing sentence in this entry points to the Septuagint figure of 5228. Again, this is Bede's own computation, extrapolated from Eusebius. Bede is perhaps deliberately highlighting the differences between his and Eusebius' chronologies: MacCarron, *Bede and Time* 120.

995 See above *s.a.* 2519.

both versions <of the Bible>, as it seemed good to him, the years <from Creation> are 5228.⁹⁹⁶

3984

In the eighteenth year of the reign of Tiberius the Lord redeemed the world by his Passion,⁹⁹⁷ and the Apostles, preparing to preach throughout the regions of Judaea, ordained James the brother of the Lord to be bishop of Jerusalem. They also ordained seven deacons,⁹⁹⁸ and after the stoning of Stephen the Church was scattered throughout the regions of Judaea and Samaria.⁹⁹⁹

Agrippa surnamed Herod, the son of *Aristobolus* the son of King Herod,¹⁰⁰⁰ accuser of Herod the tetrarch, having been brought to Rome, was thrown into prison by Tiberius. He made many friends there, in particular *Gaius* <*Caligula*> the son of *Germanicus*.¹⁰⁰¹

3993

Gaius, called *Caligula*, ruled for three years, ten months, and eight days.¹⁰⁰²

He released his friend Herod *Agrippa* from chains and made him king of *Judaea*,¹⁰⁰³ and he remained king for seven years,¹⁰⁰⁴ that is, until the fourth year of Claudius. Then, when Herod *Agrippa* had been struck down by an angel,¹⁰⁰⁵ his son *Agrippa* succeeded to the kingdom.¹⁰⁰⁶ He continued in office for twenty-six years, until the Jews were driven into exile.¹⁰⁰⁷ Herod the tetrarch, who also sought the friendship of *Gaius*, went to Rome under compulsion from Herodias; but being accused by *Agrippa*, he lost his post as tetrarch. Fleeing to Spain with Herodias, he died destitute there.

996 Jerome, *Chron.*, ed. Helm 173.18–174.5.

997 Cf. *ibid.* 174.14 *sqq.*

998 Cf. *ibid.* 175.24–6.

999 Cf. Acts 8:1.

1000 Cf. Rufinus' trans. of Eusebius, *Historia ecclesiastica* 2.1.8, ed. Mommsen 107.4–7.

1001 Jerome, *Chron.*, ed. Helm 176.21–3 and Hegesippus 2.3.4, ed. Ussani 136.16–20.

1002 Jerome, *Chron.*, ed. Helm 177.11–13; Eutropius 7.12, ed. Santini 45.10.

1003 Jerome, *Chron.*, ed. Helm 177.14–15.

1004 *Ibid.* 179.16–17.

1005 Cf. Acts 12:23.

1006 Hegesippus 2.5.6, ed. Ussani 141.15–16.

1007 Jerome, *Chron.*, ed. Helm 179.17–19.

*Pilate, who had pronounced the verdict of condemnation on Christ, /497/ was beset with such anguish inflicted by Gaius that he committed suicide.*¹⁰⁰⁸

Gaius, counting himself one of the gods, profaned the holy places of Judaea with the filth of idols.¹⁰⁰⁹

*Matthew, preaching in Judaea, wrote his Gospel.*¹⁰¹⁰

4007

Claudius <ruled for> thirteen years, seven months, and twenty-eight days.¹⁰¹¹

*The Apostle Peter, after he had first established the Church in Antioch, went to Rome,*¹⁰¹² *and there held the episcopal throne for twenty-five years, until the last year of the reign of Nero.*

Mark, having been sent to Egypt by Peter, preached the Gospel he had written in Rome there.¹⁰¹³

In the fourth year of Claudius there was a very severe famine, which is recorded by Luke.¹⁰¹⁴

In the same year <Claudius> went to Britain, *which no one before Julius Caesar or since his time had dared to invade. Most of the island surrendered without battle or bloodshed within a very few days. He also added the Orkney Islands to the empire, and he returned to Rome in the sixth month after he had set forth.*¹⁰¹⁵

In the ninth year of his reign the Jews were expelled from Rome for disturbing the public peace, which Luke also reports.¹⁰¹⁶

*The following year a great famine overcame Rome.*¹⁰¹⁷

1008 Orosius 7.5.8, ed. Zangemeister 445.18–446.4.

1009 Jerome, *Chron.*, ed. Helm 177.17.

1010 Isidore, *Chronica maiora* 242, ed. Martin 116–18.

1011 Jerome, *Chron.*, ed. Helm 179.1–2.

1012 *Ibid.* 179.7–9.

1013 *Ibid.* 179.12–13.

1014 *Ibid.* 179.20–2; Acts 11.28.

1015 Orosius 7.6.9–10, ed. Zangemeister 447.6–450.4); cf. Bede, *Historia ecclesiastica* 1.3, ed. Colgrave and Mynors 22–4.

1016 Orosius 7.6.15 (451.7–8).

1017 *Ibid.* 7.6.17 (452.1–4).

4021

*Nero <reigned for> thirteen years, seven months, and twenty-eight days.*¹⁰¹⁸

In his second year *Festus succeeded Felix* as procurator of Judaea;¹⁰¹⁹ *Paul was sent in chains to Rome by this man. He was held there under house arrest for two years, and thereafter was released to preach, while Nero burst forth in those great crimes that histories relate of him.*¹⁰²⁰

*James the brother of the Lord, after having ruled the Church of Jerusalem for thirty years, was stoned to death by the Jews in the ninth year of Nero; they took their revenge on him because they had been prevented from killing Paul.*¹⁰²¹ /498/

*Albinus succeeded Festus in the governorship of Judaea, and Florus <succeeded> Albinus.*¹⁰²² *Because they could not tolerate his wantonness, greed, and other enormities, the Jews rebelled against the Romans. Vespasian, Master of the Soldiers, was sent out against them, and captured many of the cities of Judaea.*¹⁰²³

*On top of all his other crimes, Nero now persecuted the Christians; of their leaders in Rome he killed Peter by crucifixion and Paul by the sword.*¹⁰²⁴

*This <emperor> undertook nothing of a military nature, and nearly lost Britain, for in his reign two of the finest towns there were captured and sacked.*¹⁰²⁵

4031

*Vespasian <ruled for> nine years, eleven months, and twenty-two days.*¹⁰²⁶

*He had been declared emperor by his army in Judaea, and leaving the war in the hands of his son Titus, he journeyed to Rome by way of Alexandria.*¹⁰²⁷

1018 Jerome, *Chron.*, ed. Helm 181.24–5.

1019 *Ibid.* 182.4.

1020 Jerome, *De viris illustribus* 5.14, ed. Ceresa-Gastaldo 78.

1021 Jerome, *Chron.* 182.25–183.1; Jerome, *De viris illustribus* 5.5, ed. Ceresa-Gastaldo 82; Rufinus' trans. of Eusebius, *Historia ecclesiastica* 2.23.16–18, ed. Mommsen 171.11–24.

1022 Jerome, *Chron.*, ed. Helm 182.24 and 183.23.

1023 *Ibid.* 185.11–15.

1024 *Ibid.* 185.6–10; Orosius 7.7.10, ed. Zangemeister 454.15–455.1.

1025 Eutropius 7.14, ed. Santini 46.35.

1026 Jerome, *Chron.* 186.20–1.

1027 *Ibid.* 186.22–5.

In the second year <of Vespasian's reign>, Titus overthrew the kingdom of Judaea and destroyed the Temple by himself,¹⁰²⁸ 1089 years after it was first built. This war was finished in four years: two during the lifetime of Nero, and two more after him.

Amongst other great deeds which Vespasian performed while he was *still in private life, he was sent by Claudius to Germany, and thence to Britain, and he fought the enemy thirty-two times. He added to the Roman empire two powerful peoples, twenty towns, and the Isle of Wight, near Britain.*¹⁰²⁹ *He erected the Colossus <of Rome>, 107 feet high.*¹⁰³⁰

4033

*Titus <ruled for> two years and two months, a man so admirable in all forms of virtue that he could be called the love and delight of humankind.*¹⁰³¹

*He built the amphitheatre in Rome and killed 5000 wild beasts during its dedication.*¹⁰³²

4049

*Domitian the younger brother of Titus <reigned for> sixteen years and five months.*¹⁰³³

*After Nero, he was the second <emperor> who persecuted Christians. Under his <rule> /499/ the Apostle John was exiled to the island of Patmos,¹⁰³⁴ and Flavia Domitilla, the niece of the consul Flavius Clemens by his sister, was exiled to the island of Pontia for testifying to the faith.*¹⁰³⁵

It is said that this same John was placed in a vat of boiling oil, but he

1028 *Ibid.* 187.1–26.

1029 Eutropius 7.19, ed. Santini 47.23–8; cf. Bede, *Historia ecclesiastica* 1.3, ed. Colgrave and Mynors 24.

1030 Jerome, *Chron.*, ed. Helm 188.9–10. This Colossus, a gigantic statue of the Sun God, gave its name to the Colosseum: see *s.a.* 4033 and 4145.

1031 *Ibid.* 188.2–3; Eutropius 7.21, ed. Santini 48.20–2.

1032 Jerome, *Chron.*, ed. Helm 189.14–16. This is the Flavian Amphitheatre, popularly known as the Colosseum.

1033 *Ibid.* 189.24–6.

1034 *Ibid.* 192.1–4. On this and the following references to the Apostle John see Susan Cremin, 'Bede and the Gospel of John', in *Bede the Scholar*, ed. Peter Darby and Máirín MacCarron (Manchester: Manchester University Press, 2023), 107–8.

1035 Jerome, *Chron.*, ed. Helm 192.16–18.

remained as immune to pain as he had always been to corruption of the flesh.¹⁰³⁶

4050

*Nerva <ruled for> one year, four months, and eight days.*¹⁰³⁷

In his first edict, he recalled the exiles, and so the Apostle John, freed by this general pardon, returned to Ephesus.¹⁰³⁸ Because he saw that during his absence the faith of the Church had been assailed by heretics, he immediately made it firm by describing the eternity of the Word of God in his Gospel.¹⁰³⁹

4069

*Trajan <reigned for> nineteen years, six months, and fifteen days.*¹⁰⁴⁰

In the sixty-eighth year after the Passion of the Lord and in the ninety-eighth year of his life, the Apostle John died a peaceful death at Ephesus.¹⁰⁴¹

*When Trajan began to persecute the Christians, Bishop Simeon of Jerusalem (also known as Simon), the son of Cleophas, was crucified.*¹⁰⁴²

*Ignatius bishop of Antioch as well was brought to Rome and thrown to the wild animals.*¹⁰⁴³

Alexander, the bishop of the city of Rome, was also crowned with martyrdom, and he was buried *where he was beheaded, on the Via Nomentana at the seventh milestone from the City.*¹⁰⁴⁴

*Pliny, the orator and famous historian from Como, lived at this time. Many products of his genius survive.*¹⁰⁴⁵

1036 Jerome, *Aduersus Iouinianum* 1.26 (247C).

1037 Jerome, *Chron.*, ed. Helm 192.25–6; Eutropius 8.1, ed. Santini 50.1–11.

1038 Jerome, *Chron.* ed. Helm 193.3–8.

1039 Cf. Jerome, *De viris inlustribus* 9.1, ed. Ceresa-Gastaldo 92.

1040 Jerome, *Chron.*, ed. Helm 193.19–22; Eutropius 8.5, ed. Santini 51.15–17.

1041 Jerome, *De viris inlustribus* 9.6, ed. Ceresa-Gastaldo 94. Jerome implicitly dates the Passion to AM 4001, whereas in his *Chronicle* he followed Eusebius' Septuagint chronology; note that Bede dates the Passion above to AM 3984.

1042 Jerome, *Chron.*, ed. Helm 194.19–22.

1043 *Ibid.* 194.24–6.

1044 *Liber pontificalis* 7, ed. L. Duchesne (Paris: E. de Boccard, 1955), 1.127.

1045 Jerome, *Chron.*, ed. Helm 195.21–3. This is actually Pliny the Younger, but Bede may have thought it was Pliny the Elder.

*The Pantheon at Rome, which Domitian built, was burnt by lightning;*¹⁰⁴⁶ it took this name from the fact that it was to be the dwelling-place of all the gods.¹⁰⁴⁷ /500/

The Jews, instigating sedition in various parts of the world, were struck down by the slaughter they deserved.¹⁰⁴⁸

*Trajan extended the borders of the Roman empire far and wide, which since Augustus had been defended rather than nobly expanded.*¹⁰⁴⁹

4090

*Hadrian the son of Trajan's female cousin <ruled for> twenty-one years.*¹⁰⁵⁰

*Because he had been instructed by reading the books written about the Christian religion by Quadratus the disciple of the Apostles and by Aristides the Athenian, a man full of faith and wisdom, and by the legate Serenus Granius, he ordered in a letter that the Christians should not be condemned without being accused of crimes in a proper fashion.*¹⁰⁵¹

*He utterly defeated the Jews, who had rebelled a second time, in a final slaughter, and also deprived them of permission to enter Jerusalem, whose walls he had restored to their finest state; and he ordered <the city> to be called Aelia after himself.*¹⁰⁵²

*He himself, being most learned in both languages [i.e. Latin and Greek], constructed a library of marvellous workmanship in Athens.*¹⁰⁵³

*Mark was the first gentile to be made bishop of Jerusalem,*¹⁰⁵⁴ *when the Jewish bishops came to an end.* There were fifteen of these,¹⁰⁵⁵ extending for about 107 years from the Passion of the Lord.¹⁰⁵⁶

1046 *Ibid.* 195.26.

1047 Cf. *ibid.* 191.8.

1048 *Ibid.* 196.12–26.

1049 Eutropius 8.2, ed. Santini 50.16–17.

1050 Jerome, *Chron.*, ed. Helm 197.9–12.

1051 Orosius 7.13.2, ed. Zangemeister 467.18–468.6.

1052 *Ibid.* 7.13.4–5 (468.9–469.3).

1053 Jerome, *Chron.*, ed. Helm 197.21–22; 200.18–19.

1054 *Ibid.* 201.15–17.

1055 Cf. *ibid.* 203.25.

1056 Note that here Bede refers to his preferred date of the Passion, AM 3984.

4113

*Antoninus, surnamed Pius, with his sons <Marcus> Aurelius and Lucius <Aurelius Commodus>, <ruled for> twenty-two years and three months.*¹⁰⁵⁷

*The philosopher Justin <Martyr> gave Antoninus the book that he had written in favour of the Christian religion, and caused him to look kindly upon the Christians.*¹⁰⁵⁸ Not long after, when Crescens the Cynic stirred up persecution, <Justin> *shed his blood for Christ.*¹⁰⁵⁹

In the time of Bishop Pius of Rome, *Hermas wrote a book called The Shepherd, in which is contained an angel's command that Easter should be celebrated on Sunday.*¹⁰⁶⁰ /501/

When he arrived in Rome, Polycarp chastised many people who had recently been corrupted by the teachings of Valentinus and Cerdo for disgracing themselves with heresy.¹⁰⁶¹

4132

*Marcus Antoninus Verus [i.e. Marcus Aurelius] <ruled> with his brother Lucius Aurelius Commodus for nineteen years and one month.*¹⁰⁶²

*From the outset they administered the empire with equal authority, although hitherto there had <only ever> been single emperors.*¹⁰⁶³

*They made war against the Parthians with great valour and success.*¹⁰⁶⁴

*When the persecution began in Asia, Polycarp and Pionius were martyred; in Gaul as well, many gloriously shed their blood for Christ.*¹⁰⁶⁵

1057 Jerome, *Chron.*, ed. Helm 202.1–3.

1058 Orosius 7.14.2, ed. Zangemeister 469.10–12.

1059 Jerome, *Chron.*, ed. Helm 203.13–18.

1060 *Liber pontificalis* 11, ed. Duchesne 1.132. No such episode appears in the *Shepherd of Hermas*. On similar early medieval legends about angelic authority for computistical rules, see ch. 43 and Commentary.

1061 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 4.14, ed. Mommsen 333.19–335.14.

1062 Jerome, *Chron.* 204.7–9.

1063 *Ibid.* 204.10–12.

1064 Orosius 7.15.2, ed. Zangemeister 470.1–2.

1065 Jerome, *Chron.*, ed. Helm 205.9–10.

Not long after, *plague*, the avenger of evil deeds, caused *extensive devastation in many provinces*, especially Italy and the city of Rome.¹⁰⁶⁶

After the death of his brother Commodus, *Antoninus [i.e. Marcus Aurelius] made his own son Commodus his colleague as emperor*.¹⁰⁶⁷

Melitus of Asia, the bishop of Sardis, gave the emperor Antoninus his apology on behalf of the Christians.¹⁰⁶⁸

Lucius the king of Britain sent a letter to Bishop Eleutherius of Rome, asking to become a Christian.¹⁰⁶⁹

The celebrated bishops Apollinaris of Asia, bishop of Hieropolis, and Dionysius bishop of Corinth, lived <at this time>.¹⁰⁷⁰

4145

Lucius Antoninus Commodus ruled for thirteen years after the death of his father.¹⁰⁷¹ *He waged war successfully against the Germans*,¹⁰⁷² but otherwise he was given over to all forms of wantonness and indecency¹⁰⁷³ and did nothing which can be compared to his father's virtue and piety.¹⁰⁷⁴

Irenaeus the famous bishop of Lyon lived <at this time>.¹⁰⁷⁵

The Emperor Commodus ordered the head of the Colossus removed and a representation of his own head put up <in its place>.¹⁰⁷⁶ /502/

4146

Aelius Pertinax <ruled for> six months.¹⁰⁷⁷

He was murdered in the palace through the treason of Julian [i.e. Didius

1066 *Ibid.* 205.13; Orosius 7.15.5, ed. Zangemeister 471.1–2.

1067 Jerome, *Chron.*, ed. Helm 207.18–19.

1068 *Ibid.* 206.1–3.

1069 *Liber pontificalis* 14.2, ed. Duchesne 1.136; cf. Bede, *Historia ecclesiastica* 1.4, ed. Colgrave and Mynors 24.

1070 Jerome, *Chron.*, ed. Helm 206.4–6.

1071 Orosius 7.16.1, ed. Zangemeister 472.19–21.

1072 *Ibid.* 7.16.2 (472.21–473.1).

1073 Cf. Eutropius 8.15, ed. Santini 54.31.

1074 *Ibid.* 54.28.

1075 Jerome, *Chron.*, ed. Helm 208.20–1.

1076 *Ibid.* 209.16–18.

1077 *Ibid.* 210.4–5.

Julianus], a lawyer; seven months after <Julian> began to rule, *Severus* defeated him in a civil war at the Milvian Bridge and slew him.¹⁰⁷⁸

Through notices sent far and wide, Victor the thirteenth bishop of Rome ordered that Easter should be celebrated on the Sunday between the fifteenth¹⁰⁷⁹ and the twenty-first day of the lunar month, as his predecessor Eleutherius <had done>.¹⁰⁸⁰

In support of this decree, *Theophilus* bishop of Caesarea in Palestine together with other bishops present at the same Council, wrote a very useful synodical letter against those who celebrated Easter with the Jews on the fourteenth day of the lunar month.¹⁰⁸¹

4163

<Septimius> *Severus* Pertinax <ruled for> seventeen years.¹⁰⁸²

Clement a priest of the church of Alexandria and *Panthenus* a Stoic philosopher conducted a very vigorous disputation on the subject of <Christian> doctrine.¹⁰⁸³

Narcissus bishop of Jerusalem, *Theophilus* bishop of Caesarea, and *Polycarp* and *Bachylus*, bishops of the province of Asia, were notable at this time.¹⁰⁸⁴

A persecution was unleashed against the Christians in various provinces. *Leonidas* the father of *Origen* was amongst the many who received the crown of martyrdom.¹⁰⁸⁵

After *Clodius Albinus*, who had made himself Caesar in Gaul, was killed at Lyon, *Severus* carried the war over to Britain, where in order to make the

1078 *Ibid.* 210.16–19; Orosius 7.16.5–6, ed. Zangemeister 473.14–20.

1079 Jones (502.1184), following Mommsen, reads ‘xiiii’ but some MSS cited in Mommsen’s apparatus read ‘xv’. The next sentence implies that Bede probably understood ‘fifteenth’ since ‘Theophilus of Caesarea’ (i.e. the spurious *Acta synodi Caesareae*) rejected the fourteenth Moon as a suitable date for Easter.

1080 Jerome, *Chron.* 210.9–10 and *Liber pontificalis* 15, ed. Duchesne 1.137.

1081 Jerome, *De viris illustribus* 43, ed. Ceresa-Gastaldo 142. Bede undoubtedly identified this ‘very useful synodical letter’ with the spurious *Acta synodi Caesareae*. See ch. 47.

1082 Jerome, *Chron.*, ed. Helm 210.20–1.

1083 *Ibid.* 211.1–4.

1084 *Ibid.* 211.5–8.

1085 *Ibid.* 212.7–9; Orosius 7.17.4, ed. Zangemeister 474.10–12.

provinces more secure from barbarian incursions *he built a massive ditch and a very solid wall, closely set with towers, running for 132 miles from sea to sea. He died at York.*¹⁰⁸⁶

*Perpetua and Felicitas were thrown to the beasts for Christ in the arena at Carthage in Africa on the Nones of March [7 March].*¹⁰⁸⁷ /503/

4170

*Antoninus surnamed Caracalla, the son of Severus, <ruled for> seven years.*¹⁰⁸⁸

*Alexander bishop of Cappadocia came to Jerusalem out of longing for the holy places. While Narcissus, then a very old man, was still bishop of that city, <Alexander> was ordained bishop there, after the Lord indicated in a revelation that this should happen.*¹⁰⁸⁹

*Tertullian the African, son of a centurion in the service of the proconsul, was praised in the report of all the churches.*¹⁰⁹⁰

4171

*Macrinus <reigned for> one year.*¹⁰⁹¹

*According to <Julius> Africanus, the holy man Abgar ruled at Edessa.*¹⁰⁹² *Together with his son Diadumenian, with whom he had usurped the empire, Macrinus was killed during a military uprising at Archilaides.*¹⁰⁹³

4175

*Marcus Aurelius Antoninus <ruled for> four years.*¹⁰⁹⁴

In Palestine the city of Nicopolis, previously called Emmaeus, was

1086 Orosius 7.17.6–7 (474.17–475.9); cf. Bede, *Historia ecclesiastica* 1.5, ed. Colgrave and Mynors 24–6.

1087 Prosper of Aquitaine, *Chronica* 757, ed. Th. Mommsen, MGH AA 9 (1892), 434.

1088 Jerome, *Chron.*, ed. Helm 213.4–5.

1089 *Ibid.* 213.8–10; Rufinus' trans. of Eusebius, *Historia ecclesiastica* 6.11.1–2, ed. Mommsen 541.25–543.6.

1090 Jerome, *Chron.*, ed. Helm 212.23–5.

1091 *Ibid.* 213.23–4.

1092 *Ibid.* 214.5–6.

1093 Orosius 7.18.3, ed. Zangemeister 476.1–4.

1094 Jerome, *Chron.*, ed. Helm 214.8–9. This is the emperor more commonly known as Elagabalus.

<re->founded; *Julius Africanus, a writer of chronicles, received the commission to carry this out.*¹⁰⁹⁵ This is the Emmaus which the Lord deigned to sanctify by going there after his Resurrection, as Luke records.¹⁰⁹⁶

*Bishop Hippolytus, the author of many works, brought his book *The Canon of History up to this point <in time>*. His discovery of the sixteen-year Easter cycle gave Eusebius the opportunity to compose a nineteen-year cycle based on it.*¹⁰⁹⁷

4188

*Aurelius Alexander <Severus ruled for> thirteen years.*¹⁰⁹⁸

*He was singularly*¹⁰⁹⁹ *dutiful towards his mother Mammaea and for this reason beloved by all.*¹¹⁰⁰

*Urban the bishop of Rome led many of the nobility to the faith of Christ and to martyrdom.*¹¹⁰¹

*Origen of Alexandria was famous throughout the world.*¹¹⁰² For this reason, *Mammaea, the mother of Alexander, arranged to hear him and received him at Antioch with the highest honour.*¹¹⁰³ /504/

4191

*Maximin <the Thracian ruled for> three years.*¹¹⁰⁴

He launched a *persecution* against the *bishops and clergy* of the Churches

1095 *Ibid.* 214.20–4.

1096 Luke 24:13. Bede mentions Nicopolis as the alternative name of Emmaus in his commentary on Luke 24:14: he drew this information from Jerome, *De situ et nominibus locorum Hebraicorum (Onomastica sacra)*, ed. P. de Lagarde (Göttingen: A. Rente, 1870), 121.6–8.

1097 Jerome, *De viris inlustribus* 61.1, ed. Ceresa-Gastaldo 190; cf. Rufinus' trans. of Eusebius, *Historia ecclesiastica* 6.22.1, ed. Mommsen 569.15–20. See ch. 44 and Commentary.

1098 Orosius 7.18.6, ed. Zangemeister 476.11–14; Jerome, *Chron.*, ed. Helm 215.1–2.

1099 Jones and Mommsen read *unicae*, but it is an adverb, i.e. *unice*, and is rendered as such in Helm's edition of Jerome's text.

1100 Jerome, *Chron.*, ed. Helm 215.25–6.

1101 *Liber pontificalis* 18.2, ed. Duchesne 1.143.

1102 Jerome, *Chron.*, ed. Helm 215.22.

1103 Orosius 7.18.7, ed. Zangemeister 476.14–15; Jerome, *De viris inlustribus* 54.5, ed. Ceresa-Gastaldo 152–4.

1104 Jerome, *Chron.*, ed. Helm 216.8–9.

(that is to say, against the teachers) largely because the family of Alexander <Severus>, whom he had succeeded, and of his mother Mammaea, were Christian; but above all because of the priest Origen.¹¹⁰⁵

Pontianus and Antherus, bishops of the city of Rome, were crowned with martyrdom and buried in the cemetery of Calixtus.¹¹⁰⁶

4197

Gordian <reigned for> six years.¹¹⁰⁷

Julius Africanus was celebrated amongst the authors of the Church. In the chronicles that he wrote, he said that he was hastening to Alexandria, attracted by the very celebrated reputation of Heraclas, whom rumour declared to be exceptionally learned in divine and in philosophical studies and in all Greek learning.¹¹⁰⁸

In Caesarea in Palestine, Origen initiated <two> young brothers from Pontus – Theodore (known as Gregory)¹¹⁰⁹ and Athenodorus, who later became very celebrated bishops – into divine philosophy.¹¹¹⁰

4204

Philip <the Arabian> together with his son Philip <ruled for> seven years.¹¹¹¹

He was the first of all the emperors to be a Christian, and in the third year of his reign, the thousandth year from the founding of Rome was completed. Thus, this most august anniversary year commemorating past events, was celebrated with magnificent games by a Christian emperor.¹¹¹²

Origen replied in eight volumes to a certain Epicurean philosopher called Celsus, who had written against our books. <Origen>, to put it briefly, was so prolific in writing that Jerome remembers that he read somewhere that his books <numbered> 5000.¹¹¹³

1105 Orosius 7.19.2, ed. Zangemeister 477.9–13.

1106 *Liber pontificalis* 19–20, ed. Duschene, 1.145–7.

1107 Jerome, *Chron.*, ed. Helm 216.18–19.

1108 Rufinus' translation of Eusebius, *Historia ecclesiastica* 6.31.1, ed. Mommsen 585.24–5, 587.3–9.

1109 More commonly known as St Gregory the Thaumaturge: see below *s.a.* 4222.

1110 Jerome, *De viris illustribus* 65.1–2, ed. Ceresa-Gastaldo 168.

1111 Jerome, *Chron.*, ed. Helm 217.9–13.

1112 Orosius 7.20.2, ed. Zangemeister 478.12–479.1.

1113 The source of this information has not been traced. Jerome's *Ep.* 82.7.2 (ed. Hilberg,

4205

*Decius <ruled for> one year and three months.*¹¹¹⁴

*After he had killed both the Philips, he launched a persecution against the Christians out of hatred of them,*¹¹¹⁵ *in which Fabian /505/ was crowned with martyrdom in the city of Rome. He left his episcopal see to Cornelius, who was also martyred.*¹¹¹⁶ *Alexander the bishop of Jerusalem was killed at Caesarea in Palestine and Babylas at Antioch.*¹¹¹⁷ *This persecution, as Dionysius bishop of Alexandria states, did not originate in an imperial command, but, as he says, 'A servant of the demons, who in our city was said to be divine, anticipated the imperial edicts by a whole year, stirring up the credulous crowds against us'.*¹¹¹⁸

4207

*Gallus with his son Volusian <ruled for> two years and four months.*¹¹¹⁹

*Dionysius the bishop of Alexandria recalls of his reign that Gallus could neither see nor guard against Decius' misfortune, but tripped over the same stone. When his reign was prospering at the outset and all was as he wished it to be, he persecuted the holy men who were praying to God on high for the peace of his realm, and both peace and his prosperity took flight with them.*¹¹²⁰

*Origen died and was buried in the city of Tyre, being not quite seventy years old.*¹¹²¹

Bishop Cornelius of Rome moved the bodies of the Apostles from the catacombs at night at the request of a certain lady called Lucina, and on the third Kalends of July [29 June] he installed the body of Paul on the road to Ostia where he had been beheaded, and that of Peter in the place

114.11–12) refers to the 6000 volumes of Origen's works, and *Ep.* 84.8.2 (130.24) says that Origen wrote '1000 or more books'. Cf. Mommsen's introduction to his ed. of ch. 66 in MGH AA 13 (1898), 228.

1114 Jerome, *Chron.*, ed. Helm 218.7–8.

1115 *Ibid.* 218.11–13.

1116 *Liber pontificalis* 21–2, ed. Dushesne, 1.148–51.

1117 Jerome, *Chron.*, ed. Helm 218.16–18.

1118 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 6.41.1, ed. Mommsen 601.4–6.

1119 Jerome, *Chron.*, ed. Helm 218.11–12.

1120 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.1, ed. Mommsen 637.8–12.

1121 *Ibid.* 7.1 (637.4–5); Jerome, *De viris illustribus* 54.11, ed. Ceresa-Gastaldo 156.

*in which he had been crucified, among the bodies of the holy bishops in the temple of Apollo on the Mons Aurelius in the Vatican palace of Nero.*¹¹²²

4222

*Valerian <ruled> with his son Gallienus for fifteen years.*¹¹²³

*While the persecution of the Christians raged, <Valerian> was suddenly captured by Shapur, king of the Persians. His eyes were gouged out, and he grew old there in miserable slavery.*¹¹²⁴ *Gallienus, frightened by such a clear judgement from God, therefore restored peace to us <Christians>.*¹¹²⁵

But either because of his own wanton cravings, or because of his father's war against God,¹¹²⁶ he sustained much loss to the Roman realm from barbarian uprisings. *Bishop Cyprian of Carthage, whose highly learned writings have survived, was crowned with martyrdom in this persecution.*¹¹²⁷ /506/ *His deacon Pontius, who shared his exile up to the day of his death, left a celebrated book about <Cyprian's> life and passion.*¹¹²⁸

*Bishop Theodore of Neocaesarea in Pontus, who was also called Gregory, and of whom we wrote above,*¹¹²⁹ *shone with great glory of <miraculous> powers,*¹¹³⁰ *one of which was that he moved a mountain by his prayers that there might be sufficient space to build a church.*¹¹³¹

*Stephen and Sixtus, bishops of Rome, suffered martyrdom.*¹¹³²

4224

*Claudius <reigned> for one year and nine months.*¹¹³³

1122 *Liber pontificalis* 22.4, ed. Duchesne 1.150.

1123 Jerome, *Chron.*, ed. Helm 220.1–2; Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.10.1, ed. Mommsen 649.13–15.

1124 Jerome, *Chron.*, ed. Helm 220.12–14; cf. Orosius 7.22.4, ed. Zangemeister 481.12–14.

1125 Orosius 7.22.5, ed. Zangemeister 482.2–4.

1126 I.e. the persecution of the Christians.

1127 Jerome, *Chron.*, ed. Helm 220.9–11.

1128 Jerome, *De viris inlustribus* 68, ed. Ceresa-Gastaldo 172.

1129 *S.a.* 4197.

1130 Jerome, *De viris inlustribus* 65.4, ed. Ceresa-Gastaldo 170.

1131 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.28, ed. Mommsen 954.11–12; Gregory, *Dialogi* 1.7.3, ed. A. de Vogüé (Paris: Ed. du Cerf, 1978), 2, 38.38–41. Cf. Bede, *In Marci euangelium expositio* 3, ed. D. Hurst, CCSL 120 (1960), 580.1514–581.1529.

1132 *Liber pontificalis* 24–5, ed. Duchesne 1.154–5.

1133 Jerome, *Chron.*, ed. Helm 221.22–3.

*He defeated the Goths who had been ravaging Illyria and Macedonia for fifteen years, and because of this a golden shield was erected to him in the Senate house and a golden statue of him erected on the Capitol.*¹¹³⁴

*Marcion, a very eloquent priest of the church of Antioch, who had also taught rhetoric in the same city, disputed with Paul of Samosata, bishop of Antioch, who was teaching that Christ was only a man in the common nature <of humanity>. This dialogue still survives today, for it was taken down by notaries.*¹¹³⁵

4229

*Aurelian <ruled for> five years and six months.*¹¹³⁶

*After he had launched a persecution against us, lightning struck directly in front of him, greatly terrifying bystanders, and not long after he was killed by soldiers while travelling between Constantinople and Heraclea, at a place on the old highway called Caenofrurium.*¹¹³⁷

*Eutychian bishop of Rome was crowned with martyrdom and buried in the cemetery of Calixtus; he himself had buried 313 martyrs with his own hands.*¹¹³⁸

4230

*Tacitus <reigned for> six months.*¹¹³⁹

*After <Tacitus> was killed in Pontus, Florian was emperor for eighty-eight days and was killed at Tarsus.*¹¹⁴⁰ /507/

Bishop Anatolius of Laodicea in Syria, an Alexandrian by birth, who was very learned in philosophical subjects, was widely renowned. The

1134 *Ibid.* 221.26–222.3; Orosius 7.23, ed. Zangemeister 485.1–5.

1135 Jerome, *De viris illustribus* 71.1, ed. Ceresa-Gastaldo 178. Cf. Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.27.2, ed. Mommsen 703.20–6. Neither Rufinus nor Jerome mention Paul's specific heresy *pace* the italics in Jones' edition.

1136 Jerome, *Chron.*, ed. Helm 222.8–9.

1137 *Ibid.* 223.7, 9–10; Orosius 7.23.6, ed. Zangemeister 486.10–13; Eutropius 9.15, ed. Santini 60.20–6.

1138 *Liber pontificalis* 28, ed. Duchesne 1.159.

1139 Jerome, *Chron.*, ed. Helm 223.12.

1140 *Ibid.* 223.13–14.

*greatness of his genius can readily be appreciated from the book that he wrote about Easter, and from his ten books on the principles of arithmetic.*¹¹⁴¹

*The insane heresy of the Manichees was born at this time.*¹¹⁴²

4236

*Probus <ruled for> six years and four months.*¹¹⁴³

*By many fierce battles he completely liberated the Gallic <provinces>, which had been occupied for some time by barbarians.*¹¹⁴⁴

As we read in Eusebius' chronicle, the *second year* of his reign was the 335th year of the Antiochenes, the 402nd of the Tyrians, the 324th of the Laodiceans, the 588th of the Edessans, the 380th of the <city of> Ascalon, and the beginning of the eighty-sixth Jubilee for the Hebrews, which means their year 4250.¹¹⁴⁵

*Bishop Archelaus of Mesopotamia wrote an account in Syriac of the debate he had with a Manichee who had come from Persia; this became known to many through its Greek translation.*¹¹⁴⁶

4238

*Carus <reigned> with his sons Carinus and Numerian for two years.*¹¹⁴⁷

Bishop *Gaius* of Rome, who later suffered martyrdom under Diocletian, was illustrious.¹¹⁴⁸

*Pierius, a priest of Alexandria under Bishop Theon taught the people very effectively. His words and various treatises, which have survived to the present, were of such refinement that he was called 'the younger Origen'. He was amazingly frugal and longed for voluntary poverty. After the persecution he spent the rest of his life in Rome.*¹¹⁴⁹

1141 *Ibid.* 223.21–2; *De viris illustribus* 73.1–2, ed. Ceresa-Gastaldo 180.

1142 Jerome, *Chron.* 223.25–6.

1143 *Ibid.* 223.16.

1144 Orosius 7.24.2, ed. Zangemeister 487.2–4.

1145 Jerome, *Chron.*, ed. Helm 223.23–4, 20–2. Bede explains *s.a.* 2519 and 3981 why his reckoning deviates from Eusebius' by nineteen years.

1146 Jerome, *De viris illustribus* 72.1, ed. Ceresa-Gastaldo 178.

1147 Jerome, *Chron.*, ed. Helm 224.19–20.

1148 *Liber pontificalis* 29, ed. Dushesne 1.161.

1149 Jerome, *De viris illustribus* 76.1–2, ed. Ceresa-Gastaldo 182.

4258

*Diocletian <ruled> with Herculus Maximian for twenty years.*¹¹⁵⁰

*Carausius, having assumed the purple, occupied the British <provinces>. Narseh king /508/ of the Persians declared war in the East. The 'Five Nations' invaded Africa. Achilles took control of Egypt. For these reasons Constantius and Galerius Maximianus were taken on as Caesars.*¹¹⁵¹

*Constantius took Theodora the stepdaughter of Herculus <as his wife>, and afterwards had by her the six half-brothers of Constantine. Galerius <married> Valeria the daughter of Diocletian.*¹¹⁵²

*After ten years, Britain was recaptured by the praetorian prefect Asclepiodotus.*¹¹⁵³

*In the eighteenth year <of their reign>, Diocletian in the East and Maximian Herculus in the West ordered the churches to be destroyed, and the Christians attacked and killed.*¹¹⁵⁴

*In the second year of the persecution Diocletian laid aside the purple*¹¹⁵⁵ *at Nicomedia and Maximian at Milan.*¹¹⁵⁶ However, the persecution now under way did not cease to rage until the seventh year of the reign of Constantine. *In the sixteenth year of his reign, Constantius, a man singularly mild and affable, died in Britain, at York.*¹¹⁵⁷

*This persecution raged with such cruelty and intensity that in the course of a single month it was discovered that 17,000 had suffered martyrdom for Christ.*¹¹⁵⁸

It even crossed the band of the Ocean, and in Britain Alban, Aaron, and

1150 Jerome, *Chron.*, ed. Helm 225.7–8; 13–14.

1151 *Ibid.* 225.18–23; on Carausius' occupation of Britain see Bede, *Historia ecclesiastica* 1.6, ed. Colgrave and Mynors 26. 'Caesar' in this case means a junior co-emperor. Senior emperors in the Diocletianic tetrarchy were called 'Augusti'.

1152 Jerome, *Chron.*, ed. Helm 225.26–226.3.

1153 *Ibid.* 227.2–3.

1154 *Ibid.* 228.5–6; Orosius 7.25.13, ed. Zangemeister 491.13–15.

1155 I.e. abdicated.

1156 Jerome, *Chron.*, ed. Helm 228.12–14; Orosius 7.25.14, ed. Zangemeister 492.1–7.

1157 Jerome *Chron.* 228.20–1; Orosius 7.25.16 (493.1–2); cf. Bede, *Historia ecclesiastica* 1.8, ed. Colgrave and Mynors 36.

1158 *Liber pontificalis* 30.2, ed. Duchesne 1.162; cf. Bede, *Historia ecclesiastica* 1.6, ed. Colgrave and Mynors 28.

Julius, with many other men and women, were condemned to that blessed slaughter.¹¹⁵⁹

The priest Pamphilus, a close connection of Bishop Eusebius of Caesarea, was martyred.¹¹⁶⁰ <Eusebius> wrote his life in three books.

4259

In the third year of the persecution, in which Constantius died, *Maximin and Severus were made Caesars* by Galerius Maximianus.¹¹⁶¹ Of these, Maximin added crimes and debauchery to the persecution of the Christians.

During this time, *Bishop Peter of Alexandria* suffered <martyrdom> along /509/ with many other Egyptian bishops; *so did Lucian a priest of Antioch, a man of exceptional chastity and erudition*,¹¹⁶² and *Timothy, <martyred> at Rome on the tenth Kalends of July [22 June]*.¹¹⁶³

4290

Constantine, the son of Constantius by his concubine Helena, was made emperor in Britain, and ruled for thirty years and ten months.¹¹⁶⁴

In the fourth year of the persecution *Maxentius, the son of Herculius Maximianus, was made Augustus in Rome*.¹¹⁶⁵

Licinius, the husband of Constantia the sister of Constantine, was made emperor at Carnuntum.¹¹⁶⁶

Constantine turned from a persecutor into a Christian.

At the Council of Nicaea, in the 636th year after Alexander, on the nineteenth day of the Greek month Desi, which is the tenth Kalends of July

1159 Gildas, *De excidio et conquestu Britanniae* 10, ed. T. Mommsen, MGH AA 13 (1898), 31.14–22. Cf. Bede, *Historia ecclesiastica* 1.7, ed. Colgrave and Mynors 28–34.

1160 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 8.13.6, ed. Mommsen 773–10.12; Jerome, *De viris illustribus* 81.3, ed. Ceresa-Gastaldo 188.

1161 Jerome, *Chron.*, ed. Helm 228.20–1, 18–19.

1162 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 9.6.2–3, ed. Mommsen 813.1–12.

1163 Prosper 974, ed. Mommsen 447.

1164 Jerome, *Chron.*, ed. Helm 228.26–229.1; Eutropius 10.2, ed. Santini 65.20–3 and 10.8 (67.21–4); cf. Bede, *Historia ecclesiastica* 1.8, ed. Colgrave and Mynors 36.

1165 Jerome, *Chron.*, ed. Helm 229.1–3.

1166 *Ibid.* 229.6; Eutropius 10.4, ed. Santini 66.13.

[22 June], in the consulship of Paulinus and Julian, 'viri clarissimi', the catholic faith was laid out.¹¹⁶⁷

In Rome, where he was baptized, Constantine built the basilica of St John, known as the Constantinian basilica.¹¹⁶⁸ He also built a basilica dedicated to the blessed Peter on <the site of> the temple of Apollo,¹¹⁶⁹ and also <one> to the blessed Paul,¹¹⁷⁰ and he encased both their bodies in <sarcophagi of> copper five feet thick. He built a basilica in the Sessorian Palace, which is known as <the basilica of the Holy Cross> of Jerusalem, where he deposited some of the wood of the Lord's Cross. He built a basilica dedicated to the holy martyr Agnes at his daughter's request, and a baptistry¹¹⁷¹ in the same place, where his sister Constantia was baptized together with the emperor's daughter. Again, he built a basilica to the blessed martyr Lawrence on the Via Tiburtina, in the field of Veranus,¹¹⁷² and also one to the blessed martyrs Peter and Marcellinus, between two laurel trees on the Via Labicana, and a mausoleum where he laid his mother to rest in a purple sarcophagus. He built a basilica in the town of Ostia, near the port of Rome, dedicated to the holy Apostles Peter and Paul and John the Baptist, and a basilica in the city of Alba to St John the Baptist, and a basilica in the city of Naples.¹¹⁷³ /510/

When he restored the town of Drepanum in Bithynia in honour of the martyr Lucian, who was buried there, Constantine renamed it Helenopolis after his mother.¹¹⁷⁴

He also wished to make the city in Thrace to which he had given his own name¹¹⁷⁵ the seat of the Roman empire and the capital of all the East.¹¹⁷⁶

1167 *Liber pontificalis* 34.4, ed. Duchesne 1.171; the full dating clause comes from the *Acta* of the Council of Chalcedon 2, ed. J.D. Mansi, *Sacrorum conciliorum amplissima collectio* (Paris: Hubert Welter, 1901), 6.955.

1168 St John Lateran.

1169 St Peter's on the Vatican.

1170 St Paul outside the Walls.

1171 St Constance.

1172 St Lawrence outside the Walls.

1173 *Liber pontificalis* 34.9, ed. Duchesne (1.172), 13 (1.174), 16 (1.176), 21–4 (1.178–81), 26 (1.182), 28 (1.183–4), 30 (1.184–5), 32 (1.186).

1174 Jerome, *Chron.*, ed. Helm 231.22–5.

1175 I.e. Constantinople.

1176 Orosius 7.28.27, ed. Zangemeister (504.12–16); 3.13.2 (163.18–164.3).

*He ordered that the temples of the pagans be closed, but without killing <anyone>.*¹¹⁷⁷

4314

*Constantius ruled with his brothers Constantine and Constans for twenty-four years, six months, and thirteen days.*¹¹⁷⁸

*James is recognized as bishop of Nisibis; the city was often saved in times of crisis by his prayers.*¹¹⁷⁹

*Fostered by the protection of the emperor Constantius, the Arian heresy persecuted first Athanasius and then all bishops not of its party with exile, imprisonment, and various types of affliction.*¹¹⁸⁰

*Bishop Maximin of Trier was famous. Bishop Athanasius of Alexandria was honourably received by him when Constantius wished to punish him.*¹¹⁸¹

*The monk Anthony died in the desert at the age of 105.*¹¹⁸²

*The relics of the Apostle Timothy were brought to Constantinople.*¹¹⁸³

*After Constantius had visited Rome, the bones of the Apostle Andrew and Luke the evangelist were received by the citizens of Constantinople with marvellous enthusiasm.*¹¹⁸⁴

*Bishop Hilary of Poitiers, who had been driven out by the Arians and exiled to Phrygia, returned to Gaul after a book <written> on his behalf was presented to Constantius in Constantinople.*¹¹⁸⁵

4316

*Julian <reigned> for two years and eight months.*¹¹⁸⁶

1177 *Ibid.* 7.28.28 (505.1–3).

1178 Jerome, *Chron.*, ed. Helm 234.13–15.

1179 *Ibid.* 234.24–5.

1180 *Ibid.* 234.16–235.4; cf. *In Ezram* 1, ed. Hurst 283.1175–7, trans. DeGregorio 71 and n. 1.

1181 *Ibid.* 236.1–4.

1182 *Ibid.* 240.5–6.

1183 *Ibid.* 240.15–16.

1184 *Ibid.* 240.26–241.2.

1185 *Ibid.* 240.11–14; 241.17–19; cf. *In Ezram* 1, ed. Hurst 283.277–8, trans. DeGregorio 71 and n. 4.

1186 *Ibid.* 242.10–11.

*Julian, having converted to the worship of idols, persecuted the Christians.*¹¹⁸⁷

*In the city of Sebaste in Palestine, pagans broke into the tomb of John the Baptist and scattered the bones. After these had been collected up again, they burnt them and scattered them more widely. But by the providence of God, some monks from Jerusalem were there. Collecting whatever they could, they brought <the bones>, all mixed together, as an offering to their father [i.e. abbot] Philip. He /511/ immediately sent them by his deacon Julian to the metropolitan (ad pontificem maximum), who at that time was Athanasius <of Alexandria>, for <Philip> felt it was beyond his powers to guard so great a treasure by his own vigilance. After he had received them, <Athanasius>, inspired by a prophetic spirit, preserved the relics for a generation yet to come in a hole under the sanctuary wall in the presence of a few witnesses.*¹¹⁸⁸ This prophecy was accomplished in the reign of Theodosius by Theophilus, bishop of the same city, who dedicated a church to St John after the tomb of Serapis had been destroyed.¹¹⁸⁹

4317

*Jovian <ruled for> eight months.*¹¹⁹⁰

*A synod was held at Antioch by Melitius and his supporters, in which, having rejected 'homoeousion' and 'anomoio', as a compromise they affirmed the Macedonian doctrine of 'homoeousion'.*¹¹⁹¹

*Jovian, warned by the fall of his predecessor Constantius, in most courteous and respectful letters inquired of Athanasius, and received from him the form of the faith, and the manner in which the Church should be ordered. But an early death cut short his pious and happy reign.*¹¹⁹²

4328

*Valentinian <ruled> with his brother Valens for eleven years.*¹¹⁹³

1187 *Ibid.* 242.11–12.

1188 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 11.28, ed. Mommsen 1033.20–1034.16.

1189 *Ibid.* 11.26–7 (1031.10–1032.18). For a different account of the fate of the Baptist's relics see below *s.a.* 4410.

1190 Jerome, *Chron.*, ed. Helm 243.16–17; cf. 247.23–6.

1191 *Ibid.* 243.21–4.

1192 Rufinus' trans. of Eusebius, *Historia ecclesiastica* 11.1, ed. Mommsen 1002.10–13.

1193 Cf. Jerome *Chron.*, ed. Helm 244.7–8; Orosius 7.32.1, ed. Zangemeister 512.1–2. In the chronicle in *On Times* 20 (ed. Jones 609.44–610.45) Bede did not represent this as

*Apollinaris bishop of Laodicea wrote a variety of works concerning religion, but later, deviating from <true> belief, he instituted the heresy that bears his name.*¹¹⁹⁴

*Damasus bishop of Rome built the basilica of St Lawrence next to the theatre, and another in the catacombs, where the holy bodies of the Apostles Peter and Paul had lain. There he adorned with verses the very slab*¹¹⁹⁵ *where the bodies had lain.*¹¹⁹⁶

*Having been baptized by Eudoxius, a bishop of the Arians, Valens persecuted our people.*¹¹⁹⁷

*Gratian, the son of Valentinian, was made emperor at Amiens in <Valentinian's> third year.*¹¹⁹⁸

*The martyrium of the Apostles at Constantinople was dedicated.*¹¹⁹⁹

*After Auxentius died late in life, Ambrose, elected bishop of Milan, converted all Italy to the true belief.*¹²⁰⁰ **/512/**

*Bishop Hilary of Poitiers died.*¹²⁰¹

4332

*Valens <ruled for> four years with Gratian and with Valentinian, the son of his brother Valentinian.*¹²⁰²

a joint reign, and followed Isidore in stating that Valentinian reigned for fourteen years: MacCarron, *Bede and Time* 104.

1194 Jerome, *Chron.* 244.14–15; Prosper, *Chronica* 1129, ed. Mommsen 457.

1195 Reading *platomam* with Mommsen, against Jones' *platoniam*. Both forms are found in late Antiquity, but only the former in medieval Latin.

1196 *Liber pontificalis* 39, ed. Duchesne 1.212. The basilica 'next to the theatre' is St Lawrence *a Damaso* in the Campus Martius, which Damasus built on the site of his family's house. The basilica in the catacombs is St Lawrence outside the Walls: it was in fact constructed by Constantine the Great (see above, *s.a.* 4290), but remodelled during the pontificate of Damasus: see Richard Krautheimer, *Rome, Profile of a City* (Princeton, NJ: Princeton University Press, 1980), 33–4.

1197 Jerome, *Chron.*, ed. Helm 245.4–5.

1198 *Ibid.* 245.6–7.

1199 *Ibid.* 245.24–5.

1200 *Ibid.* 247.16–18.

1201 *Ibid.* 245.13.

1202 Orosius 7.33.1, ed. Zangemeister 515.8–9; cf. Jerome, *Chron.*, ed. Helm 247.23–6.

*Valens issued a law that monks should serve in the army, and he ordered that those who refused should be cudgelled to death.*¹²⁰³

*The people of the Huns, who had long dwelt secluded in inaccessible mountains, struck by sudden madness, burst forth against the Goths, and scattering them hither and thither drove them from their ancient settlements. The fugitive Goths, having crossed the Danube, were received by Valens without <being made to> lay down their arms. Soon they were driven to rebel because of the greed of general Maximus, and having defeated Valens' army they spread abroad throughout Thrace, all the while perpetrating massacres, arson, and rapine.*¹²⁰⁴

4338

*Gratian <ruled> with his brother Valentinian for six years.*¹²⁰⁵

*Theodosius was made emperor by Gratian, and in many great battles defeated the greatest of those Scythian peoples, namely the Alans, the Huns, and the Goths.*¹²⁰⁶

Because they could not reach an agreement <with Theodosius>, the Arians relinquished the churches which they had held by force for forty years.¹²⁰⁷

A synod of 150 bishops under Bishop Damasus of Rome was held in the Augustan city¹²⁰⁸ against <the heresy of> Macedonius.¹²⁰⁹

*Theodosius made his son Arcadius his colleague as emperor.*¹²¹⁰

In the second year of Gratian's reign, and in his and Theodosius' sixth consulship,¹²¹¹ Theophilus wrote his paschal *computus*.¹²¹²

1203 Jerome, *Chron.* 248.3–4.

1204 Orosius 7.33.10–11, ed. Zangemeister 518.2–10; Jerome, *Chron.*, ed. Helm 248.23–5.

1205 Prosper 1167, ed. Becker and Kötter, 64.

1206 Marcellinus Comes, *Chronicon* 379, ed. T. Mommsen, MGH AA 11 (1894), 60.17–22; Orosius 7.34.5, ed. Zangemeister 522.7–523.2.

1207 Cf. Marcellinus 380, ed. Mommsen 61.3–6.

1208 I.e. Rome.

1209 Cf. Marcellinus Comes, *Chronicon* 381, ed. Th. Mommsen, MGH AA 11 (Berlin: Weidemann, 1894), 61.8–12.

1210 Orosius 7.34.9, ed. Zangemeister 524.2–5.

1211 *Recte* fifth. This error was detected by Roger Collins in his translation of Bede's Chronicle in the 'World's Classics' edition of *The Ecclesiastical History of the English People* (Oxford: Oxford University Press, 1994).

1212 Cf. ch. 44 above. This is the unique instance of Bede using the word *computus* to

*Maximus, a man of energy and integrity, who would have been worthy to be an emperor if he had not emerged as a usurper in defiance of his oath of allegiance, was invited to Britain and there virtually made emperor by the army. He crossed into Gaul, and there waylaid the Emperor Gratian at Lyon, and killed him, and expelled his brother Valentinian from Italy.*¹²¹³

The latter suffered a richly deserved penalty of exile with his mother Justina, because he had polluted himself /513/ with the Arian heresy and had tormented Ambrose, the most eminent citadel of the catholic faith, by a treacherous siege.¹²¹⁴ Not until the relics of the blessed martyrs Gervasius and Protasius, revealed by God, were brought forth incorrupt did he abandon the wicked deeds he had begun.¹²¹⁵

4349

*Theodosius, who had already ruled the East for six years while Gratian was alive, reigned for eleven years after his death.*¹²¹⁶

He received Valentinian, who had been expelled from Italy, kindly. They killed the usurper Maximus at the third milestone from Aquileia.¹²¹⁷

Since <Maximus> had despoiled Britain of almost all of its armed youth and large numbers of soldiers, who had followed in the footsteps of this tyrant to Gaul, seeing that these men would never return home, some wild peoples from across the sea – the Irish from the north-west and the Picts from the north – came to the island thus abandoned by its troops and by its defender, and after devastating and pillaging it, they oppressed it for many years.¹²¹⁸

Jerome, the translator of sacred history, wrote a book about the most

denote a book or text about calendar reckoning.

1213 Orosius 7.34.9–10, ed. Zangemeister 524.5–11; cf. Bede, *Historia ecclesiastica* 1.9, ed. Colgrave and Mynors 36; the information that Gratian was killed at Lyon is from Marcellinus 383, ed. Mommsen 61.26–7. Maximus was in fact officially recognized as emperor in the West from 383 to 388.

1214 Cf. Rufinus' trans. of Eusebius, *Historia ecclesiastica* 11.15, 1020.18–1021.15.

1215 Cf. Paulinus, *Vita Ambrosii* 14–15, ed. M. Pellegrino, *Verba seniorum* n.s. 1 (Rome: Studium, 1961).

1216 Orosius 7.35.1, ed. Zangemeister 525.1–4.

1217 Prosper, *Chronik* 1191, ed. Becker and Kötter 72.2–3; Orosius 7.34.10 (524.10–13).

1218 Gildas 13–14, ed. Mommsen 32.26–33.14; cf. Bede, *Historia ecclesiastica* 1.12, ed. Colgrave and Mynors 40.

*illustrious men of the Church, which he brought down to the fourteenth year of Theodosius' reign.*¹²¹⁹

4362

*Arcadius, the son of Theodosius <ruled> with his brother Honorius for thirteen years.*¹²²⁰

*By a divine revelation, the bodies of the holy prophets Habakkuk and Micah were discovered.*¹²²¹

*The Goths entered Italy and the Vandals and Alans entered the Gallic <provinces>.*¹²²²

*Bishop Innocent of Rome dedicated the basilica of the blessed martyrs Gervasius and Protasius, <built with> the testamentary bequest of a certain illustrious lady called Vestina.*¹²²³

*Pelagius the Briton impugned the grace of God.*¹²²⁴

4377

*Honorius <ruled> with Theodosius the Younger, the son of his brother, for fifteen years.*¹²²⁵

*Alaric, king of the Goths, captured Rome and burnt part of it*¹²²⁶ /514/ *on the ninth Kalends of September [24 August]*¹²²⁷ *in the 1164th year after its foundation.*¹²²⁸ *On the sixth day after entering it, he left the pillaged city.*¹²²⁹

The priest Lucian, to whom in the seventh year of the emperor Honorius God had revealed the place where the relics of the blessed protomartyr

1219 Marcellinus 392, ed. Mommsen 63.5–9.

1220 Isidore, *Chronica maiora* 365, ed. Martin 174 [= Mommsen 470].

1221 *Ibid.* 367 (471).

1222 *Ibid.* 368 (471).

1223 *Liber pontificalis* 42.3, ed. Duchesne 1.220.

1224 Isidore, *Chronica maiora* 374, ed. Martin 178–9; cf. Bede, *Historia ecclesiastica* 1.10, ed. Colgrave and Mynors 38.

1225 Isidore, *Chronica maiora* 371, ed. Martin 176–7.

1226 Marcellinus 410, ed. Mommsen 70.7–8.

1227 Prosper, *Chronik* 1240, ed. Becker and Kötter, 82.10 (see reading of MS *V* in apparatus).

1228 Orosius 7.40.1, ed. Zangemeister 548.14–15; cf. Bede, *Historia ecclesiastica* 1.11, ed. Colgrave and Mynors 40.

1229 Marcellinus 410, ed. Mommsen 70.9–10.

*Stephen and of Gamaliel and Nicodemus (about whom it is possible to read in the Gospel and in the Acts of the Apostles) were buried, wrote down his revelation in Greek for the whole Church.*¹²³⁰

The priest Avitus, a Spaniard by birth, translated this revelation into Latin, and, adding a letter of his own, sent it to the West by the priest Orosius. When he arrived in the Holy Land, whither he had been sent by Augustine to Jerome to learn about the nature of the soul, Orosius received relics of the blessed Stephen and returning home, was the first to bring them to the West.¹²³¹

The Britons, who could bear the harassment of the Irish and the Picts no longer, sent to Rome, and promising their submission, /515/ besought help against the enemy. Immediately, a legion was sent to them which struck down a great horde of barbarians and expelled others from the borders of Britain. When it was preparing to return home, <the legion> ordered the allies¹²³² to build a wall across the island between the two seas in order to keep the enemy out. As there was no master builder, this <wall> was built without craftsmen, and from turf rather than stone. Shortly after the Romans had departed, the former enemy came in ships and cut down whatever stood in their way, devouring it as if it were ripe grain. Their help having been sought again, the Romans swooped down and defeated the enemy, chasing them across the seas. With the Britons, they built <another> wall from sea to sea, not as before out of crumbly earth, but in solid stone, between the towns which were sited there for fear of the enemy. But along the southern coast, because they also feared an enemy approach there, they built towers at intervals overlooking the sea. Then they bade farewell to their allies, as if they were never to return again.¹²³³

Bishop Boniface of Rome built an oratory in the cemetery of Saint Felicitas, and decorated her sepulchre and that of Saint Silvanus.¹²³⁴

1230 Lucian's *Revelatio sancti Stephani* has been edited by E. Vanderlinden in *Revue des études byzantines*, 4 (1946): 190–217.

1231 Cf. Gennadius, *De viris illustribus* 40, ed. Richardson 76.13–15.

1232 I.e. the Britons.

1233 Gildas 15–18, ed. Mommsen 33.14–35.7; cf. Bede, *Historia ecclesiastica* 1.12, ed. Colgrave and Mynors 40–2.

1234 *Liber pontificalis* 44.6, ed. Duchesne 1.227.

*The priest Jerome died at the age of ninety-one on the second Kalends of October [30 September] in the twelfth year of Honorius.*¹²³⁵ /516/

4403

*Theodosius the Younger, the son of Arcadius, <ruled for> twenty-six years.*¹²³⁶

*Valentinian the Younger, son of Constantius, was made emperor at Ravenna.*¹²³⁷

*His mother <Galla> Placidia was called Augusta.*¹²³⁸

*The ferocious race of the Vandals, the Alans, and the Goths, crossing from Spain into Africa, ravaged everything with fire, sword, rapine, and the Arian heresy.*¹²³⁹ But the blessed Bishop Augustine of Hippo, the foremost doctor of all the churches, lest he see the ruin of his city, went to the Lord on the fifth kalends of September [28 August] in the third month of the siege, having lived for seventy-six years and having completed nearly forty years in holy orders and as a bishop.¹²⁴⁰

At this time, the Vandals, having captured Carthage, annihilated Sicily as well. Paschasius bishop of Lilybaeum recounted its capture in the letter which he sent to Pope Leo about the calculation of Easter.¹²⁴¹

In the eighth year of Theodosius, *Palladius was ordained and sent by Pope Celestine to the Irish who believed in Christ, to be their first bishop.*¹²⁴²

When word got around that the Roman army had left Britain, *the Irish and Picts came back again with no intention of returning home, and captured*

1235 Prosper, *Chronik* 1274, ed. Becker and Kötter, 92.10–11.

1236 Isidore, *Chronica maiora* 376, ed. Martin 180–1.

1237 Marcellinus 425, ed. Mommsen 76.22–3, 419 (74.5–7).

1238 *Ibid.* 424 (76.11–12).

1239 Isidore, *Chronica maiora* 377, ed. Martin 180–1.

1240 Possidius, *Vita Augustini* 28.4, ed. M. Pellegrino, *Verba seniorum* 4 (Alba: Edizioni Paolini, 1955), 148.26–7, 29.1 (156.11–12 and 158.3–4); the date of Augustine's death is supplied from Prosper, *Chronik* 1304, ed. Becker and Kötter, 104.4.

1241 Ed. Krusch, *Studien I* 247; see Introduction, p. 34. Paschasius' letter in fact only alludes in general terms to 'bitter captivity'; Bede likely took his information from annals in his Dionysian cycles, which probably came from Vivarium: see Luciana Cuppo Csaki, 'Roma magistra historiae: the year 680 as *caput saeculi* in Cas. 641', 125.

1242 Prosper, *Chronik* 1307, ed. Becker and Kötter, 104.11–12; cf. Bede, *Historia ecclesiastica* 1.13, ed. Colgrave and Mynors 46.

the whole island *from its indigenous inhabitants, from the north right up to the wall*. With the guardians of the wall defeated, captive, or in flight and <the wall> itself broken, the savage brigands without delay prowled through <the land>. In the twenty-third year of the reign of the Emperor Theodosius, a letter was sent bearing <the Britons'> tears and groans to the commander of the Romans, Aetius thrice consul, seeking /517/ help, but without success. *Meanwhile a terrible and very notable famine* attacked the fugitives, forcing some *to surrender* to the enemy, but others to fight back vigorously *from the mountains, caves, and defiles*, and to *inflict defeat* upon the enemy. The Irish *returned home, though shortly to come back again*. The Picts took hold of the uttermost part of the island¹²⁴³ *for the first time* and inhabited it *from that time forward*. The famine mentioned earlier was followed by a great abundance of crops, the abundance by indulgence and carelessness, the carelessness by a very severe epidemic, and soon the fiercer plague of a new enemy, namely the Angles. By unanimous agreement with their king Vortigern, <the Britons> had chosen to invite them in as defenders of <their> homeland; but soon they realized that those they had chosen were assailants and conquerors.¹²⁴⁴

Sixtus the bishop of Rome *built the basilica of Saint Mary the mother of the Lord, which was called by the ancients <the basilica> of Liberius*.¹²⁴⁵

Eudoxia the wife of the Emperor Theodosius returned from Jerusalem, bringing with her the relics of the most blessed Stephen the first martyr; these were venerated in the basilica of Saint Lawrence, where they had been placed.¹²⁴⁶

The brothers Bleda and Attila, kings of many peoples, depopulated Illyria and Thrace.¹²⁴⁷

4410

Marcian and Valentinian <ruled for> seven years.

The people of the Angles or of the Saxons were conveyed to Britain *in three*

1243 I.e. the northern part.

1244 Gildas 19–22, ed. Mommsen 35.8–38.11; cf. Bede, *Historia ecclesiastica* 1.12, ed. Colgrave and Mynors 42–4.

1245 *Liber pontificalis* 46.3, ed. Duchesne 1.232.

1246 Marcellinus 439, ed. Mommsen 80.4–8.

1247 *Ibid.* 442 (80.4–8).

longships. When their voyage turned out to be a success, news of them was carried back home. A stronger army set out, which, joined to the previous one, first of all drove away the enemy they targeted.¹²⁴⁸ Then they turned their arms on their allies, and subjugated almost the entire island by fire or the sword, from the eastern shore as far as the western one, /518/ their excuse being that the Britons had given them a less than adequate stipend for their military services.¹²⁴⁹

*John the Baptist revealed <the location of> his head, next to a former dwelling of king Herod, to two eastern monks who had come to Jerusalem to pray.*¹²⁵⁰ It was then taken to the city of Emesa in Phoenicia and venerated with appropriate honour.

The Pelagian heresy disturbed the faith of the Britons. Having sought help from the bishops of Gaul, they received Bishop Germanus of Auxerre, and Lupus, equally by apostolic grace bishop of Trier, as the defenders of the faith. The bishops strengthened the faith by the word of truth and at the same time by miraculous signs. Having *gathered some men* they stemmed *the campaign of the Saxons and Picts against the Britons* by divine power. With Germanus himself as their general, the brutal enemy was put to flight, not by the sound of the trumpet, but by the shout of 'Alleluia' raised to the stars by the whole army. <Germanus> then went to Ravenna, where after being received with the utmost reverence by Valentinian <III> and <Galla> Placidia, he migrated to Christ. His body was brought to Auxerre accompanied by a guard of honour, and by the working of miracles.¹²⁵¹ The patrician *Aetius, the great salvation of the western empire and once the terror of King Attila*, was killed by *Valentinian*; with him *fell the western realm, and to this day it has not had the strength to be revived.*¹²⁵²

1248 I.e. the Picts and Irish.

1249 Gildas 23, ed. Mommsen 38.12–39.9; cf. Bede, *Historia ecclesiastica* 1.15, ed. Colgrave and Mynors 48–52. For discussion of Bede's dating of the *Adventus Saxonum*, see Harrison, *Framework* 124–5.

1250 Marcellinus 453.1–2, ed. Mommsen 84.21–85.11. Cf. above *s.a.* 4316.

1251 Constantius, *Vita Germani* 12, ed. W. Levison, MGH Script. rer. mer. 7 (1920), 14–18 (260–5); 35 (276–7); 42 (281); 44–6 (281–2); cf. Bede, *Historia ecclesiastica* 1.17, ed. Colgrave and Mynors 54–8, and 20–1 (62–6).

1252 Marcellinus 454.2, ed. Mommsen 86.6–10; cf. Bede, *Historia ecclesiastica* 1.21 (64–6).

4427

Leo <ruled for> seventeen years. /519/

He sent identical letters to all the bishops throughout the world in support of the Chalcedonian Tome, asking them to write back to him what they thought of this Tome. He received concordant replies from all of them concerning the true Incarnation of Christ; it was as if all had been written at one time and at one dictation.¹²⁵³

Theodoret, bishop of the city called Cyrrhus, after its founder the Persian king Cyrus, wrote about the true Incarnation of the Lord and Saviour against Eutyches and Bishop Dioscorus of Alexandria, who denied the human flesh in Christ. He also wrote an Ecclesiastical History from the point where Eusebius' work breaks off down to his own time; which is to say down to the reign of Leo, under whom he died.¹²⁵⁴

Victorius, at the command of <Pope> Hilarus, wrote a paschal cycle of 532 years.¹²⁵⁵

4444

Zeno <ruled for> seventeen years.

The body of the Apostle Barnabas and the Gospel of Matthew written by his own hand were found through <Matthew's> own revelation.¹²⁵⁶

Odoacer king of the Goths gained control of Rome, which their kings henceforward held for a long time.¹²⁵⁷ After the death of Theodoric the son of Triarius, another Theodoric, surnamed Valamer, ruled as king of the Goths, and depopulated both Macedonia and Thessaly.¹²⁵⁸ Having put various parts of the royal city <of Constantinople> to the torch, he also invaded and occupied Italy.¹²⁵⁹

Huneric the Arian king of the Vandals in Africa having driven into exile or flight more than 334 catholic bishops, closed their churches and afflicted

1253 Marcellinus 458, ed. Mommsen 87.9–17.

1254 Gennadius, *De viris illustribus* 89, ed. Richardson, 92.21–8.

1255 *Ibid.* 88 (107.25–108.7); cf. ch. 51 above.

1256 Isidore, *Chronica maiora* 388, ed. Martin 186–7.

1257 Marcellinus 476.2, ed. Mommsen 91.21–6.

1258 *Ibid.* 481.1–482.2 (92.14–18, 24–5).

1259 *Ibid.* 487–9 (93.18–21, 25–30).

*the populace with various torments. Although he cut off the hands and cut out the tongues of countless people, he still could not eliminate the expression of the catholic confession.*¹²⁶⁰ /520/

*Under the leadership of Ambrosius Aurelianus – a man of modest means, who chanced to be the only one of the Romans who survived the slaughter <inflicted> by the Saxons in which his parents, who had worn the purple, had been killed – goaded the victors into battle and defeated them. And from then on, first one side then the other had the palm, until the intruders, being stronger, gained possession of the whole island for a long time.*¹²⁶¹

4472

Anastasius <ruled for> twenty-eight years.

*Trasamund the king of the Vandals closed the catholic churches and sent 220 bishops into exile in Sardinia.*¹²⁶²

Pope Symmachus, amongst the many church buildings which he built from the ground up or restored, *constructed a dwelling for the poor, dedicated to Saints Peter, Paul, and Lawrence. And every year he supplied money and clothes to the bishops who were in exile throughout Africa or in Sardinia.*¹²⁶³

*Anastasius, who supported the heresy of Eutyches, harassed the catholics, and perished by a divine thunderbolt.*¹²⁶⁴

4480

Justin the Elder <ruled for> eight years.

*John, bishop of the Roman church, when he came to Constantinople, was met by a great crowd at the gate called 'Golden', where, in the sight of all, he restored the sight of a blind man who besought him <to do this>.*¹²⁶⁵

When <John> arrived at Ravenna on his return journey, Theodoric killed him and his companions by imprisoning them in a dungeon, out of spite

1260 Cf. *ibid.* 484.2–4 (92.3–93.9).

1261 Gildas 25–6, ed. Mommsen 40.1–41.14; cf. Bede, *Historia ecclesiastica* 1.16, ed. Colgrave and Mynors 52–4.

1262 Isidore, *Chronica maiora* 390, ed. Martin 188–9.

1263 *Liber pontificalis* 53.10–11, ed. Duchesne 1.263.

1264 *Ibid.* 54.5 (720.4).

1265 Gregory, *Dialogi* 3.2.3, ed. A. de Vogüé, SC 251, 260, 265 (Paris: Éd. du Cerf, 1978–1980), 2.268.22–6.

that Justin, the defender of catholic piety, had received him with so much honour.¹²⁶⁶ In that year, the consulship of Probus the Younger, he also killed the patrician Symmachus at Ravenna, and in the following year he himself died suddenly, and was succeeded in the kingship by his grandson Athalaric.¹²⁶⁷

Hilderic king of the Vandals *ordered the bishops to return from exile and /521/ the churches* to be restored, after seventy-four years of heretical profanation.¹²⁶⁸

Abbot Benedict shone forth in the glory of his miracles, which the blessed Pope Gregory wrote down in his book of *Dialogues*.¹²⁶⁹

4518

Justinian, Justin's nephew by a sister, <ruled for> thirty-eight years.

*The patrician Belisarius, sent to Africa by Justinian, exterminated the Vandals.*¹²⁷⁰ *Carthage was recovered in the ninety-sixth year after its loss. The Vandals were defeated and expelled, and their king Gelimer was sent as a captive to Constantinople.*¹²⁷¹

*The body of St Anthony the monk, discovered by divine revelation, was brought to Alexandria, and buried in the church of the blessed John the Baptist.*¹²⁷²

Dionysius wrote Paschal tables beginning in the 532nd year from the Lord's Incarnation, which is the 248th year of Diocletian.¹²⁷³

*This was after the consulship of Lampadius and Orestes, in which year the Code of Justinian was promulgated to the world.*¹²⁷⁴

1266 *Liber pontificalis* 55.6, ed. Duchesne 1.276.

1267 Marius Aventicensis, *Chronica*, anno 525, 526, ed. Th. Mommsen, MGH AA 11 (1894), 235; *Liber pontificalis* 55.6, ed. Duchesne 1.276.

1268 Isidore, *Chronica maiora* 396, ed. Martin 191–2.

1269 *Dialogi*, book 2.

1270 Isidore, *Chronica maiora* 398–9, ed. Martin 192–5.

1271 Marcellinus 534, ed. Mommsen 103.33–104.3.

1272 Isidore, *Chronica maiora* 400, ed. Martin 194–5.

1273 Counting from his accession in AD 284. Cf. ch. 47. This is one of two occasions in the Chronicle where Bede mentions the *annus Domini*, the other being *s.a.* 4670.

1274 Marcellinus 531, ed. Mommsen 103.12. Lampadius and Orosius were consuls in 530.

Victor bishop of Capua also wrote a book about Easter, criticizing the errors of Victorius.¹²⁷⁵

4529

Justin the younger <ruled> for eleven years.

*The patrician Narses overcame and killed Totila king of the Goths in Italy.*¹²⁷⁶

Then, due to the malice of the Romans, on whose behalf he had laboured long against the Goths, <Narses> was accused before Justin and his wife Sophia of claiming Italy in subjection as his reward. He withdrew to Naples in Campania and *wrote to the people of the Lombards telling them that they should come and possess Italy.*¹²⁷⁷ /522/

*John bishop of the Roman Church completed and dedicated the church of the Apostles Philip and James, which his predecessor Pelagius had begun.*¹²⁷⁸

4536

Tiberius Constantine <ruled for> seven years.

Gregory, then *apocrisarius* in Constantinople and later bishop of Rome, wrote his commentaries on Job. He also showed, in the presence of the emperor Tiberius, that Bishop Eutychius of Constantinople had erred concerning our faith in the Resurrection, so that the emperor himself ordered that *the book <Eutychius> had written about the Resurrection be burned, refuting it with his own and with catholic arguments.* For Eutychius had taught that *our bodies will be impalpable in the glory of resurrection and will be more subtle than winds and air;* contrary to <what> the Lord <said>: *Touch me and see, because a spirit does not have flesh and bones in the way that you see I have.*¹²⁷⁹

The plundering people of the Lombards, accompanied by famine and

1275 See ch. 51 above.

1276 Isidore, *Chronica maiora* 402, ed. Martin 196–7; *Liber pontificalis* 61.8, ed. Duchesne 1.299.

1277 *Liber pontificalis* 63.3, ed. Duchesne 1.305.

1278 *Ibid.* 62.3 (1.303) and 63.1 (1.305).

1279 Gregory, *Moralia in Job* 14.56.74, ed. M. Adriaen, CCSL 143A (1979), 745.70.85; the biblical quotation is from Luke 24:39.

plague, seized hold of all Italy, and besieged the city of Rome; at this time King Alboin was pre-eminent.¹²⁸⁰

4557

Maurice <ruled for> twenty-one years.

Herminigild, son of Leuvigild the king of the Goths, because his profession of the catholic faith was proof against all persuasion, was deprived of his kingdom by his Arian father, and was thrown into prison in chains, until he was struck on the head with an axe at the end of the holy night of Easter Sunday, and exchanged an earthly kingdom for the heavenly one, which he entered as a king and martyr. His brother Reccared soon after took over the kingdom, following their father, and converted to the catholic faith all of the Gothic people over whom he ruled at the urging of Leander bishop of Seville, who had also taught Herminigild.¹²⁸¹ /523/

In the thirteenth year of the reign of Maurice and the thirteenth indiction, Gregory, the bishop of Rome and outstanding teacher, assembled a synod of twenty-four bishops at the tomb of the blessed Apostle Peter, to make decisions concerning the needs of the Church.¹²⁸²

He sent to Britain *Augustine, Mellitus, and John, and many others*, accompanied by *God-fearing monks, to convert the English to Christ*.¹²⁸³ Aethelberht was soon converted to the grace of Christ, together with the people of the Cantuarii over whom he ruled, and those of neighbouring kingdoms. <Gregory> gave him Augustine to be his bishop and teacher, as well as other holy priests to become bishops.¹²⁸⁴ However, the people of the

1280 *Liber pontificalis* 64–5, ed. Duchesne 1.308.9; Marius Aventicensis 569, ed. Mommsen 238.

1281 Gregory, *Dialogi* 3.31, ed. de Vogüé 2.384–90.

1282 Gregory, *Registrum* 5.57a, ed. P. Ewald and L.M. Hartman, MGH Ep. 1 (1891), 362–6.

1283 *Liber pontificalis* 66.3, ed. Duchesne 1.312; cf. Bede, *Historia ecclesiastica* 1.23, ed. Colgrave and Mynors 68. In *Historia ecclesiastica* Bede dates the Roman mission to the fourteenth year of Maurice's reign, i.e. AD 598. This has been used as evidence that in 725 Bede did not have the letters copied in Rome by Nothelm. However, as the final paragraph of this year's chronicle entry indicates, Bede already had the letter on the structuring of the English church. Also, Bede does not state explicitly that the year of the Roman synod was the same as the year when the missionaries were sent to England: see Joanna Story, 'Bede, Willibrord and the Letters of Pope Honorius I on the Genesis of the Archbishopric of York', *English Historical Review*, 127 (2012): 789–90.

1284 Cf. Bede, *Historia ecclesiastica* 1.23, ed. Colgrave and Mynors 114–16.

Angles north of the river Humber, under Kings Aelle and Aethelfrith, did not at this time hear the Word of life.¹²⁸⁵

Gregory, in the eighteenth year of Maurice and the fourth indiction, decreed in a letter to Augustine that the bishops of London and York, having received the pallium from the apostolic see, should be metropolitan bishops.¹²⁸⁶

4565

Phocas <ruled for> eight years.

In his second year and the eighth indiction, Pope Gregory went to the Lord.

At the request of Pope Boniface, <Phocas> proclaimed that the see of the Roman and apostolic Church *was the head of all other churches, because the Church of Constantinople wrote that it was the first of churches*.¹²⁸⁷

The same emperor, <responding to> another request of Pope Boniface, ordered that a church should be constructed in the old temple called the Pantheon, with the stains of idolatry removed, and dedicated *to the blessed and ever virgin Mary and all the martyrs*;¹²⁸⁸ so that where once the worship, not of all the gods but rather of all the demons had taken place, there should thenceforth be a memorial to all the saints. /524/

The Persians, waging a *terrible war against the Empire*, seized many *Roman provinces*, and even took *Jerusalem itself*,¹²⁸⁹ destroying churches and profaning the holy furnishings both of the places of the saints and of those of the community. They carried them off, and also stole the standard of the Lord's Cross.

4591

Heraclius <ruled for> twenty-six years.¹²⁹⁰

1285 Cf. *ibid.* 2.1 (134), 2.2 (140–2).

1286 Cf. *ibid.* 1.29 (104–6).

1287 *Liber pontificalis* 68.1, ed. Duchesne 1.316.

1288 *Ibid.* 69 (1.317); cf. Bede, *Historia ecclesiastica* 2.4, ed. Colgrave and Mynors 148.

1289 Isidore, *Chronica maiora* 413, ed. Martin 202–3.

1290 In *On Times* 22 (ed. Jones 611.69), Bede says that Heraclius reigned for thirty-six years. MacCarron, *Bede and Time* 104 and Appendix 3, argues that this makes his total number of years in the Sixth Age too long by twelve years; moreover, Bede did not rectify the problem by reducing Heraclius' reign by ten years, as *The Reckoning of Time* total is still

Anastasius the Persian monk suffered a noble martyrdom for Christ.¹²⁹¹ Born in Persia, he learned the magic arts from his father when a boy, but when he heard the name of Christ from Christian captives, he soon converted to Him with all his heart. Leaving Persia, he came to Chalcedon and then Hierapolis in search of Christ, and finally reached Jerusalem, where he received the grace of baptism, and entered the monastery of abbot Anastasius, at the fourth milestone from the city. There he lived under a monastic rule (*regulariter*) for seven years, until he came for the sake of prayer to Caesarea in Palestine. Captured by the Persians, he was kept in prison by the sentence of Marzban the judge, whipped frequently and held in chains for a long time. Then he was sent back to Persia, to their king Chosroes. Over a period of time, he was flogged almost to death by them three times, and suspended by one hand for three hours a day, before he was beheaded, along with seventy others, and his martyrdom was completed. Shortly after, a man possessed by a demon was cured by putting on his tunic. He was amongst those who were survivors when the Emperor Heraclius defeated the Persians with his army and brought the Christian captives back rejoicing. The relics of the blessed martyr Anastasius were first of all venerated at his own monastery, and then after they had been brought to Rome, in the monastery of the blessed Apostle Paul, called 'By the Salvian Waters'. /525/

In the sixteenth year of Heraclius' reign and the fifteenth indiction, and more or less 180 years after the arrival of the English in Britain, Edwin, the most excellent king of the English living across the Humber in north Britain, received with his people the Word of salvation through the preaching of Bishop Paulinus, whom the venerable archbishop Justus had sent from Kent. This was in the eleventh year of <Edwin's> reign. He gave Paulinus the episcopal see at York.¹²⁹² As an omen of the coming of the faith

three years out. However, the manuscripts of *On Times* vary considerably in the length of Heraclius's reign: see Kendall and Wallis' translation of *On Times*, 130 n. 302.

1291 Bede states in *Historia ecclesiastica* 5.24 (ed. Colgrave and Mynors 568) that he had revised a poorly translated Greek *vita* of Anastasius. C. Virgilio Franklin has identified this revision of the First Translation as *BHL* (i.e. *Bibliotheca Hagiographica Latina*) 408(p), ed. in *The Latin Dossier of Anastasius the Persian* (Toronto: Pontifical Institute of Mediaeval Studies, 2004), 362–427, with discussion in ch. 6. This develops arguments originally set out in C. Virgilio Franklin and Paul Meyvaert, 'Has Bede's Version of the "Passio S. Anastasii" come down to us in "BHL" 408?' *Analecta Bollandiana*, 100 (1982): 373–400.

1292 Cf. Bede, *Historia Ecclesiastica* 2.14, ed. Colgrave and Mynors 186–8. The elaborate dating formula, with its multiple synchronizations, is highly unusual and paralleled only by

and of the heavenly kingdom, the power of this king's earthly kingdom was increased, so that all the confines of Britain, wherever either the English or the Britons dwelt, were under his authority. None of the English before him <had accomplished this>.¹²⁹³ At this time Pope Honorius condemned in a letter the Quartodeciman error concerning the observance of Easter, which had appeared amongst the Irish. Also John, who came after <Honorius> successor Severinus, while he was still pope-elect, wrote to them about this same problem of Easter and at the same time about the Pelagian heresy, which was reviving amongst them.¹²⁹⁴

4593

Heracleonas <ruled> with his mother for two years.

Cyrus of Alexandria, with Sergius and Pyrrhus, bishop of the royal city [of Constantinople], instigators of the Acephalite heresy, taught that there was one operation of divinity and humanity in Christ and one will.¹²⁹⁵ Of these <two>, *Pyrrhus*, coming to Rome *from Africa at this time*, namely <the time> of Pope Theodore, *displayed* (as it later became evident) a *false* penitence *in the presence of* the pope and *all the clergy and people* when he presented a declaration, signed by himself, in which he condemned everything that he or his predecessors had either by word or deed done against the catholic faith. Hence he was graciously received by pope

Bede's record of the birth of Christ: MacCarron, *Bede and Time* 108. Bede thus dates the conversion to 627 (indictional year 15). Heraclius came to the throne on 5 October 610 and the indictions change in September: see Story, 'Bede, Willibrord' 793.

1293 Cf. Bede, *Historia Ecclesiastica* 2.9, ed. Colgrave and Mynors 162.

1294 Cf. *ibid.* 2.19 (198–202). See Story, 'Bede, Willibrord' 792–3; Herren, 'The "Papal Letters to the Irish" cited by Bede'. Though Honorius definitely accused the Irish of Quartodecimanism, an accusation frequently repeated by Stephen of Ripon (Eddius Stephanus, *Vita sancti Wilfridi*, ed. B. Colgrave (Cambridge: Cambridge University Press, 1927), chs 12, 14, 15), Bede realized that this was not the case, for in *Historia ecclesiastica*, he edits Pope Honorius' letter to excise the reference to Quartodecimanism; cf. Thacker, 'Bede and the Irish' 38–9. The other heresy associated with the Insular Paschal observance was Pelagianism: see Ó Cróinín, "'New Heresy for Old'". However, Bede seems to associate Pelagianism with celebrating Easter in a lunation which has reached its fourteenth day before the equinox, which was the case with the Victorian tables: cf. ch. 6 and ch. 51, and Ceolfrith's letter to King Nechtan in *Historia Ecclesiastica* 5.21, ed. Colgrave and Mynors 544–5: see Masako Ohashi, 'The "real" addressee(s) of Bede's Letter to Wicthed', in *Early Medieval Ireland and Europe: A Festschrift for Dáibhí Ó Cróinín*, ed. Pádraic Moran and Immo Warntjes (Turnhout: Brepols, 2015), 129–30.

1295 Cf. *Liber pontificalis* 76.3, ed. Duchesne 1.336–7.

Theodore, as if he really were /526/ the bishop of the royal city. But when he returned home and again took up his wonted error, the aforementioned *Pope Theodore*, having called together all *priests and clergy in the church of the blessed Peter, Prince of the Apostles, condemned him under the bond of anathema*.¹²⁹⁶

4594

Constantine the son of Heraclius <ruled for> six months.

Paul the successor of Pyrrhus, tormented the catholics not only by his insane teaching, as his predecessors had done, but by open persecution, afflicting the envoys of the holy Roman Church, who had been sent to correct him, with imprisonment, exiling some and flogging others. He also *overturned and destroyed their altar, consecrated in the ancient oratory of the house of Placidia, forbidding them to celebrate mass there*.¹²⁹⁷ Thus he, like his predecessors, was *condemned by the apostolic see by a just sentence of deposition*.¹²⁹⁸

4622

Constantine [i.e. Constans II] the son of Constantine <ruled for> twenty-eight years.

Deceived by Paul in the way that his grandfather Heraclius had been deceived by Sergius, bishop of that same royal city, he promulgated an edict against *the catholic faith*, in which it was <said> that it should be confessed that *neither one nor two wills or operations in Christ should be specified*, as if Christ could be believed neither to have willed nor to have acted.¹²⁹⁹ In consequence Pope Martin convened a synod in Rome of 105 bishops, and under anathema condemned the aforementioned Cyrus, Sergius, Pyrrhus, and Paul as heretics.¹³⁰⁰

Following this, *the exarch Theodore, sent by the emperor, carried off Pope Martin from the Constantinian basilica and sent him to Constantinople*. Afterwards <Martin> was exiled to Cherson, where he ended his life,

1296 *Ibid.* 76.3 (1.337).

1297 *Ibid.* 76.1–2 (1.336).

1298 *Ibid.* 76.6 (1.338).

1299 *Ibid.* 76.1 (1.336).

1300 *Ibid.* 76.3 (1.336–7).

refulgent in many signs of miracles in that place right up to today.¹³⁰¹ The above-mentioned synod was held in the month of October, in the ninth year of the Emperor Constantine, in the eighth indiction.

When Pope Vitalian had just been consecrated, the Emperor Constantine /527/ sent to the blessed Apostle Peter a golden Gospel book, decorated all around the edge with white gems of great size.¹³⁰² Some years later, in the sixth indiction, he came to Rome and laid on <St Peter's> altar a cloak made of cloth of gold, while the entire army entered the church carrying wax candles.¹³⁰³

In the following year there was a solar eclipse, which is still remembered in our days, around the fifth hour on the fifth Nones of May [3 May].¹³⁰⁴

Archbishop Theodore and Abbot Hadrian, a man equally learned, were sent to Britain by Pope Vitalian, and made many of the churches of the English fertile with the fruit of ecclesiastical teaching.¹³⁰⁵

Constantine, after many and unprecedented raids had been made on the provinces, was killed in his bath in the twelfth indiction. Not long after this, Pope Vitalian also sought the heavenly kingdom.¹³⁰⁶

4639

Constantine, the son of the previous king Constantine <ruled for> seventeen years.

*The Saracens invaded Sicily, and then returned to Alexandria, taking with them much booty.*¹³⁰⁷

Pope Agatho, at the request of the most pious rulers Constantine, Heraclius, and Tiberius, sent envoys to the royal city [Constantinople], amongst whom was John, then a deacon, but not long after bishop of Rome, to bring about the unification of the holy churches of God. They were received very graciously by Constantine, the most reverend defender of the catholic faith,

1301 *Ibid.* 76.8 (1.338).

1302 *Ibid.* 78.1 (1.343).

1303 *Ibid.* 78.2–3 (1.343).

1304 Cf. Bede, *Historia ecclesiastica* 3.27, ed. Colgrave and Mynors 310. This eclipse actually took place on 1 May, 664: see Commentary on ch. 44.

1305 *Ibid.* 4.1–2 (328–36).

1306 *Liber pontificalis* 78.4, ed. Dushesne, 1.344.

1307 *Ibid.* 79.3 (1.346).

and were ordered *to lay aside* all *philosophical* debates in order to search for the true faith in *peaceful* discussion, and all the works of the Fathers that they asked for were given to them from the library of Constantinople. One hundred and fifty bishops were present there, under the presidency of the Patriarchs George of the royal city and Macarius of Antioch. And they were convinced. They added that those who asserted that there was *one will and one operation* /527/ *in Christ* falsified very many statements of the catholic Fathers. With the conflict settled, George was corrected, and *Macarius, together with his followers and their predecessors* Cyrus, Sergius, Honorius, Pyrrhus, Paul, and Peter, were anathematized. *In* <Macarius> *place Theophanius, an abbot from Sicily, was made bishop of Antioch. Such great gratitude* accompanied the envoys of the catholic peace, that John bishop of Porta, who was one of them, *publicly celebrated mass in Latin in the presence of the emperor and the patriarch in the church of the Holy Wisdom on the Sunday of the octave of Easter.*¹³⁰⁸

This was the *sixth universal synod held in Constantinople*¹³⁰⁹ and *written up in Greek* in the time of Pope Agatho, enforced and presided over by the most pious prince Constantine in his *palace*, together with *the legates of the Apostolic See and with 150 bishops* taking part. The first universal synod was convened in Nicaea against Arius, with 318 bishops, in the time of Pope Julius and under the Emperor Constantine. The second was in Constantinople with 150 bishops, against Macedonius and Eudoxius in the time of Pope Damasus and the Emperor Gratian, when Nectarius was ordained bishop of Constantinople. The third was held in Ephesus, with 200 bishops present, against Nestorius, the bishop of the imperial city, under the Emperor Theodosius the Great and Pope Celestine. The fourth was in Chalcedon, with 630 bishops under Pope Leo and in the time of the Emperor Marcian, against Eutyches the leader of the most villainous monks. The fifth was also in Constantinople in the time of Pope Vigilius

1308 *Ibid.* 81.3–4 (1.350–1), 6 (1.351), 12 (1.353–4), 14–15 (1.354); the reference to the condemnation of Honorius is from 82.2 (1.359). Bede's equation of 'philosophy' with heresy is particularly prominent in his commentary on Proverbs: see Faith Wallis, 'Rectores at Risk: the Heresy of Intellectuals in Bede's *Commentary on Proverbs*', in *Cities, Saints and Communities in Early Medieval Europe: Essays in Honour of Alan T. Thacker*, ed. Scott DeGregorio and Paul Kershaw (Turnhout: Brepols, 2020), 129–43.

1309 *Liber pontificalis* 82.2, ed. Duschesne (1.359). 82.2 (1.359).

and under the Emperor Justinian, against Theodore and all heretics. The sixth is the one of which we have just spoken.¹³¹⁰

The holy and perpetual virgin of Christ Aethelthryth, daughter of Anna king of the English, was first married to a very eminent man, and afterwards /529/ to King Egfrid. After she had preserved the marriage bed uncorrupted for twelve years, she who was once a queen became a consecrated virgin by taking the holy veil. Immediately she also became a mother of virgins and the pious nurse of holy women, and received the place called Ely in order to build a monastery. Her dead body, discovered uncorrupted along with the garment in which it had been wrapped, having been buried for sixteen years, also attests to her enduring merits.¹³¹¹

4649

Justinian the Younger, the son of Constantine, <ruled for> ten years.

He *made a ten-year peace on land and sea with the Saracens. But the province of Africa was brought under the control of the Roman empire. It had been occupied by the Saracens,*¹³¹² and Carthage itself was captured by them and destroyed.

<Justinian>, sending out his *protospatharius* Zacharias, ordered that the Roman bishop Sergius, of blessed memory, be deported to Constantinople because he was unwilling to approve of and subscribe to the errant synod that <Justinian> was holding in Constantinople. But the militia of the city of Ravenna and of the surrounding regions forestalled the wicked orders of the emperor and drove Zacharias from Rome with insults and injuries.¹³¹³

The same Pope Sergius ordained the venerable man Willibrord, called Clement, as bishop of the Frisian people. Even now, as a pilgrim for the eternal homeland (for he is one of the people of the English from Britain) he achieves there every day innumerable daily losses for the devil and gains for the Christian faith.¹³¹⁴

Because he was guilty of treason, Justinian was deprived of the glory of his kingdom, and withdrew to Pontus as an exile.

1310 Cf. Bede, *Historia ecclesiastica* 4.17, ed. Colgrave and Mynors 386.

1311 Cf. *ibid.* 4.19–20 (390–400).

1312 *Liber pontificalis* 84.3, ed. Duchesne 1.366.

1313 *Ibid.* 86.6–8 (1.372–4).

1314 Cf. Bede, *Historia ecclesiastica* 5.11, ed. Colgrave and Mynors 584–6.

4652

Leo <ruled for> three years.

*By divine revelation, Pope Sergius found a silver chest in the sanctuary of the blessed Apostle Peter, where it had long lain hidden in a very dark corner. In it was a cross adorned with diverse precious stones. /530/ When he had removed the four metal plates in which the gems were embedded, he discovered inside the cross a piece of the salvific Cross of the Lord, of marvellous size. From that time forward, each year on the day of the Exaltation <of the Cross> this <relic> is kissed and adored by all the people in the basilica of the Saviour, known as the Constantinian <basilica>.*¹³¹⁵

The most reverend Bishop Cuthbert, who from being an anchorite became bishop of the church of Lindisfarne in Britain, led from infancy to old age a life justly celebrated for its miraculous signs. When his body had remained buried but uncorrupted for eleven years, it was thereafter discovered, together with the clothes by which he was covered, as if he had just died, as we have recounted in the book of his life and miracles recently composed in prose, and some years ago in hexameter verse.¹³¹⁶

4659

Tiberius <ruled for> seven years.

*A synod held at Aquileia out of ignorance of the faith was reluctant to accept the fifth universal council; but instructed by the salutary warnings of the blessed Pope Sergius, it consented to endorse it along with the other churches of Christ.*¹³¹⁷

Gisulf, the duke of the Lombards of Benevento, ravaged Campania with fire and sword and the <taking of> captives. Because there was no one who could resist his advance, the apostolic Pope John, who had succeeded

1315 *Liber pontificalis* 86.10, ed. Duchesne 1.374.

1316 Cf. Bede, *Historia ecclesiastica* 4.27–32, ed. Colgrave and Mynors 434–48. The reign of Leo is the last one recorded in the *On Times* Chronicle, and there is no mention of Cuthbert there. This is a unique instance in *Reckoning of Time* where Bede refers to his own writings: MacCarron, *Bede and Time* 109. Bede's prose life of Cuthbert is edited and translated by Bertram Colgrave, *Two Lives of St. Cuthbert: A Life by an Anonymous Monk of Lindisfarne and Bede's Prose Life* (Oxford: Clarendon Press, 1940). The verse life has been edited and translated by Lapidge, *Bede's Latin Poetry*, 181–313.

1317 *Liber pontificalis* 86.15, ed. Duchesne 1.376.

Sergius, having sent priests and very many *gifts to him, ransomed all of the captives and made the enemy return home.*¹³¹⁸

He was succeeded by another *John*, who amongst many notable deeds, *built the oratory of the holy Mother of God*, of the most beautiful workmanship, *inside the church of the blessed Apostle Peter.*¹³¹⁹

King Aripert of the Lombards restored many farms and estates /531/ *in the Cottian Alps* which previously had belonged to the apostolic see, but which had been stolen by the Lombards a long time since, to the same see, and he sent this deed of gift to Rome written *in letters of gold.*¹³²⁰

4665

Justinian <reigned> for a second time with his son Tiberius for six years.

With the help of Terbellius, the king of the Bulgars, he killed those who had expelled him, the patricians *Leo*, *who had usurped his place*, and also his successor *Tiberius*, who ejected <Leo> from the throne and held him a captive in Constantinople throughout his reign.¹³²¹ He sent the patriarch Callinicus to Rome with his eyes gouged out, and gave the bishopric <of Constantinople> to Cyrus, who had been an abbot in Pontus and had aided him when in exile. He ordered Pope Constantine to come to him and received and saw him off with great honour. He even ordered <the Pope> to *celebrate mass* for himself on Sunday and received communion from his own hand. He prostrated himself on the ground asking <the Pope> to intercede for his sins, and he *restored all the privileges of the Church.*¹³²² When he sent a large army into Pontus in order to overtake Philippicus, whom he had exiled there, though the pope forbade it, the whole army went over to Philippicus' side, and made him emperor. Returning with him to Constantinople, <the army> fought against Justinian at the twelfth milestone from the city. With Justinian defeated and killed, Philippicus took over the empire.

4667

Philippicus <ruled for> one year and six months.

1318 *Ibid.* 87.2 (1.383).

1319 *Ibid.* 87.1 (1.385).

1320 *Ibid.* 88.3 (1.385).

1321 *Ibid.* 88.4 (1.385).

1322 *Ibid.* 90.6 (1.390–1).

He ejected Cyrus from the bishopric and ordered him to go back and govern his monastery as abbot in Pontus. The emperor sent letters containing *deviant teaching* to Pope Constantine, which the latter /531/, *along with the council of the Apostolic See, rejected, and for this reason* <the Pope> set up pictures in the portico of *Saint Peter* depicting the deeds of the six holy universal synods.¹³²³ For Philippicus had ordered similar pictures in the royal city [Constantinople] to be removed. *The Roman people ordained that they would not recognize the name of the heretical emperor or his decrees or his face on the coinage. Hence, his portraits were not carried into church, nor was his name mentioned in the solemnities of the mass.*¹³²⁴

4670

Anastasius <ruled for> three years.

He captured Philippicus and blinded him, but did not kill him.

He sent letters to Pope Constantine in Rome *via* the patrician Scholasticus, the exarch of Italy, in which he demonstrated that he supported the catholic faith and proclaimed the sixth holy Council.¹³²⁵

*Admonished by Pope Gregory, King Liutprand of the Lombards confirmed the gift of the estates in the Cottian Alps, which King Aripert had made and he had claimed back.*¹³²⁶

In the 716th year from the Incarnation of the Lord, Egbert, a holy man of the English people and priest /533/ in monastic life, training himself for the celestial homeland as a pilgrim, converted through his pious preaching many provinces of the Irish to the canonical observance of the timing of Easter, from which they had long strayed.¹³²⁷

4671

Theodosius <ruled for> one year.

1323 *Ibid.* 90.8 (1.391).

1324 *Ibid.* 90.10 (1.392). The 'deviant' opinion was Monotheletism.

1325 *Ibid.* 90.11 (1.392–3).

1326 *Ibid.* 91.4 (1.398).

1327 Cf. Bede, *Historia ecclesiastica* 5.22, ed. Colgrave and Mynors 553–4. This is only the second time in ch. 66 that the *annus Domini* is mentioned (the first being the account of Dionysius' Easter tables above, *s.a.* 4518). MacCarron notes that there is, curiously, no reference to the conversion of Iona to Roman Paschal reckoning here, and the Iona's royal supporters Oswald and Oswiu are also absent from ch. 66: MacCarron, *Bede and Time* 109.

Elected emperor, he defeated Anastasius in a terrible battle at the city of Nicaea, and *having administered an oath to him*, he forced him to become a cleric and be ordained a priest. In order to receive the imperial office, since he was a catholic, he soon restored to its former place *in the royal city that image, worthy of veneration, depicting the six holy synods, which had been torn down by Philip<picus>*.¹³²⁸

The river Tiber overflowed its bed and caused a great exodus from the city of Rome. The waters, flowing together and exceeding their normal height by one and a half times, *descended in a broad sweep from the gate of St Peter as far as the Milvian Bridge*. <The flood> lasted for *for seven days, /534/* until, with the citizens performing *frequent litanies*, it at last receded *on the eighth day*.¹³²⁹

At this time many of the English, both nobles and commoners, men and women, leaders and people in private life, were wont to go from Britain to Rome, inspired by divine love.¹³³⁰ Amongst these was my most reverend abbot Ceolfrid, seventy-four years of age, who had been a priest for forty-seven years and an abbot for thirty-five. When he reached Langres, he died and was buried there in the church of the blessed twin martyrs.¹³³¹ Amongst other gifts which he had arranged to take with him, he sent to the church of Saint Peter a complete Bible (*pandectem*), translated by the blessed Jerome from the Hebrew and Greek sources.¹³³²

4680

Leo <ruled for> nine years.

The Saracens, coming to Constantinople with an immense army, besieged it for three years until, with the citizens calling on God on numerous occasions, many of <the Saracens> died of hunger, cold /535/ and pestilence, and withdrew, as if wearied of the siege. As they retreated, they

1328 *Liber pontificalis* 91.5, ed. Duchesne 1.398–9.

1329 *Ibid.* 91.6 (1.399).

1330 Cf. Bede, *Historia ecclesiastica* 5.7, ed. Colgrave and Mynors 472.

1331 I.e. the triplets Speusippus, Eleusippus, and Melapsippus. Bede's reference to 'twins' may derive from the church of the Holy Twins in the suburb of Langres now called Saints-Geosmes (i.e. *sancti gemini*), where some of the relics of the martyred triplets were housed. Most were in the cathedral church of St Mammès.

1332 Cf. Bede, *Historia Abbatum* 2.15–23, ed. Christopher Grocock and I.N. Wood (Oxford: Clarendon Press, 2013), 56–75, and the anonymous *Vita Ceolfridi* in the same volume 21–40, 98–121. This pandect Bible is the Codex Amiatinus.

started a war with the people of the Bulgars on the river Danube, and being likewise defeated by these people, they fled and sought their ships. When they were on the high sea, a storm suddenly blew up and many were killed when their ships were sunk or wrecked upon the shore.

Hearing that the Saracens had depopulated Sardinia and had dug up the place where the bones of holy Bishop Augustine had once been moved on account of the barbarian raids and honourably buried, Liutprand <king of the Lombards> sent and paid a great price <for them>, received <them> and transported them to Pavia, and reburied them there with the honour due to so great a Father.¹³³³

67. THE REMAINDER OF THE SIXTH AGE

We have striven to the best of our ability to work out all these matters concerning the course of past time from the Hebrew Truth, in the conviction that it is reasonable that just as the Greeks, /536/ using the version of the Seventy Translators, compose books about time for themselves and their own people on the basis of <this translation>, even so we, who drink from the pure fountain of Hebrew Truth (thanks to the industry of the holy translator Jerome), should also seek to understand the reckoning of time according to <this version>. Should anyone accuse this work of ours of being superfluous, let them, whoever they may be, accept this just response (without doing violence to brotherly love) which the aforementioned Jerome gave to those who criticized an ancient cosmography – that if it displeased them, they should not read it.¹³³⁴ For the rest, I urge everyone to note the course of time as he sees it, whether from the Hebrew Truth, which is acknowledged even by the hostile Jews to have been transmitted to us by the abovementioned translator in its pure form, or from the translation of the Seventy Translators, which was either composed with less care to

1333 On the 717–718 siege of Constantinople and the rescue of Augustine's body see Calvin B. Kendall, 'Bede and Islam', in *Bede and the Future*, ed. Peter Darby and Faith Wallis (Farnham: Ashgate, 2014), 107–8 and J.T. Hellenbeck, *The Transferral of the Relics of St Augustine of Hippo from Sardinia to Pavia in the Early Middle Ages* (Lewiston, NY: Edwin Mellen Press, 2000).

1334 Echoing Jerome's *Praefatio* to his translation of Eusebius' *Chronicon*, ed. Helm 6.6–10. Jones' text reads *priscae cosmographae* (536.10), but this is clearly an error for *chronographiae*. Manuscripts I have consulted concur.

begin with (as many assert) or else afterwards corrupted by the Gentiles (as Augustine holds);¹³³⁵ or else, indeed, from both works taken together.

Whether he indicates the length of past time to be shorter or longer, or finds them so indicated, nonetheless let him not conclude from this that the time remaining in this World Age is longer or shorter, remembering always that the Lord said that *no one knows the last day and hour, not even the angels, but only the Father*.¹³³⁶ No one should pay heed to those who speculate that the existence of this world was determined from the beginning at 6000 years, and who add (lest they seem to deny the Lord's statement) that it is unclear to mortal men in what year of the sixth millennium the day of Judgement will come, though its arrival is generally to be expected around the end of the sixth millennium. If you ask them where they have read that such things should be thought or believed, they immediately become vexed, and because they have nothing else to answer they say: 'Have you not read in Genesis how God made the world in six days? Hence it deservedly ought to be believed that it will exist for more or less 6000 years'.

What is more serious, there were some who hoped, on account of the seventh day on which God rested from his works, that after 6000 years in which the saints labour in this life, they would reign with Christ in the Seventh Age after the Resurrection, in this same life <but> immortal, and in the midst of pleasures and great happiness. Giving such things a wide berth, because they are heretical and frivolous, let us understand in a plain and catholic manner those six days in which God finished adorning this world, and the seventh in which He rested from all His work, and which for this reason He consecrated with a blessing of perpetual rest. These days signify, not 6000 years /537/ of labour and a seventh <thousand> of the reign of the blessed on earth with Christ, but rather six Ages of this fleeting world in which the saints labour in this life for Christ, and the Seventh Age of rest in another life which the holy souls, released from their bodies, will possess in Christ. This sabbath of the souls is rightly believed to have begun when Christ's first martyr [i.e. Abel], slain in the flesh by his brother,¹³³⁷ was translated in spirit into eternal rest. But it will come to an end when the souls shall have received incorrupt bodies on the day of resurrection. And because none of the five Ages in the past is found to

1335 Cf. *Letter to Plegwine* 10 (Appendix 3a, p. 587 below).

1336 Matthew 24:36.

1337 I.e. Cain: Genesis 4:8.

have run its course in a thousand years, but some in more, some in less, and none had the same total number of years as another, it follows that this <Age> likewise, which is now running its course, will also have a duration uncertain to mortal men, but known to Him alone who commanded His servants to keep watch with loins girded and lamps alight *like men waiting for their lord, when he shall return from the marriage feast*.¹³³⁸

68. THREE OPINIONS OF THE FAITHFUL AS TO WHEN THE LORD WILL COME

To be sure, all the saints wait attentively for the hour of His coming and long for it to arrive quickly. But they behave quite dangerously if any of them presumes to speculate or to teach that this <hour> is near at hand or far off. Hence St Augustine, rebuffing that wicked servant who says in his heart, *My master delays his homecoming*¹³³⁹ – *surely this man hates the coming of his lord, without any doubt* – gives the example of the three superior servants *who look forward with longing to the coming of their master, watching for it vigilantly and loving faithfully. One of them says, 'Let us watch and pray, because the Lord is coming swiftly'. The second one says, 'Let us watch and pray, for this life is brief and uncertain, though our Lord delays His coming'. The third says, 'Let us watch and pray because this life is brief and uncertain, and we do not know the time when the Lord will come'. Accordingly, if it turns out as the first one predicted, the second and third ones will rejoice with him. But if it does not come to pass, one might dread lest those who believed him be upset and begin to think that the coming of the Lord was not delayed, but rather non-existent. /538/ Those who believe what the second one says – that the Lord will come later – will in no way be disturbed in their faith if <that servant> is proved wrong and the Lord comes quickly, but will rejoice greatly with unexpected delight. For this reason, he who says that the Lord is coming quickly speaks more in line with what is desirable, but is dangerously mistaken. He who says the Lord will come later, but believes, hopes for, and longs for His coming nonetheless, even if he is mistaken about His delay, is happily mistaken. For he will have greater patience if it is so, and greater joy if it is not so. And for this reason, he is heard with greater pleasure by those who*

1338 Luke 12:35–6.

1339 Matthew 24:48.

*desire the Lord's appearing, and he is believed with greater security. But he who confesses himself truly ignorant of the hour, longs for the former and bears with the latter and errs in neither, since he neither affirms nor denies either.*¹³⁴⁰

69. THE TIME OF ANTICHRIST

We have two very certain indicators of the approach of the Day of Judgement, namely the conversion of the Jewish people, and the reign and persecution of Antichrist, which persecution the Church believes will last three and a half years. But lest this <persecution> come unexpectedly and catch everyone whom it finds unprepared, <the Church believes> that Enoch and Elijah, great prophets and teachers, will come into the world before <Antichrist's> arrival, and will convert the Jewish people to the grace of faith, and will surrender to the insuperable affliction of this mighty whirlwind directed against the elect. After they have preached for three and a half years, and as the prophet Malachi predicts, one of them – Elijah – *has turned the hearts of the fathers to the children*,¹³⁴¹ (that is, when they will have planted the faith and love of the saints of old in the mind of those who will then be persuaded), then that horrific persecution will burst into flame. First it will crown <Enoch and Elijah> with the virtue of martyrdom, and then engulfing the rest of the faithful, it will make them either glorious martyrs of Christ or condemned apostates. This is what the Apostle John seems to signify when he writes in Revelation: *But do not measure the court outside the temple; leave that out, for it is given over to the nations, and they will trample over the holy city for forty-two months*. That is, show that those who love external things only, but claim the title of faithful, are to be set apart from the destiny of the elect. For they themselves will turn to persecuting the Church in that final persecution of three and a half years.¹³⁴² *And I will grant*, he says, **/539/** *my two witnesses power to prophesy for 1260 days, clothed in sackcloth*,¹³⁴³ that is, they will

1340 Augustine, *Ep.* 199.13.52–4, ed. Goldbacher, CSEL 57, 289.10–292.14.

1341 Malachi 4:6.

1342 Revelation 11:2; Bede's exegesis here is congruent with the one he set out in his *Expositio Apocalypseos*, and derives mainly from Primasius: ed. Gryson 369.12–23, trans. Wallis 180.

1343 Revelation 11:3.

preach clothed in the confining labours of continence and affliction. And a little later on he says: *And when they have finished their testimony, the beast that ascends from the bottomless pit will make war upon them and conquer them and kill them*, and so on.¹³⁴⁴ He records that the ministers of this same beast, that is, of Antichrist, will rejoice over the slaying of these two witnesses (that is, martyrs), and will even mock them after their death.¹³⁴⁵

And in another place he says: *And I saw a beast rising out of the sea. And to it the dragon gave his power and great authority*,¹³⁴⁶ that is, I saw a man of savage mind, begotten from the turbulent stock of the impious, to whom after his birth and training by the most despicable teachers in the magic arts, the Devil will add all the authority of his power, through which he will accomplish feats of magic greater than any others. <The Devil> presented <Antichrist> as his sole companion, and (he says) *the beast was allowed to exercise authority for forty-two months*.¹³⁴⁷ When that son of perdition will have been struck down either by the Lord himself or by the archangel Michael, as some teach, and damned with an eternal verdict, it is not to be believed that the Day of Judgement will arrive immediately. Otherwise, the men of that age would be able to know the time of the Judgement, if it followed immediately upon the three and a half years after the beginning of Antichrist's persecution. Everyone is allowed to know that the Day of Judgement will not come before that persecution is completed; but it is granted to no one to know how long after the end of that persecution it will come. Therefore the prophet Daniel, who writes that the reign of Antichrist will be for 1290 days, concludes thus: *Blessed is he who waits and comes to the thousand three hundred and thirty-five days*.¹³⁴⁸ Jerome explains it in this way: *He says, blessed is he who, after Antichrist is slain, waits until the forty-fifth day after the 1290 days, that is, three and a half years, when the Lord and Saviour shall return in his majesty. But why there should be forty-five days of silence after the slaying of Antichrist, is known to God alone, unless perhaps we might say that the postponing of the Kingdom is a test of the patience of the saints*.¹³⁴⁹

1344 Revelation 11:7.

1345 Cf. Revelation 11:10. Bede's insertion of Antichrist into the narrative of Revelation was an innovation: see Wallis, *Bede: Commentary on Revelation* Introduction, 80–1.

1346 Revelation 13:1–2.

1347 Revelation 13:5.

1348 Daniel 12:12.

1349 Jerome, *In Daniele* 4.12.12, ed. Glorie 943.671–944.677; cf. Bede, *Expositio Apocalypseos* ed. Gryson 329.81–331.88; trans. Wallis 159.

70. THE DAY OF JUDGEMENT

For the day of the Lord shall come as a thief because, as He himself declares, *we know not when He will come, whether in the evening, or in the middle of the night, or /540/ at cock-crow, or in the morning.*¹³⁵⁰ Then the heavens, <St Peter> says, *shall pass away with a great noise, and the elements shall melt with fervent heat.*¹³⁵¹ What these heavens are which shall pass away, the same Apostle Peter teaches a little earlier on, saying: *By the word of God the heavens were of old, the Earth standing out of the water and in the water, whereby the world that then was perished. But the heavens and Earth which are now, by the same word are kept in store, reserved for fire in the day of judgement.*¹³⁵² Not, therefore, the firmament of heaven in which the fixed stars revolve, nor the ethereal heaven, that is, that great empty space between the starry heaven and our troubled atmosphere, full of pure and tranquil diurnal light, in which it is believed that the seven wandering stars roam, but this heaven of air (*aerium*),¹³⁵³ the one close to the Earth, from which the birds (*aves*) of heaven that fly therein take their name,¹³⁵⁴ which the waters of the Flood once destroyed when they overflowed the annihilated Earth¹³⁵⁵ – this <is the heaven which> the fire of the Last Judgement will destroy, extending as far as <this heaven> and battenning upon it.¹³⁵⁶ Not only does the statement of St Peter¹³⁵⁷ in which he says that those heavens which the flood-waters destroyed are to be destroyed by the fire of Judgement, testify that the starry heaven will not be touched by this fire, no matter how great it will be, but so also does the word of the Lord which says: *Immediately after the tribulation of those days the Sun will be darkened, and the Moon will not give its light, and the stars will fall from heaven.*¹³⁵⁸ For the Sun could not be darkened, nor the

1350 Mark 13:35.

1351 2 Peter 3:10.

1352 2 Peter 3:5–7.

1353 Bede makes this distinction in *The Nature of Things* 25 (ed. Jones 216–17; trans. Kendall and Wallis 89–90); see also *In Gen.* 1.21, ed. Jones 21.631–22.649, trans. Kendall 86–7.

1354 Cf. Gregory, *Homeliae in Euangelium* 2.29.5, ed. Raymond Étaix, CCSL 141 (1999), 8.80–9.

1355 Augustine, *De Genesi ad litteram* 3.2, ed. Zycha 63.22–64.10.

1356 Augustine, *Enarrationes in Psalmos* 101(II).13, ed. Dekkers and Fraipont, 1448.6–12. Augustine expresses the same view in *De civitate Dei* 20.18.

1357 2 Peter 3:5–7.

1358 Matthew 24:29.

Moon deprived of light, nor could the stars fall from heaven, if the heaven itself (that is, their place) were to perish, consumed by fire. So at that time the airy heaven will shrivel up in fire, <but the heaven> of the stars will remain undamaged.¹³⁵⁹ In fact, the heavenly bodies will be darkened, not by being drained of their light, but by the force of a greater light at the coming of the Supreme Judge, on the supposition that they <merely> appear to be concealed, which sometimes happens to the Moon and all the stars because of the greater power of the Sun. But when there will be a new heaven and a new Earth after the Judgement – which is not one <heaven and Earth> replacing another, but these very same ones <which> will shine forth, having been renewed by fire and glorified by the power of the Resurrection – then, as Isaiah predicts: *The light of the Moon will be like the light of the Sun, and the light of the Sun will be sevenfold, like the light of seven days.*¹³⁶⁰ John states in the Revelation: *And I saw a new heaven and a new Earth, for the first heaven and the first Earth had passed away, and he adds, and there was no more sea.*¹³⁶¹ *Whether the sea will be dried up by that mighty heat, or whether it will also be transformed into something better, is not evident. We read that there will be a new heaven and a new Earth, but nowhere do we read that there will be a new sea. /541/* For this statement, *And there was no more sea*, can be understood allegorically, *for then this world (saeculum), turbulent with the life of mortal men, which is often represented in Scripture by the word 'sea', will be no more.*¹³⁶²

Where this critical moment of the Last Judgement will take place is sought in many places. However it is agreed that when the resurrection of all the dead takes place *in the twinkling of an eye*¹³⁶³ when the Lord descends to execute judgement, the saints will be immediately caught up *to meet Him in the air*. The Apostle is understood to indicate this when he says: *For the Lord himself will descend from heaven with the cry of*

1359 Bede's scenario is based on Augustine, *De civitate Dei* 20.16 (ed. Dombart and Kalb 726.7–727.34) and 20.24 (744.15–745.71). Bede expounded this argument in *Expositio Apocalypseos* (ed. Gryson 518–19, trans. Wallis 259–60); in his commentary on 2 Peter 3:10, 13 (ed. Hurst 279.120–280.140); and in his commentary on Luke 21:33 (ed. Hurst 371, trans. Kendall and Wallis 579–80) reinforcing it with a lengthy reference to Gregory, *Homilia in Euangelium* 2.29.5, ed. Étaix 249 and *Moralia* 19.9, ed. Adriaen 858.21–33.

1360 Isaiah 30:26.

1361 Revelation 21:1.

1362 Primasius, *Commentarius in Apocalypsin*, ed. A.W. Adams, CCSL 92 (1985), 284.2–285.9, quoted by Bede, *Expositio Apocalypseos* ed. Gryson 519.61–6, trans. Wallis 259–60.

1363 1 Corinthians 15:52.

*command, with the archangel's call, and with the sound of the trumpet of God. And the dead in Christ will rise first; then we who are alive, who are left, shall be caught up together with them in the clouds to meet the Lord in the air.*¹³⁶⁴ But whether the reprobate as well will be lifted above the Earth to meet the Judge when He comes, or whether the deserts of the sinners will weigh so heavily that even though they have immortal bodies they will be incapable of rising on high, it would appear more likely that, with the Lord presiding in judgement, the saints would take their place on high at his right hand, and <the reprobate> lower down on his left. But if at that time that lofty and mighty fire covers the whole surface of the earth, and if the wicked who rise from the dead cannot be caught up on high, it is understood that, as one might expect, they would await the Judge's verdict standing on earth and surrounded by fire.

But who would dare to decide in advance whether they will be burned by <this fire>, who are not to be punished by it, but rather are to be condemned to eternal fire? For St Augustine in Book 20 of *The City of God* understands from the statements of the prophets that some of the elect will be purged by this <fire> from certain less serious sins.¹³⁶⁵ And in his homilies on the Gospel, the holy Pope Gregory explains this passage of the Psalmist: '*Before Him is a devouring fire, round about Him a mighty tempest*'.¹³⁶⁶ *Tempest and fire accompany the chastisement of such great justice, for the tempest interrogates those whom the fire burns.*¹³⁶⁷ But if the fire of the furnace which surrounded them failed to touch the mortal bodies of the three children,¹³⁶⁸ then it is amply plain that the world-wide conflagration will not harm His perfect servants who are caught up at the sound of the trumpet to meet the Lord in the air. Indeed, in all these matters it is more expedient that one present oneself chaste before the eyes of the chastening Judge, than debate where or how that Judgement will take place.

Although the Apostle rightly states, *We will be caught up together with them in the clouds to meet the Lord in the air*, and adds, *and so we shall always /542/ be with the Lord*,¹³⁶⁹ this should not be interpreted to mean

1364 1 Thessalonians 4, 15–16.

1365 Cf. Augustine, *De civitate Dei* 20.26, ed. Dombart and Kalb 750.61–70). On Bede's conception of Purgatory see Isabel Moreira, *Heaven's Purge: Purgatory in Late Antiquity* (New York: Oxford University Press, 2010), 147–76.

1366 Psalm 50:3 (49:3).

1367 Gregory, *Homilia in Evangelium* 1.6, ed. Etaix 10.134–5.

1368 Cf. Daniel 3:19–26.

1369 1 Thessalonians 4:16.

that he says that we shall always remain with the Lord in the air in this fashion. For <the Lord> himself will certainly not remain there, because in coming, He will continue onwards. Indeed, one meets someone who is approaching, not someone who is standing in place. But we will be with the Lord in this manner: namely, wheresoever we are with Him, we will be there with everlasting bodies.

71. THE SEVENTH AGE, AND THE EIGHTH AGE OF THE WORLD TO COME

And this is that Eighth Age which is ever to be loved, hoped for, sighed for by the faithful, when Christ shall convey their souls, endowed with the gift of incorruptible bodies, into the possession of the kingdom of heaven and into the contemplation of His divine majesty. He will not take from them the glory which they, released from their bodies, receive in blessed peace from the moment of their departure <from this life>, but will heap upon them the even greater glory of their restored bodies. As a foreshadowing of this continuous and uninterrupted beatitude, Moses, although he said that the six days in which the world was made began at light and morning and ended at evening,¹³⁷⁰ <in the case of> the seventh day, when God rested from His labours, mentioned only the morning, and not the evening. Everything which he thought worthy to be commemorated concerning <the seventh day>, he comprised in the light of eternal rest and beatitude. For as we observed earlier,¹³⁷¹ all the Six Ages of this world, in which the just apply themselves to good works with God's co-operation, are so disposed by heavenly arrangement that, while they each began with some element of joy, they ended in many shadows of trouble and constriction. However, the repose of the souls, which they will receive in the world to come for the sake of their good works, will not be brought to a close by the eruption of any time of fearful anxiety. Rather, when the time of Judgement and resurrection comes, it will be fulfilled in the more glorious perfection of eternal bliss.

The sacrosanct time of our Lord's Passion, burial, and Resurrection can be compared to these Ages.¹³⁷² For we read in the Gospel of John that *Jesus*

1370 Genesis 2:2; cf. Bede, *In Gen.* 1.2, ed. Jones 32.975–34.1049, trans. Kendall 96–9.

1371 See above, ch. 10.

1372 Cf. Bede's *Hom.* 1.23 (ed. Hurst 167.209–27) and 2.7 (225.17–226.26), where the

came to Bethany six days before the Passover,¹³⁷³ where Judas, offended at the service performed by the devout woman, betrayed Him to the chief priests. On the following day, <Jesus> entered Jerusalem upon an ass, with a crowd of people singing praises to God. For the next five days He was assailed by their insidious questions, /543/ and finally on the sixth day He was crucified. On the seventh day He lay in the tomb, but on the eighth, that is, on the first day of the week, He rose from the dead. For in the Five Ages of this world that are passed and gone, the saints never had respite from the hatred and treachery of the reprobate. But in the Sixth <Age>, which the Lord deigned to establish in faith by His Incarnation, redeemed from hell by His Passion, and fired with hope and love for the heavenly kingdom by His Resurrection and Ascension, the loftier virtue of the blessed martyrs has borne with more atrocious conflicts of persecution at the hands of the infidel. But the more assured they are that they suffer for Him who promised to the one who died with Him, first as a thief and then as a confessor, *Today you shall be with me in paradise*,¹³⁷⁴ the more resolutely they confront these things.

This blessed repose of paradise has no end other than the beginning of the glorified resurrection.¹³⁷⁵ The evangelist Matthew wishes to indicate this, and after writing that the Lord died on the sixth day and lay buried on the seventh, he begins to speak of the Resurrection thus: *At the evening of the sabbath, as it began to dawn towards the first day of the week, Mary Magdalene and the other Mary came to see the sepulchre*.¹³⁷⁶ He says that the evening of the sabbath, in which the Lord rested in the tomb, did not darken into night, but brightened into the first day of the week. For indeed His sepulchre was not to be defiled by the corruption of the body it received, but as Isaiah says, *His grave shall be glorious*,¹³⁷⁷ and exalted by the power of His swift Resurrection. Likewise the repose of our souls after we have put off our bodies will not be darkened by any shadows of anxiety,

triduum paschale is compared to the Six Ages.

1373 John 12:1.

1374 Luke 23:43.

1375 The patristic *locus classicus* for the identification of the number seven with rest and eight with resurrection is Augustine, *Contra Faustum* 12.19, ed. Zycha 347.13–348.18. Bede revisits this theme in *In Ezram* 1, ed. Hurst 241.21–30, trans. DeGregorio 6–7.

1376 Matthew 28:1. Cf. Bede's *Homilia* 2.7, ed. Hurst 226.43–227.75, and ch. 5 above.

1377 Isaiah 11:10.

but in the end will be taken up and enhanced by the gifts of the true Sun and everlasting light.¹³⁷⁸

This is that great and unique octave for which the sixth and the eleventh Psalms were written, whose words commemorate the days as follows: *And Mattithiah and Elipheleh and the other Levites sang a song of victory (epinicion) for the octave*¹³⁷⁹ to the victorious God, and praises of His judgement in an endless *ogdoas*, for *epinicion* means ‘triumph’ and ‘palm’.¹³⁸⁰ Or they prophesied the mystery of the Resurrection of Christ, which deservedly is called the great and unique octave. For every eighth day of this faltering age is an eighth day following a sabbath, so that it is likewise the first day of the following week. But just as the first day of the world was ‘first’ in such a way that it did not have seven other days preceding it, of which it was the eighth, and so was ‘first’ in a unique manner, so also the day of the future resurrection is not only uniquely great, but also eighth in a unique way, because this eighth day will so follow upon the preceding seven, /544/ that it will not have other days following it of which it will be the first, but it alone will abide, one and unending, in the eternal light. Hence the prophet, thirsting for the vision of that day, rightly called it one, saying, *Better is one day in your courts than a thousand*.¹³⁸¹

Therefore when we read of the octave in Scripture, we know that it can be understood symbolically of both the day and the age. For the Lord rose from the dead on the eighth day, that is after the seventh day of the sabbath; and we also shall rise again, not only after the seven fleeting days of this World Age, but also after the aforementioned Seven Ages, at once in the Eighth Age and upon the eighth day. To be sure, this day of life has always abided, abides, and will abide, eternal in itself. But for us it will begin when we deserve to enter into it in order to see it, where the saints, renewed in the blessed immortality of flesh and spirit, are occupied in doing what the Psalmist invokes, who sings to God in praise of His love: *Blessed are they*

1378 Cf. Augustine *De civitate Dei* 22.30, ed. Dombart and Kalb 862–6.

1379 1 Chronicles 15:21.

1380 Ambrose, *Explanatio super psalmos* 38.1.2, ed. M. Petschenig, CSEL 64 (1919), 183.21–184.6.

1381 Psalm 84:10 (83:11); cf. Augustine, *Enarrationes in Psalmos* 83.14 (1159.5–10): ... *contemnunt milia dierum, desiderant unum diem, diem sempiternum, cui non cedit hesternus, quem non urget crastinus*. (‘Let them scorn these thousands of days, let them long for the one day, the everlasting day, for which no yesterday makes way, and which no tomorrow urges on’.)

who inhabit your house; they shall praise you, world without end.¹³⁸² He then tells of the vision which shall delight them; for He who gave the law will give blessing, and they will go from strength to strength, and the God of Gods will be seen in Zion.¹³⁸³ The Lord himself, who is *the way, the truth and the life*¹³⁸⁴ declares what sort of men will be able to come thither: *Blessed are the pure in heart, for they shall see God.*¹³⁸⁵

And so let our little book concerning the fleeting and wave-tossed course of time (*de uolubili ac fluctuago temporum lapsu*)¹³⁸⁶ come to a fitting end in eternal stability and stable eternity. And should those who read it deem it worthy, I ask that they commend me in their prayers to the Lord, and that they behave with pious zeal towards God and their neighbour, to the best of their ability, so that after temporal exertions in heavenly deeds, we may all deserve to receive the palm of heavenly reward.

1382 Psalm 84:4 (83:5).

1383 Psalm 84:7 (83:8). This was one of Bede's favourite passages in Scripture. On its use here and in other works see Jennifer O'Reilly, 'Bede on Seeing the God of Gods in Zion', in *Text, Image, Interpretation. Studies in Anglo-Saxon Literature and its Insular Context in Honour of Éamonn Ó Carragáin*, ed. Alastair Minnis and Jane Roberts (Turnhout: Brepols, 2007), 3–29; Arthur Holder, 'Co-heirs of Christ's Glory: Deification in Bede', in *Bede the Scholar*, ed. Peter Darby and Máirín MacCarron (Manchester: Manchester University Press, 2023), 48–51.

1384 John 14:6.

1385 Matthew 5:8.

1386 This phrase – and particularly the notion of time as *fluctuagum* – is discussed in the Commentary, p. 536. It is echoed in Bede's other writings, notably the metrical *Vita Cuthberti* 691: *fluctuagis saecli curis defessus obiret* (ed. Lapidge, *Bede's Latin Poetry* 278); and the epigraph to *The Nature of Things* (ed. Jones 189.3–5) *Naturas rerum uarias labentis et aeuī / Perstrinxi titulis, tempora lata citis, / Beda Dei famulus ...*. In *Historia Ecclesiastica* 2.1 (ed. Colgrave and Mynors 124–5), Bede cites Gregory's image of the monastic rule as a cable that secures the soul to the calm shores of prayer while it is 'tossed about on the ceaseless tide of secular affairs' (*cum incessabili causarum saecularium impulsu fluctuaret*).

COMMENTARY

PREFACE

Bede's Preface sets out an explanation of his motive for composing *The Reckoning of Time*, a defence of his allegiance to the chronology of world history supported by the Vulgate translation of the Bible, and, finally, an apology for writing on a subject that others have tackled before him. These three themes are discussed in the Introduction, and will be summarized here. Bede's aims were certainly didactic, though his claim that students were clamouring for a more detailed textbook of *computus* cloaks more complex motivations. The controversy over the Vulgate chronology first adumbrated in *On Times* has reached a stalemate, and Bede is ready to present both Vulgate and Septuagint reckonings side by side where necessary, while continuing to prefer the former. He claims to leave the choice to the reader; but, in fact, he is prepared to reiterate his case in even stronger terms. The apology for writing a book on a subject so thoroughly covered by others is a bit disingenuous; Bede was not following in the footsteps of the Fathers here, let alone of Augustine, but elevating the Irish genre of *computus* textbook to a significantly more comprehensive and analytical form.¹

The Preface to *The Reckoning of Time* was not a prime location for glossators, but those who did comment on it revealed a sophisticated interest in his concept of time. Two examples show how they pondered the relationship between 'the nature of things and the reckoning of time'. The Laon gloss on *status* ('stable order'), *cursus* ('course'), *fines* ('ends') signals the crucial role of *natura*:

Stable order (*status*) is contained in the natural order of hours, days, weeks months, years and cycles, which always recur upon themselves in a natural circle. It is the nature <of times> that the day has twenty-four hours, the week

1 Evaluating Bede's educational motives: see Introduction, pp. 4, 52–7. The controversy over chronology: pp. 7–11. Bede's sources and originality: pp. 53–88.

seven days, and so forth. Therefore after twenty-four hours, the day recurs, and so on for the rest. But the course (*cursus*) of time, that is, the diverse deeds of human beings, is contained in the chronicles which are the second part of this book. The end (*fines*) of times is contained at the end of this book, where <Bede> discusses the Seventh and Eighth Ages.²

This glossator grasped one of Bede's most persistent ideas, namely that the patterns of time that can be expressed in recurring measurements are 'natural' in that they are the outcomes of the creation of the heavenly bodies. Bede will make this notion of 'natural time' explicit in ch. 6. The contrast between the repeating character of natural cycles and the non-recursive *cursus* of historic time is underscored in ch. 65, where the column of the Paschal table devoted to the *annus Domini* stands out as the only element (apart from the purely conventional indictions) which do not repeat after 532 years; and, of course, it is the *Leitmotif* of chs 66–71, which display historic time from its inception at Creation to its future consummation. The glossator has not only summarized the structure of *The Reckoning of Time* but detected some of its most significant ideas.

The 'Melk Commentary' adopts a more philosophical perspective. Bede is both comparing and contrasting the 'nature of things' with 'the reckoning of time'. The 'nature of things' comprises their substance and proper qualities. If time can be said to have a nature, it is 'the movement of mutable things', but this is not what Bede is concerned with. Instead, his focus is the fact that this movement is orderly and governed by 'natural numbers', as God created it. We speak of the *ratio* of times, because their movements are regularly spaced out. When Bede speaks of the *status*, *cursus*, and *fines* of time, he is indicating the three-fold division of his book: *status* covers everything up to the Chronicle in ch. 66; the Chronicle is about *cursus*; the closing chapters are about *fines*. For, while time is always in motion, it always returns to the *status* where it began. Time as created and ordered by God is a kind of 'substance', for although all 'times' as instantiated in individual beings come to an end, the life of the species is constantly renewed.³

It is interesting that from an early stage in its diffusion, and at least in

2 Ed. Jones, *BOD* 263. On the Laon glosses, see Introduction pp. 112–13.

3 Ed. Jones, *Beda's Pseudepigrapha* 95–6. To Jones' list of manuscripts of this initial section of the commentary should be added Zwettel, Zisterzienserstift 296 (s. XII), Bordeaux, Bibliothèque municipale 11 (s. XII) (Appendix 5, nos 285 and 41).

some circles, what Bede proposed in *The Reckoning of Time* was considered relevant not only to *computus* but to more abstract speculations.

CHAPTER 1

The first four chapters of *The Reckoning of Time* are a technical preparation for the study of *computus*. They deal with ways of representing number, the ontological status of different types of time reckoning, divisions of time smaller than the day (which is the basic unit of calendar reckoning), and fractions. These divisions and fractions will be important later for understanding such issues as the leap-year and the *saltus lunae*. *Computus* manuscripts, reflecting this fact, often reproduce one or more of these chapters as a detached excerpt or paraphrase.⁴

Ch. 1 is about representing numbers using hand positions, with the implication that they can be used in calculations.⁵ We are so accustomed to ciphered arithmetic with Indo-Arabic numerals that we often forget that, with Roman numerals, this is all but impossible. Although they obey an overall place system (like ours, starting with units on the right and reading to the left with tens, hundreds, thousands and so forth), the individual Roman numerals are compounded of separate sigla, sometimes by addition to the right of a base number (e.g. the number 8 – VIII – is made by adding III to V) and sometime by subtraction from the left (e.g. 9 – IX – which is formed by putting I before X). Moreover, the Roman method of representing compound numbers disrupts the place system and makes it impossible to use for written calculations. In the number 876 (DCCCLXXVI), for instance, the units place has two characters (VI), the tens place three (LXX) and the hundreds place four (DCCC). Hence numbers cannot easily be computed by visual juxtaposition of their notated forms. Instead, the ancients made use of the classical abacus, a table divided into columns representing the ranks (units, tens, hundreds ...), on which counters could be moved to

4 Chs 1 and 4 are frequently excerpted in *computus* albums: see Appendix 5, p. 610, and Introduction, p. 109.

5 F. del Mar Plaza Picón and J.A. González Marrero, 'De computo uel loquela digitorum: Beda y el cómputo digital', *Faventia*, 28 (2006): 115–32; Alfred Cordoliani, 'À propos du chapitre premier du De temporum ratione, de Bède', *Le moyen âge*, 54 (1948): 209–23.

perform calculations; however, knowledge of the abacus was not available in medieval Europe until the tenth century.⁶

The early Middle Ages inherited two systems for coping with this deficiency: finger-notation and Greek letter-numerals. Bede describes them both in this chapter.

It is important to emphasize that we know how numbers were *represented* with hand-signs in Roman culture, but can only infer how calculations were *performed*. The notation⁷ used both hands, the left for units and tens, the right for hundreds and thousands, and it formed the individual numbers either by bending the last three fingers to various degrees and in varying combinations, or by forming different figures with the thumb and index finger. The system incorporated an implicit concept of 'place' or rank in that the integers were formed on the last three fingers of the left hand (hence the technical term for the integers was *digiti*, 'fingers'), the tens with the index and thumb of the left hand (hence these numbers were called *articuli*, 'joints'), the hundreds with the index and thumb of the right hand, and the thousands with the last three digits of the right hand. Moreover, the system also has an implicit zero. If in any rank the fingers are simply held upright and relaxed, no numbers are to be read in that rank. The hands alone are used for numbers up to 9999, while other parts of the body are called into play to represent numbers beyond 10,000.⁸ As the positions are sometimes difficult to visualize from Bede's

6 Charles Burnett, 'The Abacus at Echternach in ca. 1000 A.D.', *Sciamus*, 3 (2002): 91–108; Gillian Evans, "'Difficillima et ardua": Theory and Practice in Treatises on the Abacus, 950–1150', *Journal of Medieval History*, 3 (1977): 21–38.

7 Roman finger-reckoning is discussed by Burma P. Williams and Richard S. Williams, 'Finger Numbers in the Greco-Roman World and the Early Middle Ages', *Isis*, 86 (1995): 587–608. This article includes an extensive anthology of classical and early medieval references to finger notation, including a translation of this chapter of *The Reckoning of Time*, as well as a survey of the older literature. For a thoughtful survey of the long cultural life of this form of finger-reckoning, see Moritz Wedell, '*Actio – loquela digitorum – computatio*: Zur Frage nach dem *numerus* zwischen Ordnungsangeboten, Gebrauchsformen und Erfahrungsmodalitäten (Einleitung II)' in *Was zählt: Ordnungsangebote, Gebrauchsformen und Erfahrungsmodalitäten des 'numerus' im Mittelalter*, ed. Moritz Wedell (Cologne, Weimar and Vienna: Böhlau, 2012), 15–63.

8 In one of his sermons, however, Bede implies that calculation with the fingers was performed only up to the thousands place, so the larger numbers must have been employed only for representation. In *Homeliae* 2.2, Bede is explaining the mystical significance of the 5000 who were fed with the loaves and fishes: *Millenarius autem numerus ultra quem nulla nostra computatio succrescit plenitudinem rerum de quibus agitur indicare consuevit ...*: ed. Hurst, 168.259–264. Martin and Hurst translate this as follows: 'The number one thousand,

text, an illustration is provided, based on one of many such illustrations in manuscripts of *The Reckoning of Time*.⁹



Figure 1 Illustration of hand positions for numbers, based on Vatican City, Urb. lat. 290 (s. XI) fol. 31r.

Exactly how calculations could have been performed using *computus digitorum* is not explained in ch. 1, or in any of the medieval glosses on this chapter. But, elsewhere in *The Reckoning of Time*, Bede gives us some clues. First, he explains how to make compound numbers by representing numbers in two ranks on the same hand. His code for secret communication translates letters into number-values based on alphabetical position (A=1, B=2, etc.), with which one could cipher messages silently to a friend across a crowded room by making number-signs for the coded letters

beyond which no calculation of ours extends, customarily indicates the fulness of the things which are under consideration ...' (19). But this does not make sense, on two grounds. First, the finger-symbols extend well beyond 1000, all the way to 9999. Secondly Bede could certainly count, and compute, numbers beyond 9999; cf. ch. 65, where he calculates the number of days in the 532-year Paschal cycle as 194,313. I would suggest that *millenarius numerus* should be rendered as 'a number in the thousands', and *computatio* as 'counted' in this case. Hence Bede is specifically referring here to the limitations of finger-notation.

9 For manuscripts containing ch. 1 with illustrations, see Appendix 5, nos 29, 58, 129, 158, 194, 217, 220, 250, 251, 260, 262, 264, and 277. For discussion see Alfred Cordoliani, 'Un manuscrit de comput mal connu de la Bibliothèque nationale de Madrid', *Revista de archivos, bibliothecas y museos*, 57 (1951): 5–35.

with one's hands. One has to use compound numbers to do this, because there are twenty-three letters in the Latin alphabet; and, indeed, Bede's example uses some compound numbers. This game, if such it is, may also have deep antique roots: in Martianus Capella's *De nuptiis Philologiae et Mercurii* (a text not known to Bede) Lady Arithmetic salutes Jupiter by making the number 717 on her fingers, which is the numerical value of the letters in his title $\eta \dot{\alpha} \rho \chi \eta$, 'The First'.¹⁰ Roman game-counters or tesserae depicting finger numbers depict composite numbers.¹¹ The number twelve, for instance, is made by forming two with the last fingers and ten with the thumb and forefinger.

There is indirect evidence that calculations were actually performed using the finger-numerals.¹² But how? Moritz Cantor proposed that finger-reckoning was a way to temporarily store intermediate sums when performing mental arithmetic, and this is supported by medieval Arabic treatises.¹³ But it seems that something more dynamic could also be involved, especially where the ability to do mental arithmetic was limited. For example, in a sermon addressed to the laity on the miraculous draught of fishes, Augustine asks his audience to prove to themselves that the number of fish – 153 – is formed by adding together all the numbers in sequence from one to seventeen. Seventeen in turn is formed from two

10 7.729, ed. Willis 261.11–13. Also unknown to Bede was Pliny's reference in *HN* 34.15.33–34 (ed. Rackham 9.152) to the statue of Janus erected by Numa that represented on its hands the number 365, i.e. the days of the solar year. Bede did not have a complete copy of *HN*: see p. 101 n. 304.

11 Elisabeth Alföldi-Rosenbaum, 'The Finger Calculus in Antiquity and in the Middle Ages. Studies in Roman Game Counters I', *Frühmittelalterliche Studien*, 5 (1971): 1–9.

12 S. Calderone, 'Digitis conludentibus', *Rivista di filologia e di istruzione classica*, 104 (1976): 31–5, points out that Quintilian's warning about making mistakes with sums etc. indicates that *loquela digitorum* was used not just to represent numbers but to calculate with them. He concludes that the obscure phrases *consuetudo micandi* and *digitis conludentibus* in the edict of the urban prefect Turcius Apronianus refer to collusion between one of the parties to a stock sale and the market officials over the weight of the animal, based on 'slight of hand' in adding up figures. However, he emphasizes, with quotations from Bede and Quintilian, that finger-computation was a difficult and technical system, not a kind of folk arithmetic.

13 Moritz Cantor, *Vorlesungen über Geschichte der Mathematik*, 3rd ed. (Leipzig: Teubner, 1907), 1.829. For medieval Arabic treatises, see A.S. Saidan, 'The Arithmetic of Abū'l-Wafā', *Isis*, 65.3 (1974): 369–75, and 'Finger Reckoning in an Arabic Poem', *The Mathematics Teacher*, 61.7 (1968): 707–8, as well as Jeffrey A. Oaks, 'An Arabic Finger-Reckoning Rule Appropriated for Proofs in Algebra', *Convergence* December 2018, DOI: 10.4169/convergence20181221.

highly symbolic numbers, ten and seven. ‘Ten and seven make 153, for if you count from one to seventeen and add together all the numbers... one, two, three <and so on> – 1 and 2 and 3 are 6; 6 and 4 and 5 are 15 – you finally arrive at 17, carrying (*portans*) 153 on your fingers.’¹⁴ While mentally adding together one, two, and three seems simple, how would Augustine’s parishioners have performed the last operation in the exercise, namely adding 17 and 136? It is doubtful that they did it in their heads. Rather, the fingers must have been used to tabulate the addition, rank by rank.

We might tentatively reconstruct the process as follows. To add 17 to 136, begin by forming the number 136 on one’s hands. Then add 7 to the 6 already on the *digiti* of the left hand. One might know by heart that 7 and 6 make 13, but even if one did not, one had simply to count forward seven places on one’s fingers, tally-fashion. When one reaches 10 on the *digiti* (i.e. after counting forward four steps), one carries the 10 over to the *articuli*, and adds this 10 to the 30 already shown on the *articuli* by moving the *articuli* up one notch, raising the total on the *articuli* to 40. One then finishes the count to 7 on the *digiti*, for a total of 3. Finally, one adds the 10 of 17 to the *articuli* by moving the *articuli* forward one notch, raising the total to 50. The computation being finished, one looks at one’s hands, as Augustine says, and reads the ‘digital display’: 153. All one needs to know in order to add is the *sequence* of the finger positions – in short, how to count on your fingers. With the fingers recording one’s count, one can temporarily ‘forget’ the first number and concentrate on keeping a running total on the fingers. It is rather like pressing ‘+1’ over and over on a modern electronic calculator, and then reading the result on the liquid crystal display. Subtraction can be done by reversing the addition method, and one can even multiply, provided multiplication is performed as a series of additions: i.e. 7×3 is performed as $7 + 7 + 7$. This is, of course, a very laborious way of multiplying, but the only alternatives were memorizing the multiplication table or consulting a multiplication table in a book.¹⁵ If

14 *Decem et septem faciunt centum quinquaginta tres. Si vero computes ab uno usque ad decem et septem et addas numeros omnes: nam si ab uno usque ad decem et septem numeros non addas, quos commemoras totos, non erunt nisi decem et septem: si autem ita numeres: unum, duo, tria: sicut unum et duo et tres faciunt sex, sex quattuor et quinque faciunt quindecim; sic pervenis usque ad decem et septem, portans in digitis centum quinquaginta tres. Sermo 270.7 (PL 38.1244–45).*

15 Edward Bechtel suggested that the Romans multiplied by successive addition even on the counting board or abacus: ‘Finger-Counting Among the Romans in the Fourth Century’,

one were incapable of the one and had no access to the other, multiplication by successive additions was still possible by finger-reckoning. Division would be carried out by analogous procedures. For the computist, division usually meant dividing the AD – a three- or four-digit number – by 19, 28, or 15 to find the position of any given year within the lunar, solar, or indictional cycle.

Elsewhere in *The Reckoning of Time*, Bede furnishes verbal descriptions of the calculating process which reveal something of how finger-computation might have functioned for medieval computists. In ch. 22 he gives the following formula for finding the age of the Moon:

If you wish to know how old the Moon is on this or that day, count the days from the beginning of January up to the day you want, and when you know this, add in the age of the Moon on the Kalends of January. Divide the total by 59, and if more than 30 remain, subtract 30. What is left over is the day of the Moon you are seeking ... So for example, if you wish to know what the age of the Moon is on the Kalends of May in a year in which the Moon is nine days old on the Kalends of January, say 'May: 121 on the Kalends'. Subtract the <day of the> Kalends, and 120 remains; add 9, and that makes 129. Divide by 59: 59 times 2 is 118. Subtract 118 and 11 remain. The Moon is eleven days old on the Kalends of May ... In using this formula, it is helpful if the calculator commits the products of the fifty-nine-times table to memory.

'Helpful' indeed, but not strictly speaking necessary. Notice the terms in which Bede describes the process of division. First one 'says' the dividend out loud because one cannot show it on the hands, so one will have to fix it in the memory. It will be recalled that, in describing the finger positions, Bede likewise instructs his pupils to 'say' the numbers as they form them, so that they can engrave the connection between the number and the symbol in their memory. The next step is the actual process of

Classical Philology, 4 (1909): 31. J. Hilton Turner suggests that multiplication could be worked by registering 'successive sums in a series of additions on the fingers', but does not demonstrate how. In his view, complex operations would have to be done on the abacus, though he admits that this is 'an assumption based on surprisingly little direct evidence': 'Roman Elementary Mathematics: the Operations', *The Classical Journal*, 47.2 (1951): 69. In the end, there is little concrete evidence for these operations. It is perhaps telling that the great manual of Tudor mathematics, Robert Recorde's *The Grounde of Artes* (1543) included a plate showing the finger-positions, and promised to teach 'addition, subtraction, multiplication and division <using these positions> which yet were never taught by any man as far as I do know', but then failed to do so: Gordon Roberts, *Robert Recorde: Tudor Scholar and Mathematician* (Cardiff: University of Wales Press, 2016), 52.

division, which takes place as a sequence of multiplications up to a point where the next multiplication would produce a product in excess of the dividend: Bede ‘divides’ by *multiplying* 59 by 2, and when he realizes he cannot go any further, subtracting the product from the dividend to find the remainder. Hence he recommends memorizing the fifty-nine-times table. However, this can even be done by successive additions should one not know the fifty-nine-times table by heart. Once you have this product, you can subtract it from your memorized figure for the number of days between 1 January and your desired date.¹⁶

If *computus digitorum* was indeed used for calculations, why did Bede not tell his students how to perform it? One answer may be that he was uncertain how to express it. A procedure for calculating using finger-numbers is nowhere laid out in detail in ancient scientific literature,¹⁷ although literary allusions to its practice abound.¹⁸ The earliest Latin description is found in the Irish *computus* anthology used by Bede, the ‘Sirmond manuscript’ discussed in the Introduction. But this *Romana computatio* or *De flexibus digitorum*¹⁹ merely describes the positions

16 The 1 January date suggests a possible Irish source. Forward counting on the fingers was a feature of Irish *computus* up to the mid-eighth century. Even Irish texts advocating the Dionysian system avoided Dionysius’ *argumenta* in favour of finger-counting from the weekday and lunar data of 1 January: Warntjes, *Munich Computus* lxxii–lxxiii. In the Irish-inspired *Liber de computo* in Milan Ambrosiana H 150 inf. (Bobbio, ca. 810), fol. 18vb there is an interesting example of division by reduction, using successive multiplications and subtractions. The author has just calculated that there are 8760 hours in a year. ‘Divide these into 7 parts. First make 7000, and 1760 remain. Then multiply 7 by 200. That makes 1400. <Subtract this from 1760: the result is 360>. Then multiply 7 by 50. That makes 350, with 10 remaining <after subtracting 350 from 360>. Then multiply 7 by 1, and 3 remain. This hour makes one day in four years.’ (*Diuide illas in vii partes. Primum facies septies mille. remanent mille DCCLX. Iterum facies septem ccⁱ fiunt mille cccc. Iterum facies septies quinquageni fiunt cccl. remanent x. Iterum facies septuagine vii remanent iii iste tres horae faciunt unum diem in quattuor annis.* Cf PL 129.1296BC). Bede will critique the notion that the leap-year increment is twelve hours in ch. 39.

17 Jones, ‘Bede’s Place’ 279 n. 29.

18 See anthology assembled by Williams and Williams, ‘Finger Numbers’ (n. 7 above).

19 Edited by Jones in *BP* 106–8, and in revised form in *BOD* 671–2. For English translation, see Williams and Williams, ‘Finger Numbers’ 605–6. The Sirmond MS (Oxford, Bodleian Library 309; see Introduction, p. 62) contains this text on fols 97v–98r. Other versions survive in the ‘Bobbio *computus*’, Milan Ambrosiana D.150 inf. (Bobbio, s. IX) and in London, British Library Cotton Caligula A.XV (n. France, s. VIII), from which latter MS the text was transcribed and discussed by Cordoliani, ‘À propos du chapitre premier’. For the numbers above 9999, the London manuscript differs from the Milan and Sirmond codices, and Bede’s text agrees with the London version. There is also a tabular depiction of finger-reckoning

representing the various numbers, and says nothing about operations. For this reason, Bede may have felt unsure about how to put the operations into words. Indeed, Bede on a few occasions claims that he often found it difficult to reduce mathematical procedures to expository prose.²⁰ The technique of calculation may also have exceeded the capacities of his readership. At the very outset of ch. 1 Bede admits that there was some resistance to learning finger-calculation, and in chs 18 and 22 he half-heartedly provides alternative methods for students who cannot, or will not, learn to calculate.

Finally, Bede may never have intended to sell the usefulness of the system primarily as a tool for calculation, but as a demonstration of the bond between numbers and words, notably the saving words of Scripture. For this reason, Bede paraphrases Jerome's exegesis of the Parable of the Sower. The thirty-, sixty- and hundredfold yield of the seed which falls on good ground is interpreted as three states of life – marriage, widowhood, and virginity – and each state of life is symbolized by the finger-position representing its number.²¹ Having convinced his students that knowledge of finger-reckoning is not only relevant but endorsed by patristic authority, Bede can proceed to describe the basic positions. The positions are combined, however, not to work sums, but to spell out messages. In the substitution code Bede describes for finger-reckoning, the number which the 'speaker' signs to the 'listener' represents the letter's position in the alphabet; the 'listener' can decode the message by turning the numbers into letters. The message is an urgent one: take care, act with caution.

The second system described in ch. 1 is the Greek letter-numerals, which Bede refers to as *computus Graecorum*. It assigns a single letter of the Greek alphabet to each digit from one to ten, then to each of the tens to ninety, and to each of the hundreds to 900. The distribution follows the order of the Greek alphabet. However, since twenty-seven symbols are required, and the Greek alphabet contains only twenty-four letters, the obsolete letter *digamma* (or the symbol called *stigma* or *episemon/episinon*) was used to represent six, the archaic letter *koppa* stood for ninety, and a

reproduced in PL 90.693, which appears in numerous manuscripts of dating from the early ninth century: Jones, *BOT* 329–30. All the manuscripts listed by Jones have Insular links, so this version, like the *Romana computatio* itself, may also have originated in the British Isles.

20 See Introduction, p. 56 and n. 172.

21 This allegory certainly caught the attention of Bede's readers: see Stock and Synan, 'A Tenth-Century Preface to Bede's *De temporum ratione*'. For another poem inspired by ch.1, see Brian Stock, 'Amor communis omnibus: Paris, B.N. lat. 11130', *Mediaeval Studies*, 33 (1971): 351–3.

variant form of the letter *sampi* called *enacosse* for 900.²² The advantage of this system, as Bede himself declares, is that it employs a single and distinct siglum for each number, within each rank. Thus, in principle at least, when compound numbers were written vertically the place columns would align, allowing one to add each column and carry the excess to the next column. However, Bede presents the Greek letter-numbers not as a system for ciphered computation but as a substitution code for a textual message.

Indeed, Bede and his contemporaries would probably have encountered the Greek letter-numbers *only* as a code, in the so-called *litterae formatae*. These were official documents – in the early Middle Ages, usually papal or episcopal ‘passports’ for travelling clergy – which were protected from forgery by a special numerical cryptogram. If the numbers of the cryptogram were resolved according to the *computus Graecorum* they would yield the initial letters of the sender, recipient, place of origin, and date.²³ The rules for *litterae formatae* even ascribed the system to the Fathers of the Council of Nicaea – the same Fathers who, according to Dionysius, legislated the nineteen-year Paschal cycle.²⁴

It is worth pausing here to consider, if only briefly and very superficially, the important role played by cryptography, exotic and artificial alphabets, and puzzles in clerical–monastic culture, and particularly in *computus* manuscripts. When Bede suggests that his brethren send secret messages to one another in code, he is echoing Jerome’s preface to his *Life of Pachomius*, the father of cenobitic monasticism. An angel

22 Dáibhí Ó Cróinín, ‘Mo-Sinnu moccu Min and the Computus of Bangor’, in his *Early Irish History and Chronology*, 35–47, esp. 37 and 42–3.

23 Clara Fabricius, ‘Die *litterae formatae* im Frühmittelalter’, *Archiv für Urkundenforschung*, 9 (1926): 38–86 and 168–94.

24 Fabricius, ‘Die *litterae formatae* im Frühmittelalter’ 39–40. According to a note in an eighth-century Irish manuscript of the Gospel of Matthew, now Würzburg Universitätsbibliothek M. p. th. f. 61, Mo-Sinnu moccu Min, abbot of Bangor (d. 610), was ‘the first of the Irish who learned the Computus by heart from a certain Greek’. His disciple, Mo-Chuaróc, later ‘committed this knowledge in writing, lest it should lapse from memory’. Jones and others concluded that this Greek *computus* was Alexandrian reckoning, but this hypothesis has been refuted by Ó Cróinín, who was the first to transcribe the full text of the Würzburg note. The final sentence of the note identifies the *computus* which Mo-sinnu learned as the Greek system of letter-numerals described by Bede’s *computus Graecorum*, for it closes with an explanation of the three additional symbols ‘which the Greeks insert in amongst the letters, lest the order of the numbers be disturbed (*Sed tamen inseruntur apud Grecos inter literas, ne turbetur ordo numerorum*)’: ‘Mo-Sinnu moccu Min’ 290.

(says Jerome) gave knowledge of an unknown language to Pachomius, Cornelius, and Syrus so that they could communicate with one another using an *alfabetum spiritale* to ‘conceal profound ideas’ under the cloak of this cipher. Nonetheless, Jerome ‘translated’ these letters, so the code – assuming it existed – must have been shared within and beyond the monastic community.²⁵ Allegedly, Pachomius also received *via* angelic revelation knowledge of the nineteen-year Paschal cycle (Bede will report this in ch. 43) or, in other accounts, the precepts of his monastic rule.²⁶ *Computus*, with its combinatorial rules and formulae, calendar key-letters, and decoding tables (cf. chs 19, 22) could be considered as a form of clerical–monastic arcana. Little wonder, then, that *computus* albums often contain pages of runic, Ogham, ‘Chaldean’, or simply invented alphabets alongside the *computus Graecorum*.²⁷ The very ambiguity of the term *computus* (*Graecorum*) cemented the link.

25 *Aiunt autem Thebaei quod Pachomio Cornelioque et Syro, qui usque hodie ultra centum et decem annos uiuere dicitur, angelus linguae mysticae scientiam dederit, ut scriberent sibi et loquerentur per alfabetum spiritale, signis quibusdam et symbolis absconditis sensus inuoluentes; quas nos epistulas ita ut apud aegyptios graecos que leguntur in nostram linguam uertimus: eadem ut repperimus elementa ponentes, et quod simplicitatem aegyptii sermonis imitati sumus interpretationis fides est, ne uiros apostolicos et totos gratiae spiritalis sermo rhetoricus inmutaret. Pachomiana latina*, ed. A. Boon (Louvain: Universiteitbibliotheek, 1932), 8.

26 See above p. 253, and below (Commentary). The connection between Pachomius, *computus*, and secret writing is discussed by E.J. Christie, ‘By means of a Secret Alphabet: Dangerous Letters and the Semantics of *Gebregdstafas* (*Solomon and Saturn* I, line 2b)’, *Modern Philology*, 109.2 (2011): 145–70 at 148–9, 166–7.

27 For example, Walafrid Strabo’s personal anthology of *computus*, chronology, and grammar (St Gall 878) also contains a page of Hebrew, Greek, and runic alphabets: Stevens, *Rhetoric and Reckoning in the Ninth Century* 86–7. See also Appendix 5, no. 36 (Bern Burgerbibliothek 207), possibly the earliest manuscript where ch. 1 is excerpted. It is accompanied by table of Greek letter numbers, along with Ogham and runic alphabets. For an example from an eleventh-century English album see Ciaran Arthur, ‘The Gift of the Gab in Post-Conquest Canterbury: Mystical ‘Gibberish’ in London, British Library MS Cotton Caligula A. XV’, *Journal of English and Germanic Philology*, 118.2 (2019): 177–210. Other contemporary examples are cited by K. Dekker, ‘Alphabets in Anglo-Saxon Manuscripts’, in *Limits of Learning: The Transfer of Encyclopedic Knowledge in the Early Middle Ages*, ed. C. Gilberto and L. Teresi (Leuven: Peeters, 2013), 81–108. Part 3 of Byrhtferth of Ramsey’s *Enchiridion of computus* contains an exposition of Latin, Greek, and Hebrew letters, as well as *notae sententiarum* (editorial marks): 3.3.156–9, ed. Baker and Lapidge 174–5. James J. Murphy, ‘The Rhetorical Lore of the *boceras* in Byrhtferth’s *Manual*’, in *Philological Essays: Studies in Old and Middle English Language and Literature in Honour of Herbert Dean Meritt*, ed. James L. Rossier (The Hague: Mouton, 1970), 111–24; reprinted in *Latin*

Strictly speaking, *computus Graecorum* has nothing to do with the calendar, or even with calculation: Bede states that it is useful for cryptography, not computation.²⁸ Nonetheless, Bede's inclusion of the Greek numerals in *The Reckoning of Time* did result in their being used by computists, albeit neither as a mode of calculation nor as a substitution code. From the late tenth to the twelfth century, Greek letter-numbers were not uncommonly used in *computus* tables in preference to, or in parallel to, Roman numerals. Why the designers of these tables preferred Greek numerals is not altogether clear. A plausible explanation is that they are more compact than Roman numerals, and therefore easier to inscribe into the restricted and inelastic spaces of a grid. They could also be read more quickly and easily, and mistakes in transcription were less likely.²⁹ But some computists, such as Abbo of Fleury (d. 1004) designed multiple versions of tables in both Greek and Roman notation.³⁰ This would suggest that facility with Greek numerals was a display of esoteric technique or quasi-secret knowledge, even when the intent was not cryptographic.

Finally, it should be noted that ch. 1, and particularly the part of it

Rhetoric and Education in the Middle Ages and Renaissance, Variorum Collected Studies Series 827 (Aldershot: Ashgate, 2005).

28 Ó Cróinín ('Mo-Sinnu moccu Min' 290) argues that these Greek letter-symbols were an adjunct to finger-computation and learned as part of that system. But there is no functional link between the two. Tracts describing the two systems are rarely fused in the manuscripts: in Bede's own Sirmond compilation, for instance, the Greek letter-numerals are found on fol. 61v and the *Romana computatio* on fols 97v–98r, and, when ch. 1 of *The Reckoning of Time* was excerpted, the section on Greek numerals was often omitted. The finger-notation for numbers described in ch. 1 of *The Reckoning of Time* is not functionally related to other forms of mnemonic-combinatorial 'hands' used for calculating dates. Bede will describe one such hand in ch. 55, and many others were devised after the twelfth century (*computus chirometralis*): Nothaft, *Scandalous Error* 119–20.

29 These advantages are signalled by the Laon glossator: *Facilius enim cognoscunt Greci numerum ex suis literis quam nos ex nostris, quia unusquisque numerus apud illos habet suam propriam literam per quam intelligatur. Latini autem no intelligunt numeros nisi paucis literis isdemque etiam geminatis*. ('The Greeks learn number<s> more readily from their letters, than we do from ours. For with them, each number has its own proper letter, through which it is recognized. The Latins do not recognize numbers save by means of a very few letters, but these doubled': ed. Jones 272, *ad lineam* 80).

30 See tables from his *computus* in Berlin, Staatsbibliothek Phill. 1833, ed. Alfred Lohr, *Abbonis Floriacensis Miscellanea de computo, de astronomia et de cosmographis secundum codicem Berolinensem Phill. 1833*. Introduction by Barbara Obrist, CCCM 300 (Turnhout: Brepols, 2019), 19 and 125 (two versions of the *pagina regularis*).

devoted to finger-numerals, is by far the most frequently excerpted section of *The Reckoning of Time*. It can be found not only in *computus* albums and works on mathematics but also in manuscripts dedicated to grammar, because the signs can be used as letters.³¹ But the connection to *computus* remained central: Bede's source, the *Romana computatio*, was often ascribed to him by mistake, as was a later adaptation beginning 'Tres digiti in sinistra manu ...'.³²

CHAPTER 2

Applying the grammarians' distinction between nature, custom, and authority to time-reckoning is original with Bede and critical to his understanding of *computus*. Some divisions of time are grounded in the natural movements of astronomical time-markers, such as the solar year of 365¼ days; others derive from convention (Bede's example is the notional thirty-day month); and others are legislated by human or divine authority, such as the Olympiad or the Jubilee. Terms such as 'year' or 'month' can therefore have different meanings, depending on the mode of time-reckoning to which they refer.³³ Hence 'with nature as our guide' we know that a lunar year is 354 days long if it is a common year and 384 days long if embolismic, and that each of the planets traverses the zodiac in its own distinctive 'year'. Bede comes close to endowing nature with an identity and agency when he appoints her as 'our guide'. We learn from nature a different value for the length of the year or the month from that which calendrical convention dictates.³⁴

Invoking 'nature as our guide', however, prompts Bede to qualify what he means by 'nature': 'This "nature" was created by the one true God when He commanded that the stars which He had set in the heavens should be

31 E.g. Appendix 5, nos 104, 182.

32 Jones *BP*, 53–4.

33 Bede may be taking his cue here from Augustine's *De Genesi ad litteram* 2.14, ed. Zycha, 55. 54–56. Augustine points out that the divisions of time are relative: 'year', for example, could mean a solar sidereal year or the period of any other planet's passage through the zodiac. Any of these meanings might be encountered in Scripture: cf. Eileen Reeves, 'Augustine and Galileo on Reading the Heavens', *Journal of the History of Ideas*, 52 (1991): 563–79, esp. 567–73. Bede will develop this idea of the polysemy of terms such as 'week' and 'year' in chs 8–10, 36–37.

34 See Introduction, pp. 76–9.

the signs of seasons, days and years; it is not, as the folly of the pagans asserts, a creating goddess (*dea creatrix*), one amongst many.³⁵ ‘Natural time’ is ‘divine’ because it was reckoned by the heavenly bodies, which are God’s creation, a point Bede will elaborate further in ch. 6. But why did Bede consider it necessary to attack the idea that Nature was a *goddess* in a polytheistic pantheon, and herself the creator? After all, Augustine had made it clear that ‘nature, uncreated and creating’ was God himself.³⁶ Why not simply invoke Augustine’s authority and be done with it?

A reasonable hypothesis is that somewhere in his reading Bede had found the words, or at least the notions, of *natura*, *dea*, and *creatrix*, together. Jones’ apparatus cites Lucretius, *De rerum natura* 1.629, but it is extremely unlikely that Bede knew Lucretius at first hand, save perhaps through an excerpt in a grammar text; even Isidore does not appear to quote this particular line.³⁷ Another possible target is Cicero’s *De natura deorum* 2.57.142 (‘And who other than nature is the craftsman <of the universe>?’ *Quis vero opifex praeter naturam?*), but it is also unlikely that he had access to this work.³⁸ Pliny’s *Natural History* refers to nature as *parens* or *domina omnium rerum*, but most other classical or pagan authors who characterize nature in such terms were not available to Bede.³⁹ In any event, it was to be expected that a pagan might divinize nature, and hence Bede presumably was under no obligation to refute this idea.

However, the situation might be viewed differently if the notion of the creating goddess Nature came from a Christian source. One candidate is the fifth-century Christian Latin poet Dracontius, whose *Praises of God* (*De laudibus Dei*) opens with an account of creation. Dracontius personifies Nature as both the recipient of God’s command to create the world in the

35 Bede made the same point about nature, custom, and authority in ch. 1 of *On Times*, but placed all three on the same syntactic level (ed. Jones 587.10). It is interesting that in the *Letter to Wicthed* 7, the issue is the leap-year increment; he uses the more impersonal phrase ‘according to nature’ (*secundum naturam*) to indicate that in astronomical terms it accrues at the end of the solar year (i.e. at the spring equinox), though according to ‘human custom’ the leap-year day is inserted into the calendar on various dates.

36 *deus est, natura scilicet non creata, sed creatrix*: *De Trinitate* 15.1.1, CCSL 50 (1968), 1.9.

37 Michael Lapidge, *The Anglo-Saxon Library* (Oxford: Oxford University Press, 2006), 66, 67, 101–4, 219.

38 It turns up in Jones’ *apparatus fontium* to *The Nature of Things* 12.1 (203) at the end of a chain of other possible parallels; but see Lapidge, *Anglo-Saxon Library* 205.

39 Mechthild Modersohn, *Natura als Göttin im Mittelalter. Ikonographische Studien zur Darstellungen der personifizierten Natur* (Berlin: Akademie Verlag, 1997), 17–18.

beginning and the source of His continued unfolding of creation over time. God is the ultimate cause of all things, who, in separating light from darkness, made fire, and this fire warmed the waters of Earth: 'Creating Nature (*natura creatrix*) generated from thence, remained potent, retaining within herself whatever would flow out over time'.⁴⁰ Bede certainly knew Dracontius' poem, and the phrase *natura creatrix* is striking.⁴¹ However, Dracontius never calls Nature a goddess, and certainly not 'one among many'. Indeed, literary representations of Nature as a goddess are all but unknown prior to the twelfth century.⁴² Even Prudentius' *Against Symmachus*, which Bede knew and cited, and which condemned the pagan worship of nature, does not claim that she was treated as a goddess. Nature did not beget humankind, but only sustains it.⁴³ Finally, one of Bede's favourite works of Christian poetry, Sedulius' *Carmen Paschale*, invokes the aid of God the Creator in undertaking the author's own (literary) creation: 'With you as guide the way is not hard; all nature is subject / To your rule ...' (*Te duce difficilis non est uia; subditur omnis / Imperiis natura tuis* ...).⁴⁴ It is not impossible that Bede's haste to qualify nature's

40 *Inde potens generata manet natura creatrix, / intra se retinens quicquid per saecula refundit*: Dracontius, *Oeuvres. Louanges de Dieu Livres I–II*, ed. Colette Camus (Paris: Les Belles Lettres, 1985), 1: 22–28. See discussion by Paul-Augustin Deproost, 'Natura Creatrix. Jeux d'eau, de lumière et de feu aux deux premiers jours du monde dans l'Hexaméron poétique de Dracontius', in *Science et exégèse. Les interprétations antiques et médiévales du récit biblique de la création des éléments (Genèse 1.1–8)*, ed. Béatrice Bakhouch (Turnhout: Brepols, 2016), 225–43. Deproost argues that Dracontius' *Natura creatrix* is a secondary cause of creations, which regulates the action of the elements so as to bring forth all the creatures with which she is pregnant.

41 Lapidge, *Anglo-Saxon Library* 207.

42 Most scholarship on this theme, from George Economou, *The Goddess Natura in Medieval Literature* (Cambridge, MA: Harvard University Press, 1972) to Barbara Newman, *God and the Goddesses: Vision, Poetry and Belief in the Middle Ages* (Philadelphia: University of Pennsylvania Press, 2003), begin with the twelfth century. See Wallis, 'Si Naturam Quaeras' 72 n. 16.

43 *Contra Symmachum* 1.12, ed. J.H. Thomson (Cambridge, MA: Harvard University Press and London: Heinemann, 1919), 350 (Romulus forbade the worship of *elementorum naturam* which is the handiwork of the Father of all); 1.327–8 (374) (the true God *praesidet omni naturae*) and 2.795–6 (Nature is *capax* in the creation of humans, but her only job is to feed them (*tantum pascere iussa est*)); Ernst Robert Curtius, *European Literature and the Latin Middle Ages*, trans. Willard D. Trask (Princeton, NJ: Princeton University Press, 1973), 107.

44 Sedulius, *The Paschal Song* 1.85–6, ed. and trans. Carl P.E. Springer (Atlanta: Society of Biblical Literature, 2013), 6–7. Springer's text offers revisions to the standard text by Johannes Huemer, *Sedulii Opera Omnia* (CSEL 10, 1885). *Te duce* also appears in Virgil's famous Fourth Eclogue, with its invocation of the new age ushered in by Augustus. In the

powers was triggered by his own phrase *natura duce* – ‘with nature as our guide’ – and his recollection of Sedulius.

Certainly, resolving the status of nature was significant to Bede, who followed closely in the footsteps of Augustine in asserting that creation at every level was God’s work, and His alone. As part of his project to rewrite Isidore’s *On the Nature of Things*, he began his own book of the same title with a chapter on God’s fourfold work of creation as four layers of causality: in his eternal Word, God creates eternally; in the elements co-created with primordial matter, He created instantaneously; in the Six Days of Creation, these causes unfold in time to produce the distinct elements and contents of the material cosmos; and, finally, God’s work of creation persists in his continuous government of the universe, the dimension of creation which Dracontius assigns to *Natura creatrix*.⁴⁵

Yet, at the same time, Bede exhibits something of the interest of the Irish cosmographers of the seventh century in carving out a distinctive role for nature. No longer the governing deity of the lower world, ‘nature’ is now God’s law and instruction to His creation. Natural time was ‘hard-wired’ into the heavens on the fourth day of Creation; even the miracles of the Sun standing still on Gibeon (Joshua 10.12–14), or the shadow moving backwards up the Temple steps as a sign for King Hezekiah (2 Kings 20.1–11) cannot, in Bede’s view, stop time’s course. When God came to the aid of Joshua’s troops he took care to stop the Moon, as well as the Sun, precisely so as not to dislocate the rhythm of natural time.⁴⁶ Dethroned from the pantheon, deprived of a name and identity, nature resurfaces as, if anything, more powerful and unshakable than before. Indeed, Marina Smyth suggests that the very orderliness of *computus* may have reinforced the belief that the celestial world of ‘natural time’ was one of absolute order.⁴⁷

The Reckoning of Time shows how *computus* furnished a setting for a discussion (however qualified and cautious) of ‘nature’ in the early Middle Ages. Though Bede’s contemporaries certainly understood what he was talking about, it was the computists of a later age who elaborated

apostrophe to the consul Pollio the poet says ‘With you in the lead, anything that remains of our guilt will be annulled and the earth released from endless dread’ (*te duce, si quam manet scleris vestigia nostri. / inrita perpetua solvent formidine terras* (13–14)). Unfortunately, the Eclogues were not known in Anglo-Saxon England.

45 See Kendall and Wallis, *Bede: The Nature of Things* 135–7.

46 Smyth, *Understanding the Universe* 160–5, 169; cf. Bede, *In Regum librum XXX Quaestiones* 25, ed. D. Hurst, CCSL 119 (1972), 316–17.

47 Smyth, *Understanding the Universe* 171.

this theme. Virtually every major treatise written after 1100 begins with an explanation of the distinction between ‘natural’ (or ‘philosophical’) and ‘authoritative’ (or ‘ecclesiastical’ or ‘vulgar’) *computus*.⁴⁸ By then, however, with the arrival of new texts on astronomy through the Arab world, and in particular with the discovery of astrology, it had become plain that the *kind* of reckoning required for the Church’s calendar was substantially different from that demanded by astronomical measurement or astrological calculations. The former was necessarily approximate, particularly because it dealt only in whole days.⁴⁹

This is not to suggest that Bede shows no interest in divisions of time smaller than a day, or in fractions; indeed, the remainder of the technical propaedeutic of *The Reckoning of Time* is devoted to these subjects.

CHAPTER 3

Ch. 3 discusses intervals of time smaller than the day, the basic unit of *computus* – a subject not covered by the Irish *computus* textbooks. These include the hour, defined in both its sundial sense and its astronomical sense. Sundials were divided into twelve equal segments, so that the entire span of daylight, be it long or short as the seasons dictate, was divided into twelve hours. These were called ‘artificial’ hours, because they were defined by the artifice of the sundial. Hence an ‘hour’ in winter would be shorter than an ‘hour’ in summer. ‘Natural’ hours, or as Bede terms them, ‘equinoctial’ hours, are of a constant length, namely 1/24th of a day. At the equinoxes, daylight equals night, so equinoctial day and night hours are all the same length. However, there are more such equinoctial hours of sunlight in summer, and fewer in winter.

Bede assumes that his reader is familiar with both kinds of hour. While monks may have used sundial hours in their daily round (weather

48 See Nothaft, *Scandalous Error* chs 3–4, and ‘Technical Chronology and *Computus Naturalis* in Twelfth-Century Lotharingia: a New Source’, *Isis*, 115.1 (2024): 65–83.

49 For example, Master Cunestabulus, writing in England in 1175, states that ‘natural’ *computus* deals in uniform divisions of time, and for this reason deploys the smallest units, while ‘artificial’ *computus* calculates only with full days (*Naturalis aequis motibus aequas temporum portiones distribuit. Cuius rei gratia secatur tempus in minimas particulas. Artificialis solummodo dies integros computat et inaequalitatem obseruat*), *Opera de computo saeculi duodecimi*, ed. Alfred Lohr, CCCM 171 (Turnhout: Brepols, 2015), 61.4–62.7.

permitting), the calendars in their *computus* manuscripts would have made them aware of equinoctial hours, for one of the conventional addenda to the monthly calendar page was a note on the number of equinoctial hours of daylight and night in that month.⁵⁰ Another common feature of *computus* manuscripts, the *horologium*, showed this variation in diagrammatic form.⁵¹ Certainly, whatever convention was used for daily life, the student of *computus* needed to know about equinoctial hours, for they were the basis of all computations, such as the leap-year increment.⁵²

The intervals of time described in this chapter include the (solar) *punctus* (one-quarter of an hour), the *minutum* (one-tenth of an hour, i.e. six minutes of our time), the *pars* (one-fifteenth of an hour, i.e. four minutes by our modern reckoning), and the *momentum* (one-fortieth of an hour, or one and one half minutes).⁵³ Significantly, Bede points out that these conventional divisions were invented out of the necessity to divide the hour into segments of various lengths for the purposes of calculation. After explaining the etymology of these terms (following Isidore), Bede reinforces their conventional character by pointing out that astrologers (*mathematici*) use virtually the same terms, but with rather different meanings. For example, an astrological or astronomical *punctus* is one-twelfth of an astrological *pars*, which is one-thirtieth of a zodiac sign or, in other words, one day; hence an astrological or astronomical *punctus* is two equinoctial hours.⁵⁴

50 Every calendar included by Wormald in his *English Calendars Before A.D. 1100* contains such an addendum stating, e.g., in May the night is eight hours long and the day sixteen hours long.

51 E.g. PL 90.953–954. See Wallis, ‘An Eleventh-Century “Science Album”’ 54 (no. 67).

52 Max Lejbowicz argues that, by using the term ‘equinoctial hours’, Bede reveals the essentially unquantitative cast of his thinking, for ‘equinoctial hours’ invokes a concrete experience of time on a certain day, the equinox, not an abstract unit of measurement: ‘Postérité’ 6–7. However, the fact that Bede not only described the equinoctial hour but used it in calculations would seem to weaken this hypothesis. The ‘equinoctial hour’ is precisely the abstraction used for computation, while the unequal hour is the lived experience of time.

53 On the ancient background to these divisions, see P. Tannery, ‘Sur les subdivisions de l’heure durant l’Antiquité’, *Revue archéologique*, 26 (1895), rep. in his *Mémoires scientifiques*, 2 (Toulouse: Privat, 1912): 517–26; Grumel, *Chronologie* 164–5; On the *momentum*, see F. de Gandt, ‘Ébauche d’une notice sur *momentum*’, *Documents pour l’histoire du vocabulaire scientifique*, 1 (Paris: Editions du CNRS, 1980), 1–20.

54 Jones asserts that Bede’s use of the term *punctus* is ‘confusing’, because it means something different in this passage than it does in his enumeration of the computational divisions of the day given above. But that is precisely Bede’s point: these terms are conventional, not natural, and can be arbitrarily defined according to any system. As Bede states with reference to the *atomus*, it means something different to a grammarian and a computist.

Bede evidently understood what ancient technical astrology purported to do, and explicitly, even ostentatiously, rejected it. Technical astrology may not have been as unknown to the early Middle Ages as is sometimes asserted, and Bede's denunciation seems more than mere convention.⁵⁵ His concern about astrology will re-emerge in chs 11 and 16, when he discusses the signs of the zodiac. What is noteworthy here is that while Bede decries the pretensions of astrologers to predict fate from the stars, he does not mention the classical argument that man's free will transcends celestial determinacy. Possibly he felt nervous about the associations of this idea with Pelagianism.⁵⁶

What is the purpose of learning these divisions? Bede does not answer this question directly, but his response is implicit. Computists have to resolve their cycles into whole days in order to establish a calendar. On the other hand, arriving at the correct number of whole days will involve calculating not only fractions of days but even fractions of hours, as is the case with the *saltus lunae*, the correction in lunar reckoning at the end of

Bede also points out that *punctus* means one-fifth, not one-quarter of an hour when it is the Moon which is being reckoned (cf. ch. 17), a variation which did, indeed, sow some confusion amongst computistical writers: see *BOT* 333.

55 The argument that technical astrology was unknown prior to the twelfth century is represented by J. Tester, *A History of Western Astrology* (New York: Ballantine, 1987), ch. 3, and McCluskey, *Astronomies and Cultures*, 145–9. A revisionist perspective is presented by David Juste, 'Horoscopic Astrology in Early Medieval Europe (500–1100)', in *La Conoscenza scientifica nell'alto medioevo. Atti della LXVII Settimana di Studio del Centro italiano di studi sull'alto medioevo* (Spoleto: Centro Italiano di Studi sull'Alto Medioevo, 2020), 311–30. Juste presents evidence that horoscopic astrology was known in seventh-century Canterbury and witnessed by Aldhelm. It was certainly accessible by the later Carolingian period: see Juste's *Les Alchandreana primitifs. Étude sur les plus anciens traités astrologiques latins d'origine arabe (Xe siècle)* (Leiden: Brill, 2007). By contrast, it seems entirely absent from Bede's Irish source material: Smyth, *Understanding the Universe* 172. Lejbowicz, 'Postérité' 17–19, argues that Bede objects to the *mathematici* primarily because they spatialize divisions of time by assigning them to the zodiac and ecliptic, and because they claim to be able to measure infinitesimally small units. While such arguments appear in patristic literature, I do not think they are exactly Bede's. Bede, after all, claims that the computists (*calculatores*) make strict distinctions between *momentum*, *punctus*, and *atomus*, though ordinary usage treats them as synonyms. It is the astrologers' claim to deduce the fate of the newborn from the position of the stars that draws his criticism, not the division of the zodiac *per se*.

56 Lejbowicz, 'Postérité' 22.

the nineteen-year Easter cycle.⁵⁷ The evidence of the *computus* manuscripts suggests that teachers drilled their students in these terms.⁵⁸

CHAPTER 4

The final section of the technical propaedeutic concerns duodecimal fractions. These fractions would be used in the same context as the smaller units of time discussed above, for example in the calculations designed to resolve varying cycles into whole days, or in explanations of how such cycles work.⁵⁹ Bede's purpose here is to clarify terminology, especially since (as he points out) young pupils tend to misuse the terms. The terminology is fairly complex, as Romans had separate terms for the fraction itself and for the remainder of the unit, e.g. *uncia* = one-twelfth, *deunx* = eleven-twelfths, *quadrans* = one-quarter, *dodrans* = three-quarters.

A unique feature of Bede's discussion is the number of synonyms he knows for different kind of fractions, e.g. *libra*, *as*, and *assis* for 'pound'. This suggests that he drew on a grammatical source, perhaps a lexicon.⁶⁰ Like ch. 1, ch. 4 frequently circulated separately in *computus* anthologies.⁶¹ One medieval editor of *On Times* even inserted them into Bede's text (British Library Egerton 3088, fol. 79r, and its sibling Cotton Tib. E. IV, fols 134v–135r: see Appendix 5, nos 113, 115).

Noteworthy as well is Bede's concern to make the study of numbers relevant to the reading of Scripture, while at the same time turning his reading of Scripture into material for his scientific interests. The coherence of Bede's interests illustrates a distinctively monastic model of erudition in practice: reading Philippus Presbyter's commentary on Job, he discovers information on tides; commenting on the word *semis*, he recalls its appearance in the description of the Mosaic tabernacle.

57 Cf. *The Reckoning of Time* ch. 42.

58 For examples, see Jones, *BOT* 331–2.

59 Bede in fact uses these fractions rather seldom in *The Reckoning of Time*, e.g. the *bisse* ($\frac{2}{3}$) in ch. 16, or the *quadrans* in ch. 38. Jones (*BOT* 334) judged this chapter to be a relic of *computi* produced for the Roman eighty-four-year cycle, which lent itself especially to duodecimal division, especially as the *saltus* fell in the twelfth year of the cycle.

60 Florence Yeldham, 'Notation of Fractions in the Earlier Middle Ages', *Archeion*, 8 (1927): 313–29.

61 See Appendix 5 below, and cf. Jones, 'Byrhtferth Glosses' 85–6.

CHAPTER 5

The Reckoning of Time now moves on to the elements of time-reckoning linked to the solar calendar. Chs 5–43 cover the day, week, month, and year, as well as the zodiacal circle that marks the Sun's annual course, and elements of lunar reckoning that involve locating the Moon's position or phase on any given calendar date. They will also discuss equinoxes and solstices, the seasons, and the leap year. Even the Moon has a leap-year day added to its reckoning, and it also has its own 'leap' at the end of the nineteen-year cycle, to bring it back into line with the Sun.

Like the preceding chapters, ch. 5 begins with terminology, and particularly the distinction between conventional and specialized usage. Both the ordinary definition of 'day' as 'period of daylight' and the scientific meaning of 'period of 24 hours' are sanctioned by Scripture. Indeed, Bede reminds his readers that Christ himself used the human convention of 'unequal hours'. However, later, in ch. 24, he will imply that thinking in terms of unequal hours is something computists should avoid. In this chapter as well, scientific usage is ultimately promoted at the expense of the ordinary definitions.

Scripture is again the framework in which scientific curiosity and erudition come into play. Bede provides an excellent illustration of this in his discussion of what 'day' means in those passages of Genesis referring to the time before the creation of the Sun, a problem that exercised Irish computists and scholars before him, and which he alludes to in ch. 5. The Genesis narrative opens by stating that God 'created heaven and Earth', the latter being until then unformed and chaotic (Genesis 1:1–2). Then God made light, and separated light from darkness, thus making day and night (Genesis 1:3–5). But is Genesis 1:1–2 a summary of the entire Creation story, or does it form a temporal sequence with what follows, namely the account of the 'first day'? Bede had already made known his view that there are a number of orthodox readings of these passages. The four modes of divine creation discussed in the first chapter of *The Nature of Things* are each situated in a different temporal frame: in the eternity of God's dispensation; in the instantaneous creation of the elements; in the work of the Six Days; and in the continual sustaining and renewal of the world through 'seminal reasons'.⁶² In *The Reckoning of Time*, however, Bede refers to

62 *The Nature of Things* 1, ed. Jones 192, trans. Kendall and Wallis 74. Bede directly cites Augustine's *De Genesi ad litteram*, but the chapter also recalls Augustine, *Confessiones*

another Augustinian reading of creation from *De Genesi ad litteram*, one whose tenor is allegorical. Augustine argues that the initial verse ('God created heaven and earth') is a recapitulation of the whole Creation narrative. Since there was as yet no division between heaven and Earth on the first day (that was the work of the second day of Creation), there was no 'place' for the newly created light to come from or go to, so it cannot have behaved like the Sun to mark out a 'day' in the conventional sense. Bede reports this opinion, which indicates that he valued it.⁶³ But he seems to prefer, or think his pupils will understand better, the more straightforward approach of ps.-Clement, Basil, Ambrose, and Jerome: namely that Genesis 1:1–2 is part of the temporal sequence, and that the heavens, Earth, and 'abyss' were separated at the very outset of Creation. The angels were created before humans, and therefore heaven must have already existed as their home, as well as a place from which Lucifer could be cast out. There is thus a 'place' through which the primal light can move, to 'make' a day.

Bede then offers his own contribution to the patristic dialogue. The primal light on the first day rose in the east, between heaven and Earth, and illuminated every corner of the Creation, even the depths of the sea. This last is not as improbable as it may seem, Bede avers, for one can see into the depths of the ocean if one pours oil on the waters to create a smooth surface. Moreover, when the primal waters had not been compacted together into seas, they would have been more limpid and permeable to light. And, in the end, God's power can make light shine anywhere. What is noteworthy here is how Bede combines natural and supernatural explanations without feeling obliged to choose between, rank, or compare them. The primal light orbited, and finally set, just like the Sun; the only difference was that it produced no heat and, because the stars were not yet created, it left absolute darkness in its wake. The idea of the primal light implies that the 'heavens' created on the second day revolved once each day around the Earth, as they do now, and that they shone with the light created on the first day.

The ensuing discussion of the various starting points of the day is not merely an antiquarian exercise but relates directly to *computus*. Like all historic peoples, Christians have their own starting point for the day,

12.7.7–8.8, ed. Lucas Verheijen, CCSL 27 (1981), 219–20; cf. *De doctrina christiana* 3.27.38, ed. Martin 99–100.

63 Jones (*BOT* 335–6) argues that Bede is challenging Augustine here. But Bede normally avoids disagreements with his authorities by passing over contentious matters in silence. That he cited Augustine by name indicates that he approved of him.

defined by Christ's Resurrection. Since this took place on the night between Holy Saturday and Easter Sunday, that night is counted into the following day, and so Easter is deemed to begin at sundown on Holy Saturday. Since the Moon also changes its age at evening, a Moon fourteen days old on Saturday will by fifteen days old by Saturday evening, and the following day can be celebrated as Easter. Bede may also here be silently correcting a troubling statement in the *Liber Anatolii*. This text claims that the computistical lunar day begins at half past the sixth hour, i.e. about 12:30 p.m.⁶⁴ Therefore if the Moon is thirteen days old on Saturday morning, it will be well into its fourteenth day by the time Easter services begin on Saturday evening.⁶⁵ Many genuine primitive Alexandrian texts – including the authentic statements of Anatolius incorporated into the *Liber Anatolii* – condoned celebrating on the fourteenth Moon. Bede was prepared to rationalize this,⁶⁶ but had to draw the line at celebrating on the thirteenth day. Hence, perhaps, his concern to locate the day-change firmly in the evening.

The new Christian definition of day involves a synecdoche or reading of the whole in the part. Christ spent three days in the tomb if one counts Friday evening as comprising all of Friday, and considers Saturday night as part of Sunday. The way Bede weaves a little lesson on 'schemes and tropes' into this discussion is a good example of how he borrows from exegesis to illuminate *computus*, and vice versa. But this digression also has implications for the theology that Bede is endeavouring to articulate. Following Irish sources, like the *Munich Computus*, Bede is prepared to claim that Christ's Incarnation, Passion, and Resurrection changed time in every respect. The first Easter ushered in a new age of history; but it also changed the time when the day began. At Creation, the day began at dawn; but the last Age was inaugurated by a *mutatio temporis* that, significantly, shifted the beginning of the day to the evening, so that time flows from darkness into light, not from light into darkness.⁶⁷

64 *Liber Anatolii* 5, ed. and trans. McCarthy and Breen, 48.99–102 and 65.17–21 and commentary on p. 90.

65 *Ibid.*; cf. Cordoliani, 'Computistes insulaires' 12.

66 At the Synod of Whitby (*Historia ecclesiastica* 3.25, ed. Colgrave and Mynors 304), Wilfrid explains away Anatolius' lower lunar limit of fourteen by claiming that Anatolius really meant that Easter celebrations could begin on the evening of the fourteenth day, when the Moon turned fifteen days old. Cf. ch. 43 below.

67 This theme is taken up by Bede again in *The Reckoning of Time* 71, and also in *Homiliae*

CHAPTER 6

Chapter 6 may seem like a digression, but in fact it is integral to Bede's defence of the Alexandrian *computus*. The issue of the calendar date of Creation was of keen and abiding interest to computists, both before Bede's day and afterwards. Its computistical significance revolves around the equinox as terminus for the Paschal full Moon, and the consequences for the calendar limits of Easter.⁶⁸ Bede's resolution of this problem, interestingly, rested on a natural argument rather than an argument from authority.

Behind Bede's argument lies an ancient allegory: the week of the Passion replicates the week of Creation. Just as man was created on the sixth day of the first week, so was he recreated in the sacrifice of the Son of Man on Good Friday.⁶⁹ Since Passover, the time of the historic Good Friday, falls in the spring, it follows that the world was created in the spring.⁷⁰ A traditional argument held that the first day of Creation was the vernal equinox itself (either 21 March in accordance with the Greeks, or 25 March in the Roman fashion), and this claim is a characteristic feature of Irish computistical writings:⁷¹ Bede was also familiar with the 'Cologne Prologue', which includes a lengthy discussion of the date of Creation, fixing the first day on the equinox because God, who made all things perfectly, would have created the first 'day' and the first 'night' equal.⁷²

Bede, however, asserts otherwise. God created day and night on the first day of Creation, but it makes no sense to say that they were created *equal*. Day and night can only be said to be equal when they can be measured. The

2.7, ed. Hurst 226.43–227.68. This typology hangs, of course, on Bede's notion that the Jewish day ran from dawn to dawn: see ch. 5, p. 150 and n. 75.

68 See Introduction, section 3.

69 Cf. *The Reckoning of Time* chs 10, 66 (introduction) and 71.

70 Bede would certainly have encountered this theme in Ambrose, *Hexaemeron* 1 4.13 (11 sq.), and Victor of Capua, *De pascha* 6 (298); cf. P. Siniscalco, 'Le età del mondo in Beda', *Romanobarbarica*, 3 (1978): 310–20, and T. Halton, 'The Coming of Spring: A Patristic Motif', *Classical Folia*, 30 (1976): 150–64. The motif has ancient pagan roots: cf. Vergil, *Georgics* 2.316 sqq.

71 For a good example, see *Munich Computus* 11, ed. Warntjes 42.37–40 and 44, ed. Warntjes 146–152, which places day one on 21 March, and times the creation of the Sun at noon on day four. See Warntjes' notes on both passages for discussion.

72 *Cologne Prologue* 4, ed. Krusch, *Studien I* 229–31. The author dates the vernal equinox to 22 March, because he reckoned the day from midnight to midnight; for other writers who adopted this formulation, see Warntjes' ed. of *Munich Computus* 146, apparatus.

equinox occurred on the first day when there was a Sun and stars to mark out hours by which equality could be determined; this was the fourth day of Creation, when these heavenly bodies were made. The world, therefore, was created on 18 March, but the equinox was created on 21 March. But, because the Moon was also created on 21 March, and God would not have made it in any state other than full, this 'first day of time' was also the very day when both the criteria for the Easter terminus were present: namely the equinox and the full Moon. Since the full Moon will not rise until evening, the earliest date of Easter will be the *following* day, 22 March. Bede goes on to clinch his argument by answering the objection that the 'days' before the first 'day of time' (the fourth day of Creation) were indeed days in the natural sense of the term – but there were as yet no hours.

Bede's championing of 18 April as the date when Creation began is enshrined in many medieval calendars, where that date is marked as *Prima dies seculi*,⁷³ as well as in poems and prose notes found in *computus* albums from the Carolingian period onwards.⁷⁴ But it created problems with historical chronology which did not go unnoticed. The Dionysian Paschal tables Bede adopted, and which were supposed to run for 532 years and then repeat, began at the birth of Christ: year one of the cycle marked Christ's Incarnation. Bede's 'Hebrew Truth' chronology dated Christ's birth to AM 3952. If the 532-year cycle is retrojected to locate a full Moon on Wednesday 21 March, the world would have been created in year 54, 149, 369, or 491 of the 532-year cycle, not at its beginning. But dividing 3952 by 19 showed that the world must have been created in year 305, 306, or 307 of the Dionysian cycle, depending on whether Christ's birth is situated in 2 BC (532/532), 1 BC (1/532) or 1 AD (2/532). The only one of these three in which 21 March falls on a Wednesday (day four of creation) is year 306; but in none of these years does Wednesday 21 March coincide with *luna* 14. Hence Bede's assurances that all cycles of time began at the creation of the Sun and Moon cannot be verified. Practically speaking, dating Creation to year 306/532 was the best (if not the perfect) solution, as it allowed the computistical algorithms (*argumenta*) to be applied to either *annus mundi* or *annus Domini* years.

73 Jones, *BOT* 338. To Jones' list of early witnesses one could add the Old English Menologium, which also marks 21 March as the date of creation of Sun and Moon: 'Likewise, those skilled in reckoning hold the equinox at the same time, since Ruler God created, in the beginning, the sun and moon on this very day', ed. and trans. Karasawa, *The Old English Metrical Calendar (Menologium)*, 76.44–47.

74 E.g. the text beginning 'Prima dies seculi creditur fuisse dominica ...': ed. Borst, *Schriften* 3.1124.3 (Aachen Encyclopedia of 809), 1395.5 (Salzburg Encyclopedia of 817).

By the Carolingian period computists were interpreting Bede's world-era in this sense, thus dating the birth of Christ (year one of the 532-year cycle) to 1 BC, even though Bede is clear in ch. 47 that he regards the second year of Dionysius' cycle (1 AD) as the date of Christ's birth.⁷⁵ As Bede himself would later, and rather elliptically, observe, this would generate an even greater problem: none of the AD years usually proposed for the Passion and Resurrection could produce the appropriate Paschal data, i.e. a full Moon falling on the Friday right after the equinox.⁷⁶

But not all medieval readers of Bede were content with this solution, nor were they willing to abandon the quest for concordance between *computus* and chronology. In the Carolingian 'Aachen Encyclopedia',⁷⁷ a chapter entitled *Annus magnus de concurrentibus compositus ad ostendendam diversitatem Nativitatis et Passionis Domini* ('a Great Year composed of concurrents to show the divergence of the Nativity and Passion of the Lord') tries to recalibrate the concurrents in the 532-year cycle to made 24 March fall on the right day of Bede's Creation week. However, this means that the historical date of the Passion would be 16 April, which is possible only if the Passion took place in year AD 314 of the 532-year cycle. The compiler then tries again using the Eusebius–Jerome AM 5199 and Africanus' AM 5500 as equivalent to the year of the Incarnation, with no better luck. Nothhaft comments:

the anonymous author of the *Annus magnus* had worked in the sincere hope that he could bypass the overt conflict between the Dionysiac era and the Easter cycle, which had been uncovered by Bede, by calculating the date of Christ's Passion from a different starting point, namely the year of creation. In doing so, he piously followed Bede's remarks on the chronology of the hexaëmeron in chapter six of DTR, not realizing that his creation year 54/532 stood in no adequate chronographic relation to the year of the nativity (2/532).⁷⁸

Further disjunctions between Dionysius' Paschal data and the historical record implied by his *annus domini* will surface in ch. 47 of *The Reckoning of Time*.

75 Nothhaft, *Dating the Passion* 84–5. See the Paschal Tables in Appendix 2, below. On the other hand, the chronology which dates the Incarnation to AM 5500 can readily be harmonized with the nineteen- (and 532-) year cycle: see Nothhaft's discussion of Annianus (fl. 400) and the principles of Byzantine chronology (58–64).

76 See ch. 47 below.

77 See Introduction, pp. 102–3.

78 *Dating the Passion* 91–2. The text is printed in Borst, *Schriften* 3.1119–22.

Bede's sources for the argument he presents in this chapter are difficult to trace. The closest parallel is the *De pascha computus*, composed about 243 and falsely attributed to Cyprian of Carthage.⁷⁹ 'Cyprian's' theological explanation convinced the Romans, who clung for some time thereafter to 18 March as the earliest possible date of 14 Nisan: this is, in fact, Victorius' definition of Nisan, which Bede will refute in ch. 51. However, Bede's interest in making this point is also theological. The correct computation of the date of Easter is, in his view, sacramental: the observation of the season of Easter embraces both the symbolism of salvation and its historical reality.⁸⁰ Celebrating Easter at a full Moon before the dawn of the equinoctial day, as Victorius proposed, reverses an order inscribed at the beginning of Creation and dissolves the symbolic relationship of grace which exists between Christ and his Church. It is, in short, a kind of calendrical Pelagianism.⁸¹

A theological perspective on *computus* also underpins Bede's championing of Abraham as the true father of astronomy. His immediate source for the story of how Abraham brought *astrologia* to Egypt is probably Isidore's *Etym.* 3.25, for though the Irish *De divisionibus temporum* also relates the tale it is *scientia numeri*, and not astronomy, that the patriarch invents. Both sources cite Josephus.⁸² The modifications which Bede introduces, however, are very telling. Isidore states that the Egyptians invented *astronomia* (astronomical theory) and the Chaldaeans *astrologia* (applied astronomy), and that Abraham was the intermediary between the two; he also relates the Greek legend that Atlas invented astronomy. Bede excises the references to Atlas and transforms Abraham from mere intermediary into a creative scientist who improved upon Chaldaean *astrologia* and taught it to the Egyptians, who apparently had no knowledge of the stars before his arrival.⁸³

Bede was determined to ground *computus* in astronomy.⁸⁴ But he was also concerned to circumscribe certain elements which might endanger

79 See Introduction, pp. 21–2, 26–7.

80 See ch. 64 below, as well as *In Gen.* 1.1.7 (ed. Jones 18.510–24, trans. Kendall 83) and 1.1.9 (19.561–20.580, trans. Kendall 83–4).

81 Cf. *The Reckoning of Time* ch. 59.

82 See above, pp. 155–56 n. 104. *De divisionibus temporum*'s substitution of *scientia numeri* aligns with the preference of Irish textbooks to locate the ground of *computus* in mathematics rather than in astronomy: see Introduction, pp. 68–70.

83 Lejbowicz, 'Postérité' 2–3.

84 See Introduction, pp. 70–80.

this relationship, such as the zodiac. He therefore stresses that the zodiac and its signs are conventional divisions of the Sun's annual course. 'As far as nature is concerned', the zodiac is simply the trace of that course against the backdrop of the fixed constellations. As if to anticipate possible objections to any reference to the zodiac whatsoever – for Bede, like Isidore, is always conscious of the spectre of judicial astrology – he adds that the zodiac was known to the Old Testament patriarchs and is not the exclusive property of pagans or philosophers. Here once again we see how Bede's *natura*, while a system or force in its own right, always serves its Maker, and teaches His truth.

CHAPTER 7

Though the chapter on night begins with an Isidorean etymology, Bede's development of this theme has a rather Augustinian flavour: like evil, night has no existence in itself, but rather is the privation of light, the shadow cast by the Earth as the Sun moves around to its far side. This shadow is the dominant theme of the chapter, and it allows Bede to summon up a number of related themes: eclipses, the relative size of Sun and Earth, and how season and latitude contrive to produce variations in the length of the night. The result is an excellent illustration of how *computus* served as an organizing principle for a broad range of scientific knowledge in the early medieval world.

In the Irish *computus* textbooks, there is always a chapter about 'night' because it is one of the fourteen divisions of time. Typical of the treatment accorded night is ch. 7 of the *Computus Einsidlensis*. Citing Isidore of Seville, the author names the seven subdivisions of night, from evening twilight (*crepusculum*) to daybreak (*diluculum*), and provides a lengthy discussion of their etymologies.⁸⁵ Bede takes a somewhat different approach. He relegates Isidore's subdivisions to the end of this chapter and focuses his exposition on a physical and astronomical explanation of the phenomenon of night. The nature of night (*quae noctis natura est*) is that it is the effect of the Earth's mass blocking the Sun's light. The resulting shadow is projected out into space. It is a cone, and its apex is the Moon; hence the Moon can be eclipsed but not the stars which lie beyond the Moon, even though the stars, in his view, derive their light by reflection from the

85 Ed. Loevenich, 22–6.

Sun. Though the heavens are filled with their light, we see the stars only as shining points of light because of the thickness of the atmospheric air.

This chapter also furnishes a typical example of Bede's talent for contriving vivid examples to demonstrate scientific truths. Bede's sources – Ambrose, Isidore, Pliny – teach that the stars are never eclipsed because they lie beyond the cone of the Earth's shadow, and beyond the Moon there is perpetual light. Bede anticipates scepticism on the part of his students: if this is so, why then is the night sky black? So he invokes the experience of seeing torches at a distance, which are not just points of light but also illuminate some of the surrounding area. The stars evidently behave in the same way and, if we can see only a little of this diffused light, it is because of the thick atmosphere which shrouds the Earth. Incidentally, the implicit assumption here is that the stars are simply natural fires, like their earthly counterparts – another unobtrusive blow against any divinization or astrological mystification of the heavens.⁸⁶

Bede then turns to the physics of lunar eclipses. He will revisit this topic in ch. 26, where he will explain their timing; here he focuses on the mechanism, explaining why the angle of its orbit in relation to the ecliptic prevents the Moon from being eclipsed every time it is in opposition to the Sun. Finally, Bede relates the length of night-time to latitude: at northern latitudes, winter nights are longer and summer nights much shorter. Only then does Bede list Isidore's seven divisions of night, which in the case of the *Einsiedeln Computus* takes up most of the chapter. In short, where the Irish texts focus on the divisions of night, Bede uses 'night' as a platform to discuss astronomical phenomena such as the stars and lunar eclipses.

But Isidore's divisions are not an afterthought with Bede. Night is an uncanny time, and especially so for the computist, because there are no shadows by which a sundial can measure it in precise and uniform units. Bede describes its divisions not as hours (equal or unequal) but as seven *partes*, each with a distinctive name. These names evoke an image of the night as a time without light (*crepusculum*) or sound (*conticinium*) – even a time without time (*intempestum*). Time, as Bede observed in ch. 2, is only what can be separated out into units (*spatia*) and measured (*temperatum*). The night contrasts with the day in that its time is qualitative, not quantitative.⁸⁷

86 The Fathers were not entirely agreed as to the nature of the stars: see Alan Scott, *Origen and the Life of the Stars: A History of an Idea* (Oxford: Clarendon Press, 1991).

87 It is noteworthy that Bede does not discuss the rising and setting of constellations as

Yet it would be well to bear in mind that, for Bede and his contemporaries, day and night could be subdivided only in a very approximate and contingent way. Whether one used a sundial or the passage of the stars, one was dependent on the weather for success in reading the time. The very word *tempus* means both time and weather (cf. modern French *temps*), but the wayward effect of weather on time-keeping is perhaps the reason why Bede does not discuss meteorology in *The Reckoning of Time*, though it occupies an important place in *The Nature of Things*.⁸⁸ By contrast to the day, calendar-time, in which the day was the smallest unit, was independent of such accidental interference; it was the realm of *ratio*.

CHAPTER 8

The Roman and medieval calendar listed the days of each month, but, being generic, did not show the weekdays. The calendar had to be customized for each year by using formulae or systems of key-letters to determine which weekday any calendar date would fall on. Bede reserves his discussion of this matter for his section on the month (ch. 20), since both the formulae and the key-letters function in relation to particular months. In this chapter, he will focus on the meaning of the ‘week’ within a Christian context.

This chapter also opens with Isidore of Seville’s definition, which ties the week to the number seven,⁸⁹ and it is this number that matters for Bede. From the very earliest days of the Church Christians have ordered their common worship according to its seven-day rhythm.⁹⁰ The medieval

a form of nocturnal clock. He may not have known Gregory of Tours’ *De cursu stellarum*: McCluskey, *Astronomies and Cultures* ch. 6.

88 Lejbowicz, ‘Postérité’ 11.

89 Unlike many Irish computists, Bede does not discuss the grammatical features of the word *hebdomada* – e.g. whether the *b* should be a *p* (*Einsiedeln Computus* 8.1, ed. Loevenich 26.2–28.10) – nor will he later on in his discussion of Easter in ch. 63 refer to the problem of whether the Hebrew word for Passover should be *Phase* because Hebrew had no letter *p*. Such questions were of interest to him – they arise in *On Luke* 2.6 (ed. Hurst 133.1297–1305; trans. Kendall and Wallis 264), *Expositio Actuum Apostolorum et Retractatio* 9.26, ed. Laistner 24.13–15 and *In Ezram et Neemiam* 2 (ed. Hurst 320.1303–6; trans. DeGregorio 128). But he excluded them from his *computus* teaching: see Warntjes’ note on *Munich Computus* 54 (208.9–13).

90 See Bultrighini and Stern, ‘The seven-day week in the Roman Empire’, 58–71, as well as the essays in Uta Heil, ed., *From Sun-day to the Lord’s Day: The Cultural History of Sunday in Late Antiquity and the Early Middle Ages* (Turnhout: Brepols, 2022), and Charles

attitude to the week was not only grounded in Biblical precept but also coloured by ancient astrological and numerical symbolism. Both elements combined to transform the week into a trope for time itself – linear in its progress, cyclical in its rhythmic return. Sunday, the first day of the week, the day on which the Lord's Resurrection was commemorated, was for Christians both a day of rest and a symbol of new beginnings, of eternity, and the consummation of all things at the end of time. It was both the first day and the eighth, a renewal of time and a state beyond time.⁹¹ It is for this reason that Bede devotes three chapters to the week, chapters which underscore its status as the privileged symbol of sacred time.

Bede draws heavily on Isidore and his Irish sources for the etymological and philological material in chapter 8, but in other respects he goes beyond what his sources had to offer. While *De divisionibus temporum*, for instance, enumerates the ancient pagan planetary names for the weekdays in a neutral and scholarly tone,⁹² Bede takes a robustly no-nonsense approach to pagan mythology that combines rationalization and dismissal. Secondly, he salvages from his disparaging account of the astrological names of the weekdays the opportunity to discuss the astronomical order of the planets and the interval each requires to traverse the zodiac, a typically Bedan 'encyclopaedic' digression, but one which also reflects his commitment to embedding *computus* within astronomy.⁹³

Bede also elaborates a theme found in Irish treatises and ultimately derived from a hint in Isidore's *De natura rerum*.⁹⁴ This is the notion that, in the Bible, the 'week' is not a univocal category; rather, there are eight (clearly not an insignificant number) different kinds of week. This can be seen as a sort of gloss on the three types of time discussed by Bede in ch. 2: whereas human custom restricts the meaning of 'week', the divine authority of Scripture expands and diversifies it.⁹⁵ These Scriptural weeks include (1) the week of Creation, (2) the seven-day week, (3) Pentecost or the 'feast of weeks', i.e. the fifty days after Easter ($7 \times 7 + 1$ days), (4)

Pietri, 'Le temps de la semaine à Rome et dans l'Italie chrétienne (IV–VIe s.)', in *Le temps chrétien de la fin de l'Antiquité au Moyen Âge IIIe–XIIIe siècles*, Colloques internationaux du Centre national de la recherche scientifique 604 (Paris: Editions de CNRS, 1984), 63–79.

91 Cf. *The Reckoning of Time* ch. 71.

92 II.9.5, ed. Bisagni 79.

93 See Introduction, pp. 70–80.

94 See p. 161.

95 Siniscalco, 'Le età de mondo in Beda' 313. Cf. ch. 2 above, on customary or conventional words for time.

the Jewish seventh month, during which the feast of the Atonement was celebrated, (5) the sabbath of the land in the seventh year, (6) the Jubilee, the annual analogue of Pentecost ($7 \times 7 + 1$ years), (7) the ‘prophetic week’ of the Old Testament, looking forward to the coming of Christ (to be discussed in ch. 9) and (8), the week of the World Ages, which, like Sunday, both encompasses all time and reaches beyond time to eternity (to be discussed in ch. 10). Like Russian dolls, these weeks of ever-increasing dimensions nest one inside the other. They are, of course, all based on the number seven, but they also reflect a consistent pattern of religious themes of fulfilment, rest, and restoration.⁹⁶ Here again, Bede fills out the skeletal allusions of his immediate sources with the flesh and blood of patristic theology.

CHAPTER 9

In a rare cross-reference to *The Reckoning of Time*, Bede explicitly cites this chapter on the ‘seventy prophetic weeks’ of the book of Daniel in his commentary on Ezra and Nehemiah, where he summarizes its conclusions.⁹⁷ The exegetical value of ch. 9 was recognized by medieval readers, who copied it separately, and notably in conjunction with one of Bede’s principal sources, Jerome’s commentary on Daniel.⁹⁸

Bede unravels the cryptic number imagery of the prophecies of Daniel 9 by using *computus* as his guide. His purpose is essentially chronological. The ‘Seventy Weeks’ provided the only firm dating framework for the events of the Fifth World Age, from the Babylonian Captivity to the birth of Christ, and was subject to much attention in the Patristic age.⁹⁹

96 These themes as applied to the 7×7 weeks of Pentecost are expounded in Bede’s *Homiliae* 2.16 (ed. Hurst 294.158–162).

97 In *Ezra et Nehemiam* 3, ed. Hurst 342.132–343.157, trans. De Gregorio 159–60; see also DeGregorio’s discussion in his Introduction, xxxviii–xxxix, esp. xxxix n. 2. Bede repeats the substance of this section in *The Reckoning of Time* ch. 66 (s.a. 3529).

98 See Introduction, p. 109 and Appendix 5, no. 179. It should be noted that Bede composed *capitula lectionum* or chapter summaries, now lost, on the Book of Daniel, which he mentions in his autobiographical note in *Historia ecclesiastica* 5.25.

99 Hippolytus of Rome was also interested in this question, for he sought to test the accuracy of his 112-year Paschal table by comparing it to the recorded dates of Passovers in biblical times. This is recorded on the Vatican statue of Hippolytus (Nothaft, *Dating the Passion* 45 and Introduction, p. 26). Hence the establishment of an accurate chronology for the post-exilic period was important: Hippolytus’ own commentary on the book of Daniel

Bede has much to say about his own reading of these chronological data in ch. 66. Here he simply notes that the ‘Seventy Weeks’ of Daniel 9:24 must evidently refer to years. Since Daniel says (in the Vulgate translation) that these weeks are ‘diminished’ (*abbreviatae*), Bede argues that they refer to lunar, not solar years, since twelve lunar months are shorter than a solar year by eleven days. From this basic premiss, Bede produces calculations that demonstrate that the Prophet accurately anticipated the Passion of Christ. Though not an original argument – Bede found it in a quotation from Julius Africanus embedded in Jerome’s commentary on Daniel – it seems to have impressed medieval readers, for ch. 9 was eventually incorporated into the *Glossa ordinaria*.

There may, however, be an additional motive for attending in such detail to the Seventy Prophetic Weeks. Bede’s next chapter will address the issue of the analogy between the World Ages and the week – a potentially dangerous analogy because it implied that each age, like each weekday, was of equal and hence predictable length, and thus opened up the possibility of predicting the time of the end. The Seventy Weeks have a similar history of eschatological valence amongst both Jews and early Christians: indeed, Jerome’s Daniel commentary records how Apollinaris of Laodicea predicted that the world would end 490 years (i.e. seventy weeks of seven years) after the Incarnation, and an anonymous pre-Bedan text entitled *De Enos et Helia* proposed to use the Prophetic Weeks of Daniel to predict when Enoch and Elijah would return to initiate the End Times. Bede’s decision to lodge the fulfilment of Daniel’s prophecy safely in the past was also adopted by Jewish rabbis concerned about apocalyptic speculation based on this passage amongst their own co-religionists.¹⁰⁰

enunciated his view (in which he seconded Julius Africanus) that the world would last 6000 years: see Hippolytus, *Commentaire sur Daniel*, ed. M. Lefèvre (Paris: Éditions du Cerf, 1947), especially the exegesis of Daniel 4–6; George Ogg, ‘Hippolytus and the Introduction of the Christian Era’, *Vigiliae Christianae*, 16 (1962): 1–8; Mosshammer, *Easter Computus* 28; and Brian Croke, ‘The Origins of the Christian World Chronicle’, in *History and Historians in Late Antiquity*, ed. Brian Croke and Alanna M. Emmett (Sydney and Oxford: Pergamon Press, 1983), 121.

100 Oded Irshai, ‘Dating the Eschaton: Jewish and Christian Apocalyptic Calculations in Late Antiquity’, in *Apocalyptic Time*, ed. Albert I. Baumgarten (Leiden: Brill, 2000), 113–53. Cf. Jerome, *In Daniele* 3.9.24, ed. Glorie II. 458 sqq.; *De Enoc et Helia*, ed. Mommsen, *Chronica minora* 1, 493.

CHAPTER 10

Bede invokes the analogy of the Creation week to the World Ages in this chapter, and in his second prologue to the chronicle of the Six Ages in ch. 66. However, in ch. 66 he will omit a critical interpretive element presented in this chapter, namely that each World Age begins with a promising ‘morning’ and closes in an ‘evening’ marked by decline. This line of symbolism, endorsed by Augustine,¹⁰¹ would be attractive to someone like Bede, who liked to read lessons about salvation history into *computus*, e.g. the analogy between the creation of humanity on the sixth Day and its redemption by Christ on the same weekday, referred to in ch. 6. But it was also slightly dangerous. Making each Age repeat the arc of the previous one and comparing that arc to the repeating cycle of the day might invite speculation that each Age was equal in length to the others and, in particular, that the arc of the Sixth Age might be predicted. This was exactly the error Bede denounced in his *Letter to Plegwine*. Interestingly, the analogy does not appear in *On Times*, either in ch. 4 on the week, or in ch. 16 on the World Ages, so Bede’s decision to include it in *Reckoning of Time* constitutes a reclamation of this Augustinian theme.

CHAPTER 11

The largest block of chapters in the first part of *The Reckoning of Time* (11–29) concerns the month. The Julian solar calendar itself, whose graphic structure and contents underpin this section, is articulated as twelve distinctively titled months. But the months of the Julian calendar are not natural months in either the lunar or the solar sense: that is, they represent neither lunations nor divisions of the zodiac. The total number of days in the year is intended to represent the Sun’s annual circuit, but the months are an arbitrary grid against which the true astronomical months of the Sun and Moon must be plotted for any given year. The pattern of weekdays is also independent of the division of the year into months. Consequently, formulae were necessary to transform the generic month of the calendar page into

101 Most clearly in *De Genesi contra Manichaeos* 1.35–42, ed. Dorothea Weber, CSEL 91 (1998), 104–12. Augustine is the architect of the Six Ages model of world history (see Commentary on ch. 66 below), but the analogy of the days of the week and the ages of the world is much older.

this month, with its distinctive pattern of weekdays and lunar phases. Thus introducing the months of the Julian calendar meant explaining the entire system of lunar reckoning, at least in so far as this involved locating the Moon on any given day in the heavens and determining its phase. This invited consideration of further issues related to the Moon, such as the number of hours of moonlight associated with each phase (ch. 24); why the tilt or angle of the crescent Moon varies (ch. 25); why the Moon, though closer to Earth than the Sun, sometimes rides higher than the Sun in the sky (ch. 26); how eclipses occur (ch. 27); the effect of the lunar cycle on life on Earth (ch. 28); and the mechanism of the tides (ch. 29). In this respect, Bede departs from the Irish model of organizing the *computus* textbooks into strictly demarcated sections of solar and lunar reckoning.

The calendar as a graphic document is very present in this section, and to familiarize the reader with its form and content a reconstruction of the calendar Bede envisions is provided in Appendix 1. Every month of the Roman calendar is unique not only in name but also with respect to the number of days, to the position of its internal divisions (Kalends, Nones and Ides), and to the location of the point where the Sun enters each zodiac sign. The latter is especially important, as the zodiac signs provide a point of reference for locating and determining the age of the Moon on any given day. While Bede would prefer that his students learn to ‘customize’ the calendar through mathematical formulae, he also describes systems of key-letters attached to the individual months, which accomplish the same thing, and invites his students to consult them *in annali* (in the calendar).

But the relationship between the calendar and *The Reckoning of Time* also went in the reverse direction. Medieval manuscript calendars came to incorporate onto their pages much of the information discussed by Bede in these chapters, such as his concordance of the Roman months with those of the Jews, Egyptians, Macedonians, and even Anglo-Saxons, or his enumeration of the lunar and ferial regulars. The relation of textbook to reference document was a constantly evolving and complex one, and in some respects defines the ambivalent status of *computus* itself as neither exactly a *disciplina* conveyed through authoritative texts nor yet purely a technique.

Chapters 11–15 constitute a subsection on the structure of the month. This section weaves together two themes: the relation of calendar months to natural months (lunar or solar) and the concordance of the Roman months with those of other ancient peoples. The second theme serves two purposes: it illustrates the first, in that the Jewish calendar serves as an

example of a purely lunar calendar and the Egyptian of a purely solar one; and it also enables Bede to prove an important point concerning the claims put forward by proponents of the Insular 84-year cycle about the patristic authority of their system.

The Roman calendar might be solar, but the month, for Bede, was grounded in the natural phenomenon of the lunation, as his etymology makes plain. The ancient Jewish calendar, pre-eminent both historically and theologically, was lunar. Just as in the case of the week, Bede puts biblical categories of time into the foreground to demonstrate both their basis in nature and their role as types and exemplars of all other systems.

The names of the Hebrew months, like those of the Egyptian and 'Greek' months which Bede will discuss later, are drawn from the calendar of Polemius Silvius,¹⁰² a fourth-century adaptation of the Roman civic calendar with historical, geographical, and scientific notes. Polemius Silvius did not attempt a concordance of these various national monthly systems, but Bede did. In ch. 11 he argues that Nisan, the first Jewish month, should be considered the equivalent of April, because it 'either begins, ends, or is totally included within it' – or at least will do so if the computist is following the orthodox rule and designating Nisan as the first lunar month whose full Moon falls after the vernal equinox. Moving Nisan to April was an innovation on Bede's part, in that Nisan had traditionally been associated with March (and was so by Polemius Silvius); but it was adopted almost universally thereafter.¹⁰³

The lunar character of the Jewish month did, however, pose some difficulty to exegetes unaccustomed to reckoning time in this way. Bede takes the opportunity to prove once again the value of *computus* to exegesis by unravelling problems associated with the timing of the Hebrew Pentecost and the length of the sojourn of Noah in the Ark. It is not always clear, Bede says, whether a lunar month is a lunation (a synodic month), and not the time required for the Moon to return to the same position in the zodiac (a sidereal lunar month). The synodic month is 29½ days, but the inconvenience of dealing with half-days led to distributing the lunations into alternating months of twenty-nine and thirty days. This distribution, combined with the variable times chosen for intercalating additional embolismic lunar months in order to bring the lunar and solar years back into phase (cf. *The Reckoning of Time*, ch. 43), means that no two

102 See p. 184 n. 235.

103 Jones, 'Polemius Silvius' 52–3.

calculators will agree on what the exact age of the Moon on any particular day is. When it comes to *computus*, says Bede, ‘custom or authority or at least convenience of calculation prevails over nature’.

It is worth our while to pause over this sentence and try to capture Bede’s tone of voice. On the one hand, he is exasperated that human arbitrariness is allowed to override nature and logic: the embolisms should be inserted at the end of the lunar year, not in the middle, where they will upset the lunar reckoning. On the other hand, he is aware that the artifice of the calculated Moon is an unavoidable necessity: calendars deal in days, so the Moon’s course must be reduced to a whole number of solar days, even in defiance of appearances. How far can time be schematized before the calendar ceases to be an instrument of order and becomes instead the victim of human wilfulness? Of course, Bede does not pose the question in quite this way, let alone answer it, but it lies close beneath the surface of his text and informs his concept of *ratio* – a creative yet orderly dialogue between God’s Creation and man’s divinely inspired quest for order.

Faced with the confusion engendered by luni-solar calendars and the chaos of embolisms, the Egyptians jettisoned lunar reckoning completely and adopted a solar year, divided into equal months of thirty days, with five – or in leap years, six – extra days at the end. Bede now pauses to establish a precise concordance of the Egyptian months to the Roman calendar months – an exercise of considerable significance to the broader argument underlying *The Reckoning of Time*.

CHAPTER 12

Roman months are neither natural months, like the Hebrew ones, nor uniform, like the Egyptian. Bede’s chapter on the Roman months sets out to explain why.

Bede’s main point is that the eccentric structure of the Roman calendar is based on historical happenstance (‘custom or authority’) rather than on a scientific rationale (‘the logic of nature’). But, for all its peculiarities, the Julian calendar was the official calendar of the Western Church, and the Christian faith had done much to redeem it. February, once the morbid month of fevers and propitiatory sacrifices to the subterranean gods, was now a feast of light and Purification. This apparent digression serves a number of purposes. It is not unlikely that Bede was a little embarrassed to be trafficking in so much pagan mythology and religion through his

long quotations from the *Debate of Chorus and Praetextatus*; underscoring the contrast between the gruesome rites of the Roman month of the dead and the pious processions of the Purification allowed him to distance himself from this material. But Bede goes beyond a moralizing contrast between paganism and Christianity to stress that February's rituals now commemorate a different kind of time: not the repetitive cycles of worldly empires but 'an everlasting memory of the heavenly kingdom' (*in perennem regni coelestis memoriam*), a 'remembering' that lies outside time. In this way, he evokes the larger themes of time and eternity which underpin the structure of *The Reckoning of Time*.

CHAPTER 13

Chapter 13, on the divisions of the Roman months, steers the reader into the safer waters of rationalizing etymology. The Roman divisions of the month had to be memorized not only in order to read the Julian calendar but also to be able to add and subtract days within the Julian calendar. A poem for learning these divisions, ascribed in some manuscripts to Bede, summarizes it all into a memorable jingle. All months save March, May, July, and October have six Nones, while these months have four, and consequently, seventeen days before the Kalends on the next month. April, June, September, and November have eighteen Kalends, while January, August, and December have nineteen and the anomalously short February sixteen. All months have eight Ides.¹⁰⁴ A practical application will be demonstrated in ch. 22.

CHAPTER 14

Here Bede presents a complex and important argument for which the preceding chapters have set the stage. His interest in the 'Greek' (really, Macedonian) month-names is focused on one of the central documents of the Insular 84-year cycle, the *Liber Anatolii*. The crucial passage is the one which Bede discusses here, in which the author identifies the starting point of the nineteen-year Paschal cycle according to the Egyptian, Macedonian,

104 *Bede's Latin Poetry*, ed. and trans. Lapidge 517–21, correcting his translation of *bis nonis* in line 13 to read 'eighteen'.

and Roman calendars. The *Liber Anatolii* recension of the text rendered the Julian date as 8 Kalends of April, or 25 March, while the version recorded in Eusebius gave it as 11 Kalends of April, or 21 March. The distinction was, of course, a crucial one, because the Nicene Council, in Bede's view, had confirmed that the equinox fell on 21 March and no longer on the date established in the Julian calendar at its inception, 25 March. Now it becomes plain why Bede was so concerned to establish a concordance of the Roman months with those of the Greeks and Egyptians: Anatolius' Egyptian date (26 Phamenoth) and his Greek one (22 Dystros) could only correspond to the 11th Kalends of April, and not to the 8th. Therefore the defenders of the Insular 84-year cycle were working with a corrupt text of Anatolius.¹⁰⁵

CHAPTER 15

Bede was not interested in ancient month-names primarily for antiquarian reasons: indeed, he omitted completely Polemius Silvius' Athenian month-names, as they had no bearing on *computus*. It is thus an interesting irony that later readers of *The Reckoning of Time* appreciated the discussion of the month-names precisely for their antiquarian value. They not only imitated Polemius Silvius by inscribing the names of Egyptian and Greek months onto the pages of calendars¹⁰⁶ but also expanded the repertoire with other month-names of regional interest,¹⁰⁷ and incorporated Bede's material into new tractates on the origins of the month-names.¹⁰⁸ In a sense, Bede is responsible for this development, for he indulges in a bit

105 Elizabeth Dulabahn, 'Studies on the Laterculus of Polemius Silvius', PhD diss., Bryn Mawr, 1987, 130–1 n. 55. To make matters more complicated, the version of Anatolius found in Rufinus' translation of Eusebius says that Anatolius dated the equinox to 22 March. Bede, to avoid confusing his students, reserves this problem for his *Letter to Wicthed*, where he also revisits the issue of textual corruption of the *Liber Anatolii*: see translation in Appendix 3c.

106 Concordances could also be copied apart from the calendar, as in St Gall MS 251, p. 13, and Vatican City, Reg. Lat. 1260, fol. 107. This phenomenon is noted by Jones, *BOT* 136.

107 E.g. Vatican Library, Reg. lat. 123 (AD 1056, Ripoll; Appendix 5, n. 252) fol. 21, adds the 'Saracen' names for the months, and on fol. 22r, in a *rota*, lists Hebrew, Greek, Egyptian, English, and Saracen months. We have also included Bede's Hebrew, Egyptian, 'Greek', and English month names in the calendar in Appendix 1.

108 E.g. the post-Bedan material added to *De divisionibus temporum* in the version published in PL 90, 659–63 (see Bisagni, *From Atoms to the Cosmos* 18), and the texts in Vatican

of patriotic antiquarianism himself in ch. 15, 'The English Months'. This chapter furnishes a unique account of the pagan Anglo-Saxon calendar. This calendar (he claims) was luni-solar, and operated on a fixed system of embolismic intercalation, though Bede does not say whether his ancestors used an eight- or a nineteen-year cycle.¹⁰⁹ He devotes most of his attention to surveying the names of the months and their meanings.

What delights the modern historian might have seemed dangerous in the eyes of Englishmen anxious to set aside the pagan past. Bede shows little anxiety, though: indeed, this account of the ancestral calendar can be seen as supporting his larger aim to define the English as one of the *gentes* of Christendom. Ch. 15 also carries echoes of Bede's interest in Gregory the Great's policy of conversion: the pagan heritage of the English has been 'translated' into Christian practice, not obliterated. Though Bede is generally taciturn about English paganism, he makes an exception for the months precisely because they illustrate the triumph of the conversion process. As Meaney observes:

We have to take into account that Bede here, for once, is setting up a deliberate contrast between the old times and the new: between the old pagan immolation of cattle and the new sacrifice of praise to Jesus; between the night of ceremonies for the Mother Goddesses and the celebration of the birth of the Lord. For once he does not wish to keep quiet about paganism, but to glory in its replacement.¹¹⁰

Indeed, Bede's account deliberately emphasizes alleged religious meanings of the old month-names. His assertion that *Solmonað* (February) means 'month of cakes' because pagans offered cakes to their gods in February is another case in point. The etymology of the word is uncertain, but it plausibly means 'month of mud', not 'month of cakes'. He calls March *Hreðmonað* and once again proposes a religious origin in the name of a goddess; the alternative for March recorded in the *Menologium*, and in

Library, Pal. lat. 834 (Appendix 5, no. 248), fols 34r–35v, and Bamberg, Staatsbibliothek Msc. lit. 160 (Bamberg, s. XII), fols 30v–33v.

109 For discussion, see Harrison, *Framework* ch. 1.

110 Audrey L. Meaney, 'Bede and Anglo-Saxon Paganism', *Parergon*, n.s. 3 (1985): 7. Cf. Bede, *Historia Ecclesiastica* 1.30, ed. Colgrave and Mynors 106–8. Her view contrasts with that of R.I. Page, who regards ch. 15 as 'one Bede text where he is unlikely to be influenced by rhetorical <or> theological ... considerations', 'Anglo-Saxon Paganism: the Evidence of Bede', in *Pagans and Christians*, ed. T. Hofstra, L.A.J.R. Houwen, and A.A. MacDonald (Groningen: Egbert Forsten, 1995), 99–129 at 124.

Ælfric's *De temporibus anni* is *Hlyda*, which means 'loud, blustery' and probably refers to wind.¹¹¹

Bede's name for April, *Eostermonað*, poses particular problems. Once again, he argues that its origin lay in pagan religion, and that Eostre was a goddess. But, as he points out, the word 'Eoster' in the English language no longer denoted either a month or a goddess but rather the Christian feast of Easter. Bede's goddess Eostre has been the focus of almost two centuries of philological and historical debate. Nineteenth-century scholars were divided into those who held that she was a pan-Germanic goddess whose name derived from words for 'dawn' or 'springtime' and those who rejected these claims and charged Bede with inventing a deity who never existed. Recent research based on archaeology and epigraphy (particularly the discovery of the sculptural votive inscription to the *matronae Austriahenae* in the Rhineland in 1958) supports the view that Eostre, and probably Hreð as well, were indeed deities, but suggests that their cult was local in nature and associated with particular social groups. In England, they seem mainly connected to Kent.¹¹² While this hypothesis has not gone unchallenged, it has to some degree rehabilitated Bede's report. However, the geographical and chronological gaps between such local cults and the world of eighth-century Jarrow have yet to be bridged.

Bede is also unquestionably correct that the word 'Eostre' had ceased to have any connection to a pagan deity, and by his day denoted the Paschal feast.¹¹³ This is unique to English, and it has never been conclusively explained. Other western and northern Germanic languages such as Dutch and the Scandinavian tongues use derivatives of *pascha*, and the German word 'Ostern' is linked to the Englishman Boniface's missionary activity. But it is still a puzzle why and how early medieval English speakers transformed the name of an apparently minor and local goddess into their term for Christianity's most significant and universal feast.¹¹⁴

111 Parker, *Winters in the World* 96–7; *Menologium*, ed. Karasawa 74, lines 36–7; Ælfric, *De temporibus anni*, ed. Blake 84, line 185. Parker suggests this was a West Saxon name, which is why Bede did not know it.

112 For an account of the controversy over Eostre and a defence of the local cult theory see Philip A. Shaw, *Pagan Goddesses in the Early Germanic World: Eostre, Hreða and the Cult of Matrons* (London: Bristol Classical Press, 2011), esp. chs 4–5; cf. Parker, *Winters in the World* 124–7, and Meaney, 'Bede and Anglo-Saxon Paganism' 6–7.

113 For example, the *Menologium* calls the month *Aperilis* (ed. Karasawa 76, line 56) and refers to it as *þe Eastermonað* (line 72).

114 This is the burden of Richard Sermon's critique of Shaw: 'Eostre and the Matronae

The subsequent use to which *The Reckoning of Time* was put adds an interesting twist to this story. While one strand of the manuscript transmission dropped ch. 15 as irrelevant,¹¹⁵ the old English month-names joined those of the Egyptians and Macedonians on the pages of calendars, even outside the British Isles. Bede's antiquarian gesture may lie behind Charlemagne's attempt to legislate native Frankish names for the months.¹¹⁶

CHAPTER 16

The block of chapters on the zodiac signs (16–19) has no cognate in *On Times*, though elements of it can be found in *The Nature of Things*, chs 17 and 21. Jones asserts that it was inserted into *The Reckoning of Time* not for its computistical relevance but because 'the zodiac and planets fascinated early medieval students'.¹¹⁷ However, it seems very doubtful that this was what motivated Bede. In the first place, he limits his discussion to the Sun and Moon, and barely alludes to the existence of the other planets.¹¹⁸ Secondly, he is explicit, both here and in ch. 39 on measuring the leap-year increment, that many of his readers never learned about the zodiac at school. Instead, we should regard these chapters as representing the 'astronomical surplus' that Bede deliberately injected into *computus*.¹¹⁹

What Bede wants his students to grasp in this chapter is that the 'age' of the Moon is its visible phase, which in turn is a function of its angular distance from the Sun along the ecliptic or zodiacal band. This distance is the length of the Moon's daily advance through the zodiac minus the Sun's daily reduction of that advance as *it* moves through the zodiac. Bede devotes chs 16–17 to an astronomical and mathematical explanation of the relationship between the Sun's position and progress along the ecliptic, the Moon's position and progress, and the lunar phase. The relationship

Austriahenae', *Folklore*, 133.2 (2022): 139–57.

115 See Introduction, pp. 88–9.

116 Einhard, *Vita Caroli Magni* 29, ed. G.H. Pertz and G. Waitz, MGH *Scriptores rerum Germanicarum in usum scholarium*, 25 (1911), 233–4. On Carolingian ruler ideology and the calendar, see Introduction, pp. 94–7.

117 *BOT* 351.

118 In fact, he only alludes to them in ch. 16 in the form of a brief cross-reference to ch. 8, where he mentions the relative speed of the other planets through the zodiac and explains the discrepancy between their natural order and the order of the weekdays named after them.

119 See Introduction, pp. 77–8.

between the Moon's phase and its position in the zodiac can be reduced to a crude mathematical formula (ch. 18) or, for those who do not know how to calculate, read off a chart (ch. 19).

The formulae presented by Bede are highly approximate, even by medieval standards.¹²⁰ However, there was no need for Bede's students to know with extreme precision which sign, and which degree of which sign, the Moon was in. What they did need to grasp, in order to comprehend how lunar computation works with respect to the Julian calendar, was broadly what is happening in the heavens: how the Moon's faster journey through the zodiac relates to the Sun's slower course. Were they merely curious about the speed of the Moon's passage, they could read *The Nature of Things* 21; but this was not enough for the purpose of understanding *computus*. To grasp the relationship of lunar phase (synodic month) to celestial position (sidereal month), the student had to be able at least to conceive of the amount of zodiacal distance the Moon puts between itself and the Sun on each day of its lunation. Bede needs nothing more than an approximate formula here – indeed, if ch. 19 gives any indication, most of his readers could probably not cope with anything more complex – because his purpose is to demonstrate a principle.

Two main themes run through this group of chapters: Bede's concern to stress that the zodiac is a convention of measurement, and his pedagogical technique. Introducing the zodiac in ch. 16, Bede is careful to describe it as an artifice of astronomical measurement. He is unconcerned with the mythology of the zodiac signs, and quotes Ausonius' poem only because it fixes the relationship between the signs and the months of the solar calendar.¹²¹ The signs of the zodiac are each divided into thirty segments, representing a solar day; but the representation is only approximate, because the Sun actually passes through a sign in thirty days, plus 10½ hours. The equinoxes and solstices have no meaningful relationship to the divisions of the zodiac and, indeed, different traditions locate these celestial events at different points. In fact, Bede gives the traditional Roman dates for the solstices and equinoxes, noting that the Alexandrian dates fall 'a few days earlier'. Only in the case of the spring equinox does he explicitly spell out the Alexandrian date, because it is of critical computistical significance.

120 Jones, *BOT* 353–4.

121 Under Bede's influence, Ausonius' verses were frequently inscribed on the pages of calendars in *computus* manuscripts: see Hennig, 'Versus de mensibus'.

As long as essential computistical data is not affected, Bede is content to tolerate the conventions of the calendar.

This emphasis is, I think, significant, for Bede probably felt that, in discussing the zodiac at all, he was handling something potentially dangerous. His insistence that the zodiac was just an artifice of measurement and his studious avoidance of any allusion to celestial influences or mythological connotations suggest a certain sensitivity to the threat of astrology. It is noteworthy that later on, in ch. 18, he will define a *pars* of a zodiac sign as ‘nothing but the daily advance of the Sun in the heavens’, as if to stress that these signs and particularly their more minute divisions are merely markers.

CHAPTERS 17 AND 18

This pair of chapters concerns the zodiac, and displays Bede’s practices as a teacher. Indeed, one senses that he has inserted this entire section because students complained that they could not understand why the formulae for finding the age of the Moon were supposed to work. Hence Bede seems frustrated at the loss of face-to-face contact and feedback. In ch. 16, for example, he apostrophizes the *lector* frequently, and observes that ‘much can be said about <the Sun’s passage through the zodiac>, but it can be done to better effect by someone speaking than through the written word’. We see him pause to explain terms such as *bisse* in context (ch. 16), a good strategy for ensuring that the explanation will be retained; and, in ch. 18, he will keep his students on their toes by reversing the equation, shifting at day five from correlating the Moon’s position to the Sun’s to correlating the Sun’s to the Moon’s.

Bede likewise undertakes throughout this section to provide numerous worked examples of the formulae he presents. The design of these worked examples is revealing: Bede begins with simple applications, then introduces more complex examples, and then finally a reverse corroboration which works backwards from an incontestable fact to demonstrate the soundness of the method. In ch. 17 his first example uses simple division without a remainder: to find the position of the Moon on day five, multiply by 4, which makes 20, and divide by 10. The quotient 2 means that the Moon and Sun are separated by two signs. He then proceeds to a slightly more complex example. This one involves a remainder, but a remainder expressed as a single unit of time-measurement: the quotient for the eighth

day is 3, with 2 remaining: ‘Therefore the eighth Moon is separated from the Sun by three signs and two *puncti*. You know that two *puncti* equal six *partes*, that is, the distance covered by the Sun in its journey through the zodiac in six days.’ The third level of difficulty involves a remainder grouped into two registers of units: on day nineteen, the quotient will be 7, with 6 remaining: ‘Therefore, on the journey which it began away from the Sun, the Moon has parted company with it by seven signs, plus one hour, which is half a sign and a *punctus*, that is, three *partes*.’ Finally, there is the reverse corroboration. Everyone knows that the full Moon on the fifteenth day is exactly opposite the Sun. Since there are twelve zodiac signs, this means it must be six signs away from the Sun, and $15 \times 4 = 60 \div 10 = 6$.

CHAPTER 19

Bede is also willing, with a show of reluctance, to provide for the student who does not have enough mathematics to be convinced by any formula. In ch. 19 he introduces a system of key-letters attached to the dates in the Julian calendar. These key-letters refer to a table, the *pagina regularis*, which locates the Moon’s position in the zodiac, and correlates this to the month in which the Sun will occupy the same position.¹²² Bede indicates that he has added these key-letters to the calendar which he assumed would accompany *The Reckoning of Time*, or be readily accessible to his readers. It is tempting to interpret Bede’s patronizing disdain for those who are ‘rather less adept at calculation’ as strategic sarcasm, designed to shame his students into making a greater effort. If so, it backfired miserably, for the *pagina regularis* enjoyed an enormous success in medieval *computus* collections and anthologies. It was copied into innumerable albums, often

122 This table is modelled on an earlier version sometimes ascribed in *computus* albums to Aldhelm, and which was based on the synodic, not the sidereal, month: Jones, *Bedae pseudepigrapha* 62–3, 68–70 and *BOT* 354. For a discussion of the table and its history see von Sickel, ‘Die Lunarbuchstaben in der Kalendarien des Mittelalters’ 181. It probably came to Bede from an Irish source and, beyond that, from Spain, which inherited a north African tradition of calendar tables. Krusch (*Studien I* 178–83) reconstructed some tables based on the Carthaginian *computus* of 455, including a cycle of Dominical letters, a lunar-regular and lunar-letter table, and a table of Easter dates by ferial numbers – none of which were known to Victorius or Dionysius: cf. Jones, *BOT* 76.

directly before or following the calendar, and sometimes paired with an extract of ch. 19 itself, to serve as a canon.¹²³

Both Bede's reluctance and the subsequent popularity of the table are reflected in some peculiarities of the table itself and the questions these peculiarities raised. The table translates the A–O letter series affixed to the solar calendar (see Appendix 1) into a position of the Moon within the zodiac. In the calendar, the letters A–O are separated by a single space, but there is no space after O. The letters and their spaces therefore account for twenty-seven days, approximately the length of the sidereal lunar month (the time it takes the Moon to return to the same position in the zodiac as it started from at last conjunction). As Bede explains in ch. 16, it takes the Moon two days, six hours and two-thirds of one hour to traverse each sign: multiplying two days and six hours by twelve signs yields twenty-seven days. But what about the extra two-thirds of an hour? Multiplied by twelve, this excess produces an additional eight hours. Over three months, these extra eight hours will cumulate into a whole twenty-four-hour day. For this reason, every third A–O sequence in the calendar adds a space after O. If we turn to the *pagina regularis*, however, we find no space after any O. On the other hand, we discover that every fourth zodiac sign is given an additional space – three instead of two.

That Bede does not bother to explain these oddities perhaps indicates his disinclination to spend much time and attention on tables. The readers of *The Reckoning of Time*, however, would not rest content. The Carolingian computist who compiled the 'B Glosses'¹²⁴ answered their perplexity by pointing out that the space following the third O represents the extra day cumulated by the extra two-thirds of an hour, and that the extended space accorded to every fourth zodiac sign is due to the fact that each line of the table is supposed to represent a day. It takes $2\frac{1}{4}$ days for the Moon to move through a zodiac sign, but the quarter-day cannot be represented in the table, and so it is cumulated and added to every fourth zodiac sign. But why, the students ask, is the extra blank after the third O found in the calendar, but not in the table? One might answer that because each annual column must serve for all months in that year, the anomaly must be omitted. The glossator, however, takes a slightly different tack:

123 See Appendix 5, nos 67, 103, 195, 218. In the English family of manuscripts containing 'graphic glosses' to *Reckoning of Time*, the *pagina* is inserted as an illustration: Wallis, 'Diagrams as Glosses' 298–301.

124 See Introduction, p. 116–17.

That constellation [i.e. the zodiacal position of the Moon] between O and A can be known after the manner of the *bissextus* [i.e. leap-year day], for which no space is left blank in the calendar, but it is inserted between two solar days, that is, between the seventh and sixth kalends of March, in the place <assigned to> the sixth kalends of March.¹²⁵

In short, the relationship between calendar and table is a complex one, involving adjustments in both directions and an understanding of the notional character of the spatial strategies employed. We may conjecture that Bede felt that a student whose background was so weak as to require the use of a table might not be competent to handle this level of detail.

CHAPTER 20

Bede now presents his system for finding the age of the Moon on any given day of the Julian calendar, a topic more immediately relevant to Paschal *computus*. Since the system for finding the weekday of any calendar date is analogous, this will also be covered in this block of chapters on lunar and solar coordinates for every day of the month (20–3). Both are discussed in the context of the month because the computistical apparatus used to solve these problems is geared to the Kalends or first day of each month, from which other dates are derived by counting.

Bede's system presupposes a nineteen-year cycle of lunations, beginning in a year when the Moon is new on an index date. The age of the Moon on that index date in subsequent years is known as the annual *epact*. For the Alexandrians, the nineteen-year cycle began in the year when the epact was nil (i.e. the Moon was new) on 22 March. Bede adopted this

125 *Ac breviter respondere possumus, quod inter o et a illud sidus cognoscitur similitudine bissexti, cui nullus locus est vacuus in annali serie, sed inseritur inter duos dies solares, id est inter septimum et sextum Kalend. Mart., in loco VI Kalend. Mart* (PL 90.391D). Similar questions about the table are addressed in the Old Welsh 'Computus fragment', composed in the tenth century and preserved in Cambridge University Library MS Add. 4543. The fragment was edited by E.C. Quiggan, 'A Fragment of an Old Welsh Computus', *Zeitschrift für celtische Philologie*, 8 (1911): 407–10, and re-edited with annotations (including the 'Byrhtferth' gloss) by Ifor Williams, 'The Computus Fragment', *Bulletin of the Board of Celtic Studies*, 3 (1927): 245–72. The general background to the Fragment was presented by John Armstrong III, 'The Old Welsh Computus Fragment and Bede's *Pagina regularis* [Part I]', *Proceedings of the Harvard Celtic Colloquium*, 2 (1982): 187–273. The second part of this article appears never to have been published.

system of epacts, but he was working with a Julian calendar which began on 1 January. This introduces an additional step: translating the epact into the age of the Moon on 1 January, so that the moons of the other eleven months can be calculated in relation to it.¹²⁶

Since the Moon advances eleven days with respect to the Sun each solar year, the epacts increase by eleven, year by year, until a full lunar month of thirty days has accumulated, at which point this additional or embolismic lunar month is inserted into the reckoning. In the nineteen-year cycle, these embolisms are inserted in the third, sixth, eighth, eleventh, fourteenth, seventeenth, and nineteenth years. As Bede observed, it would make sense to insert the embolismic months at the end of the year, to cause minimal disturbance to the normal reckoning of the Moon, but in three years (eight, eleven, and nineteen), they are inserted in the spring, which necessitates additional adjustments for the other months. The *saltus lunae* in year nineteen poses a similar problem. Bede will discuss both embolismic years and the *saltus* in greater detail in the context of the Paschal reckoning in chs 42 and 45. At this point, he simply wants to alert his students to these exceptions to the rule.

The formula Bede presents for finding the Moon in ch. 20 was well known, even among proponents of the Victorian *computus*.¹²⁷ It involves a relatively simple mathematical operation, plus some undemanding memorization. First, one should know the epact, or age of the Moon on 22 March, in the year in question: this can be calculated according to the formula presented in *The Reckoning of Time*, ch. 50, or simply looked up in the Paschal table. Secondly, one should memorize the monthly lunar ‘regulars’. A mnemonic poem ascribed to Bede in several manuscript witnesses provided the student assistance.¹²⁸ These regulars are numbers which represent the age of the Moon on the first day of each month, on a year when the epact is nil, i.e. year one of the cycle. Bede recommends simply memorizing them, but it is worth explaining how they are derived.

To avoid working with fractions of a day, medieval computists adopted the convention of alternating lunations of twenty-nine and thirty days. The

126 Another system of epacts based on the lunation of January is enshrined in the *cyclos lunaris* column of the Paschal table: see ch. 56 below, and Commentary.

127 Jones, *BOT* 354.

128 ‘September semper quinis October habenis’, *Bede’s Latin Poetry*, ed. and trans. Lapidge 525–6; Schaller and Könsgen, *Initia carminum* 14907. Poetry was a hardy perennial in the garden of computistical literature: see Introduction, p. 121 n. 351.

lunation of January (i.e. the one terminating in January) is calculated as 'full' (thirty days), the lunation of February as 'hollow' (twenty-nine days) and so on through the year. In year one, the Moon on 22 March is nil, or as we would say, zero. Counting backward, you will discover that the Moon on 1 January will be nine days old; January's 'regular' is thus nine. January has thirty lunar days but thirty-one calendar days, so the Moon on 1 February will be one day older than it was on 1 January, or in its tenth day. The 'regular' for February is therefore ten. February has twenty-nine lunar days but twenty-eight calendar days, so the Moon for 1 March will be one day younger than for 1 February, i.e. nine. The regular for March is, therefore, nine. The regulars for the other months are calculated in the same way. Add the annual epact to the monthly lunar regular, and you will have the age of the Moon on the first of the month.

Bede is conscious of the limitations of his system. It does not work, for example, in the eighth and nineteenth years of the cycle, when the embolism is inserted in March. This being the same month when the annual epact changes, the embolism pushes the lunar count in all subsequent months forward by one day (the embolismic month is always thirty days long, and thus interrupts the twenty-nine-/thirty-day alternation of the lunar months). It also does not work in the eleventh year, when the embolism is inserted exceptionally late in the month, on 5 December. This means that the embolismic month cannot end within the calendar month of December, as it should: in fact, it ends on 3 January. The thirty-day lunation proper to January does not end until 1 February and February's twenty-nine-day lunation does not end until 2 March. That is why, as Bede observes, the Moon on 1 March in year eleven is twenty-eight days old when, according to the formula, it ought to be twenty-nine (epact 20 + lunar regular 9).

Bede also admits that the formula must be abandoned for the final months of the nineteenth year of the cycle, because of the *saltus lunae*. The *saltus lunae* (the shortening of one lunar month by one day to bring the lunar and solar cycles together at the end of nineteen years) is placed as close to the end of the cycle as possible so as not to disturb calculations such as those explained in this chapter. That means that Bede's Roman system puts it in the penultimate month of the cycle, November of year nineteen. The Egyptian calendar began in September, and the Egyptians also inserted the *saltus* in the penultimate Egyptian month, i.e. July. Bede points out that if users of the Julian calendar follow this Alexandrian system, the epact-and-regular formula will not work for the last five months of the cycle.

The Alexandrian system of lunar regulars was adapted to a calendar

beginning in September; nonetheless, it had great authority and was in widespread use in the Middle Ages. Bede's system of starting the regulars in January, though more 'efficient' (as he himself remarks) for a Julian calendar, only slowly supplanted it, though it was certainly an advance over previous formulae, such as the one ascribed to Dionysius.¹²⁹ Though later computists preferred to work with the 'Egyptian' regulars enumerated by Bede at the close of ch. 20, they retained the principles of his formula.

CHAPTER 21

Bede now explains a cognate method for locating the weekday of any given calendar date. The solar regulars are analogous to the lunar regulars introduced in ch. 20, and the concurrents correspond to the epacts. The solar year of 365 days totals fifty-two weeks and one day. Hence a calendar date which this year falls on a Sunday will next year fall on a Monday, in the following year on a Tuesday, and so forth. However, the addition of an extra day at the end of February in leap year means that this sequence of weekdays 'leaps' forward by one place after the leap-year day; e.g. if 1 March in the year preceding a leap year falls upon a Monday, it will fall on a Wednesday in leap year. The entire cycle of weekdays unfolds in twenty-eight years. The annual concurrent is a number representing the weekday of 24 March. Why this index date was chosen is unclear, but it has some advantages. It falls on the same weekday as 24 February, when the leap-year day is inserted, but also within the period of the Easter reckoning; it is therefore a computistically handy reference point. The monthly regular represents the constant distance between the weekday of 24 March and the weekday of the first of each month. For example, the eight days between 24 March and 1 April are reduced to a week and one day, so the interval or regular for April is one; the thirty-eight days to 1 May are reduced to five weeks and five days, so the regular for May is five. Hence, by adding the annual concurrent to the monthly regular, one can find the weekday of the first day of any month. Any weekday within the month may then be derived by simple counting.

The opening phrase of ch. 21 indicates that this system was not Bede's invention and, indeed, the algorithm appears in the *Computus Cottonianus* of 689 (fol. 75v) as well as Munich CLM 14456, fol. 66v, the

129 Jones, *BOT* 355.

same manuscript containing the unique copy of the *Munich Computus*. The *Cottonianus* and Munich text begins with October and most Carolingian examples start with March, but Bede (and his imitators, such as Hrabanus Maurus) begins with January.¹³⁰ Nonetheless, *The Reckoning of Time* would contribute to this system's popularity. The solar regulars, like the lunar ones, were fairly simple to memorize, especially with the assistance of one of a number of mnemonic poems devised for this purpose, one of which, 'Ianus et October binis regulantur habenis', is ascribed to Bede himself in many manuscripts.¹³¹ And of course both could also be – and quickly were – reduced to handy tables.¹³²

CHAPTER 22

Bede somewhat diffidently presents a second method for finding the age of the Moon or the weekday. Add up the number of days that have elapsed since 1 January, add in the age of the Moon on 1 January, and divide by 59 (i.e. the sum of one full plus one hollow lunar month). If the remainder is greater than 30, subtract 30. The result is the age of the Moon. To find the weekday, calculate the number of days elapsed since 1 January, add the number of the weekday of 1 January, and divide by 7. The remainder is the weekday.

To our modern eyes, this method might, at least at first glance, seem very much simpler than formulae involving epacts, concurrents, and regulars; but, in fact, this second method would probably have been more challenging to Bede's students. Two factors contributed to its difficulty. The first is the difficulty of doing division with large numbers (up to 365), which we discussed in connection with ch. 1. In order to reduce the total number of days to a lunation, one must divide this figure by the length of a lunation, namely 29½ days. However, division where the divisor is an integer and a fraction is very difficult, especially when the operation is done in one's head or on one's fingers. Hence the reduction is effected by

130 Warntjes, 'Computus Cottonianus' 190–1.

131 *Bede's Latin Poetry*, ed. and trans. Lapidge 523–4; see Schaller and Königsen, *Initia carminum*, 7613; Lynn Thorndike and Pearl Kibre, *Incipits of Medieval Scientific Writings in Latin*, 2nd ed. (Cambridge, MA: Mediaeval Academy of America, 1963), 654.

132 For examples of the lunar table see Jones, *BOT* 356, PL 90.753–754 (top); and Abbo of Fleury's *computus* manuscript Berlin, Staatsbibliothek Phill. 1833, *Abbo Floriacensis Miscellanea de Computo*, ed. Lohr 41 (lunar) and 44 (weekday, both in *rota* form).

first dividing by a double lunation of fifty-nine days and then reducing this double to a single lunation, if necessary, by subtracting thirty from the remainder. Bede suggests that the easiest expedient would be to memorize the products of fifty-nine to 365. He does not explicitly advise memorizing the seven-times table (perhaps because multiplication tables up to ten were memorized as a part of elementary education?),⁹⁹ but it seems that neither came easily to medieval students, for fifty-nine- and seven-times tables are commonly included in *computus* albums.¹³³

The second problem is the Roman calendar itself. Our method of designating dates by sequential count from the first of the month makes it easy to add up the number of days since the beginning of the year assuming you know the length of each month. Roman dates, however, are numbered backwards from the Kalends, Nones, and Ides. Therefore one has to memorize the numerical position *vis-à-vis* 1 January of each of these fixed days for each month and then subtract the number of days by which the date in question precedes the fixed day. All in all, epacts and concurrents were easier.

Why, then, did Bede include this second method? He claims to be doing so as a concession to tradition, but there may be something more here. This old formula may be hard to apply in practice, but it offers a very clear illustration of the orderly progression of lunations and weekdays through the months. Since the Julian calendar recorded neither lunations nor weekdays, these patterns were not as obvious to the medieval student as they are to us. We are accustomed to calendars which are graphically organized as overlapping week-long strips; almost without thinking about it, we know that 1 June, 8 June, and 15 June will all fall on the same day. Simply as a mental exercise, Bede's second formula would have impressed on the medieval student the fact that the Julian calendar can be conceived as successive blocks of seven days – an insight which his ordinary experience of the calendar as a document, and of the peculiar Roman method of naming dates, would not immediately suggest.

133 Examples include: Paris, BnF lat. 5239 (Appendix 5, no. 187) fols 213r–214r, BnF nouv. acq. lat. 1615 (no. 210) fols 155v–156r; BnF nouv. acq. lat. 1616 (no. 211) fol. 8r–v; Bern, 417 (no. 37) fols 93r–v; and Rome, Vallicelliana E 26 (no. 218), fols 41r–43r.

CHAPTER 23

After a suitable display of schoolmasterly indignation, Bede once again furnishes a table for those ‘so lazy or slow-witted’ that they cannot calculate the age of the Moon. Like the one described in ch. 19, it is based on a system of key-letters prefixed to each day of the solar calendar. The letters cover the fifty-nine days of a full plus a hollow lunar month by using three sequential alphabets: the first alphabet has no distinguishing mark, the second has a dot following each letter, and the third has a dot preceding each letter. Hence these were commonly known as *litterae punctatae*. The third alphabet also ends with ‘t’ rather than ‘u’, so that the total number of letters is fifty-nine. The table translates these letters into the age of the Moon for every day of every year of the nineteen-year cycle. All one needs to know is what year of the cycle it is, and one can look up which letter applies to which calendar date.¹³⁴

This table was, rather surprisingly, often copied inaccurately in medieval *computus* manuscripts. Dots were omitted, letters skipped, or the scribe forgot that the third alphabet was shorter than the others. Rather than give up on tables, though, later computists tried other expedients to reduce the chances of scribal error, such as using a single alphabet with intervening spaces (as in the table in ch. 19) or reordering the tables so that the same letters were lined up in a row – proof against miscopying, but difficult to use.¹³⁵

CHAPTER 24

Bede closes his section on the month by examining some issues concerning the relationship of the Moon with the Sun, apart from the calendar. Chapters 24 to 29 are of exceptional interest, for they reveal Bede’s originality as a scientific thinker and teacher. This block of chapters has no cognates in prior *computus* literature. Its purpose is to set the record straight on a number of confusions and misconceptions about

134 See the formula in *The Reckoning of Time* ch. 47. On the *litterae punctatae* see von Sicking, ‘Die Lunarbuchstaben’ 159 *sqq.*

135 Such tables are found in Carolingian manuscripts with Irish roots, e.g. Karlsruhe Aug. perg. 167 (Appendix 5, no. 95) fols 1v–2r, and were the speciality of Abbo of Fleury (d. 1004), ed. Lohr 30, 32, 37. For discussion see Wallis, ‘What a Diagram Shows’ 14–23.

the appearance of the Moon. It is, in fact, pure astronomy, with no obvious connection to the calendar. But, as we discussed in the Introduction, Bede was committed to establishing *computus* within the larger context of cosmology and astronomy. These chapters are an excellent illustration of this commitment in action, showing how *computus* could function as an occasion for scientific reflection as well as problem-solving, and as a haven for purely scientific knowledge with ‘no fixed address’ in the clerical educational curriculum.

In ch. 25 Bede attacks a common error, found on the pages of many authorities. In chs 26 and 27 he seems to be responding to his students’ demands for clarification about two cases where our visual experience might deceive us about what is happening in the heavens. In chs 28 and 29 he sets out the results of his own original research into the relationship of the tides to the lunar month, providing us with a vivid picture of his critical intelligence, pedagogical inventiveness, and spirit of rational inquiry. Terms such as *natura*, *naturalis ratio*, and *naturae ordo* are thickly strewn through these chapters, and the accent is on the conflict of reason with ignorance or superstition. More than any other part of *The Reckoning of Time*, they lend a scientific tone to the study of *computus*.

Ch. 24 discusses the number of hours of moonlight using a formula which, as Bede admits, will only really work at the equinoxes. This is, of course, not without computistical interest, given the symbolism of the Sun and Moon flooding the world with light at Easter (cf. *The Reckoning of Time*, ch. 6) and the debate over the lunar limits of Easter. However, Bede does not bring up this computistical angle. The formula is, by his own admission, fairly useless for calculating purposes.¹³⁶ But it is certainly not without its scientific and heuristic value, for a knowledge of the mathematics of the lunation, however crude, permits an understanding of

136 Jones (*BOT* 359) argues that this formula would have been computistically embarrassing to Bede, as it would support the claim of the champions of the Insular 84-year cycle that Easter cannot be celebrated on the 21st day of the Moon, because at that point darkness has overcome light (*Liber Anatolii* 4, ed. McCarthy and Breen 47.78–84). Jones interprets this to mean that on the 21st day of the lunation the Moon will rise after midnight. But Bede’s formula assigns seven hours and one *punctus* to the 21st Moon ($30 - 21 = 9 \times 4 = 36 \div 5 = 7$, with a remainder of 1) which means that it rises before midnight; in fact, even the 22nd Moon, at six hours and two *puncti*, is still within the limits, if judged by this criterion. Moreover, ‘darkness’ has in a sense already overcome ‘light’ by day sixteen, when there is a gap of four *puncti* between sunset and moonrise.

the phenomenon of tides. Indeed, Bede will invoke this formula in ch. 29 to support his explanation of the timing of tides.

CHAPTER 25

Bede now turns his critical acumen upon a time-honoured piece of lore. The nightly variations in the Moon's shape and position are highly conspicuous and in almost every culture and age have given rise to forms of prognostication, especially about weather. One common belief, enshrined in the works of some classical authorities, is that when the horns of the crescent Moon point upwards from the horizon the weather will be stormy; when the Moon seems to be standing erect, it will be fair. Isidore recounts much in this vein in his *DNR* 38.

Bede's explanation of why this is not so might be clearer if a short astronomical exegesis were provided, expressed in the geocentric terms he would have understood.

Once every day, the entire heavenly sphere appears to rotate around Earth on an axis running through the north and south poles. That means that all the heavenly bodies travel across the sky in lines parallel to the celestial equator, which is a projection of the Earth's equator onto the celestial sphere. Wherever we stand on Earth, the celestial equator intersects our horizon at due east and due west. However, the *angle* at which it intersects varies with latitude. That angle is constant, and in northern latitudes slants to the south.

The ecliptic, however, is set at a $23\frac{1}{2}^{\circ}$ angle to the celestial equator. Along with the rest of the heavens, it is carried around the Earth once each day, but its tilt to the equator means that the angle it forms with our horizon will vary throughout the day, as various parts of the ecliptic to the south and north of the equator come into view. If we could darken the sky for twenty-four hours so that we could actually see the constellations along the ecliptic, and set up a camera facing due west so that it would take a photograph at six-hour intervals, we would see the ecliptic in the following positions in succession (see Figure 2a):

- a. parallel to the equator to the north
- b. crossing the horizon at due west, but slanting to the south
- c. parallel to the equator to the south
- d. crossing the horizon at due west, but slanting to the north

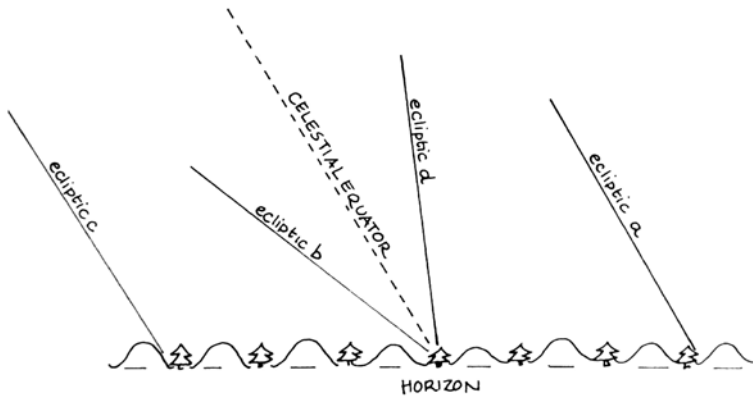


Figure 2a Positions of ecliptic with respect to celestial equator and horizon at six-hour intervals, looking west.

The ecliptic, then, seems to weave up and down the sky, to the north and south of the equator, and the angle it forms with the horizon changes hour by hour.

However, the daily timing of these angular changes varies throughout the year. In spring, the ecliptic at sunset will be crossing the equator and inclined at its maximum angle to the north. In northern latitudes, this means that the angle it forms with the horizon is very steep. The Moon, like the Sun, travels along the ecliptic.¹³⁷ Therefore the waxing crescent Moon at sunset will appear high up in the sky towards the north, plunging almost straight down into the west. The setting Sun will illuminate the Moon from 'below', producing two horns pointing away from the horizon and up into the sky. Likewise at sunset at the autumn equinox, the ecliptic is at its maximum southward slant with respect to the equator. In northern latitudes, this means that the angle formed with the horizon is very shallow. Therefore the waxing crescent Moon, setting just after the Sun, and hugging the horizon, will appear to be 'beside' rather than 'above' the Sun (to borrow Bede's terms). The setting Sun will illuminate its northern flank, so that the Moon will seem to be standing upright, with its horns pointing south. At midwinter and midsummer, on the other hand,

¹³⁷ It can, of course, be as much as 5° to the north or south of the ecliptic, but this will not materially affect the phenomenon discussed here.

the ecliptic is parallel to the celestial equator at sunrise and sunset, and, as Bede observes, when new or very old the Moon is high in the north in the summer and low in the south in winter because it is close to the Sun at these points in its monthly cycle. Therefore the waxing crescents at these seasons will be tilted midway between their spring and autumn extremes. These positions are illustrated in Figure 2b.

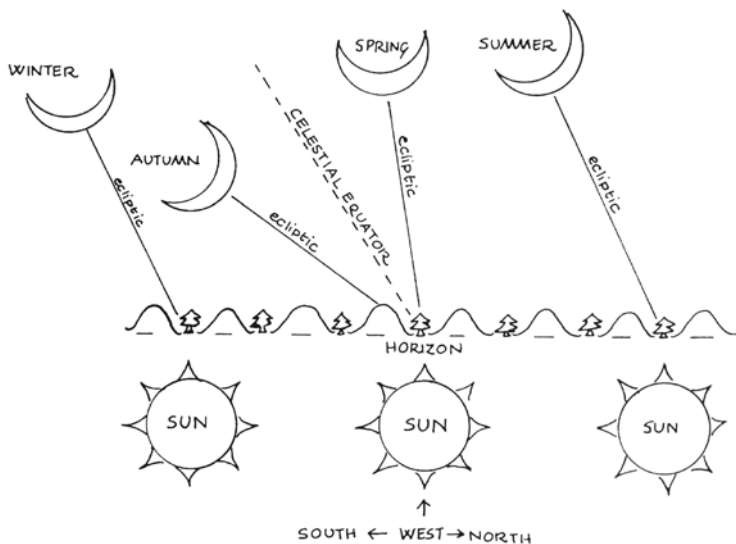


*Figure 2b Angle and visible segment of crescent Moon at sunset in west, at solstices and equinoxes.*¹³⁸

Bede drives home his point with some force at the close of this chapter: the angle of the Moon is ‘natural and fixed’, so it cannot portend anything. People have jumped to this conclusion simply because the season when the Moon is supine at sunset – i.e. spring – tends to have more unsettled weather than autumn, when the Moon is erect at sunset. There is a legitimate kind of weather prognostication based on the appearance of the Moon, but it is caused by atmospheric, not astronomical conditions.

¹³⁸ Figures 2a and 2b are adapted from Norman Davidson, *Astronomy and the Imagination* (London: Routledge and Kegan Paul, 1985), 38, 73.

CHAPTER 26

Bede is at pains to correct another kind of false impression in ch. 26. A full Moon at midwinter will appear very far to the north – that is, it will be high up in the sky, towards the zenith – while the midwinter Sun remains in the south – low in the sky, close to the horizon. Apparently, some of Bede’s students confused the *elevation* of the Moon with its *distance* from Earth, as if ‘higher than the Sun in the sky’ meant ‘above the Sun in the heavens’. Bede seeks to eliminate this confusion by an ingenious experiment, using the hanging sanctuary lamps in a darkened church.

Jones claimed that this experiment could not have been actually carried out by Bede, as it would require a church of far greater dimensions than any in Anglo-Saxon England.¹³⁹ But it hardly makes sense for Bede to offer such a concrete and circumstantial experiment if it could not be verified by his readers. In fact, as the photograph of the modern lamps in St Peter’s Monkwearmouth shows (Figure 3a), this was certainly possible in Bede’s own church.



Figure 3a Nave of St Peter’s Church, Monkwearmouth, looking west, with ceiling lamps. Photograph by Kendall Wallis.

139 BOT 127.

Figure 3b may also assist in visualizing Bede's experiment. Remember that the lamps themselves cannot be seen, but only the flames, for the church is dark. The nearer flame (the 'Moon') will appear to be higher than the 'Sun' flame.

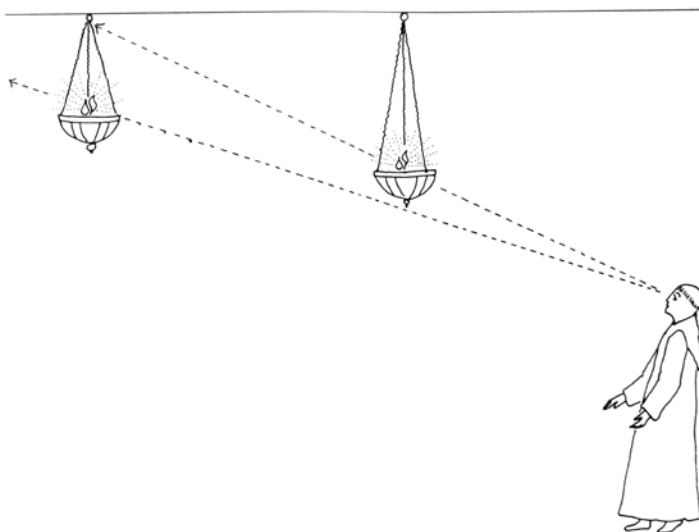


Figure 3b. Bede's experiment with the hanging lamps.

In fact, the experiment does not require a large room at all. It is undoubtedly more evident in a large room, particularly as one can (as Bede indicates) more readily ignore the vessels and chains, and what they tell us about the true position of the lamps. But the principle of the relative apparent position of two lights, placed on the same plane as the viewer's advance, but at unequal heights, can be tested in a modern living room with two candles, or can even be successfully carried out with two lit matches, one held out at arm's length and high up, and the other closer to one's eyes, but lower down. The flame of the lower match can easily be made to appear above the farther, higher flame, as this figure shows. However, Bede has a reason for setting his experiment in a church: namely, his persistent and subtle use of architecture, both here and in his biblical exegesis, as an analogue of the cosmos.¹⁴⁰ We will have occasion to highlight this theme

140 This analogy is discussed in detail in Wallis, 'Astronomy and *ratio*' 136; 'Bede's

later, notably when Bede imagines the nineteen-year cycle, and the Paschal table itself, as a building (chs 41, 47–61).

CHAPTER 27

As the previous chapter shows, the Moon's monthly journey through the zodiac will affect its position *vis-à-vis* the Sun. Hence the transition in ch. 27 to a discussion of eclipses is logical, as these are also determined by these shifting relations. But, once again, Bede is determined to drive off superstition and misinformation by means of 'reason' and 'nature'.

Bede's concern to establish a natural explanation for eclipses is reinforced by a rather ostentatious array of authorities, both pagan and Christian, and follows the example of Isidore of Seville's *DNR*.¹⁴¹ Undoubtedly many of Bede's contemporaries in England regarded eclipses as omens of doom.¹⁴² Moreover, some even within the Church thought the 'darkness' (*tenebrae*) at the time of Christ's Crucifixion was an eclipse, or at least used the term 'eclipse' (*defectus*) rather loosely to denote it. Hence Bede quotes Jerome to the effect that this darkness was a miracle and not an eclipse. Christ was crucified at Passover, when the Moon was full and in opposition to the Sun, but solar eclipses can only occur at conjunction.¹⁴³

Eye' 659–98; 'Caedmon's Created World and the Monastic Encyclopedia', in *Caedmon's Hymn and Material Culture in the Anglo-Saxon World*, ed. Allen Frantzen and John Hines (Morgantown: West Virginia University Press, 2007), 80–111. The cultural and literary framework for this image is discussed by Shannon Godlove, 'Heaven-Roofs and Holy Alters: Envisioning a Seventh-Century English Church in Aldhelm's *Carmina Ecclesiastica* 3', in *Architectural Representation in Medieval Textual and Material Culture*, ed. Hannah M. Bailey, Karl Kinsella, and Daniel Thomas (Amsterdam: ARC Humanities Press, 2023), 57–78; esp. 68–9 on Aldhelm's invocation of the annual cycle of the liturgy 'with feasts in the fixed order' carried out with the church, which is envisioned as a 'circle of order and light' illuminated by the Sun.

141 See Kendall and Wallis' Introduction to *Isidore of Seville: On the Nature of Things*, section 2.

142 Cf. *The Reckoning of Time* ch. 66, s.a. 664, and *Historia ecclesiastica* 3.27.

143 This point was appreciated by Irish writers such as the author of *De mirabilibus sacrae scripturae* 313 (PL 35.2199), though he hedged about what to call the Good Friday event: 'The sun's physical eclipse (*defectio iuxta carnem*) <at Christ's Passion> happened not when the moon was kindled, as is usual, but at the full moon, the fifteenth day of the month, lest it be thought that it happened by chance. And darkness obscured the sun's light at midday to such an extent that stars were visible in the sky throughout the three hours of the eclipse (*defectionis*):' trans. Carey, *King of Mysteries* 72.

However, Bede is also interested in what eclipses can reveal about the relative size of Sun, Moon, and Earth. His source, Pliny, is unfortunately quite out of line with prevailing ancient opinion, which estimated the size of the Moon at one-sixth to one-half that of Earth.¹⁴⁴ But the fact that Bede saw fit to discuss this implication of eclipses speaks to the range of his curiosity.

CHAPTER 28

Since Bede devoted ch. 25 to debunking ideas about the Moon's influence on Earth's weather, it is interesting to follow his exposition in this chapter of the power of the Moon over other phenomena on our planet. No ancient or medieval philosopher doubted for a moment that the heavenly bodies exert a natural influence upon life on earth, though they explained the physics of that influence in various ways. Medieval thinkers were often anxious to distinguish this natural or 'environmental' influence from astrological determinism.¹⁴⁵ However, in this chapter Bede focuses closely on the Moon in relation to the Sun. Both planets are responsible for growth and decay in terrestrial life-forms. In the Sun's case, this is exerted through heat and light; in the Moon's, through moisture. As Ambrose observes, while the Sun dries out terrestrial moisture by day, the Moon replenishes it in the form of dew by night. Bede follows up Ambrose's statements with a corroborative passage from Basil, which leads him directly to the subject of the Moon's influence over channels and currents of open water. In short, this chapter is designed to set the stage for the following one, in which Bede will conclusively demonstrate that tides follow the course of the Moon.

144 Jones, *BOT* 361.

145 For overviews of this subject, see Edward Grant, 'Medieval and Renaissance Scholastic Conceptions of the Influence of the Celestial Region on the Terrestrial', *The Journal of Medieval and Renaissance Studies*, 17 (1987): 1–23, and J.D. North, 'Medieval Concepts of Celestial Influence: a Survey', in *Astrology, Science and Society: Historical Essays*, ed. Patrick Curry (Woodbridge: Boydell, 1987), 5–17.

CHAPTER 29

This chapter on ‘The Harmony of the Moon and the Sea’ has excited considerable admiration for its originality and critical clarity.¹⁴⁶ Here Bede digests, evaluates, and offers significant corrections to previous explanations of tides, specifically the statements by Pliny in the *Historia naturalis* and the more sophisticated discussions found in Philippus Presbyter and the Irish cosmographies of the seventh century.

Bede’s sources were not clear or consistent on the subject of tides. The ancient texts came from the Mediterranean region, where tides are not conspicuous. Only a few, for example, mention that there are two tides every day, or that the tides exhibit semi-monthly variations, which are especially marked at the equinoxes.¹⁴⁷ Most, however, mentioned a correlation between the tides and the phases of the Moon, and an attempt to coordinate tides with an eight-year lunar calendar is reported by Pliny in *Historia naturalis* 2.99.215. Patristic exegesis, especially the commentary on Job by Philippus Presbyter, a disciple of Jerome, preserved the essence of classical learning on this subject. Isidore also discussed the tides in *DNR* 40 and *Etymologiae* 13.8.1.

Dwellers on the Atlantic coast, on the other hand, were much better situated to observe and calculate the times of tides, and it is in the realm of tide-lore that we find, for the first time, original contributions to Latin natural science coming from peoples and regions outside the western confines of the old Roman empire.¹⁴⁸ These contributions were incorporated into two anonymous seventh-century tracts written in Ireland, both of which were

146 E.g. Stevens, ‘Bede’s Scientific Achievement’, 655–62; T.R. Eckenrode, ‘Original Aspects in Venerable Bede’s Tidal Theories with Relation to Prior Tidal Observations’, PhD diss., St. Louis University, 1970, and ‘Venerable Bede’s Theory of Ocean Tides’, *American Benedictine Review*, 25 (1974): 56–74; Heribert M. Nobis, ‘Zeitmass und Kosmos im Mittelalter’, in *Mensura. Mass, Zahl, Zahlensymbolik im Mittelalter*, ed. Albert Zimmermann, *Miscellanea Mediaevalia* 16/1–2 (Berlin and New York: De Gruyter, 1984), 271–4; Paul Hughes, ‘Implicit Carolingian Tidal Data’, *Early Science and Medicine*, 8.1 (2003): 1–24 (on the diagrams embodying Bede’s tidal lore, mainly in *computus* albums).

147 In the sixth century Priscian of Lydus, in his *Solutionum ad Chosroem*, described tidal action on the coasts of both the western Mediterranean and the Atlantic Ocean, including spring and neap tides at conjunction and opposition; however, the only Latin translation of his treatise is rather later (though possibly derived from a Carolingian exemplar), and was not known to Bede: Stevens, ‘Bede’s Scientific Achievement’, 656.

148 See the illuminating discussion of Irish tide-lore in Smyth, *Understanding the Universe* 241 sq.

probably known to Bede: the *Liber de mirabilibus sacrae scripturae* of 'Irish Augustine' and the *Liber de ordine creaturarum* of ps.-Isidore. To assess Bede's achievement in this chapter we must examine first what these sources said – and did not say – about the tides.

Job 38:8 says that God 'shut up the sea with doors, when it broke forth, as if it had issued out of the womb'. This slants the exegesis of Philippus Presbyter towards the problem of the cause of tides; in consequence, he only incidentally refers to their periodicity or intensity. Philippus knew that tides arrived twice in twenty-four hours, and was aware that each tide arrived about three-quarters of an hour later than the corresponding tide on the previous day (Bede quotes this passage in ch. 4), and yet he did not connect this to the fact that the Moon rises each day about three-quarters of an hour later than the previous day. Philippus was more concerned with debates over whether the swelling tide is due to an outpouring of waters from some sub-oceanic geyser, comparable to 'the fountains of the great deep' that erupted at the Deluge and retreated again (Genesis 7:11 and 8:2).¹⁴⁹ In *DNR* 40.1 Isidore sets out a number of theories without endorsing any of them: the tides may be caused by sub-oceanic winds that breathe in and out like a gigantic animal, or by the swelling of the sea with the waxing Moon (a variation on the theme of lunar influence expounded by Bede in ch. 29), or by evaporation of the sea by the Sun.¹⁵⁰ In *Etymologiae* 13.15.1 and 13.28 he opts for the wind theory, imagining the wind as a kind of current.

By contrast, the Irish Augustine never mentions Isidore's winds. Instead, he focuses on Philippus' geyser model. His starting point is the miraculous Flood of Genesis. The Bible states that the Flood was unleashed by opening the 'fountains of the great deep'; the Irish Augustine, whose aim is to reduce the miraculous to an instance of God's law established at Creation, concludes that the Flood was an exceptional kind of tide. He goes on to explain that tides originate from sub-oceanic 'geysers'; when they erupt, the volume of water increases, and then they subside, as did the Flood waters. More precisely, the 'fountains' are channels that connect the ocean with the great abyss proper, whence the tides arise and whither they return.¹⁵¹ Finally, *De mirabilibus* emphatically asserts that the Moon and

149 Philippus Presbyter, *Commentarium in Job* 38 (PL 26.752D–753A); see also critical edition of this passage by Dom Irénée Fransen, quoted by Brown, 'Bede, a Hisperic Etymology, and Early Sea Poetry', 423–4; cf. Smyth, *Understanding the Universe* 247–8.

150 Ed. Fontaine 305–7; trans. Kendall and Wallis 168.

151 *De mirabilibus sacrae scripturae* 1.7, PL 35.2157–59; ps.-Isidore: *De ordine*

the tides are interlocked within the machinery of the universe. Hence when the Sun and the Moon stood still to allow Joshua to defeat his enemies (Joshua 10:1–15), the shifting pattern of the tides must have halted as well.¹⁵² When God made the Sun retreat as a sign for King Hezekiah (2 Kings 20:1–11), the Moon and the tides must have followed suit.¹⁵³

Neither *De mirabilibus sacrae scripturae* nor *De ordine creaturarum* link the timing of the tides to the passage of the Moon. Indeed, they both assume that tides occur at the same time everywhere on earth. They do not repeat Philippus' information about the daily retardation of the tides. Both texts, however, connect the monthly variations in the intensity or height of tides to the phases of the Moon. They call these phases *ledo* and *malina*.¹⁵⁴ *Ledo* is often translated 'neap tide' and *malina* 'spring tide', but this is not exactly the meaning of the Irish sources. *De mirabilibus* says that each *malina* begins three and a half days before new Moon and full Moon, and each *ledo* three and a half days before the quarters. In short, they cover intervals of a week straddling the spring and neap tides; they denote, then, the peak above, and the trough below, the average tide, respectively. Both authors state that *ledones* and *malinae* are characterized by specific durations: *ledones* flood and ebb for six hours, while *malinae* flood for five hours and ebb for seven.¹⁵⁵ *De mirabilibus sacrae scripturae* adds that there are six *malinae* in each season, and that a common lunar year of twelve lunar months has twenty-four *malinae*, while an embolismic year

creaturarum 9.4–6, ed. Manuel C. Díaz y Díaz, *Liber de ordine creaturarum. Un anónimo irlandés del signo VII* (Santiago de Compostela: Universidad de Santiago, 1972), 148–50. See Marina Smyth, 'From Observation to Scientific Speculation in Seventh-Century Ireland', in *Music and the Stars: Mathematics in Medieval Ireland*, ed. Mary Kelly and Charles Doherty (Dublin: Four Courts Press for the Royal Society of Antiquaries of Ireland, 2013), 84; *ibid.*, *Understanding the Universe* 244–5.

152 *De mirabilibus sacrae scripturae* 2.4 (2175).

153 *De mirabilibus sacrae scripturae* 2.23 (2187).

154 The term *malina* appears in the work of the fourth-century medical writer Marcellus of Bordeaux to designate a phase of the Moon suitable for collecting herbs: *De medicamentis liber* 36.49, ed. Max Niedermann and Eduard Leichtenhan, *Corpus medicorum latinorum* 5 (Berlin: Akademie Verlag, 1968): 612.3. He does not use the term *ledo*. The use of these terms to designate tidal phases was evidently quite current in seventh-century Ireland: see *Hisperica famina I–II* [the A-text] 399–411, ed. and trans. Michael Herren (Toronto: Pontifical Institute of Mediaeval Studies, 1974–1987), 1.94–7; Smyth, *Understanding the Universe* 255.

155 *De mirabilibus sacrae scripturae* 1.7 (2159); *De ordine creaturarum* 9.4–6 (ed. Díaz y Díaz 148–50). Cf. Smyth, *Understanding the Universe* 252–3; 'From Observation' 85.

of thirteen lunar months has thirty-six.¹⁵⁶ Both state that the tides at the equinoxes and solstices are especially high.¹⁵⁷

Bede used all these materials, first in *The Nature of Things* and then in *The Reckoning of Time*, but in the later work he made numerous corrections. The first of these corrections involved clarifying the link between the daily passage of the Moon and the tide. For the first time, he connected lunar retardation to the daily period of tidal retardation, and he corrected the figures for the latter. Philippus Presbyter said that the retardation was a *dodrans* or three-quarters of an hour. In Pliny, Bede found a more precise figure for the daily retardation of the Moon – a *dodrans* plus a *semiuncia*, or three-quarters plus one twenty-fourth of an hour, or, as we would say, 47½ minutes¹⁵⁸ – and he reported that figure in ch. 39 of *The Nature of Things*.¹⁵⁹ In *The Reckoning of Time* he revised that figure to four *puncti*, or forty-eight minutes – still short of the correct figure of fifty minutes, but showing evidence of continuous reflection and research on this subject.

Secondly, Bede offered a new causal model for the tides. The link between the passage of the Moon and the timing of the tides suggested to him that the Moon ‘drags’ the waters of the ocean around the world with it. Bede borrows the word *protrahatur* from Ambrose but gives it a new and literal meaning. He points out that in fifty-nine days (two synodic months) the Moon goes around the Earth fifty-seven times and there are twice this number of tides. He then scales this down to twenty-nine-day and fifteen-day periods to show how a new Moon could appear at sunset in the west and, fifteen days later, appear as a full Moon at sunset in the east. Likewise, the tides, pulled around the Earth by the influence of the Moon, will appear at different times of day, but in a consistent pattern throughout the lunar month. In pointing out the exact correlation between lunar passage and tide, Bede also modifies and corrects *De mirabilibus*’ account of the number of *malina* tides each year. Since the Moon produces the tides, the number of times it circles the earth will equal the number of tides. In a common year of 354 days the Moon circles the earth 342 times, so there are fewer tides than days in the lunar year.

Thirdly, Bede reproduces the Irish theory of *ledo* and *malina*, but denies that *ledo* and *malina* last exactly seven days each. Their periods are not

156 *De mirabilibus sacrae scripturae* 1.7 (2159).

157 *Ibid.* 1.7 (2159); *De ordine creaturarum* 9.6 (ed. Díaz y Díaz 150).

158 *HN* 2.10.58 (206).

159 Ed. Jones 225.11–2; trans. Kendall and Wallis 95.

equal, nor are they consistent, as strong winds or other forces can modify their course. Fourthly, Bede corrects a misunderstanding about the annual patterns of tides. This is something of a *retractatio* for Bede, because in his own *The Nature of Things* he had copied ps.-Isidore's statement that unusually high tides occur at the equinoxes and solstices.¹⁶⁰ Here, he cites Pliny's statement that these exceptional tides occur at the equinoxes only.

Finally, by linking the rise and fall of tides to the passage of the Moon around the earth, Bede refuted the assumption that tides occurred all over the world at the same time. In showing that this was not the case, he enunciated for the first time the idea of a 'rule of port'. Dwellers along the North Sea coastline know, he says, that tides arrive earlier in some places than others.

How did Bede arrive at this last piece of information? Wesley Stevens suggests that he enlisted the aid of monastic and clerical friends up and down the coast of Britain as research assistants. Bede mentions the tides at Lindisfarne in *Historia ecclesiastica* 3.3; it stands to reason that the monks there would have had a good empirical notion of the tide-schedule, since the timing of traffic to their island along the causeway would depend on this. Bede certainly knew people at Lindisfarne, and possibly visited there in the course of preparing his versions of the life of St Cuthbert. Stevens also argues, albeit somewhat more speculatively, that Bede gathered information from Whithorn, the Isle of Wight (Bede does mention currents in the Solent at *Historia ecclesiastica* 9.16), and elsewhere. Stevens' intriguing reconstruction of a method for methodically measuring and timing tides over a significant period of time is attractive, but perhaps not totally convincing, given the demands of Bede's monastic schedule.¹⁶¹

So far, what Bede has presented is remarkable for its critical acumen and originality, but withal in harmony with his overall vision of 'nature' and 'reason'. Bede suggests that the movement of the tides was set up at the time of the creation of the heavenly bodies, and that it follows a repeating cycle.¹⁶² One has but to glance again at ch. 25 to understand afresh what he means by *naturalis ordo*. It is a vision of nature entirely consonant with Bede's aim as a computist, which was to envision time itself as a universal and mathematical *regula*. It is therefore all the more remarkable – and does credit to Bede's intellectual honesty – that he admits that no general

160 *De ordine creaturarum* 9.7, ed. Díaz y Díaz 150.

161 Stevens, 'Bede's Scientific Achievement' 657–60.

162 See Introduction, pp. 78–9.

theory can totally account for tidal phenomena.¹⁶³ The tides arrive sooner in the north than in the south, but Bede also recognized that every region had a *regula societatis* of the Moon and the tides. All of these *regulae* might be upset by chance conditions such as weather. In short, though the tides are driven by the Moon, whose sway is exercised over all the Earth, their ultimate expression is local. That a man of Bede's systematic mind, so passionately concerned with regularity and uniformity, should conduct such researches and express the results in this way is testimony to his freedom from dogmatism. The Irish cosmographers were likewise enchanted with the *regula* of tides, but they were more complacent about the information they found in their sources, particularly about the supposed simultaneity of tides around the globe and the precision of their schedule.¹⁶⁴

CHAPTER 30

The final section of the first part of *The Reckoning of Time* (chs 30–42) steps back to consider the solar year as a whole. The Moon names, shapes, and pervades the month; but the year is the Sun's domain. Its annual tour up and down the heavens defines the measurement of the year and marks off its major phases, the seasons. Unlike lunar phases, solar vicissitudes are slow, and their boundaries are inconspicuous; it is easier to mark them by monitoring shadows cast by a pole stuck into the earth than by looking up at the Sun itself. Moreover, if the Moon's journey shifts the waters all over the globe, the Sun's advance and retreat is best read in the land – the seasons of growth and decay, and the latitudes on Earth which feel the Sun's power and enjoy its light at different times and to different degrees. However, the natural courses of both the Moon and the Sun are not readily reduced to the full days with which computists prefer to work. The leap year and the *saltus lunae* are devices to bring the conventional calendars of human society back into some kind of harmony with the transcendent calendar of the two great luminaries.

Much of the power and beauty of *The Reckoning of Time* as a theological vision of time – and indeed, much of the impulse medieval people felt to study *computus*, even when there were no more problems left for it to solve – rests on this attraction. Bede's picture of the heavens is not only

163 Stevens, 'Bede's Scientific Achievement' 662.

164 Smyth, *Understanding the Universe* 262.

orderly, comprehensible, and convincing but full of life and meaning. The harmonious contrast of the swift and conspicuous course of the Moon to the stately and more inscrutable motion of the Sun suggests a dynamic balance between stability and change, faster and slower rhythms of time.

That being said, it is important to recall that the Julian calendar found in medieval manuscripts retained the graphic form and also, to some degree, the content of the Roman calendar. One of the features of this calendar was the inscription of celestial phenomena associated with the solar year onto the calendar ‘pages’: the heliacal rising of seasonal constellations (Pleiades, Arcturus, etc.), the beginnings of the seasons, and the solstices and equinoxes. The latter were carried over into medieval calendars. Hence Bede is continuing to ‘read’ the calendar in his *annalis libellus* with his students, even when he ventures into the realm of astronomy and geography.

The first subsection of this discussion of the solar year concerns the seasons (chs 30–5). It is dominated by the theme of the distinction between natural time and calendar time. The seasons do not coincide with the monthly divisions of the Julian solar calendar, which, as Bede has been at pains to show, are to a large degree the result of Roman convention. On the other hand, they are the terrestrial manifestations of the Sun’s annual journey north and south along the ecliptic. They are, therefore, linked to the solstices and equinoxes.

The section on the year therefore opens with this chapter on the solstices and equinoxes. It immediately lands Bede in the midst of a problem, which he resolves in a manner both typical and instructive. At the time of the inception of the Julian calendar the spring equinox fell on 25 March, the autumn equinox on 24 September, and the two solstices on 24 June and 25 December respectively. Much classical science and Christian symbolism came to be attached to those dates on the understanding that they represented the true dates of the equinoxes and solstices. Bede himself, at the time he wrote *On Times* ch. 7, still thought of them as such, and he opens ch. 30 of *The Reckoning of Time* by citing some ancient scientific and medical authorities who match the seasons to these dates. The ps.-Hippocratic passage is particularly interesting for what it reveals about Bede’s medical reading,¹⁶⁵ but he may also have selected this passage because it highlights

165 The *Ecclesiastical History* contains a number of passages that testify to Bede’s exposure to classical medical learning: see Faith Wallis, *Medieval Medicine: a Reader* (Toronto: University of Toronto Press, 2010), 59–62. A particularly intriguing example of Bede’s interest in medical theories of embryogenesis is found in his exegesis of Luke 11:27,

the relationship between the solstices and equinoxes, on the one hand, and the seasons, on the other; it also draws attention to how the seasons vary in length. Bede then goes on to observe that the symbolism of many Christian feasts – including Christmas, coinciding with the old winter solstice – is based on an allegorization of the solstices and equinoxes.

However, while avoiding any disparagement of either ancient learning or ecclesiastical traditions, Bede must assert that these conventional dates are not the true dates of the solstices and equinoxes. He invokes both scientific authority (the astronomical expertise of the ‘Egyptians’, since this is an Alexandrian doctrine) and ecclesiastical sanction (the (alleged) decrees of the Council of Nicaea). According to both, the spring equinox must be on 21 March.¹⁶⁶ Though Bede claims that this date is supported by the evidence of the sundial (*horologica consideratione*) as well as conciliar authority, it is doubtful that he understood why the Alexandrians had moved the equinox back to 21 March.¹⁶⁷

What is noteworthy about this chapter, however, is what it reveals about Bede’s attitude toward fact and custom in matters relating to the calendar. Why does it *not* matter that the Lord’s Nativity is not celebrated at the true winter solstice,¹⁶⁸ while the true spring equinox *does* matter in relation to his Resurrection? Though Bede does not pose this question, he does furnish its answer: the Mosaic Law (in his view) forbids the celebration of Passover before the equinox. Therefore the date of the equinox must be established with as much precision as possible. But the Bible furnishes only a general indication of when Jesus was born, and no injunctions are laid down as to when this event should be celebrated. The Church has assigned the Nativity to the conventional calendar date of the solstice for symbolic reasons, but no biblical precept is jeopardized if the date is off by a few days. As far as Bede is concerned, there is only one date where the

in *In Lucam* 4, ed. Hurst 236–7, trans. Kendall and Wallis 400–2, and discussed in Kendall and Wallis’ introduction, 53–5. Another side of Bede’s medical interests will be explored in the context of ch. 35 below.

166 Anatolius, however, states that the equinox falls on 22 March: Bede’s solution to this problem is contained in the *Letter to Wicthed* (see Appendix 3.3).

167 See Introduction, pp. 17–18 and remarks on Bede’s familiarity with sundials in the Commentary on ch. 31.

168 Cf. Bede, *In Lucam* 1, ed. Hurst 29, trans. Kendall and Wallis 130 (see also their Introduction 48–9) where Bede adds that it does not matter if Christ was born a little *after* the true winter solstice, because John’s preaching of the Kingdom before Christ’s official ministry began constitutes the beginning of that ministry.

distinction between scientific and conventional dating of the equinoxes and solstices is significant, and that is the spring equinox, because of Easter. He is casual about the others, merely pointing out that the true date falls before the conventional one by the same interval as applies in the case of the spring equinox.¹⁶⁹

Whether dealing with tidal anomalies, dates for the solstices and equinoxes, or the discrepancy between the natural and computed age of the Moon, Bede is sensitive to the distinction between the idealized regularity of the calendar, the truth of nature, and the compromises of human society. Within certain limits, these divergences can be tolerated without scandal. What those limits were is never articulated. For Bede and his medieval readers the religious significance of *computus* lies in its character as a model or symbol of the Creator's achievement of natural time. When that model diverged 'too far' from Creation, and was in 'error', was indeterminate.¹⁷⁰

CHAPTER 31

There is no disputing that the days are longer in summer than in winter, but one can imagine Bede's students asking him how one could be sure that today's daylight is longer or shorter than yesterday's. In other words, how could you verify that the solstice or equinox had come? To answer questions like these, Bede composed four chapters (31–4) on the measurement of variations in the amount of sunlight. This includes some intriguing claims about measuring those variations with a *horologium*, or sundial.

Bede's familiarity with the sundial has been the subject of some controversy. He clearly invokes the evidence of the sundial in favour of revising the traditional date of the equinox in ch. 30, in the letters to Wicthed and Helmwald, and in the letter of Abbot Ceolfrith to King Nechtan of the Picts in *Historia ecclesiastica* 5.21, where it is claimed that 'we can confirm' that 21 March is the equinox 'by consulting a sundial'.¹⁷¹ The conventional ancient and medieval sundial was a circular or semi-circular plate, sometimes mounted vertically on a wall, with a gnomon perpendicular to the support. The dial was marked like a fan with eight or twelve

169 For an exception, see *Letter to Wicthed* 6, Appendix 3c.

170 Cf. Zélinsky, 'Le calendrier'; on the 'tipping point' of the eleventh and twelfth centuries, see Nothaft, *Scandalous Error* chs 2–3.

171 *ut etiam ipsi horologica inspectione probamus*: ed. Colgrave and Mynors 542.

divisions, representing the hours. As the solstices are relatively easy to observe (the Sun seems to ‘stand still’ for several days at solstice) the outer edge of the semicircle could be marked with a line corresponding to the sweep of the gnomon’s shadow on the longest day of the year; a smaller semicircle incised much closer to the gnomon would mark its path on the shortest day of the year. A line halfway between these two would mark the shadow’s path at equinox.

But Jones argues that, even had Bede made such an observation, it could not have produced the stated result, for the spring equinox in his day was falling around 17/18 March; if it did, it was because the sundials used in Anglo-Saxon England were very crude.¹⁷² Both Harrison and Stevens, on the other hand, argue that Bede meant what he said. He could have used a very well-calibrated gnomon sundial, but even better methods were available. In the letter to Helmwald (Appendix 3b), and in ch. 38 on the leap-year day, Bede lays out an experiment to demonstrate the leap-year increments using *horologii lineis in terra* – ‘the lines of the sundial on the ground’; this is an application of Pliny’s method (*HN* 2.69) of confirming the equinox by means of ‘sights’ (*dioptrae*), i.e. stakes or poles aligned with the rising and setting sun. Nonetheless, the margin of error would have been significant, perhaps more than one day. So Bede might at least have been able to prove that the old Roman equinox was not correct, even had his equipment and expertise not been sufficient to prove that the Alexandrian one was.¹⁷³ To put it another way, the sundial proved that the old Roman sources were wrong; therefore, by elimination, the Alexandrians authorities promoted by Bede must be right.

Philipp Nothaft, however, is persuaded that Bede was not only familiar with sundials¹⁷⁴ and expected his readers to be as well but that his *horologium* was a kind of sundial that would readily provide the observational confirmation of the date of equinox he claims was indeed carried out.¹⁷⁵ Bede’s reference to a sundial ‘on the ground’ points to a circular sundial, mounted horizontally on a table or plinth and orientated to the

172 *BOT* 87.

173 Harrison, ‘Easter Cycles and the Equinox in the British Isles’; Stevens, ‘Bede’s Scientific Achievement’ 16 and nn. 48–9.

174 He alludes to them again in his *In Regum librum XXX quaestiones*, ed. D. Hurst, CCSL 119 (1962): 316; cf. Harrison, ‘Easter Cycles’ 5 n. 3.

175 C. Philipp E. Nothaft, ‘Bede’s *Horologium*: Observational Astronomy and the Problem of the Equinoxes in Early Medieval Europe’, *English Historical Review*, 130.546 (2015): 1079–101.

horizon. Such an Anglo-Saxon dial, or sun-path *horologium*, equipped with holes for moveable pegs to track the points of sunrise and sunset along the rim of the dial, has been excavated at Coates in Gloucestershire.¹⁷⁶ As Nothaft remarks,

Given the description in *DTR* 38 of a ‘sundial on the ground’ the sun-path *horologium* is probably the most convincing candidate for the instrument Bede may have had in mind when he wrote about the *horologica consideratio* of the equinoctial date. The distinctive advantage of this method was that it allowed for a direct observation of the equinoxes, which are the days of the year when the points of sunrise and sunset, marked by the pegs on the *horologium*’s outer circle, appear in a perfectly straight line from east to west. In this regard, the sun-path approach was clearly superior to the principal archaeo-astronomical alternative: observing the noon shadow cast by a vertical stick or ‘gnomon’, the length of which would have reached its maximum and minimum around the winter and summer solstices.¹⁷⁷

This would not, to be sure, solve the problem of the slippage of the date of the vernal equinox to 17/18 March. But if Bede’s purpose was to prove not that 21 March was the equinox but that 25 March was *too late* to be the equinox, this would not have mattered.¹⁷⁸

Nonetheless it is interesting to see how, in this chapter and elsewhere, Bede insists that the sundial provides evident proof that nature – and

176 D. Scott and M. Cowham, *Time Reckoning in the Medieval World: a Study of Anglo-Saxon and Early Norman Sundials* (London: British Sundial Society, 2010), 6, 12, 27–8, 36–7, 89, 120, 132–4.

177 Nothaft, ‘Bede’s *Horologium*’, 1090. Crucial evidence on the varieties of *horologium* comes from a diagrammatic representation in the Calendar of Willibrord (658–739), who was educated in Ripon and Ireland before embarking on his continental mission. This *horologium*, despite its label, is not a conventional sundial, but *inter alia* a form of sun-path *horologium*. As Barbara Obrist observes, ‘it condenses several complementary, but nevertheless distinct features of ancient practical and theoretical astronomy: it is a compass figure, an illustration of the solstitial and equinoctial sun courses at a given latitude, and finally, the additional hourly divisions make it also the illustration of a clock’. Above all, it ‘reproduces the spatial frame within which the movements of the sun take place’. Its calibration for northern Britain indicated that, while its prototypes derive from Mediterranean antiquity, it was actively used and adapted in the milieu Willibrord shared with Bede: ‘The Astronomical Sundial in Saint Willibrord’s Calendar and its Early Medieval Context’, *Archives d’histoire doctrinale et littéraire du moyen âge*, 67 (2000): 71–118 at 81, 101; cf. Nothaft, ‘Bede’s *Horologium*’ 1088–9. On Willibrord’s calendar see D. Ó Cróinín, ‘Rath Melsigi, Willibrord and the Earliest Echternach Manuscripts’, in his *Early Irish History and Chronology*, 145–72; on his computational interests see Introduction, pp. 52 n. 161, 57–8 n. 178, and 94.

178 Nothaft, ‘Bede’s *Horologium*’ 1091; Eastwood, *Ordering the Heavens* 24–5.

hence God – is on the side of Alexandrian *computus*. The implication that the contest of authorities can be settled by observations carried out with an instrument is unquestionably a bold one, and worthy of the name of science. Later readers of *The Reckoning of Time* took Bede at his word, and contrived more precise and more sophisticated experiments, with increasingly complex instruments like the astrolabe, to establish exactly when the solstices and equinoxes fell. In short, Bede's *horologium*, despite all its limitations, implanted the notion that direct observation and empirical testing was simply part of what a computist did.¹⁷⁹

CHAPTERS 32–3

In ch. 31 Bede follows his policy of parallel quotations from classical and Christian writers to demonstrate that, even though the length of the equinoctial day is the same everywhere on the globe, the shadow cast at noon will be much shorter in the tropics, where the sun is overhead, than in the north, where it is always to the south of the zenith. As Pliny points out, this means that sundials must be calibrated to latitude. Moreover, on any day other than equinox, the length of the day itself will vary with latitude. The further north one goes, the longer the days will be at summer solstice and the shorter they will be at midwinter. In the following chapter, he will explain why.

The Earth, according to Bede, is a sphere set in the middle of the universe. Once each day, the Sun revolves around the Earth from east to west. But from day to day this orbit will shift southwards or northwards, depending on the time of year. Latitude determines the length of the day because the winter Sun in the southern sky is 'blocked by the mass of the Earth', just as certain southern constellations cannot be seen by the inhabitants of a village on the northern slopes of a large mountain. But all locations at the same latitude (or, as Bede puts it, 'all who are placed facing one another in the same line under a northern or southern clime') will experience the same amount of sunlight on any given day.

All this is very well (we may imagine Bede's students replying), but how do you know what places 'face one another' on the same parallel of latitude? Bede's response in ch. 33 is a long quotation from Pliny, showing how sundial readings at solstice, gathered from various locations, could

179 Nothaft, 'Bede's *Horologium*' 1092–101.

be used to determine which places lie along the same latitude.¹⁸⁰ It can also be seen as Bede's 'proof of principle' that knowledge of astronomy, cosmography, and cosmology is integral to *computus*.

CHAPTER 34

Hitherto Bede's students have been looking outwards, so to speak, from the sundial to the horizon. In ch. 34 he asks them to do something different: to stand outside the universe in their imagination, and visualize how the diurnal and annual motions of the universe produce varying patterns of light and darkness on Earth, from east to west during the day, and from south to north to south again through the year. As Jones observes, this exposition of the world zones and their climates is a sophisticated piece of scientific writing.¹⁸¹ But what is particularly remarkable is the concrete, homely example with which Bede brings his students literally back down to earth again at the end. Imagine a rectangular open-air firepit on a cold night, with people sitting on either side. Nobody can sit right in the middle of the fire because it is too hot; on the other hand, if you are too far away, you will freeze. If you are close, but not too close to the fire, you will be comfortable, no matter which side of the hearth you are on. Now imagine the rectangular firepit wrapped around the earth like a belt.¹⁸² The two 'comfort zones' represent the two habitable areas to the north and south of the equator, while the distant reaches stand for the Arctic and Antarctic polar zones. Both comfort zones are *habitable*, but Bede denies that both are actually *inhabited*. Pliny, after all, says that no one can cross the torrid zone. The missing minor premiss here is that

180 Pliny named cities and prominent locations within the Roman Empire and tried to assemble data about the hours of sunlight at solstice in each, to establish their relative latitude. Bede used some of this material in *The Nature of Things* 47–8. It is not, by our standards, completely accurate: Meroe and Syene are too far south, the size of Sicily has been considerably inflated, and Narbonne is too far north: cf. Stevens, 'Bede's Scientific Achievement' 652–3.

181 *BOT* 367–8.

182 This image suggests that Bede may have seen a zone-map, like the one illustrating Macrobius' *Commentary on the Dream of Scipio* (ed. Willis 165). This showed the five climatic zones laid out across a disk-like earth. Such a map was sometimes imported into *The Reckoning of Time* as an illustration: see Wallis, 'Diagrams as Glosses' 302, 321; J.B. Harley and David Woodward, eds. *The History of Cartography. Volume 1: Cartography in Prehistoric, Ancient and Medieval Europe and the Mediterranean* (Chicago, IL: University of Chicago Press, 1987), 300–3.

mankind is descended from a single person, Adam, who began life in the northern hemisphere; hence none of his progeny could have ever reached the southern hemisphere. Note that the issue for Bede is not the possibility of life in the southern hemisphere, but the impossibility of travel to the southern hemisphere through the blazing equatorial zone. This means that, if people lived there, the message of salvation could never reach them, and there would be human beings for whom Christ had died in vain.¹⁸³

CHAPTER 35

Chapter 35 is about the analogy of the four seasons, elements, and humours, and it links the preceding chapters on the variable length of days to the following section on the year. But it is a linking chapter in other ways as well. At the mid-point of *The Reckoning of Time* Bede pauses to reflect on the way in which time joins man to the universe. This connection is mediated by number, for the elements which compose the physical universe, the humours which constitute the human body, and the seasons of the natural year are all four in number. The connection is also grounded in an ancient theory explaining the coincidence of stability and change in the cosmos. Four qualities – hot, cold, wet, and dry – combine in pairs to make the elements and the humours; at each of the four seasons, one of these pairs dominates the world. Time, then, makes change rhythmic, not chaotic. This *syzygia* of *mundus*, *annus*, and *homo* is derived from Isidore's *DNR* 7, where it is illustrated by a much-copied and much-imitated diagram. Bede's language in describing the connection of the elements one to another suggests that he had this Isidorean diagram in mind: he speaks, for instance, of each element 'embracing what is on either side of it', and of the ensemble of elements looking like a sphere.¹⁸⁴

The general scheme was a commonplace, but the exact dates when the seasons began was a matter for debate. Bede's argument about these dates

183 The patristic *locus classicus* is Augustine, *De civitate Dei* 16.9. The question was of considerable interest to Irish cosmographers, who were sometimes uncertain as to whether the antipodeans dwelt on the far side of a spherical earth or simply underground. The outrage expressed by Boniface at the Irish bishop Virgil of Salzburg's suggestion that people might live 'below the earth' shows how shocking the religious implications of the doctrine were felt to be, at least by some: see Smyth, *Understanding the Universe* 285–90; John Carey, 'Ireland and the Antipodes: the Heterodoxy of Virgil of Salzburg', *Speculum*, 64 (1989): 1–10.

184 See ch. 35, n. 410.

is a complex one and, since it has engendered some misunderstanding, it seems worthwhile to dissect it in detail.

Bede arranges the various opinions on this issue in an ascending hierarchy of authority. First, he reports the dates found in Isidore of Seville, but he plainly thinks little of them. Isidore's dates are certainly conventional and without scientific foundation, but Bede's criteria for dismissing them is that they are *provincial*, a local Spanish reckoning. This is not exactly the case, but the fact the Bede makes this point is, as we shall shortly demonstrate, of some significance.

The Greek and Roman dates rate higher in his estimation, as they rest on an astronomical foundation. However, Bede passes over these dates as well, without comment. The reason for doing so, however, can be deduced from what follows. Bede, as we shall see, has a special interest, for computistical reasons, in determining the beginning of *spring*. The Greco-Roman system furnishes clear criteria for the beginning of winter and summer, namely the heliacal rising and setting of the Pleiades – the Pleiades are in Taurus, so will set just before the Sun in spring and they are most visible in the winter – but spring and summer are only vaguely marked by the constellation's rising and setting 'about midnight'.

Ranking very much higher in Bede's estimation is the method described in the *Liber Anatolii*, which takes the solstices and equinoxes as the mid-points of the seasons. The passage from the *Liber Anatolii* does not actually date the spring equinox, but the dates provided for the autumn equinox and the solstices indicate that it was using the old Roman dates, so the spring equinox would be on 25 March. If spring has ninety days (cf. ch. 33) and the mid-point is 25 March, it will begin on 8 February. Most medieval *computus* texts which date the seasons according to this method use either 8 February or 6 February as the beginning of spring.

Jones states that Bede approved, adopted, and popularized this system, but 'moved the seasons back from v id. [8 February] to vii id. [6 February]' to adjust for the 21 March equinox.¹⁸⁵ However, careful reading of this chapter will reveal that Bede never explicitly names the dates on which the seasons begin. Moreover, moving the beginning of spring from 8 February to 6 February would by no means adjust for the four-day interval between 25 March and 21 March; spring, using the *Liber Anatolii* system but Bede's equinox, would come on 4 February.

Bede adds yet another rung to his hierarchy of authorities on the dates of

the seasons: the Bible. The quotation from Deuteronomy indicates that spring begins in the Passover month; this is a lunar month, but (in Bede's view) determined by the equinox. The most orthodox computistical authorities, the Egyptians (represented here by Proterius), also use this criterion.

Bede in fact at no point fixes calendar dates for the beginnings of the seasons. Rather, he sets out in ascending order of authority the various schemes of which he knew, ending with the Hebrew/Egyptian method. Given Bede's reverence for both biblical authority and Alexandrian computistical expertise, this is clearly his formula of choice. It is also the only one of any computistical consequence and, as we have seen earlier, Bede's interest in taking sides on these contentious questions is roused only by computistical consequences. Moreover, even if he did think the *Liber Anatolii*'s system plausible, to have committed himself to it would have confused his students, since the *Liber* used Roman dates for the equinoxes and its spring began before the earliest acceptable calendar date for the Passover month.

Finally, Bede makes the interesting observation that the etymologies of the Latin names for the seasons make sense only in terms of the climate Latin-speaking peoples know. Unlike solstices and equinoxes, which are astronomical phenomena, seasons (like hours of daylight) are local conditions, different in India, Egypt, and England. They are sublunary and terrestrial, and hence widely variable and inconsistent. This may be another reason why Bede refrained from any dogmatic statement about their starting dates, but it also reveals his care in distinguishing 'natural' seasons from astronomical ones.

CHAPTER 36

Chapters 36–43 of *The Reckoning of Time*, devoted to the year, are also dominated by the theme of the distinction between natural and computed time. The 'year' which the student sees laid out before him in the *annalis libellus* is not equivalent to the natural 'year', for it is six hours shorter than the time the Sun takes to make a complete circuit of the zodiac. Since calendars are constructed out of whole days, the six extra hours can be 'counted' only when they have cumulated into a full day of twenty-four hours; this happens every four years.

As we have seen, this distinction between calculated and natural time was an important one for Bede, and one which he was at pains to

impress upon his students.¹⁸⁶ Natural time was God's time; it was the time marked by the Sun and Moon themselves, the exemplar-time which good time-reckoning strove to conform to as closely as possible.

Significantly, Bede begins ch. 36 by amplifying his readers' notions of what the word 'year' means, rather in the way he had multiplied the meanings of 'week' in chs 8–9. *Annus* denotes a 'circuit'. Therefore the scope of the 'year' depends on what is making the circuit, be it the Sun, the Moon, the planets, or even all of the above. When applied to the Moon, this circuit can have no fewer than four meanings: a sidereal lunar month, a synodic lunar month, a common year of twelve lunar months, or an embolismic year of thirteen. Where the latter two begin and end also varies, depending on whether one is following the 'Hebrew' or Roman system. The Sun's year is the length of time required for it to return to the same point in the zodiac, and planetary years are defined in the same way. A Great Year is the interval of time it takes for all the planets to resume the same position in relation to one another. Bede betrays no knowledge of the ancient debates concerning the length of the Great Year, the nature of the grand planetary conjunction, the notion that all the events of previous Great Years would be repeated, or the theories of alternating floods and conflagrations, even though he may have encountered Augustine's critique in *The City of God* 12.12–14.¹⁸⁷ Information about this Great Year was also conveyed in Macrobius' *Commentary on the Dream of Scipio*,¹⁸⁸ but Bede knew only the extracted passages in the *Debate of Chorus and Praetextatus*. The only clue that his library yielded as to the length of the Great Year was the quotation from Josephus. Josephus' Great Year is actually the Babylonian *naros*, a cycle designed to predict eclipses. It is far too short a period to bring all the planets together in the fourth degree of Aries, which is the definition of the grand conjunction Bede proposes in ch. 6.¹⁸⁹

This catalogue of different kinds of year was adapted by Bede from

186 See Commentary on ch. 3.

187 Godefroid de Callataÿ, *Annus Platonicus: A Study of World Cycles in Greek, Latin and Arabic Sources* (Louvain-la-Neuve: Université Catholique de Louvain, Institut Orientaliste, 1996), 95–6.

188 2.11.8–17, ed. Willis 128.31–129.20.

189 de Callataÿ, *Annus platonicus* 98–9. Bede's remarks on the Great Year elaborate on his statements in *On Times* 9. The Macrobian tradition about the Great Year was certainly known to Carolingian computists, e.g. Paris, B.N. nouv. acq. lat. 1615, fols 166v–167v: cf. Jones, *BOT* 371.

Isidore's *DNR*, but strongly influenced by the Irish textbooks.¹⁹⁰ Chapters on different kinds of year are found in the *Munich Computus* (ed. Warntjes 90–3) and *De ratione computandi* 46 (ed. Ó Cróinín 154–7). Bede's list is rather shorter than the Irish examples, which include natural years, equinoctial years, and, in the case of *De ratione computandi*, the Jubilee years; but his planetary year is not found in the Irish texts.

CHAPTER 37

Not only do natural years vary in length, but so do the conventional years of human time-reckoning. Bede illustrates this fact in ch. 37 with a quotation from St Augustine. Augustine's point is that ancient pagan peoples used the term 'year' to denote different measures of time. Anti-Christian polemicists exploited this fact to cast doubt on the Old Testament's statements about the life-spans of the Patriarchs. What Bede omits, and presumably was confident his readers would understand, is that Augustine goes on to argue that the 'years' of Genesis are true years, and not shorter periods of time.

CHAPTER 38

Leap-year day was a subject of perennial and seemingly inexhaustible interest for computists, both in Bede's day and later. One eleventh-century anthology, Vatican Reg. lat. 123, contains no fewer than fourteen tracts on leap year, and it is far from unique.¹⁹¹ Chs 38 and 39 of *The Reckoning of Time* in fact were originally composed as a separate treatise on leap year

190 Jones argues (*BOT* 371) that Bede's source for this chapter was a short tract in his 'Irish computus' (n.b. not the Sirmond MS), whose incipit reads *Quot modis soleat annus nominari. Primus modus est de luna ...* ('The number of ways in which one can designate a year. The first way is according to the Moon ...'), which reproduces Bede's typology and order. It survives in a number of Carolingian computus manuscripts, e.g. Berlin, Staatsbibliothek 128, fol. 117r; Besançon 186, fol. 40r; Geneva 50, fols 165v–166r; Rouen 26, fol. 150; Paris, B.N. lat. 2341, fol. 6r; Paris, B.N. nouv. acq. lat. 1613, fol. 3v; and Munich, CLM 210, fols 72v–73r. However, Borst, who edited this text (*Lib. ann.* c. 1, in *Schriften* 1.679–83), regards it as derived from Bede, and not his source. It should be noted that *Quot modis* lists years not mentioned by Bede, such as the twenty-eight-year solar weekday cycle, and the Jewish Sabbatical and Jubilee years; it also records a different length for the Great Year, namely 532 years, or the great Paschal cycle.

191 Appendix 5, no. 252.

in the form of a letter to a certain Helmwald.¹⁹² It was in turn excerpted in whole or in part into later *computus* anthologies.¹⁹³

Bede's goal in these two chapters is to explain leap-year day without overcomplicating the issue. For the sake of students with little scientific background or mathematical aptitude, he omits elaborate calculations of the leap-year increment¹⁹⁴ and focuses on more basic issues: why an extra day accumulates over four years, and why it is important to intercalate it accurately.¹⁹⁵

CHAPTER 39

This chapter is a concrete illustration of why Bede wanted to keep his exposition of the leap-year day simple. In Bede's day there was a misconception abroad that the bissextile increment was three hours per year, based on a widely circulating computistical algorithm. In consequence, many thought that the 'quarter-day' was one-fourth of a conventional day of twelve hours, rather than of a full day of twenty-four hours.¹⁹⁶ The algorithm is furnished with a theological explanation in ch. 34 of the 'Bobbio *computus*'. The world was created in seven days, but the Bible does not say that the seventh day had an evening. This is why the year is a little longer than expected: $365 \text{ days} \times 24 \text{ hours} = 8760 \text{ hours}$; and 8760

192 The part of the letter not incorporated into *The Reckoning of Time* is translated in Appendix 3.2.

193 E.g. St Gall, Stiftsbibliothek 878 (Appendix 5, no. 230), and Vatican City, BAV Vat. lat. 645 (no. 267).

194 Bede reserves some of these more complex details for his *Letter to Wicthed* 7 (see Appendix 3c).

195 On references to the use of a sundial in this chapter, see Commentary on ch. 30 above.

196 The algorithm for calculating the leap-year increment by hours circulated as ps.-Dionysius *Argumentum* 16 (ed. Krusch, *Studien II* 80–1), but was probably introduced into the broad stream of western *computus* from the Greek East via Theodore of Tarsus' computistical instruction at Canterbury: see Loevenich and Warntjes, 'Theodore of Tarsus' 16–31; indeed, it is ascribed to Theodore in the *Einsiedeln Computus*. This algorithm is found in Irish *computi* and remained very popular for centuries: its transmission is analysed by Loevenich and Warntjes, 'Theodore of Tarsus' 24–30. See also Marina Smyth, 'One in Four: the Leap Year in Early Medieval Thought', in *Late Antique Calendrical Thought and its Reception in the Early Middle Ages*, ed. Immo Warntjes and Dáibhí Ó Cróinín (Turnhout: Brepols, 2017), 229–64, at 236–47.

divided by the 7 days of the week yields 1251, with a remainder of 3; these leftover three hours were the annual leap-year increment.¹⁹⁷

That this error was so deeply entrenched, and furnished with arguments such as these, explains both Bede's monotonous insistence that the true length of the annual increment is six hours and his production of a lengthy quotation from Augustine's *De Trinitate* which discusses the leap-year increment in the context of the symbolic perfection of the number six.

CHAPTER 40

Since much of Augustine's disquisition on the number six in relation to leap year alludes to the day on which the extra day in intercalated – the sixth Kalends of March (24 February) – Bede was probably asked to explain why this date was chosen. The *Disputatio Chori et Praetextati* furnishes the answer, but one senses that Bede is uncomfortable with this account, since the reason for the choice is redolent of pagan superstition. Hence he follows up his quotation with a somewhat moralizing tirade. This effort to distance himself abruptly from the pagan content of Macrobius might be compared with Bede's remarks on the month of February in ch. 12.

CHAPTER 41

This chapter addresses a subject which had received no recorded notice before Bede's time: the effect of the leap-year day on the calculation of the age of the Moon. The intercalation of leap-year day makes the Moon one day older than it was before the intercalation. This will affect the date of the Easter full Moon.

But it is the final, somewhat cryptic paragraph in this chapter which is the most intriguing. Although he does not enter into the details, Bede is acknowledging here that computed ages of the Moon may not match reality. To begin with, the nineteen-year cycle is not exactly cyclic, because it is incommensurable with a fourth-year leap-year intercalation. Each nineteen-year cycle will accumulate 4.75 leap-year days for both the Sun and Moon (0.25×19), which means that cycle will not contain a whole

197 'Bobbio computus', ch. 43 (PL 129.1296C). Cf. Jones, *BOT* 374.

number of days. Therefore the lunar phases may vary from their computed calendar dates from one nineteen-year cycle to the next.

The total number of lunar and solar days in a nineteen-year cycle is 6939.75, computed as follows:

Solar years:	
19 solar years	6939.75 days (365.25×19)
Lunar years:	
12 common years	4248 days (354×12)
7 embolismic years	2688 days (384×7)
Bissextile lunar days	4.75 days (0.25×19)
Total lunar days	6940.75
Subtract <i>saltus</i> 1	
Total	6939.75

So, from a computistical perspective, some nineteen-year cycles will be, so to speak, ‘hollow’ and contain 6939 lunar days, while others will be ‘full’ and contain 6940. The variation will be regularized over the course of the great Paschal cycle of 532 years, which is the product of the nineteen years of the lunar cycle and the twenty-eight years it takes to move the leap-year days through each of the days of the week.¹⁹⁸ This means that the computist must be careful to track the course of the Moon each leap year, so that he can ascertain its correct age on the critical date of the spring equinox.

Computists before Bede hardly noticed the problem because they calculated the age of the Moon with annual epacts and lunar regulars. It only surfaces when the issue becomes the establishing and demonstration of a cycle; indeed, the unique pre-Bedan allusion comes from a critique of Victorius of Aquitaine’s cycle by a Spanish writer named Leo.¹⁹⁹ It has little impact on *computus* as a whole, but illustrates how profoundly Bede had grasped the problem of constructing a luni-solar cycle.

Bede’s alarm at the consequences of omitting this additional lunar day – the ‘wavering’ of the Easter reckoning, the ‘reeling’ of the course of the year, and the ‘overthrow’ of the Paschal cycle – is a striking illustration of his deeply engrained tendency to imagine *computus* as a kind of architecture and, in turn, to imagine architecture as a trope of stability.²⁰⁰

198 BOT 374.

199 Ed. Krusch, *Studien I* 299. Cf. Jones, *BOT* 374–5.

200 Bede probably noticed Dionysius Exiguus’ predilection for verbs such as *titubare*, ‘to totter, wobble’ (*Ep. ad Petronium*, ed. Krusch, *Studien II* 64.35), when discussing flaws in

We will revisit this later (chs 47–62), when we trace how Bede visualized the Paschal table as a kind of edifice.

CHAPTER 42

This chapter and the next directly address the fact that the computed age of the Moon is sometimes out of phase with the Moon's observed age. They constitute a kind of appendix to the section of *The Reckoning of Time* devoted to the solar calendar and serve as a bridge to the Paschal table.

In plotting the phases of the Moon against the grid of the solar calendar, anomalies are bound to occur due to the incommensurability of lunar and solar cycles. Over nineteen solar years the calculated Moon will gradually build up an advance of one day, which will have to be deducted at some stage of the cycle to bring the cycle back into phase with reality. Thus the Moon will have to 'jump over' one day. But the issue of this *saltus lunae* also raises broader questions about natural and calculated time – between what things *are* and how they are *named*. For, in fact, Bede was aware that such discrepancies were occurring fairly often, and not only in connection with the *saltus*.

As Bede points out in the opening sentences of ch. 42, the lunar *saltus* is the leap-year problem turned on its head. In the latter case, the calendar has to 'slow down' every four years by adding a day to 'let the Sun catch up'; in the case of the Moon, the planet starts to run ahead of the calendar, and eventually 'jumps over' a day in the count of lunar day. Bede admits that it is not easy to see this happening, since the advance amounts to only one day over nineteen years; but it is not hard to measure it.

Bede's calculation of the annual increment which eventually produces the *saltus* modifies the one given in *On Times* 12, which was in turn a critique of a misconception, namely that the *saltus* accumulated at the rate of one-twelfth of a day per year. In *On Times* Bede rendered the *mensura* as one hour, ten *momenti*, half of a *momentum*, and one-nineteenth of half of a *momentum*. In *The Reckoning of Time*, this statement is simplified by grouping the ten *momenti* into one *punctus*.²⁰¹

Paschal computation. However, Bede uses such images in a wider range of contexts and with greater intensity: Wallis, 'Bede's Eye' 672–4.

201 Cf. Jones, *BOT* 377. For a lucid explanation of the mathematics of the *saltus* see Baker and Lapidge's commentary on Byrhtferth's *Enchiridion*, 286. The sources for ch. 42 are

But where should the ‘leap’ take place? Bede argues that it should properly take place at its ‘natural’ time, which is the spring equinox. As we have seen, what Bede means by ‘natural’ is the will of God as expressed in the act of Creation.²⁰² Since God created the Moon and Sun at the spring equinox (cf. ch. 6), then their cycles begin and end at that point, and it would be logical to correct the lunar anomaly there before starting a fresh cycle. But Bede acknowledges that the conventions of the calendar tend to outweigh the claims of ‘nature’, and that computists prefer to insert the *saltus* at the end of the calendar year – November in the case of the Roman calendar, July for the Egyptians – so that the anomaly can be absorbed by the final lunation of the year.

Bede does not tell us which system he uses, but in ch. 20 of *The Reckoning of Time* he implies that he applies the *saltus* to the lunation of November of the final year of the nineteen-year cycle.²⁰³ He nonetheless would rather see the *saltus* inserted at the very end of the nineteen-year

difficult to establish, and Jones lists a number of anonymous *saltus* tracts which Bede might have used. The most important is the one whose incipit is *De saltu lunae pauca dicimus* (i.e. ps.-Alcuin, *De saltu lunae* 1, PL 101.984–9), a text which appears in the ‘Sirmond manuscript’ and its cognates (see Introduction, p. 59). Its overall structure mirrors that of Bede’s chapter, e.g. beginning with a suite of questions about the *saltus*. But it does not, for example, discuss where Victorius inserts the *saltus*. More importantly, as Warntjes observes (*Munich Computus* 273) Bede calculates the *saltus* increment per year, while Irish texts such as *De saltu lunae pauca dicimus* or *Munich Computus* 62 calculate the increment per lunation.

202 See Commentary on ch. 6 above.

203 See also Warntjes’ note on *Munich Computus* 62, pp. 279–80, on the Irish preference for 22 March; this is also the case with the ps.-Alcuin *De saltu lunae*. On Bede’s (unstated) preference for the November *saltus*, see *Munich Computus* 284 (Warntjes’ note). Dionysius himself laid down no rule for positioning the *saltus*. Ps.-Alcuin, *De saltu lunae* (PL 101.988–9) lists several possibilities: Victorius and the ‘Latins’ place it on 25 November, the Greeks on 22 March, the Egyptians on 26 September, and Dionysius on 17 April: cf. van Wijk, *Le nombre d’or* 19–22. It is interesting that Bede’s own abbot ‘Eusebius’ (Hwætbert) inclined to the Irish system, as witness his riddle on the *saltus*: *De aetate et saltu. Rite uicenis cum quadragies octies una / Quaeque sororum formatur de more mearum / Nempae momentis; tunc ego sola peracta uidebor, / Cicli nondecimus cum deficit extimus annus.* (‘Of the age <of the Moon> and the leap <of the Moon>’. According to rite, of exactly twenty times forty-eight *momenta* each one of my sisters is habitually / formed: but I, the unique, apparently <have already> run my course / the moment the cycle’s nineteenth and last year ends’): F. Glorie, ed., *Variae collectiones aenigmatum Merovingicae aetatis*, CCSL 133 (1968), 239. The ‘sisters’ are the lunar days, each of which is twenty-four hours long ($20 \times 48 \text{ momenta} = 960 \text{ momenta}$, divided by 40 *momenta* per hour = 24). But the final lunar day of the nineteen-year cycle is in fact already over by the time the final calendar day of the cycle

cycle or, ideally, at the beginning of the new cycle, on 21 March, so that the epacts on 22 March change from 18 (year nineteen) to nil (year one), and not to 29. This is why Bede refers to the *saltus* as happening in the *first* year of the nineteen-year cycle. Normally the ‘year’ in this sense means the period between the Easter new Moon of year nineteen and the Easter new Moon of year one (cf. ch. 45), but in this case it means ‘on 22 March’, since the new epact of year one comes into effect on that date. This is also why he claims that the *saltus* produces a lunar year of 353 days; year nineteen of the cycle is embolismic, and has 384 days, but year one is common.

CHAPTER 43

This chapter is one of the most complex and revealing passages in *The Reckoning of Time*. It shows Bede attempting to account for a discrepancy in the computistical system made evident by the direct observation of nature. His explanation, although purely computistical, cannot win assent unless it is shored up by authority. But the authorities Bede invokes are not as convincing as they might be.

Bede admits that the observed Moon in the sky is sometimes older than its computed age. There are (he says) four reasons for this. First, the gradually accruing *saltus* increment will mean that by the end of the nineteen-year cycle a discrepancy of about a day will be fairly normal. Secondly, we may be fooled into thinking the Moon is older than its calculated day if we mistakenly count a crescent Moon appearing *just after* sunset as the first Moon: lunar count begins *at* sunset, so only a Moon visible at sunset counts as the first. Thirdly, a Moon visible at sunset may actually be a new Moon – i.e. in day thirty of its previous lunation, not in day one of its new lunation. It can happen that we see the thin crescent of the old Moon in the eastern sky at dawn, and the thin crescent of the new Moon in the western sky at sunset on the same day – i.e. day thirty of the old lunar month. Such sightings are unusual, but they can happen, and especially in the spring, for reasons explained by Bede in ch. 25. Due to the shifting angle formed by the ecliptic and the horizon, the old Moon in spring will rise at dawn ‘beside’ the Sun and be visible as a faint arc. Conjunction will take place during the daytime. By sunset, however, the

rolls around, since it represents the advance which the Moon has accumulated throughout nineteen years. That is why it is dropped out of the reckoning, or ‘leapt over’.

Moon will be plunging almost straight downwards towards the horizon along the ecliptic; hence the setting Sun will light up a thin arc of the Moon from beneath.²⁰⁴ But the Moon is still technically in day thirty.

The fourth reason for anomaly is the most complex and interesting case of all. Bede evokes an imaginary observer – not a lone individual, but one who can summon witnesses to affirm what he has seen. This observer claims that on 4 April in year nineteen of the cycle, when the Paschal table says that the Moon will be new, he has seen a Moon two days old in the sky. One day might be accounted for by any of the three reasons given above. But how to account for two?

We now know, though Bede did not, what has caused this gap. Nineteen solar years total 6939 days and eighteen hours, but the 235 lunations which computists considered the equivalent of nineteen solar years total 6939 days, sixteen hours and thirty-one minutes (235×29.530588 days). Therefore, every nineteen years the Moon advances about one hour and twenty-nine minutes ahead of its computed age. After 308 years the discrepancy amounts to one day, so by Bede's day – always assuming the calibration was correct at the time of the Council of Nicaea – the slippage was about one and a half days.²⁰⁵

Nonetheless, Jones argued that Bede's case involving the new Moon in April of year nineteen was not an instance of first-hand observation but an echo of a controversy which had occurred in 550. In that year, the nineteenth of the Alexandrian cycle, the Victorian and Alexandrian tables disagreed, and it looked as though the Victorian tables were more accurate. Victorius fixed Easter on 17 April, the fifteenth day of the Moon, while the Alexandrian table declared it to be 24 April, the twenty-first day of the Moon. Therefore Victorius' lunation began on 3 April and the Alexandrian on 4 April. In his defence of the Alexandrian reckoning, Victor of Capua indicates that the Victorian camp pointed out that the new Moon was indeed visible on 3 April; he responds by invoking the first reason rehearsed above, namely the accumulation of the *saltus* increment. But, 'whether in 550 or 725, the discussion is highly academic. Bede shows no knowledge of the actual observed Moon.'²⁰⁶

This argument can be contested on the following grounds. First, Victor is discussing the generic issue of the calendrical *terminus ad quem* of Easter.

204 See figure 2b in Commentary on ch. 25, p. 452.

205 Nothaft, *Dating the Passion* 115–17.

206 Jones, *BOT* 378.

The date in question is not 24 April, but 25 April, and Victor nowhere alludes to the *saltus*.²⁰⁷ Secondly, Bede's explanation for this anomaly is different from the one which Jones ascribes to Victor. He points out that in year nineteen the last lunation before the Easter Moon is not a hollow one of twenty-nine days, as would normally be the case, but a full one of thirty days, because an embolismic month is inserted in March in year nineteen. It begins on 5 March and ends on 3 April. Therefore to the day accumulated by the *saltus* increment one must add an additional day to the lunar reckoning because of the embolism.²⁰⁸ For this reason, all the arguments invoked by Bede focus on the authority of the nineteen-year cycle, and particularly its pattern of common and embolismic years (see Commentary on ch. 46, below). He begins with a common-sense assumption. Given that the Council of Nicaea (in Bede's view) approved the nineteen-year cycle, they must have approved its sequence of common and embolismic years. Surely the Fathers at Nicaea knew about the discrepancy; but they chose to subordinate nature to the goal of maintaining the proper sequence of common and embolismic years, so that the cycles of Moon and Sun would coincide over a period of nineteen years (cf. ch. 46). But, as there is no documentation of such an assumption, Bede feels obliged to back it up with further evidence. The evidence is certainly colourful, being a string of wonder-tales and religious legends, none of them with impeccable credentials.

The first is the legend that St Pachomius, the founder of cenobitic monasticism, had received the rule for the nineteen-year cycle from an angel. This story was to have a long medieval career,²⁰⁹ but it is noteworthy

207 Victor of Capua, *De pascha* 11 (300).

208 See commentary on ch. 45 below. Because the embolismic lunation is thirty days long, it temporarily – but only temporarily – pushes the calculated Moon ahead of astronomical reality, as the following comparison of calculated and true new Moons for AD 664 (see n. 214 below) shows:

CALCULATED	TRUE
March (full) 3 Feb.	3 Feb.
Embolism (full) 5 March	3 March
April (hollow) 4 April	2 April
May (full) 3 May	1 May
June (hollow) 31 May	31 May

209 Jones, 'A Legend of St Pachomius'. See above pp. 405–6.

that Bede emphasizes that the saint established the sequence of the common and embolismic years.

Reinforcements are still required, so Bede invokes an elliptical reference from the *Epistola Cyrilli*. It is in fact not much of a proof, since it is a negative hypothesis: had the Council of Nicaea not established the proper Easter cycle, the true new Moons could have been tested by observing the selenite stone, which changes colour with the waxing and waning Moon. This is a rhetorical defence of the absolute accuracy of the Nicene system, not a laboratory test, but Bede at this stage is ready to take all the help he can get. He then cites a passage from Paschasinus of Lilybaeum which tells of how a miraculous font settled a dispute over the date of Easter in the nineteenth year of a cycle – a dispute occasioned by failing to account for the embolismic Moon of March.²¹⁰ Finally, Bede hints that the pope had sanctioned the Alexandrian system.

Bede is intent on proving, with every resource at his command, that the nineteen-year cycle, and especially its sequence of common and embolismic years, is sanctioned by natural, ecclesiastical, and divine authority. If there are occasional disjunctions between astronomical reality and the Nicene Paschal tables, it is a deliberate ‘design feature’ in the cycle to ensure its overall astronomical accuracy. But, given the fragility of the case, Bede must have had very pressing reasons for wanting to discuss the issue of this lunar anomaly in the first place. Some people in Bede’s circle must have observed the discrepancy; if no one had noticed, why bring it to the attention of his readers and risk confusing them?

The answer lies buried elsewhere in *The Reckoning of Time*, namely in the chronicle in ch. 66, under the year 4622 or, in AD reckoning, 664. The year 664 was year nineteen of the Alexandrian cycle. It was also the year in which the synod of Whitby took place, though Bede does not mention this fact in the chronicle. Instead, Bede records a solar eclipse on 3 May ‘which is still remembered in our days’.²¹¹ This solar eclipse actually took place on 1 May 664 and was recorded as such in English and Irish chronicles.²¹² However, according to Dionysius’ table, the new Moon would not have

210 See p. 254 and n. 480.

211 ed. cit. Jones, 527.1870–1: *Sequente anno facta est eclypsis solis, quam nostra aetas meminit, quasi decime hora diei, V nonas Maias.*

212 *The Annals of Ulster*, ed. S. Mac Airt and G. Mac Nicaill (Dublin: Dublin Institute for Advanced Studies, 1983), 34; J. Story, ‘The Frankish Annals of Lindisfarne and Kent’, *Anglo-Saxon England*, 34 (2005): 98–100.

appeared until 3 May, for the full Moon of Easter fell on 17 April. The first of May is exactly $29\frac{1}{2}$ days after 2 April, the date of the observed new Moon in Bede's example in this chapter, so Bede must have known that the eclipse of 664 occurred on 1 May, when the Moon was new – the only time when solar eclipses can take place (cf. ch. 27). However, according to Dionysius' table, the calculated new Moon would not have appeared until 3 May, because the full Moon of Easter fell on 17 April. In short, the situation in 664 was exactly the one described in this chapter: the Moon on 3 May was two days older than predicted by the Paschal tables.

If Bede was aware of the true date of the eclipse, and the evidence strongly suggests he was, then his position would have been extremely delicate. If he referred explicitly to this observed anomaly – one which cast doubt on the accuracy of the very table endorsed by the synod of Whitby – he jeopardized the still fragile allegiance of the Insular Churches to the Dionysian system.²¹³ He also risked putting himself in opposition to men such as Victor of Capua and Paschasius of Lilybaeum, who had fought for the acceptance of the late Alexandrian Easters of year nineteen against the traditional Roman calendar limit of 21 April. But he had to explain to his own satisfaction, and to the satisfaction of his more astute and well-informed readers, how a two-day gap could have transpired. So he recorded the Dionysian date for the eclipse in the chronicle, where it would do no computistical harm, and devoted this singular and difficult chapter to explaining such discrepancies in lunar reckoning. In any event, his admission that the true new Moon in April of year nineteen appears on 2 April wittingly or unwittingly hinted at the true date of the 664 eclipse.²¹⁴

213 It is noteworthy that in his *Historia ecclesiastica* 3.27 (ed. Colgrave and Mynors 310) Bede records this eclipse with the 3 May date immediately after ending his discussion of the Synod of Whitby. However, as the anomaly is not mentioned, he might have concluded that no harm would ensue from anyone comparing the date to the Dionysian Paschal table.

214 In her article 'Doubts About the Calendar. Bede and the Eclipse of 664', *Isis*, 89 (1998): 50–65, Jennifer Moreton also argues that ch. 43 is implicitly about the 664 eclipse. However, she does not attend to Bede's argument about how the embolism, in conjunction with the *saltus*, contributes to a two-day anomaly. Rather, she claims that Bede changed the date of the eclipse to cloak his dissatisfaction with Dionysius' AD reckoning, particularly in regard to the date of the historic Resurrection. While I agree that Bede had doubts about Dionysius' chronology – doubts which he scarcely disguises in chs 47 and 61 – it seems plain that, in this chapter, Bede is offering a purely computistical solution to the problem of the 664 eclipse.

CHAPTER 44

Having completed his exposition of the solar calendar, its adnexa and problems, Bede now turns to the second major graphic document of *computus*, the Paschal table. He will expound this table column by column, from left to right.²¹⁵ As the Laon glossator remarks, the backbone of the Paschal table is the nineteen-year cycle; this is a list of the full Moons of Easter which will repeat in a cycle of nineteen years; the rest of the table – its indictions, lunar cycle, concurrents etc. – was simply added on by Dionysius.²¹⁶ Hence, though the nineteen-year cycle proper does not appear until column six of the Dionysian Paschal table, Bede begins his exposition with an introductory section on the cycle itself (chs 44–6).

Chapter 44 is therefore of signal importance, for Bede's task was as much to establish the credibility of the cycle as to demonstrate its workings. Its architect, Dionysius Exiguus, was unfortunately not a recognized authority, but a mere monk, an Easterner living in Rome, about whom little was known. For his computistical system to gain a hearing it needed a patristic pedigree, the patina of antiquity, and, above all, the sanction of the Apostolic See. Furnishing such credentials was not an easy task.

Bede begins by diverting attention from the obscure Dionysius to a recognized patristic figure, Eusebius of Caesarea.²¹⁷ He adds that the system underlying the table is even older, and was well known and widely accepted throughout the Eastern Church. But using this system to calculate Easter year by year was a cumbersome business, causing delays in communication of the date of Easter to the Churches and occasioning disputes. A

215 The Paschal table is reproduced in Appendix 2. This form of exposition seems to have become standard in the medieval schools, as witness a mnemonic jingle on the order and content of the several columns, beginning *Linea Christi ... Rhythmi computistici*, ed. P. de Winterfeld, MGH Poetae 4 (1899), 153.

216 *Per decennouenalem ciclum inuenitur XIIIla luna, et dies paschae, et praeter hos inueniuntur anni incarnationis domini, et indictiones, reliqua. Hoc tamen addidit Dionysius ad ipsum ciclum.* ('The 14th Moon, and the date of Easter, are found by means of the 19-year cycle. In addition, one can find the years of Our Lord's Incarnation, the indictions, and so on. However, Dionysius added this to the cycle': 418, *ad lineam* 3).

217 Jones argues that, though medieval writers knew of this Eusebian cycle only through Jerome's *De uiris illustribus*, it is likely that Eusebius did indeed compose such a table, copies – or reconstructions – of which can be found in a few Carolingian *computus* manuscripts (Jones, *BOT* 24, n. 2). However, since the differences between these tables and the one of Dionysius are minimal, it is more probable that the Carolingian compilers were ascribing the Dionysian table to Eusebius on the strength of Bede's statement.

cycle was both easier to learn and less contentious. Bede claims that the responsibility for determining such a cycle was delegated by the pope to the bishop of Alexandria; the bishop reported back to Rome, who issued an announcement to the Churches. Most of the rest of this chapter is devoted to affirming Rome's control over the calendar. Even when Pope Leo the Great referred the Paschal dispute of 454 to Alexandria²¹⁸ he pronounced his judgement in advance; and, when the response was received from Bishop Proterius, Leo congratulated the Egyptians on their fidelity to the doctrine which Peter, founder of the Roman Church, taught to his disciple Mark, the first bishop of Alexandria.

This apostolic sanction is a fabrication, though probably not a deliberate one. The letter of Leo to Proterius which Bede quotes here concerns a dispute about the theology of the Incarnation, not the Paschal question. Krusch thought the mistake unintentional;²¹⁹ MacCarthy, deliberate.²²⁰ Jones judged it both honest and, in a sense, intelligent. The letter from Proterius to Leo in Bede's 'Sirmond manuscript' is undated, but Leo's letter is dated 10 March 454, so close to Easter that Bede could easily have jumped to the conclusion that its opening sentence (the passage cited here) referred to the receipt of a response to the Paschal question.²²¹

CHAPTER 45

Before launching into the separate columns of the Paschal table, Bede wants to clarify two structural elements of the nineteen-year cycle: the sequence of common and embolismic years, and the division of the cycle into eight- and eleven-year segments (*ogdoas* and *hendecas*). The common and embolismic years (the theme of chapter 45) have been introduced above.²²² Here, again, Bede's aim is to justify as much as to explain. He insists on the point that the insertion of embolismic months was a Hebrew practice, enshrined in their 'natural' lunar calendar. They inserted embolisms as needed, but the Romans, with their fixed solar months, preferred to insert them in locations where the extra month could be absorbed in its entirety

218 See Introduction, p. 34.

219 *Studien I* 136.

220 *Annals of Ulster* 4.cxlvi.

221 *BOT* 379–80.

222 See Introduction, section 3, and Commentary on ch. 43.

within a calendar month. This makes the embolismic lunation ‘invisible’, a lunation which belongs to no month.

However, in years eight and nineteen of the cycle (third and seventh embolisms), it is impossible to find a suitable month for an ‘invisible’ embolism. The embolism in both instances is inserted in early March (cf. commentary on ch. 43, above), but ends after the first of April. Hence, in years eight and nineteen, the Paschal reckoning must be closely monitored because the lunation beginning 5 March and ending 3 April will, contrary to normal practice, be a ‘full’ one – embolismic lunations being ‘full’.²²³

There was no consensus as to the placement of the embolisms before Bede’s practice became common in the ninth century. The starting point for calculation also differed, with the Irish textbooks favouring 1 January²²⁴ and the *De ratione embolismorum* calibrating them to September.

CHAPTER 46

The *ogdoas* (eight-year sub-period) and *hendecas* (eleven-year sub-period) have little significance for computation, but they were frequently marked on Paschal tables and are directly linked to the embolisms. Notably, they serve to remind the computist that in years eight and nineteen (the last years of the *ogdoas* and *hendecas* respectively) the embolism follows upon a single common year, not two, as is otherwise the case. But Bede finds the subject interesting for more than mnemonic reasons. *Ogdoas* and *hendecas* demonstrate the truly cyclical character of the nineteen-year period. Though it was commonly assumed by many ancient peoples that eight solar years equal eight lunar years, this was eventually proved not to be the case; an additional eleven years were necessary for a proper luni-solar cycle. But it is the way in which Bede demonstrates this that catches our attention, with its concrete, even violent language and interactive classroom manner. Students ‘hit upon’ the answer and ‘gut the bowels’ of the problem; the Sun

223 Jones (*BOT* 380) claims that the embolisms are shifted from their prescribed places in these two years. This is not the case, and the tract *De ratione embolismorum* (printed in *BOD* 685–9), which was probably Bede’s source, or one of his sources, has been misread at this point: it is *only* by inserting an embolismic month of thirty days in March that one can bring about a situation where the Moon of 1 April and the Moon of 1 May are the same age (688.10–689.19). On the dating of *De ratione embolismorum* see Baker and Lapidge’s ed. of Byrhtferth’s *Enchiridion* 299.

224 *Munich Computus* 268–9 (Warntjes’ note).

is a debtor imploring the help of his friends; and, finally, Bede makes clever tactical use of a red herring, the leap-year day.

If leap year is left out of the reckoning, the Moon will be two days ahead of the Sun at the end of eight years. How can the Sun catch up? Can he 'call in' the extra leap-year days? If we turn to the *hendecas*, though, we find exactly the inverse situation. The Sun has gained two days over the Moon in this period. What about the leap-year days then? In fact, the Sun does not need them, for the two days 'won' in the *hendecas* compensate for the two days 'lost' in the *ogdoas*. Over nineteen years, the number of lunar and solar days, setting aside leap-year days, is equal. And it is right to set aside leap-year days, as they are irrelevant. As Bede proved in ch. 41, they affect both Moon and Sun, so they cannot be used to even up either planet's score – a point which Bede will raise again to discomfit Victorius in ch. 51. Secondly, the number of leap years in any nineteen-year cycle will vary between four and five, but the overall synchrony of the lunar and solar cycles will not be affected (cf. ch. 41).

CHAPTER 47

From this point onwards Bede follows the order of the eight columns of the Dionysian Paschal table.²²⁵ He explicitly situates each column in numerical sequence, from left to right, but draws attention to their distinctive content by referring to them by a different noun: *uersus*, *linea*, *ordo* etc. One is always conscious of the physical presence of the table in this section, notably its quasi-architectural format of 'columns' and its horizontal flow of information, similar to that of the canon tables that prefaced the Gospels.²²⁶ This is reinforced by Bede's literary finger, so to speak, pointing to the 'virtual' page. In this chapter, for example, he indicates the Paschal data for the year of Christ's Incarnation 'here' and later invites the reader, 'with the cycles of Dionysius open before you', to look for the traditional date for Easter in Dionysius' year of the Passion. The irony is that he won't find it there – but, to appreciate the irony, the reader must actually be looking at the table.

Bede's relationship to *annus Domini* reckoning, and the reasons for his

225 On the columns of the Dionysian Paschal table, their history and structure, see Mosshammer, *Easter Computus* ch. 5.

226 Wallis, 'Bede's Eye' 674–9.

use of the more conventional *annus mundi* era in his chronicle of world history, have been discussed in the Introduction to this volume and will be considered again in the commentary to ch. 66 below. But it is essential to consider his historiographical choices in the light of this very curious chapter of *The Reckoning of Time*. Victorius chose a chronology based on the presumed Year of the Passion: he dates the Passion to the consulship of the two Gemini and dates Easter to 28 March, *luna* 16. For Bede this was impossible, because the historic Easter had to be *luna* 17.²²⁷ If ch. 43 was designed to confront an observed anomaly in the Dionysian system and show how it was an exception which proved the rule, ch. 47 seems to do just the opposite. Here Bede grounds the authority of the Dionysian *computus* in the fact that it proves Victorius's chronology wrong. But, in doing so, he must slip an awkward fact past his readers: Dionysius' chronology will not work either. Dionysius' *computus* is superior to Victorius, which makes the data in his table more reliable; but the chronology attached to this table proves untenable.

Bede begins by clarifying the relationship between the great Paschal cycle of 532 years (the product of the nineteen years of the lunar cycle and the twenty-eight years of the cycle of weekdays) and the year of the Incarnation. Since Dionysius began his table in AD 532 it follows that a similar cycle began in 1 BC, and that Christ's Incarnation took place in the second year of this Great Cycle. This is implied by Dionysius' computistical formulae or *argumenta*; for example, to find the year of the nineteen-year cycle take the AD year and add 1 before dividing by 19.²²⁸ That being established, Bede now turns to the year of Christ's Passion, which is his real interest. The Gospels (if one combined the statements of the Synoptics about the beginning of Christ's ministry and the claim of John that this ministry lasted three years) seem to agree that Christ had passed this thirty-third birthday when he died – or, to put it another way, the year of the Passion was AD 34. Bede anticipates some resistance here, as most people were unfamiliar with the Dionysian era. He recounts the

227 Bede's Irish counterparts were also deeply interested in comparing the different options for a historical calendar date of Easter: see *Munich Computus* 150–2 and esp. 194–9 (Warntjes' notes).

228 In using Dionysius' *argumenta* Bede is breaking new ground, because Irish computists – even those who embraced Dionysian reckoning, like the authors of the Einsiedeln and Munich textbooks – used older, more laborious forms of calculation. The Irish algorithms were concerned with teaching *why* the principle worked (a description of a general method), while the Dionysian *argumenta* were prescriptions for solving particular problems.

voyage of the Wearmouth-Jarrow monks to Rome. At Christmas, in the church of St Mary, the Northumbrian monks saw candles inscribed with the *annus passionis* 668, i.e. 701. The year of the Passion was therefore AD 34, which holds the same position within this first great Cycle as does the year 566 within the second cycle, beginning in 532. Now, says Bede, just look in your Dionysian tables for Easter in 566, and if you can find the traditional date of the Resurrection, 27 March – well, good for you!

Before we decode what Bede meant by this last statement, we should pause here and consider this episode of the candles. This visit took place during the abbacy of Ceolfrith, when monks were sent to Rome to petition Pope Sergius for letters of privilege for Wearmouth-Jarrow.²²⁹ The indictional date would have been on the papal letters they brought home. The fourteenth indiction begins in September 700 and ends in August 701.²³⁰ Bede says the brothers saw the candles at Christmas (*in natale domini*) but his description of the inscription suggests that it was Paschal candles that were being described. If they were seen at Christmas 700 (in our terms) – i.e. Christmas 701, if the monks were following the custom of changing the year at Christmas – they were not Paschal candles for 700, as Paschal candles were normally ‘retired’ at Ascension, and sometimes sooner, but Paschal candles prepared for Easter 701. This would also explain why there were *candles* (plural) in the Church of S. Maria Rotunda: this church might have served as the place where the candles were decorated and stored for the upcoming Easter.²³¹ If Bede imagined the indictions changing in September, the identical indiction would cover Christmas 700 through to Easter 701. It is most likely, then, that this event occurred on Christmas 700 (our style) which was the first day of AD 701 (their style). This would be within Bede’s indictional period.²³²

229 Cf. Bede, *Historia abbatum* 2.15, ed. and trans. Grocock and Wood 58–61; anon. *Historia abbatum* 20, ed. C. Plummer, *Baedae opera historica* (Oxford: Clarendon Press, 1896), 1.394–5.

230 F.K. Ginzel, *Handbuch der mathematischen und technischen Chronologie* (Leipzig: J.C. Hinrich’sche Buchhandlung, 1906–1914), 3.148 *sqq.*

231 Another, but less likely, explanation is that they were the candles distributed to the people at Candlemas (2 February), which Bede alludes to in ch. 12; this might explain why they were stored in a church dedicated to the Virgin. But there is no tradition of Candlemas candles being inscribed with the date of the Passion, either preceding or following it.

232 Jones (*BOT* 381) argued that it was 701 and not 700, but the record is set right with great clarity by Leofranc Holford-Strevens, “‘If you find it, give thanks’. A Problematic Chapter of Bede’s *De temporum ratione*”, in *Pre-Carolingian Computus and its Regional Contexts: Texts, Tables, and Debates*, ed. Immo Warntjes, Tobit Loevenich, and Dáibhí Ó

However, as the Laon glossator remarks, Bede is being ironic when he invites the reader to look up the year 566 in the Paschal table and rejoice to find the historic date for Easter, as laid down by Victorius.²³³ The date for Easter in Dionysius' table for AD 34/566 is 28 March, not the traditional 27 March; 28 March was indeed the date set out by Victorius for the historic Resurrection, but the age of the Moon on 28 March AD 34 was twenty-one, which was impossible historically. If Christ was crucified on the fifteenth day of the Moon, a Friday, he would have risen on Sunday, the seventeenth day of the Moon. The only year within Christ's lifetime that would have produced the correct lunar data for 27 March is AD 12, and no year will produce an Easter on 28 March with a Moon seventeen days old until AD 191. Nor will the statement of 'Theophilus' that the Resurrection occurred on 25 March pass muster.²³⁴ The only year of the Dionysian cycle which produces an Easter on that date is AD 42.

But Bede, for all his irony, has let an embarrassing cat out of the bag. The Paschal data in Dionysius' table not only do not conform to anyone's tradition but they do not even match the facts recounted in the Gospel, because no year between AD 27 and AD 35 records an Easter Sunday on *luna* 17. As Nothaft remarks, 'owing to the combination of the Dionysiac era of the incarnation with the full moon data of the nineteen-year cycle, one of the crucial dates in the history of salvation, namely the Passion of Jesus Christ, effectively ceased to be a datable event'.²³⁵

Dionysius, of course, never noticed this problem, because, unlike

Cróinín (Turnhout: Brepols, 2023), 121–40. I am grateful to Dr Holford-Strevens for sharing his chapter with me in advance of its publication. See also Mosshammer, *Easter Computus* 29–30.

²³³ Laon gloss: *AGE. Sc. hironice dixit hoc, dum nullo modo inuenitur*. ('GIVE THANKS. He is speaking ironically here, because it cannot be found at all'. *BOD* 432, *ad lineam* 89).

²³⁴ See Commentary on ch. 61 below. On the predilection for the 25 March date see Mosshammer, *Easter Computus* 48–9. It appears on Hippolytus' Easter table, the earliest we have from Rome. It would correspond to AD 43. Note, however, that in his commentary on Luke 1: 26 Bede implicitly endorses 27 March as the 'historic' date of the Resurrection, based on the symbolism of 25 March, the old Roman equinox, as the date of Christ's conception and crucifixion: ed. Hurst 30.439–42, trans. Kendall and Wallis 130. For a similar endorsement of 27 March see *Letter to Wicthed* 12. Moreover, in the introduction to *The Reckoning of Time* ch. 66 Bede will assert that the creation of Adam on 23 March coincides typologically with the Crucifixion on that date, which points to Easter on 25 March. But he does so only very tentatively, 'unless some stronger argument should prevail'.

²³⁵ *Dating the Passion* 78.

Hippolytus or ps.-Cyprian, it never occurred to him to test the validity of his computational system by chronology. But the fact that Bede apparently did not notice this problem is startling, especially since he thrusts it in his reader's face, so to speak, by telling him to check out the data in Dionysius' table. Certainly his successors remarked on it²³⁶ and, from the Carolingian period onwards, began to propose various alternative solutions; by the eleventh century, a veritable chronological reform movement was under way.²³⁷

But why did Bede bring up this question at all, given that his non-answer exposed Dionysius' system to criticism? After all, the Irish textbooks such as the *Munich Computus* could embrace Dionysian *computus* without endorsing *annus domini* as a historical chronology. The answer lies in the group of manuscripts which contain the computistical materials available to Bede, the 'Sirmond group'.²³⁸ One of these, Bremen Staats- und Universitätsbibliothek misc 0046, contains a prologue to Victorius' Easter table composed in 699. Another manuscript in this family, Leiden Scaliger 28, contains the same constellation of materials as the Bremen volume, including the Prologue's claim that Christ was crucified in the fifteenth year of Tiberius. In Leiden, however, this is followed by an abridged version of *The Reckoning of Time* ch. 47, specifically about the AD date of the Passion. Putting the Paschal tables of Victorius and Dionysius side by side correlated Victorius' Annus Passionis 1 to Dionysius' AD 28, which would have contradicted the evidence of the Gospels about Christ's age. In fact, it may have been the same text and table of AD 699 which triggered Bede to compose this chapter,²³⁹ particularly because supporters of Victorius had not been slow to point out the historical deficiencies in Dionysius' table.²⁴⁰

In the end, Bede chose to acknowledge the problem and use sarcasm

236 E.g. the 'Aachen Examination <of Computists> of 809', ed. Borst (under the title *Cap. Comp.*), *Schriften* 3.1041–2. Called upon to determine the calendar date of the Passion, the computists '*inspectis itaque maiorum cyclis, cum invenire, quod eis mandatum fuerat, pre difficultate quadam nequirent, responderunt non posse se convenientem in hoc reperire rationem*'. They opted for VIII Kalends of April [25 March] as the date approved by the authority of the Fathers, amongst whom they numbered Dionysius ... and Bede!

237 *Dating the Passion* chs 4–5; Verbist, *Duelling with the Past*.

238 See Introduction, pp. 58–9 and n. 181.

239 Warntjes, 'A newly discovered Prologue of AD 699' 270.

240 In *Munich Computus* 322–6 Warntjes edits a text entitled *Comparatione epactarum Dionysii et Victorii* from Cologne Dombibliothek 83^{II}. He argues that this was composed by supporters of Victorius to challenge the Dionysian system of the grounds that it could not provide data for the Passion that accorded with the Gospels: see Warntjes, 'Computus Cottonianus' 196.

to divert attention from it, or at least diminish its importance. His closing admonition that the reader should be sceptical about chronography, but place absolute faith in the Gospel, reveals his dilemma. Dionysius' chronology was wrong, but in the end the error could be considered negligible, for AD 36 produces an Easter on the seventeenth day of the Moon. Had Bede pointed out the error and proposed a correction he would have put at risk his main project of securing acceptance for the computistical system to which this chronology was attached. Dionysius' system *was* this table and, if there was a small mistake in a computistically irrelevant part of the table, that would have to be tolerated for the sake of promoting orthodox Easter reckoning. Chronologers were human beings who made mistakes; the Paschal *computus*, on the other hand, was grounded in God's act of creation, and humans are under a special obligation to get it right.

CHAPTER 48

The second column of the Paschal table records the indictional year. Indictions were a Roman administrative cycle of fifteen years, instituted in the reign of Diocletian and Constantine for taxation purposes.²⁴¹ From the time of Constantine the cycle began on 1 September, which became the beginning of the Byzantine fiscal year. Under Justinian, the indiction became a compulsory feature in dating official documents. Indictions were included in the Alexandrian Paschal tables, from whence they were taken over by Dionysius Exiguus.²⁴² Though familiar to men such as Ambrose who were connected with imperial administration (see below), and indicated in the thirty-year list of Easter new moons promulgated by the ecclesiastical council at Sardica in 343, they were not in common use in the West; Isidore of Seville, for instance, does not mention them. The earliest Latin computist to mention them is Dionysius Exiguus, and the papal chancery was using them in dating clauses by 584.²⁴³

For this reason, Bede was at somewhat of a loss to explain what indictions were, or why they were important. He guessed (wrongly) that

241 A.H.M. Jones, *The Later Roman Empire A.D. 284–602* (Baltimore, MD: Johns Hopkins University Press, 1986), 1.448 *sqq.*

242 Jones, *BOT* 384.

243 Franz Rühl, *Chronologie des Mittelalters und der Neuzeit* (Berlin: Reuter & Reichard, 1897), 171.

their purpose was to avoid the ambiguities of regnal years and to help historians fix dates in the past, as it had helped him to confirm the date on the Paschal candles his brothers had seen in Rome.²⁴⁴ But his lack of direct experience of indictions also led him to date the beginning of the cycle to 24 September, rather than the correct date of 1 September. Jones argued that this error stemmed from a statement Bede encountered in Ambrose's *De Noe et Arca* 17.60. Ambrose's point is that the year really has its beginning at the spring equinox, the time of the Hebrew 'first month', even though 'as our use of indictions shows', we tend to think of September as the first month. Ambrose's parallel encouraged Bede to conclude that the indictional cycle began at the analogous point of the year to the 'first month', i.e. at the autumn equinox.²⁴⁵ Harrison also points out that the age of the Moon on 24 September will match that on 1 January in ordinary years,²⁴⁶ though it is not clear what computistical use this could serve. But, if the autumn equinox was indeed the attractor, the fact that Bede fixed the start of the indictional cycle on 24 September is further evidence of his relative indifference to the dates of the solstices and equinoxes, apart from the spring equinox.

Indictions continued to be used in dating formulae throughout the Middle Ages, but by the beginning of the ninth century the indictional year was assumed to overlap with the calendar year, suggesting that the indictions were simply being copied out of a Paschal table. However, Bede's prestige resulted in the adoption of his index date of 24 September by the chanceries of the medieval Empire, France, and England.²⁴⁷

CHAPTER 50

Bede spends little time on the mechanics of lunar epacts since they have already been explained in ch. 20. Instead, he takes the opportunity they afford to launch a full-scale attack against the *computus* of Victorius of Aquitaine. He loads his ammunition in ch. 50 and discharges it with éclat in ch. 51.

The real theme of ch. 50 is not epacts at all, but the calendar limits for

244 Mosshammer, *Easter Computus* 75. See Commentary on ch. 47.

245 Jones, *BOT* 383–4. However, Blackburn and Holford-Strevens (*Oxford Companion to the Year* 770) claim that until about 462 the indictional year at Constantinople began on 23 September.

246 *Framework* 43–4.

247 Blackburn and Holford-Strevens, *Oxford Companion to the Year* 770.

the Paschal lunation. The annual lunar epact is the age of the Moon on March 22; as Bede insistently points out, this is the earliest possible date for Easter. The epact is therefore a handy index for locating the Paschal lunation: if the epact is sixteen or less 22 March is within the Paschal lunation, but if it exceeds sixteen the Paschal lunation will be the following lunar month. This is because the Paschal full Moon must not precede the equinox, for the Moon was created on the evening of the equinox (cf. ch. 6). But this is exactly the error of Victorius, who held the equinox to be the *terminus a quo* of Easter itself, not of the Easter full Moon. Bede reveals the identity of his target when he criticizes those computists who begin the Paschal lunation on 5 March, for this is precisely the doctrine of Victorius.

CHAPTER 51

In this chapter the gloves are off, and Bede assails Victorius directly. The *casus belli* would seem to have been the Easter coming up in 729. In Victorius' table AD 729 and 976 share the same data, save that 729 is an ordinary year and 976 a leap year. In both years 1 January is a Saturday and the Moon is twenty-seven days old. However, Easter in 729 is scheduled for 24 April, the twenty-first Moon, while Easter in 976 is on 23 April because of the leap year. In his preface to his table Victorius notes that years such as 729 present a problem for Roman traditionalists because 24 April was outside the ancient Roman calendar limits for Easter. The only alternative would be to move Easter back to the previous lunation, but there was simply no available Sunday in this lunation. The closest one was Sunday, 27 March, but 27 March fell on the twenty-third day of the Moon, which was outside everyone's lunar limits. Moving the 'Latin' date back a week to 20 March will not help, *even though the Moon agrees* (it will be sixteen days old on that date), because 20 March precedes the equinox. According to Victorius, the equinox is the *terminus a quo* for Easter, so he advises celebrating later with the Alexandrians.²⁴⁸

What touched off Bede's wrath was Victorius' claim that a Moon sixteen days old on 20 March was a 'true' Paschal Moon, even though it produced a manifestly uncanonical date for Easter. Obviously, Victorius' 'Latin' Paschal lunation begins too early: a full Moon before the equinox is not the

248 This will only work, of course, if the computist has remembered to add an extra day to the February lunation, to include the leap-year day: see ch. 41 above.

full Moon of Easter.²⁴⁹ Victorius has not grasped that it is *Passover* – i.e. the Paschal full Moon – which is linked to the equinox, for astronomical reasons; Easter follows Passover for *historical* reasons. Finally, Victorius is guilty of bad faith. In leap years such as 976, when the sixteenth Moon falls on Monday 20 March, Victorius' 'Latin' system should allow him to celebrate on Sunday 26 March; yet, even in this case, his table postpones Easter to 23 April, even though 26 March is within Victorius' own lunar limits of 16–22. So Victorius tacitly admits that the Alexandrian system is the correct one; why then does he not follow it?²⁵⁰

By citing Victor of Capua's critique of Victorius, Bede hopes to demolish the major defence of the Victorian system. As was pointed out earlier,²⁵¹ Victorius' tables, for all their evident flaws, seemed to carry papal sanction because they were commissioned by a man who later became pope, at the request of the then pope, Leo. In Bede's view, support from Victor, who was a bishop writing at papal behest, trumps Victorius, who is demoted to *Victorius quidam* – 'a certain Victorius'.

CHAPTER 53

Solar epacts or concurrents, like lunar epacts, have already been introduced in connection with customizing the Julian calendar to the shifting pattern of weekdays (ch. 21). In this chapter, Bede elects to focus on the twenty-eight-year weekday cycle itself, because, in conjunction with the nineteen-year cycle, it created the Great Paschal Cycle of 532 years.

The annual solar epact or concurrent is the weekday of 24 March, a date chosen, as Bede remarks rather casually, because it is 'quite close to the Paschal festivity'. No further reason is given for this choice, which has puzzled many commentators and provoked ingenious explanations. Jones offered a functional interpretation: 24 March falls on the same weekday as 24 February, the leap-year day, but it falls within the Paschal period. Hence it furnishes a useful reference point for locating the weekday of the Paschal full

249 Cf. Warntjes, 'Victorius vs Dionysius' 84–5.

250 Warntjes argues that the *Latini* that Victorius is referring to in his prologue are the Romans of old, i.e. users of the *Supputatio Romana* ('Victorius vs. Dionysius' 84). Bede may have thought that he was referring to the 'Latin' dates in his tables, because the southern Irish had dropped the 'Greek' option, thinking they were thus conforming to Roman practice (86–7).

251 Introduction, p. 37.

Moon, in ordinary or in leap years.²⁵² However, there is no historical evidence that 24 February was used as a ‘virtual’ seat of the concurrents. Mosshammer reviews the evidence at length and concludes that the 24 March date was initially selected in Late Antiquity because it synchronized with the third day before the beginning of the new year in Alexandria, on 1 Thoth, that is, the date of the Egyptian leap-year intercalation.²⁵³ Bede evidently could find no explanation for the date; by his day, it was simply customary.

Notice that Bede advises his pupils to memorize the other four dates within the Paschal period which share this same weekday. This operation is hardly necessary for us, or for the Alexandrian computists, since we both number the days of the month sequentially and can therefore just keep adding seven to find the next corresponding date. But the non-sequential Roman dates, based on reverse counting from Kalends, Nones, and Ides, made it obligatory for Bede and his readers.

CHAPTER 55

The remainder of this section is devoted to expounding the cyclical character of the solar epact cycle and how it can be used to determine these data for any year in the past or future. There are basically only three numbers one needs to know: 5, 6, and 11. Any given year will share the same solar epact with years in the past or future according to this pattern:

	PAST	FUTURE
leap year	-5	+6
year 1	-11	+6
year 2	-6	+11
year 3	-6	+5

But what if you want to find the concurrent for a year much further in the past or future? Bede’s example is 300 years. Divide 300 by 30 and multiply the quotient (10) by 2: the result is 20. Therefore the solar epacts 300 years from now will be the same as they will be twenty years from now. Since twenty is a small number, it can easily be reckoned up using the pattern given above. Lunar epacts can also be projected into the past or future, but much more simply since every twentieth year will have the same lunar epact.

252 Jones, *BOT* 387–8.

253 Mosshammer, *Easter Computus* 80–5, who also surveys previous explanations.

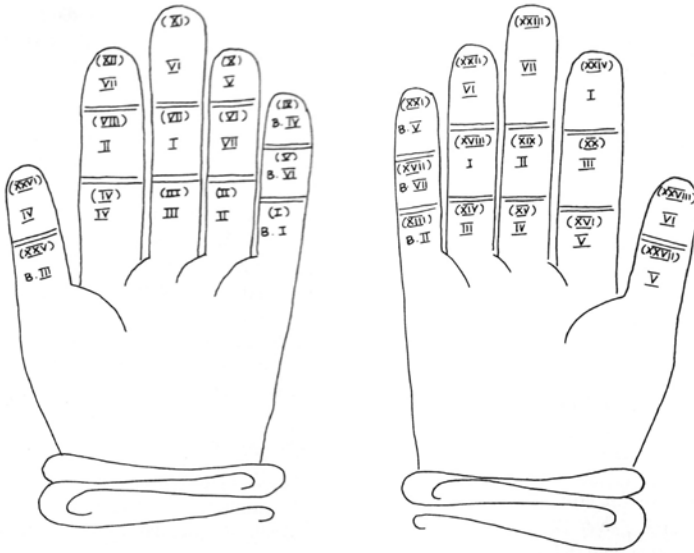


Figure 4b Solar cycle hands (left and right) showing concurrents (solar epacts) for each year of the twenty-eight-year weekday cycle. The year of the cycle is noted in parentheses.

The lunar epact hand is unproblematic, as the epacts rise steadily by eleven each year. It is the solar epact hands that shows the system's real worth. No memorization is required. If you know the position of the present year within the four-year leap-year cycle, and its solar epact, you can find where it belongs on your hand by continuously adding five to the base number on the lowest rank of joints on the left hand, numbered one to four. For example, suppose the present year is a leap year with solar epact two. Begin with the leap-year finger of the left hand. The lowest joint is solar epact one. To find the epact of the joint above, add 5 (four days for each year of cycle + extra day for leap year). The solar epact corresponding to this joint is 6 ($1 + 5$); that for the topmost joint of the little finger is 4 ($6 + 5 = 11 - 7 = 4$). Then shift to the little finger of the right hand. The bottom joint yields $4 + 5 = 9 - 7 = 2$: this is the year you are looking for. You can then count forward or backward any number of years you wish, and read off the solar epact in the same way. Forward counting moves horizontally in ascending rows, backward counting proceeds in descending rows. To continue our example: suppose you want to know what the solar epact will

be twenty-five years from now. Count forward twenty-five places from your 'present year' – that is, starting from the bottom joint of the right hand. Remember to include the four joints of the left and right thumbs in your count, when you have finished with the fingers of the right hand. You will land on the topmost joint of the middle finger of the left hand – i.e. the second year after the leap year. The bottom joint of this finger has the concurrent of three. The middle joint of this finger therefore represents 8 ($3 + 5$), and the top joint – the year you are looking for – will have a solar epact of 6 ($8 + 5 = 13 - 7 = 6$). In short, once you have counted forward or backward to the year you want, you can 'read off' its solar epact by adding up from the base of the 'table', i.e. the bottom joints of the left hand.²⁵⁴

Bede lays no claim to inventing this system, but he may have been the first computist to describe it.²⁵⁵ It is the earliest in a long line of ingenious mnemonic and calculating systems for the calendar based on the hand, known generically as *computus manualis* or *computus chirometralis*. The history of this intriguing genre of *computus*-literature awaits a fuller exposition, but the fact that a thirteenth-century version in MS Oxford, Bodleian Library Digby 56, fol. 165v bears the legend *manus bede* indicates that Bede's paternity was acknowledged as a fact in later centuries.²⁵⁶

CHAPTERS 56–8

The lunar cycle in column five of Dionysius' table must have been something of a puzzle to Bede, as indeed it has been to many others, since it plays no role in the computation of Easter, and Dionysius did not state what it was for. Bede explains that it replicates the structure of the nineteen-year

254 Florence Yeldham, 'An Early Method of Determining Calendar Dates by Finger-Reckoning', *Archeion*, 9 (1928): 325–6.

255 See Appendix 5, no. 156. The method Bede describes here was probably an Irish invention, as the preface and *capitula* of a *computus* treatise in the 'Sirmond Manuscript' (Oxford, Bodley 309 fols 62r–v, immediately preceding *De divisionibus temporum*) indicates a chapter *De cyclo solari et lunari per digitos demonstrandis*: ed. Jones, *BOT* 394. There is also an analogue in the 'Bobbio *computus*', PL 129.1322.

256 Adaptations of Bede's hand for other moveable feasts are found, for example, in an eleventh-century Abbonian *computus album* from Ferrières, Vatican City, BAV Reg. lat. 1573, fols 9r–13r (see Appendix 5, no. 258), illustrated in John E. Murdoch, *Album of Science: Antiquity and the Middle Ages* (New York: Charles Scribner's Sons, 1984), 80, no. 75.

cycle, but begins in year four of the nineteen-year cycle, with the lunation of the month of January. Because of this January epact, Bede guessed that it was a Roman lunar cycle. This is not the case, but its true origin remains obscure. It arrived in the West with the ps.-Cyrillan Paschal table, and it was obviously meant to serve as a concordance to another form of reckoning, possibly the Byzantine world-era.²⁵⁷

In ch. 57 Bede proposes a computistical use for this cycle, namely to find the age of the Moon on 1 January. Take the number of the year within the lunar cycle, multiply by 11, add 1, and if the total exceeds 30 (i.e. a lunar month), divide by 30. The sum (or remainder) is the age of the Moon on 1 January in that year of the lunar cycle. For example, in year 1 of the lunar cycle, multiply 1×11 , and add 1. The age of the Moon in year one of the lunar cycle is therefore twelve. This is the same result as can be obtained with the formulae Bede laid out in ch. 20: in year four of the nineteen-year cycle, the epact is 3; add this to the regular for January (9) and $9 + 3 = 12$.

Where confusion arises is when this formula in ch. 57 is compared to Bede's (and Dionysius') synchronizing of the lunar cycle years to the nineteen-year cycle years in ch. 56. At the beginning of ch. 56 Bede is clear that the cycle begins with the *lunation* of January, but in the synchronization he states that it begins on the *Kalends* of January. In other words, the cycle begins when the Moon's age is one on 1 January. However, the Moon is not one day old on 1 January of year four of the nineteen-year cycle, but (as we have seen) twelve days old. The Moon would be one day old on 1 January in the preceding year, that is, year three of the nineteen-year cycle, not year four. As Warntjes observes, since the years of the nineteen-year cycle run from *luna* 15 to *luna* 15, year one of the lunar cycle overlaps with year four of the nineteen-year cycle only from 14 April to *luna* 29 of the December lunation on 20 December.²⁵⁸ To find a rationale for the lunar cycle, Bede has shifted its parameters in relation to the nineteen-year cycle by one year.

257 The Jewish nineteen-year cycle coincided with this 'lunar cycle'/Byzantine world era: Jones, *BOT* 388, and Nothaft, *Dating the Passion* 126.

258 'The *Computus Cottonianus* of AD 689', 174–5 n. 5; see also Mosshammer, *Easter Computus* 86–7.

CHAPTER 59

Column six of the Paschal table contains the marrow of the Dionysian–Alexandrian reckoning: the dates, recurring over nineteen years, of the fourteenth Moon of ‘the first month’. The *terminus a quo* is the spring equinox, and the last possible date is twenty-nine days later (because April’s lunar month is ‘hollow’). For Bede, this is the only scheme which fulfils the criteria both of the Old Testament Passover and of the historical record of Christ’s Passion and Resurrection. While he makes a careful distinction (to be developed more thoroughly in ch. 63) between the Passover proper and the Feast of Unleavened Bread, both are encompassed in ‘the Pasch’. The former begins at sundown on the day of the fourteenth Moon and symbolizes Christ’s sacrificial death. Easter proper corresponds to the Feast of Unleavened Bread, from the fifteenth to the twenty-first Moon; these seven days ‘encompass’ the possible dates of Easter.

Bede complains that the followers of the Insular 84-year cycle who celebrate Easter Day on the fourteenth Moon must sometimes break their fast on the thirteenth, which is too early for the Pasch; at the same time, they reject the twenty-first Moon, which Moses includes within the time of Unleavened Bread. Victorius, on the other hand, rejects the fifteenth Moon, which is clearly within this Feast of Unleavened Bread, while including the twenty-second, which is manifestly outside it. The passage from Theophilus which Bede quotes particularly addresses the former. If the fourteenth Moon falls on a Sunday we cannot celebrate Easter then, for that would mean either breaking our fast on the thirteenth or (to avoid this) fasting until sundown on Sunday, both of which are prohibited.

CHAPTER 60

Ideally, the student of *computus* should memorize the dates on which the fourteenth Moon falls for each year in the nineteen-year cycle. By the Carolingian period they were doing just that, using a handy mnemonic poem beginning *Nonas* (or *Nonae*) *Aprilis norunt quinos* (‘The Nones of April recognize five ...’).²⁵⁹ Each of the nineteen lines of verse incorporates

259 E.g. in the ‘Rhineland Introduction of 760/792’ (*Lect. comp.*), ed. Borst, *Schriften* 2.617–18; the ‘Aachen Encyclopedia (*Lib. ann.*), 2.726–7; and the ‘Salzburg Encyclopedia’ (*Lib. calc.*), 3.1391. See Jones, ‘A Legend of St Pachomius’. For ed., see *Rhythmi computistici*,

the date of the fourteen Moon, i.e. the Paschal *terminus* for that year of the cycle (in this case, for the first year of the cycle, the Nones of April), and the number of the special regular (in this case, five). By adding this special regular to the concurrent of the year in question (and subtracting seven if necessary) one could find the weekday of the fourteenth Moon. The next Sunday is Easter.

Bede does not seem to know this poem, but he does offer his students a comparably easy formula. If the annual epact (i.e. the age of the Moon on 22 March) is less than fourteen, count the days up to fourteen, and that will be the Paschal full Moon; if more than fifteen, count the days to the end of the month (thirty) and then to fourteen. But if the pupil has the Dionysian table before him – and the whole latter half of *The Reckoning of Time* is structured on the assumption that this is the case – why learn a formula for what can be seen plainly on the page? In Bede's hierarchy of certitude memory is the most reliable; formulae are less so, because people make mistakes in calculation; tables are the least reliable of all, since it is easy to introduce mistakes when copying them. But only the formula has pedagogical and heuristic value. No table explains how or why the pattern of the full Moons unfolds as it does, nor can it bring home, as does his formula, the crucial link between the full Moon and the equinox.

CHAPTER 61

The culminating point of the Dionysian Paschal table is the seventh column, containing the dates for Easter Sunday. Bede sees this as an opportunity to recapitulate the criteria for determining this date: it must be after the equinox, in the 'first <lunar> month', in the third week – i.e. between the 15th and 21st day of the Moon, and on a Sunday. The last criterion was an innovation of the New Law, and Bede felt it was necessary, through the words of Theophilus, to emphasize that varying the age of the Moon to accommodate Sunday did not violate the Old Testament rules. After all, even the first Easter fell on the seventeenth Moon.

This last point obliges Bede to venture out once more onto the thin ice of the debate over the historic calendar date of the Resurrection, first raised in ch. 47. The traditional possibilities are 25 (Julius Africanus),

27 (Hippolytus, Augustine) or 28 March (Victorius), but, as pointed out in ch. 47, if one follows the Dionysian system none of these dates will match years within the historic period of Christ's ministry. It should be noted, however, that Bede implies, but does not explicitly state, the signal criterion of any historic date for Easter, namely that it would have to fall on the seventeenth day of the Moon because Christ kept the Passover with his disciples on Thursday and was crucified on Friday, the fifteenth day of the Moon. He avoids drawing attention to this issue by expressing his data in terms of the date of the fourteenth Moon and the concurrent. This subtle ellipsis veils the fact that Dionysius' table itself cannot produce an Easter on the seventeenth Moon for any year close to the traditional year of the Resurrection. The closest years with Easters on the seventeenth Moon are AD 26 and AD 36. However, the Easters in these years are not on the traditional calendar dates. So Bede must reject the traditional dates, without drawing too much attention to the fact that Dionysius himself offers nothing better. This is evidently embarrassing for, ever since Hippolytus and ps.-Cyprian, congruence of a Paschal table with the data of known Easters had been invoked as a foolproof test of validity. Bede's ploy is to distract the reader's attention by changing the subject to a critique of certain computists who argued that the historic Resurrection fell on the sixteenth Moon.

CHAPTER 62

The final column of the Paschal table records the age of the Moon on Easter Day, ranging from fifteen to twenty-one. Here Bede takes the opportunity to revisit the arguments against Victorius' *computus* enunciated in ch. 51. Jones found it curious that Bede should do so, given that the examples of erroneous calculation discussed in ch. 62 would not be applicable to any year in the near future from 725, and therefore could hardly have been addressing an immediate concern. Hence he speculates that what Bede is actually doing in this chapter is recounting the conflict between Pope Leo and the Alexandrians over the Easter of 444, which hinged on a similar issue.²⁶⁰

This problem can be clarified if we attend to the atmosphere of ch. 62, which is that of an instructional setting, a 'classroom' if you will. First,

260 BOT 389–90.

the teacher asks the students a riddle, adopting the *persona* of a Victorian straw man. What, after all, is wrong with celebrating Easter on 26 March when the Moon is twenty days old? Is not 26 March a legitimate date? Is not a Moon twenty days old within the legal limits? The answer, of course, is that a Moon twenty days old on 26 March would have been full before the equinox. The error of the Victorians is to base their calculation on the relationship of *Easter* to the equinox, when it is the relationship of the *full Moon* to the equinox which counts. By the same token, we cannot have an Easter on 22 March with a Moon sixteen days old, or on 23 March with a Moon seventeen days old, etc. To be sure, some of the inspiration and ammunition for ch. 62 may indeed have come from the disputes of AD 444, but Bede's aim here is to help his students grasp the relationship of the Moon on Easter Day to the lunation of the first month and the equinox, not to resurrect forgotten battles. In any event, Bede thought that Leo endorsed the Alexandrian system;²⁶¹ his real target here is Victorius.²⁶²

CHAPTER 63

In his commentary on Luke's Gospel, composed between 710 and 716, Bede digresses from the narrative of Holy Week in Luke 19:48 to discuss the typological meaning of the timing of Passover. 'Here', he says, 'I should like to notice briefly how beautifully the shadow (*umbra*) of the Paschal feast of the Law agrees with our true Paschal feast in which Christ is sacrificed, not only by reason of the mystery but also of time (*ratio temporis*).'²⁶³ He goes over the timing of the Passover. On the tenth day of the Moon the sacrificial lamb is chosen. This corresponds to Palm Sunday, when the people 'chose' Jesus by acclamation, bringing the true Lamb to their houses. There they 'kept' Him from the schemes of the priests and scribes, who could do nothing because the people supported Him (Luke 19:47–8). At the close of the fourteenth day of the Moon Christ gave his disciples the sacrament of His body and blood and was handed over to be killed. His death on the Cross was the fulfilment of the 'type' of the sacrifice of the Paschal Lamb. 'I wanted to go over these matters briefly', concludes Bede, 'in order to teach the reader that everything which follows

261 Cf. ch. 44.

262 See Wartjes, 'Victorius vs Dionysius' 85.

263 Ed. Hurst 350.2166–9; trans. Kendall and Wallis 550–1.

in succession up to the passion of the Lord relates to the figure of the lamb kept in the house and prepared for slaughter.²⁶⁴

In chs 63 and 64 of *The Reckoning of Time* Bede will develop this theme to argue that Easter must never be celebrated before or on the fourteenth day of the Moon, but can and should be celebrated on the fifteenth. He will do so through an analysis of the typological relationship between the Passover and Christ's Passion, beginning with the distinction between Passover and the Feast of Unleavened Bread. Given the exegetical and theological importance of this theme, and its ubiquity in Christian tradition,²⁶⁵ it is noteworthy that Bede does not call on any authorities by name. Indeed, his direct and immediate inspiration for this chapter is very probably the anonymous essay in the 'Sirmond Manuscript' that begins *De pascha autem tanquam maximo sacramento* (Oxford, Bodl. Library Bodley 309, fols 97r–v). This essay begins in a vein similar to Bede's Luke commentary, with a discussion of the timetable for the selection and sacrifice of the Paschal lamb. Why, then, was Christ, the true Lamb, not killed on the fourteenth day of the Moon? There are two 'reasonable causes' (*rationabiles causas*): first, He wanted to eat the Passover with his disciples; and, secondly, He wanted to institute the Eucharist as the new sacrifice to replace the Old Testament type. So his Crucifixion took place not on the fourteenth but on the fifteenth Moon, the 'feast day of the Jews' (*diem festum Iudeorum*): 'This, I am persuaded, was so that the *figura* should precede the truth, and not the truth the *figura*.' Hence the Church anathematizes those who celebrate 'with the Jews'. Easter should be celebrated 'in the first month, on the Sunday (*una sabbatorum*) after

264 Ed. Hurst 350.2194–351.2197; trans. Kendall and Wallis 551–2; cf. *In. Genesim* 1.1.9 (19.561–20.580, trans. Kendall 83–4).

265 Though Bede does not cite these directly, his predecessors include Gaudentius, *Tractatus paschales* 1.9–10, ed. Ambrosius Glueck, CSEL 58.20 (1886), 20.50–62, and Origen, whose Homily 9.5 on Leviticus on the subject of Passover and Unleavened Bread is quoted by ps.-Anatolius (317) and Cummian (62–64); *Origines Werke 6: Homilien zum Hexateuch in Rufins Übersetzung*, ed. Wilhelm Baehrens, Griechischen christlichen Schriftsteller 29 (Leipzig: Hinrichs'sche Buchhandlung, 1920), 426. The older opinion that 'Origen' was a lost or spurious authority, represented by Jones (*BOT* 390), has been refuted by *Cummian's Letter*, ed. and trans. Walsh and Ó Cróinín 62–3, n. 52. Jerome's Greek nickname for Origen, *chalcenterus* ('guts of bronze' – apparently a compliment on his indefatigable scholarship), came to mean 'computist' in seventh-century Ireland: see D. Ó Cróinín, 'Hiberno-Latin *calcenterus*', in his *Early Irish History and Chronology*, 56–7.

the fourteenth day <of the Moon>'.²⁶⁶ This argument implicitly welds the Passover and the Feast of Unleavened Bread into a single typological unity.

Bede takes a rather similar approach in ch. 63, even echoing some of the language of the 'Sirmond' text. The Passover is celebrated on the evening of the fourteenth Moon; from the fifteenth to the twenty-first Moon is the Feast of Unleavened Bread. However, the single night of Passover typifies both Christ's sacrifice as the Lamb of God and his Resurrection or 'passing over' from death to life. As the Gospels bear out, Passover and the Unleavened Bread are in fact a single entity: the disciples in Mark 14:12 speak of the Passover on the fourteenth Moon as if it were the Unleavened Bread, while John 18:28 refers to Good Friday on the fifteenth Moon as 'Passover'. These are not errors but are designed to teach us that the Lord's 'new Passover' encompasses both this Passion and his Resurrection, which together accomplished the spiritual cleansing and liberation of humanity. Each contains the other – an argument already invoked by the quotations from Theophilus in the preceding chapters, justifying the celebration of Easter on any Sunday from the fifteenth to the twenty-first Moon. Sliding into homiletic mode, Bede draws a moral lesson: just as Easter is both a moment in time and an event unfolding over time, so also our individual

266 *Hoc autem mihi uidetur propter duas rationabiles causas dominus fecisse cognoscitur. Ne cum pascha cum discipulis manducaret. nisi postea sacrificium commutasset. dicens hoc est corpus meum. sic etiam postea obseruare debere crederetur. Hec autem altera ut opinor causa. ut cum corpus domini integrum et suum sanguinem in se continens ante passionem cernerent. Hoc corpore spiritaliter refici crederent: et sic etiam nunc a nobis credi debeat. et hoc etiam intueri debemus. Quod non in XIII ad uesperum ut lex precepit. ille agnus qui tollit peccatum mundi. et pascha nostrum immolatus est christus: sed XV die in quo manifestum est diem festum iudeorum. cum suo sacrificio a domino esse solutum. Sed quid in hoc intelligere debemus. quod prius figuralis agni carnes comederit. et postea sui corporis cibo suos apostolos refecerit. et post iudeorum typicum nostrum pascha immolatus est christus? Hoc ut opinor ut non ueritas figuram. sed figura ueritatem precederet: quia non prius quod spiritale est sed quod animale. deinde quod spiritale. Vnde electa et amica sponsa christi. sponsi uniuersalis ecclesia. anathematizat eos qui cum iudeis in festiuitate paschali celebrare diffiniunt: et sabbata et cetera huiusmodi umbralis [recte -es?] obseruantiae. et hoc tantum obseruari dignatus est. quod a dominus ut in primo mense post XIII diem paschalem festiuitatem precedente una sabbatorum celebrari sine ulla ambiguitate censuerit. Licet in hoc uarietas ecclesie orta est. Aliis sufficere credentibus ut non cum iudeis in XIII pascha celebrarent. Alii autem hoc fortiter cauteque custodiunt: ut immolationem ueri agni qui tollit peccata mundi ante XIII diem celebrare non audeant. secundum illud legale preceptum quod et dominus passionem ueniens. minime contempsit. obseruabitis eum usque ad XIII. quod nunc maxime ecclesia auctoritatem sedis apostolice sequens obseruat. Oxford, Bodl. Library Bodley 309, fols 96rb–97vb.*

experience of Easter is both a discrete moment – our baptism – and a grace which unfolds ‘for the whole time of our pilgrimage’ through the seven ‘days’ of our life.²⁶⁷

As the ‘Sirmond’ text makes very plain, this condemns the supporters of the Insular 84-year cycle, who celebrated Easter on the fourteenth Moon, thereby ignoring the Unleavened Bread. But it likewise chastises the Victorians, who rejected the fifteenth Moon on the grounds that it belonged to the Passion, not the Resurrection. Bede’s argument is that the Christian Easter incorporates both Passover and Unleavened Bread. The Christian computist acknowledges both the distinction between Passover and Unleavened Bread and their reciprocity. As Bede says, we must ‘eat unleavened bread in the Passover season, and in the days of Unleavened Bread ... make a spiritual Passover’. The Insular 84-year cycle fails to honour the distinction; the Victorians, to acknowledge the reciprocity.

CHAPTER 64

Ch. 64 is another ‘sermon’ whose ‘text’ is the four computistical criteria for Easter enunciated in ch. 61. Though it draws heavily on Augustine’s *Letter* 55 to Januarius, its structure and aim are different. Augustine is concerned to defend the Church against the charge that, by observing the astronomical criteria for Easter, it in fact worships the Sun and Moon; Bede, on the other hand, takes the Sun and Moon as his ‘scripture’. The parallels between this chapter and the previous one, and the letter of Ceolfrith to King Nechtan included in *Ecclesiastical History* 5.21, are very striking. But this is also congruent with Bede’s overall commitment to integrating astronomy and cosmology into *computus* at every level.

We celebrate Easter at the vernal equinox because Christ, the Sun of Righteousness, has won his victory over darkness; because He has ‘made all things new’, we celebrate in the first month; because His Resurrection inaugurated a third age of grace (succeeding the ages of natural and written Law), Easter falls on the third week of this first month. We are like the Moon, shining in His borrowed light. After the fifteenth day of the lunation the Moon turns its illuminated side away from Earth and towards the heavens; so also Easter, falling on the fifteenth day or later, teaches us to

267 On this Johannine theme of *transitus* see Cremin, ‘Bede and the Gospel of John’ 111–12.

spurn earthly things for the sake of heavenly ones. But the Moon is also Christ himself, increasing in visibility to earthly eyes up until the time of His Passion at the full Moon, and then returning to heaven after the Resurrection. Finally, we celebrate on Sunday, the first day of the week, in honour of Creation, which is remade in Christ's triumph. Easter Sunday can fall on any one of seven days of the lunar month; this symbolizes the universality of the Church, just as John in Revelation addressed the same admonition to each of the seven Churches of Asia. Bede then returns to the beginning of his theme and rewrites the entire allegory in a moral mode, admonishing his readers to 'pass over' from sin to virtue, bring forth the 'first fruits' of redemption, shine like the Moon both for others and for God alone, and, finally, trust in the sevenfold gifts of the single Spirit.²⁶⁸

In treating *computus* as *figura*, Bede has followed much the same method as he used in his highly original expositions of the Tabernacle and Temple, where he turned the nuts and bolts of architectural detail into theological signs. But, within the economy of *The Reckoning of Time*, this homily also serves a strategic purpose. By colouring the Alexandrian rules with mystical meaning Bede has raised them above the sordid plane of computistical controversy and transformed them into a kind of sacred text. In his exposition of the Paschal table he had to defend and justify the Alexandrian reckoning line by line; now he can celebrate its apotheosis. But Bede has done more than simply close the books on the Paschal question. He has engraved the Alexandrian *computus* on his pupils' memory, not just as a body of rules to be followed – or contested – but as theological truth and moral imperative.

268 This can be compared to the conclusion of the 'Sirmond' essay: *Sed hec deserentes quod non est huius temporis per singula discuti ad spiritalem intelligentiam mentis aciem conuertamus quibus precipitur spiritaliter mense nouorum XIII die mensis paschales [recte -is] agni carnes comedere: ut in nobis nascentibus bonorum operum fructibus cum decalogi a nobis uerba completa fuerint in euangelii perfectio<ne> quaternorum numero consistentes carnes nostri agni in uespere mundi in quo seculorum finis peruenit. non tenebricatis cordibus spiritu sancto noctem nostram illuminante comedamus.* 'But forsaking these things, and shaking off what does not belong to this season, let us turn our keen attention to understand what we are taught in a spiritual sense, <namely that we should> in the month of first fruits, and on the fourteenth day of the month, spiritually eat the flesh of the Paschal Lamb, so that the fruits of good works being born in us – since the words of the Decalogue are fulfilled in us in the perfection of the Gospel – we may eat the flesh of our Lamb in the evening of this world, on which the end of time is coming, not with hearts of darkness, but with the Holy Spirit illuminating the night.'

CHAPTER 65

The note of sublimity struck in ch. 64 sets the stage for the final topics of *The Reckoning of Time*, namely the relationship of *computus* to time as a whole and in its largest sense. Three motifs articulate this theme: the Great Cycle by which the Easters will repeat over 532 years; how *computus* structures all past time, right back to Creation; and how it illuminates future time, carrying it over the threshold into eternity.

This perpetual cycle had been the focus of computists for many centuries. Victorius noticed that his data began to repeat after 532 years, but did not know or care to explain why. Dionysius knew that what Cyril claimed about the cyclic character of the ninety-five-year cycle was mistaken, but apparently either did not know, or did not appreciate, the significance of Victorius' discovery. Bede does not seem to expect his readers to be struck with its novelty.²⁶⁹ But there is no question that he was amongst the first to explain why the data recurred after 532 years.

At a stroke, the Great Cycle solved the problem of *computus* forever. All the elaborate explanations, formulae, and arguments of *The Reckoning of Time* are in a sense no longer necessary, for, by means of this table, true Easters can be found for as long as the world lasts. Bede's table would run out in 1063, but the data could then simply be recycled for the next 532 years. All that would need to be adjusted were the indictions (an arbitrary count of years, without astronomical basis or computational significance) and the years of the Incarnation. This, of course, was the theory; in practice, the flaws in Dionysian chronology and in lunar reckoning which Bede has already hinted at would reignite the problem-based approach to *computus*, culminating in the discarding of the Great Cycle in 1582.

269 Ceolfrith's letter to Nechtan (*Historia ecclesiastica* 5.21 [546]) claims that many in England were capable of producing Easter cycles, but whether he meant Great Cycles or not is unclear. Since the extension to Dionysius' table expired in 721, someone would have had to project them further into the future, but this does not imply the creation of a Great Cycle. It should be noted that the author of *De mirabilibus sacrae scripturae* realized that the Victorian 532-year cycle was the product of the nineteen-year lunar cycle and the twenty-eight-year solar cycle (2.4, 2176); cf. Smyth, *Understanding the Universe* 151–2; Ó Cróinín, 'Early Irish Annals from Easter Tables' 76–86. Cummin drew the same conclusion (ed. Walsh and Ó Cróinín 88.225–6), and *De ratione computandi* 14 applies the same logic within the context of the Dionysian system (ed. Ó Cróinín 124.1–6); the comprehensive discussion in *Munich Computus* 65 (ed. Warntjes 300–5) is unique. It is therefore more than likely that a Dionysian Great Cycle was in circulation before *The Reckoning of Time* was composed. For a dissenting view see Warntjes' commentary on *Munich Computus* 67 (311).

The years of the Incarnation are, of course, not cyclic, but linear, and their steady march into the future serves to identify and label all time to come. But it is not this possibility which primarily intrigues Bede here. It is rather the potential of the table, and its count of years, to plot past time. It can be used to ‘clarify an ancient text’ and ‘clearly identify all the years’; in short, it can be a framework for history. Bede’s *computus* has hitherto been exclusively prospective in its intentions. Its object was to determine dates for Easter, and the only such dates of interest were future ones. The link between *annus Domini* and the Paschal table, however, gives it an alternative, retrospective orientation. Bede is, of course, justly famous for the way in which he used *annus Domini* in his own historical writings. When he looks at past time in his *computus* treatise, however, he adopts a rather different approach.

CHAPTER 66

The Great Chronicle of ch. 66 and the succeeding block of chs 67–71 form a thematically distinct section within *The Reckoning of Time*, but its inclusion within the work has often seemed tenuous, even to the first generations of its readers. While Bede’s extension of the divisions of time to the cycle and the age might seem logical, the predominantly historical and theological content of these chapters sets them apart from the rest of *The Reckoning of Time*. As a result, at an early stage some lineages of the text either omitted this section (in whole or in part) or copied it separately, with or without chs 1–65. A list of such manuscripts is provided in Appendix 5. Here it will suffice to point out a few representative early examples. Carolingian manuscripts such as Munich CLM 14725 (St-Amand, s. IX^{1/4}; Appendix 5, no. 154) and Paris, BnF n.a.l. 1632 (n. France, s. IX^{2/4}; no. 213) simply stop at ch. 65. The Reichenau manuscript Karlsruhe, Aug. perg. 167 (the ‘Karlsruhe Bede’, s. IX^{2/3}; no. 95) also drops chapters 66–71, but a later hand added their titles to the *capitula*. Other codices contain the entire text, but in separate blocks. Vatican Pal. lat. 1449 (Lorsch, s. IX¹; no. 251), for example, contains chs 1–65 on fols 27v–104r and the rest on fols 121r–145v. In many cases where the chronicle and closing chapters are dropped, one or both of the ‘Introductions’ to ch. 66 which compare the World Ages to (1) the stages of the human life-cycle and (2) the days of Creation is nonetheless included.

From an early stage, we also encounter the opposite trend – exclusive interest in the chronicle and closing chapters. Rome, Biblioteca

Vallicelliana E 26 (Lyon, c. 816; no. 218) fols 43v–71v is ‘possibly a half of *DTR* rearranged in an accurate and careful text’²⁷⁰ followed (fols 91r–136v) by the full text of the chronicle and closing chapters.

If the *status* of time was important for clerical education and ecclesiastical discipline, its *cursus* and *fines* perhaps seemed less immediately relevant. In addition, the lengthy chronicle in ch. 66 carried the baggage of a controversial chronology. Both motivations seem to be at work in Cologne, Dombibliothek 83-II (Appendix 5, no. 61), which excerpts many chapters of *The Reckoning of Time*, but not those dealing with cosmology and astronomy, and omits chs 66–71, while employing Septuagint chronology elsewhere in the volume. So, while Bede’s decision to yoke *computus* and chronology by integrating history into the structure of time seems both intuitive and innovative,²⁷¹ it was not universally appreciated.

This is all the more intriguing because inserting a chronicle seemed an obvious next step in the development of *computus* literature. Isidore and the Irish textbooks established the framework for a treatise on *computus* based on an ascending hierarchy of units of time. But in *De natura rerum* and the *Etymologiae* Isidore stops at the year; his next category is *mundus* (‘world’ or ‘universe’), which bridges time to the cosmos. The Irish *De divisionibus temporum* goes from the year to the cycle, from the cycle to the *aetas* (‘age’), thence to the *saeculum* (literally ‘generation’, but here used in its extended sense of ‘era’), and finally to *mundus*, but does not incorporate a chronicle or discuss the past or future.²⁷² Bede followed the Irish lead by adding the Great Cycle and the World Age to the divisions of time, and then struck out on his own by supplying content for these categories. *On Times* chs 1–9 follows the conventional Isidorean divisions up to the year; chs 10–15 deal with the Paschal cycle; and, finally, chs 16–22 describe the Six World Ages through the medium of a chronicle. Though there was no discussion of the future in *On Times*, its format was retained and expanded in *The Reckoning of Time*.

Bede’s two world chronicles are thus unusual in being embedded in *computus* treatises and in proposing a revision of the received chronology

270 Jones, *BOT* 156.

271 Cf. Jones, ‘Bede as Early Medieval Historian’ *Mediaevalia et Humanistica*, 4 (1946): 32; Anna-Dorothee von den Brinken, *Studien zur lateinischen Weltchronistik bis in die Zeitalter Ottos von Freising* (Düsseldorf: Michael Triltsch, 1957), 102–8; Hildegard L.C. Tristram, *Sex aetates mundi. Die Weltzeitalter bei den Angelsachsen und den Iren. Untersuchungen und Texte* (Heidelberg: Carl Winter, 1985), 26.

272 *De divisionibus temporum* II.1.1, ed. Bisagni 66–7.

of world history. To understand the form, content, and role of ch. 66 within *The Reckoning of Time*, we must first situate it with respect to its major sources and to the chronicle tradition as a whole.

The Christian concept of time is characterized by its linear trajectory, its boundedness by a beginning and an end, and its exclusivity. Time began at Creation and will end at the Last Judgement. It is teleological: before Christ, its goal was Christ himself; after Christ, its goal is the Parousia. Finally, there is no time outside this sacred time of God's Creation: there is only one God, only one world, and only one history for all peoples. These three characteristics underpin the Christian genre of universal history. God's plan of salvation embraces all nations, whether they are aware of it or not. He foreordained that the Romans would rule the world at the time of the Incarnation, just as He chose the Jews as His special people. The single thread of divine purpose draws all particular histories into one continuum of time.²⁷³

The linear direction and unity of this world history is secured by chronology, the verification and synchronizing of all historical dates within one time frame. The premier figure of Christian chronology was Eusebius of Caesarea (263–339). Basing himself on the Hellenistic tradition of synchronized histories of the Mediterranean world, Eusebius constructed a pair of seminal chronological works, the *Chronographia* and the *Chronological Canons* (*Chronikoi Kanones*), commonly known as the *Chronicle*. The former survives only in an Armenian translation and a Syriac fragment and seems to have had little influence. The impact of the latter, however, was enormous. The *Chronicle* is a vertical timeline, beginning with Abraham. Its chronological backbone is the regnal lists of the world empires of Assyria, Persia, Macedonia, and Rome, supplemented after 776 BC by the Olympiads. As peoples and empires appear on the stage of world history they are granted their own parallel columns, turning the list into a table; as they are absorbed into the world empires these columns gradually disappear, until the Roman empire – eventually the *Christian* Roman empire – occupies the entire frame. This innovative format stresses the coincidence of the histories of various peoples and

273 I lean on the analyses of Hervé Inglebert, *Interpretatio christiana. Les mutations des savoirs (cosmographie, géographie, ethnographie, histoire) dans l'Antiquité chrétienne 30–630 après J.-C.* (Paris: Études Augustiniennes, 2001), pt. II, and Goldhill, *The Christian Invention of Time*, esp. chs 6 and 16. On the genre of universal history see also Croke, 'The Origins of the Christian World-Chronicle' 116–31.

the key role of chronology in tying these stories together into a history of salvation. Eusebius' signal achievement was to synchronize the dates and events of the Bible with those of the pagan kingdoms within a format that furnished continuity, parallelism, and the promise of chronological exactitude.²⁷⁴ The *Chronicle* had an extraordinary career, particularly in the West, where it was translated and edited by Jerome.²⁷⁵ The original *Chronicle* ended at AD 303; Jerome's continuation went until 378, that of Prosper (*ca.* 390–463) to 445, and that of Marcellinus Comes to 534. Bede had access to this enlarged edition of the Latin *Chronicle*.

Eusebius' *Chronicle* synchronizes eras, but does not synthesize them, save in the form of a running total of years since the birth of Abraham in the outer margin. In the preface of the work, however, Eusebius discusses the periodization of world history before Christ. He divides the time between Abraham and the beginning of Jesus' ministry into four periods – (1) Abraham–Moses, (2) Moses–First Temple, (3) First Temple–Second Temple, (4) Second Temple–Ministry – and adds that the period prior to Abraham can be divided into two periods, namely (1) Adam–Flood and (2) Flood–Abraham.²⁷⁶ The dates for the period after Abraham can be established by regnal lists, for Abraham was born in the forty-third year of King Nilus of Assyria. The chronology of first two Ages is more problematic, because the years and generations in the Septuagint translation of Genesis are quite different from those in the Hebrew text. Eusebius preferred the Septuagint version, on the grounds that modern Hebrew codices are more likely to be corrupt than the ancient exemplars used by the Seventy Translators, but he probably began his chronicle with Abraham precisely to avoid this controversy.²⁷⁷ On the other hand, he was

274 On the innovative format and layout of the *Chronological Canons* and its implicit message see Grafton and Williams, *Christianity and the Transformation of the Book*, ch. 3. See also R.W. Burgess and Michael Kulikowski, *Mosaics of Time: The Latin Chronicle Traditions from the First Century BC to the Sixth Century AD. Vol. I: A Historical Introduction to the Chronicle Genre from its Origins to the High Middle Ages* (Turnhout: Brepols, 2013), ch. 3; Alden A. Mosshammer, *The Chronicle of Eusebius and Greek Chronographic Tradition* (Lewisburg, PA: Bucknell University Press and London: Associated University Presses, 1979).

275 Jerome's editorial role and the format of the *Chronicle* is discussed by R.W. Burgess, 'Jerome Explained: an Introduction to his *Chronicle* and a Guide to its Use', *Ancient History Bulletin*, 161.2 (2002): 1–32.

276 Helm's introduction to his ed. of Jerome's *Chronicon*, 14–17.

277 Molly Miller, 'The Chronological Structure of the Sixth Age in the Rawlinson Fragment of the "Irish World Chronicle"', *Celtica*, 22 (1991): 79–83, at 80.

also hostile to apocalyptic speculations, particularly those connected with Julius Africanus, and hence deliberately preferred to be undogmatic about chronology.²⁷⁸ Eusebius dated the beginning of Christ's ministry to AM 5228. If Christ was thirty years of age at this time, he would have been born in 5197 or 5198; Jerome preferred 5199, which became the conventional date in the West.

It was through Augustine's eyes that Bede read the Greek chronographer. Augustine was less interested in the exact chronology of the World Ages than in their mystical significance, whose allegory and number symbolism he explored in many of his works.²⁷⁹ He reduced Eusebius' six pre-Christian Ages to five, which, with the addition of the Christian era, made six. He also reordered the last three Ages before Christ to match the three periods of fourteen generations enunciated in Matthew 1:17 Abraham to David, David to the Babylonian Captivity, Babylonian Captivity to Christ. This satisfied a desire to find patterns in history without fixing the length of the World Ages in terms of years.

The number six was highly significant for Augustine, because it linked the Ages of the world to the days of Creation. This analogy was commonplace in patristic literature,²⁸⁰ but Augustine elaborated it considerably: each Age, like a day, had a morning, a noontide, and an evening – in other words, an optimistic beginning, a zenith, and a troubled period of decline. Bede, as we have seen, borrowed this model for his exposition of the World Ages in ch. 10 of *The Reckoning of Time*. Augustine also

278 Palmer, *The Apocalypse in the Early Middle Ages* 47.

279 For a survey of these, see Tristram, *Sex aetates mundi* 23; cf. Luneau, *L'Histoire du salut chez les Pères de l'église* pt 4; Elisabeth Mégier, 'Les temps des âges du monde, de Saint Augustin à Hugues de Fleury (en passant par Isidore de Seville, Bède le Vénérable, Adon de Vienne et Fréculphe de Lisieux)', in *Le Sens du temps. The Sense of Time*, ed. Paschale Bourgain and Jean-Yves Tilliette (Geneva: Droz, 2017), 581–600. Bede's debt to Augustine is discussed in detail by Darby, *Bede and the End of Time* ch. 1.

280 This analogy goes back to the first- or second-century *Epistle of Barnabas*, 15.4a–5a, ed. R. A. Kraft, trans. P. Prigent, *Sources chrétiennes* 172 (Paris: Editions du Cerf, 1971), 185. For discussion of its Patristic fortunes see Siniscalco, 'Le età del mondo' 316–17; Richard Landes, '"Lest the Millennium be Fulfilled": Apocalyptic Expectations and the Pattern of Western Chronography 100–800 CE', in *The Use and Abuse of Eschatology in the Middle Ages*, ed. Werner Verbeke, Caliel Verhelst, and Andries Welkenhuysen (Leuven: Leuven University Press, 1988), 143 n. 20–2; and Tristram, *Sex aetates mundi* 22–4, for references to Augustine. As Siniscalco later observes, this analogy has the advantage of contrasting the linearity of historic time with the cycles of nature and the calendar: 'Le età del mondo' 327.

proposed a second analogy between the Six Ages of the world and the six ages of human life: indeed, he deliberately selected *aetas* as his term for the six eras or epochs of world history by analogy with the ages (*aetates*) of human life. The key text here is *De Genesi contra Manichaeos* 1.23.35 *sqq.*, a work which Bede certainly knew,²⁸¹ but the analogy is also found in other Augustinian works, notably *De civitate Dei* 16.43. The First Age is like infancy, for the world emerged into the light of Creation just as man emerges into the light of life. The Second Age corresponds to childhood, the Third to *adolescentia*, the Fourth to *iuventus*, and the Fifth to decline into old age. Bede borrowed this scheme for his first 'introduction' to ch. 66, but with some significant changes, as we shall see.²⁸²

Augustine was interested in the Six Ages as a theology of history, not as a chronological framework. Indeed, when he touched on the length of the World Ages at all, he tended to employ generations rather than years, vacillated between the Incarnation and the Ministry as the starting point for the Sixth Age, and expressed agnosticism or lack of interest with regard to the discrepancies between Septuagint and Hebrew chronologies.²⁸³ Significantly, his protégé Orosius did not use the Six Ages scheme in his own historical writing.

A different approach was taken by Isidore of Seville, one which had a formative effect on Bede. Isidore took the momentous step of fusing Eusebius' chronology to Augustine's division of the Six Ages to produce the first Christian world chronicle dated according to *annus mundi*.²⁸⁴ In other words, he abandoned Eusebius' parallel eras for a single chronological track based on the date of Creation. His figures, however, were derived entirely from the Septuagint chronology outlined in Eusebius' prologue. Isidore organized the history of the first three Ages according to the generations of the Hebrew patriarchs, and then according to the reigns of the judges and kings. After the fall of the Jewish kingdom the

281 See ch. 66, p. 294 n. 615. He mentions *De Genesi contra Manichaeos* as a source for his own commentary on Genesis, composed in 720: *In Gen., Praef.* (1). Bede's much more skeletal treatment of the analogy between the World Ages and the ages of man in *On Times* seems to be based on Isidore, *Etym.* 5.38; cf. Siniscalco, 'Le età del mondo' 323.

282 On this theme in general see Sears, *The Ages of Man* ch. 3; Paul Archambault, 'The Ages of Man and the Ages of the World: a Study of Two Traditions', *Revue des études augustiniennes*, 12 (1966): 193–228.

283 Cf. *De civitate Dei* 18.43 (639.22–28). Cf. Tristram, *Sex aetates mundi* 24.

284 Eusebius and Jerome, it will be recalled, used the 'era of Abraham'; Prosper used the *annus Passionis*.

chronological frame was furnished by the heathen empires which ruled Judaea: Macedon, Ptolemaic Egypt, and, finally, Rome. Isidore dated reigns according to their closing year, not their inception. Finally, he also innovated by fixing the beginning of the Sixth Age definitively at Christ's birth.²⁸⁵ All these features were taken over by Bede. Indeed, Bede's debt to Isidore for the substance as well as the form of the chronicle in *On Times* is very significant, and if Isidore is somewhat eclipsed by Eusebius in *The Reckoning of Time*, his formal influence remains.

To summarize the argument thus far, Bede was the heir to a complex tradition of the world chronicle, based on Eusebius' synchronization of biblical and secular time and overlaid with a particularly Augustinian reading of the World Ages. His immediate source for the latter was Isidore's chronicle in *Etymologiae* 5.29, but he reached back to Augustine for his analogies with the six days of Creation and with the six ages of man.

However, he introduced a fundamental modification of this tradition. In *On Times*, Bede replaced the Eusebian–Septuagint chronology of the first two World Ages with a chronology based on Jerome's translation of the Hebrew text of the Old Testament.²⁸⁶ As had been recognized long

285 Tristram, *Sex aetates mundi* 24–5.

286 Bede never claims to have invented this new chronology. Daniel McCarthy argues in 'Bede's Primary Source for the Vulgate Chronology in his Chronicles in *De temporibus* and *De temporum ratione*', in *Computus and its Cultural Context: Proceedings of the 1st International Conference on the Science of Computus in Ireland and Europe, Galway, 14–16 July, 2006*, edited by Immo Warntjes and Dáibhí Ó Cróinín, *Studia traditionis theologiae* 5 (Turnhout: Brepols, 2010), 148–59 and ch. 4 of *The Irish Annals* that he derived it from an unacknowledged source, namely a Vulgate chronology devised by Rufinus of Aquileia. Proof is the fact that a similar Vulgate chronology is found in the Irish Annals, indicating a common source. Bede would have acquired the Rufinus chronology through Adomnán of Iona. McCarthy's argument is speculative, as there is no proof that Rufinus composed such a chronology. The oldest manuscript of the Irish annals is 400 years younger than the oldest manuscript of Bede and could have been influenced by him: this is the position of Miller, 'The Chronological Structure of the Sixth Age'. It also does not help us to answer some important questions. If the Rufinus chronology was circulating in Ireland and the north, why was Wilfrid's entourage surprised at Bede's new chronology? Why did Bede not acknowledge where he got his chronology from, when he elsewhere praised the life and work of Adomnán? Nothaft supports McCarthy's argument, claiming that the *Laterculus Malalianus* critiques the Irish for adhering to a shorter chronology of world history (*Dating the Passion* 82–3). However, the *Laterculus Malalianus* argues that Christ's birth inaugurated the seventh millennium: *Laterculus Malalianus* 4, ed. and trans. Jane Stevenson in *The Laterculus Malalianus and the School of Archbishop Theodore* (Cambridge: Cambridge University Press, 1995), 124–7, and 154–7, as well as Stevenson's

since, notably by Eusebius himself, the two texts vary considerably in their chronology of the first two Ages. Where the Septuagint assigns 2242 years to the First Age and 942 to the Second, Bede, following the Vulgate, gives 1656 years to the First Age and 292 to the Second Age. The upshot is that the birth of Christ, which Isidore, following Eusebius, dated to AM 5197, is dated by Bede to AM 3952.

This revision, as we have seen, drew down a charge of heresy, because Bede's new chronology did not place the birth of Christ in the chronologically traditional Sixth Age. Bede refuted these accusations in his *Letter to Plegwine*,²⁸⁷ and devoted ch. 66 of *The Reckoning of Time* to restating and elaborating his case. Central to his argument is the idea that not all the World Ages are of equal length and, by implication, the duration of the Sixth Age cannot be known, a point he will expand upon in chs 67 and 68. At the outset of ch. 66 Bede sets the stage for this larger argument by recasting slightly Augustine's analogy between the Six World Ages and the six ages of man's life. Though Augustine explores this theme in *De Genesi contra Manichaeos*, Bede's text corresponds more closely to *De vera religione* 26.48: for example, the First Age is likened to childhood because childhood is a time which is lost in oblivion, as the First Age was wiped out by the Flood.²⁸⁸ But what is particularly significant is Bede's comment on the Sixth Age, where he steps outside the Augustinian framework completely. The sixth age of human life is characterized not only by decline but by the fact that we do not know the time of death. Unlike the other five ages of life, it has no predetermined end-point. Similarly, the Sixth Age, unlike the other five, has no fixed number of years, for its end – and hence the end of the world – is known to God alone. Isidore, to be sure, closed his chronicle by averring that 'the rest of the Sixth Age is known to God alone',²⁸⁹ and Augustine noted in *De civitate Dei* 23 that there is no number of generations to be assigned to the Sixth Age, but Bede's integration of this warning into Augustine's anthropological analogy is original. The

note on 174–5. Therefore anyone defending the Eusebius–Jerome Septuagint chronology would also be arguing for a 'shorter era'.

287 See Introduction, pp. 10–11.

288 *De vera religione*, ed. J. Martin, CCSL 32 (1961), 217. Contrast *De Genesi contra Manichaeos* 1.23.35 (ed. Weber 104.7–15) which connects the Creation in the First Age to human birth.

289 *Residuum sextae aetatis tempus Deo soli est cognitum*, *Etym.* 5.29.42; cf. *Chron.* 418 (ed. Mommsen 481): *Residuum saeculi tempus humanae inuestigationis incertum est*.

world chronicle thus proves the argument of chs 67–70, that there is no way to ‘schedule’ the End Times.

The choice of a Six Ages scheme and an AM reckoning for the chronicle in ch. 66 is puzzling, given that Bede did not refer to either in his *Ecclesiastical History*. It might also be remarked that the AM reckoning is a little unexpected in the context of the *The Reckoning of Time* itself, since the chronicle is a kind of gloss on the Paschal table, in which years are numbered according to Dionysius’ AD scheme. Why did Bede take this route? A second question is related to this first one: why did Bede revise the standard chronology of the *annus mundi* so radically in *On Times*, shaving nearly 1200 years off the conventional age of the world, and why, when this new chronology provoked criticism, did he proclaim it afresh, and in even more emphatic terms, in *The Reckoning of Time*?

These questions are linked to the issue of the relationship between *computus*, history, chronology, and the end of time. In his landmark essay, Richard Landes pointed out that the fusion of world chronicle and the scheme of the Six Ages is not only unique to the West, but fraught with theological and pastoral implications.²⁹⁰

Though subject to variation, most AM chronologies dated the Incarnation close to the beginning of the sixth millennium: Julius Africanus to 5500 and Eusebius to 5197/8 (or, in Jerome’s version, 5199). When the schema of the Six Ages is laid over Eusebius–Jerome’s chronology, it suggested that each of the six World Ages is about 1000 years long, for Christ’s Incarnation inaugurated the Sixth Age. This chronological coincidence tapped into an ancient piece of Christian eschatological thinking, namely that an Age was a measurement of time like a day. An Age was a period of 1000 years, just as a day is a period of twenty-four hours. The cue here is 2 Peter 3:8: ‘one day is with the Lord as a thousand years, and a thousand years as one day’ (cf. Psalm 90:4/89:4). This notion of the divine 1000-year day, when joined to the analogy between the World Ages and the days of Creation, produced the idea of the 1000-year World Age. The logical conclusion was that the world will end in *annus mundi* 6000; and, if that were the case, it meant that one could predict the time of the end of the world if one knew the date of its beginning. Moreover, if each of the Six Ages were 1000 years long, then the 1000-year reign of the saints after the general resurrection (Revelation 20:4) must be a seventh World Age, a cosmic sabbath corresponding to the seventh day of the Creation week,

290 Landes, ‘Lest the Millennium’ 137–209.

but still within historic time. Chronology, then, becomes the accomplice of both presumptuous claims to predict the Second Coming and a potentially explosive millenarianism.²⁹¹ Millenarianism was the target of Augustine's redefinition of the Seventh Age as the duration of the Church Expectant, from the time of Abel until the Last Judgement, a position which Bede will expound in ch. 71. The assumption that one could predict the date of the End, however, was less easy to uproot.

The reaction of ecclesiastical writers to predicting such a date was not coherent, for, though some strenuously condemned it, most hesitated to take the obvious measure to uproot it, namely jettisoning the notion of the Six World Ages or at least denouncing the notion that the Ages were of uniform length, namely 1000 years. The latter move would have run into resistance over the biblical passages discussed above, but also would have challenged a long tradition of chronological numerology. Bede's chapter on the Seventy Prophetic Weeks is his personal contribution to a very old tradition of aligning historical events with computistic criteria. Other biblical numbers were similarly deployed. Hippolytus of Rome's commentary on the book of Daniel supports the 'Africanus hypothesis' that Christ was born in the middle of the sixth millennium, leaving only 500 years to the end, by evoking the proportions of the Ark of the Covenant, 'whose measures of $2\frac{1}{2} + 1\frac{1}{2} + 1\frac{1}{2} = 5\frac{1}{2}$ cubits (Exodus 25:10) are read as a typological hint at the five and a half millennia of pre-Messianic history'.²⁹² In sum, Bede was confronting a deeply engrained and authoritative tradition.

Moreover, the nature of Christian historiography prevented the Church from downplaying chronology in the hopes of avoiding speculation about the date of the Last Judgement. Richard Landes argues that western writers consciously revised the *annus mundi* chronology at regular intervals to 'rejuvenate' the world and postpone the millennium, without abandoning the basic framework of the Six World Ages. He observes that these revisions always took place in the final century leading up to the year 6000, and usually rejuvenated the world by only a few hundred years: enough to allay apocalyptic terrors, but not enough to push the end over the horizon of visibility. First, Julius Africanus' chronology was replaced by Eusebius' in the late fourth century, and as Eusebius' year 6000 approached in the middle of the eighth century fresh revisions of the AM reckoning were

291 Landes, 'Lest the Millennium' 142–9; von den Brinken, *Studien* 50–60.

292 Nothaft, *Dating the Passion* 46. See above, Commentary on ch. 9.

aired. Church leaders, unwilling to abandon the Six Ages chronology or the equation of age and millennium sanctioned by so many authoritative texts, elected, in Landes' phrase, to 'mortgage the future' for the sake of peace and good order in the present, by continually pushing the Parousia a little bit ahead, but not so far ahead as to rupture the implicit connection between millennia and World Ages.²⁹³ Bede's radical revision of AM was one of these. Jerome's Vulgate inadvertently offered Bede a way of eluding the impending Eusebian deadline.²⁹⁴

Landes's 'rejuvenation' hypothesis has sustained some criticism, particularly because it assumes a clearer and more concerted 'policy' about the end times than is borne out by the record. As James Palmer observes, it also does not account for apocalyptic debates and concerns that fall between the alleged deadlines, be they AD 500 or AM 6000, and it bypasses sources and expressions of apocalyptic concerns that are not related to date.²⁹⁵ But it does shed some light on why Bede's new chronology drew fire. Unlike previous revisions (regardless of their motivation), Bede's chronology postponed the Last Judgement for a very long time – almost 1200 years. The critics at Bishop Wilfrid's table were not 'rustics' (Bede's scornful epithet) but educated clerics, and their reaction reveals the problems engendered by the western Church's ambivalent attitude to the symbolism of numbers and the 1000-year World Age.

We may hypothesize, then, that in *On Times* Bede initially revised Eusebius' chronology in the interests of what he saw as historic accuracy. But, after the Plegwine affair, he defended his innovation for a second reason: because it offered a challenge to the chronic heresy of claiming to know the time of the Second Coming.²⁹⁶ It is important to recall that Bede's accusers did not criticize his chronology for postponing the Last

293 Landes, 'Lest the Millennium' 183.

294 Cf. Landes 'Lest the Millennium' 176; von den Brinken, *Studien* 110.

295 *The Apocalypse in the Early Middle Ages* 17–18; 'The Ordering of Time', in *Abendländische Apokalyptik*, 216. Palmer demonstrates as well that apocalyptic discourse need not always be taken at face value, since it served as a vehicle for reformist ideas: 'To be Found Prepared. Eschatology and Reform Rhetoric ca. 570–ca. 640', in *Apocalypse and Reform from Late Antiquity to the Early Middle Ages*, ed. Matthew Gabriele and James T. Palmer (London: Routledge, 2018), 31–49.

296 Cf. Siniscalco, 'Le età del mondo' 309–11, who cites evidence of Bede's increasing use of this motif in the biblical commentaries written between *On Times* and *The Reckoning of Time*. A particularly lengthy refutation of the claim that the End Times could be 'scheduled' is found in Bede's commentary on Luke 17: 20–37, ed. Hurst 315–22, trans. Kendall and Wallis 504–13.

Judgement or indeed for any explicitly eschatological reason, but for implicitly calling into question Christ's identity as the Messiah by not situating His Incarnation at the beginning of the traditional Sixth Age.²⁹⁷ But in the *Letter to Plegwine*, Bede chose strategically to reframe their objections as culpable and ignorant curiosity about the timing of the End. In addition, he states that he is constantly pestered by questions about how many years were left until the Last Judgement.²⁹⁸ Presumably, the annoying queries came from other clerics of Bede's acquaintance, perhaps even his own monastic brethren. They could have absorbed their loyalty to the 6000-year/Six Age model from Patristic literature. They could also have found 'countdowns' in Irish *computus* texts, in exegetical works, and in devotional writings.²⁹⁹ They might even have been zealous to defend tradition against the aberrant chronology of the Byzantine writer John Malalas, introduced into England by Archbishop Theodore of Canterbury and promulgated through his *Laterculus Malalianus*, a historical exegesis of the life of Christ. The *Laterculus* complains about the stupidity and quarrelsomeness of the Irish, who insist on rejecting the orthodox and accepted chronology of Christ's life. That chronology dated the Crucifixion to AM 6000, which meant the world was already into its seventh millennium. The Irish were probably defending the standard Eusebian chronology. Certainly the *Laterculus* is frank about its belief that each Age of the world lasts 1000 years – a position Bede deplors.³⁰⁰ But what Bede specifically finds

297 *Letter to Plegwine* 1–2 (see below p. 582); see also Introduction, pp. 9–10.

298 *Letter to Plegwine* 15 (pp. 590–1).

299 On the 'countdown' in the dating clause in the Sirmond manuscript, see Introduction, pp. 85–6. The Irish poem 'Deus a quo facta fuit', composed in the 640s, is an early instance of an exercise in counting down to the year 6000: Ó Cróinín, 'Early Irish Annals from Easter Tables' 80–1 and 'The Date, Provenance and Earliest Use' 194–5. So likewise is the anonymous seventh-century Irish commentary on the First Epistle of John, ed. Robert E. McNally, *Scriptores Hiberniae Minores*, CCCM (1973), 1.40; cf. Smyth, *Understanding the Universe* 107. On the Irish *computus* texts and the 6000-year model see Warntjes, 'A Newly Discovered Prologue', 278–81.

300 See above, n. 286. On the *Laterculus Malalianus* see Stevenson, *The Laterculus Malalianus and the School of Archbishop Theodore*, and *idem*. 'Theodore and the *Laterculus Malalianus*', in *Archbishop Theodore: Commemorative Studies on his Life and Influence*, ed. Michael Lapidge, Cambridge Studies in Anglo-Saxon England 11 (Cambridge: Cambridge University Press, 1995), 204–21. It is possible that Bede knew the *Laterculus Malalianus* directly: James Siemens, 'Another book for Jarrow's Library? Coincidences in Exegesis between Bede and the *Laterculus Malalianus*', *Downside Review*, 132 (2013): 15–34, as well as *The Christology of Theodore of Tarsus: the Laterculus Malalianus and the Person and Work of Christ* (Turnhout: Brepols, 2010), and 'Christ's Restoration of Humankind in the

annoying about those persistent questions is the element of ‘countdown’ – that is, calculating how many years are left until the End Times begin. This query was not inspired by signs in the heavens but by reading the chronicles of Isidore of Seville, with their Eusebian *annus mundi* chronology and their Six Age framework, or inspecting Victorian Easter tables that synchronized the *anni mundi* to Victorius’ *anni passionis*.³⁰¹ Particularly in the Frankish realms, the margins of the *Etymologiae* and of various chronicles were filled with *summae annorum* – tabulations of the number of years since Creation that included, in some cases, the number of years remaining until the year 6000.³⁰² In conclusion, it was Bede’s decision, and not his accusers’, to foreground the ‘countdown heresy’ in the *Letter to Plegwine* and to reassert this position in *The Reckoning of Time*.³⁰³

Laterculus Malalianus, 14’, *Heythrop Journal*, 48 (2007): 18–28 at 26 n. 20; cf. Darby, *Bede and the End of Time* 51–7. Bede certainly had access to other literature from the school of Theodore and Hadrian. Benedict Biscop, after all, had guided the newly consecrated archbishop and his deacon to England, and had lived in close proximity to them as abbot of St Augustine’s for several years after. Bede revised the *Passio S. Anastasii* which Theodore probably brought to England: see Carmela Viricillo Franklin, ‘Theodore and the *Passio S. Anastasii*’, in *Archbishop Theodore, Commemorative Studies on his Life and Influence*, ed. Michael Lapidge, Cambridge Studies in Anglo-Saxon England 11 (Cambridge: Cambridge University Press, 1995), 175–203. Bede had access to another rare Greek text associated with the Canterbury mission, the lapidary of Epiphanius: see Peter Kitson, ‘Lapidary Traditions in Anglo-Saxon England: Part II, Bede’s *Explanatio Apocalypsis* and Related Works’, *Anglo-Saxon England*, 7 (1983): 71–123. But even had Bede known of the *Laterculus* he might not necessarily have associated it with Theodore, as he seems to have known little about Theodore’s career and learning. In *The Reckoning of Time* ch. 66, s.a. 4591, he mentions the Roman monastery of ‘Ad Aquas Salvias’ but does not remark that Theodore was the abbot of this house: cf. Franklin, ‘Theodore and the *Passio S. Anastasii*’ 203.

301 E.g. Warntjes’ ‘Newly Discovered Prologue of AD 699’; see also Warntjes, ‘The Final Countdown’ 54.

302 Palmer, *The Apocalypse in the Early Medieval Ages* 91. As Warntjes points out, there is no intrinsic connection between Isidore and countdowns – quite the contrary; they are tacked onto Isidore’s chronicles, not outgrowths of these: ‘The Final Countdown’ 56–8.

303 Jones also argues that the doctrine of the Six Ages was of minimal importance to Bede, a mere ‘teaching device’ without connection to historical reality. Indeed, he claims that the Plegwine episode made Bede almost embarrassed by the concept: ‘Bede as Early Medieval Historian’ 31–2. This position is untenable, and Jones seems to have modified his views later: see the section on the Six Ages in ‘Some Introductory Remarks’, 191–8. Not only does Bede invoke the concept of the Six Ages with great enthusiasm in many of his works (for a list of these, see Plummer, *Baedae opera historica* xli–xlii, n. 6, and Siniscalco, ‘Le età del mondo’ 311 n. 30), but the Plegwine affair made him bolder than ever in asserting its relevance and correcting what he viewed as its misconception. This is why he devotes the final seven chapters of *The Reckoning of Time* to the issue of the World Ages.

Furthermore, in selecting the Eusebian model for his chronicle, and dating by *annus mundi*, Bede was consciously conveying a specific message to his readers. Jones argues that Bede was constrained to use AM by his sources, Isidore and Eusebius; when he came to write the *Ecclesiastical History* his sources were annals in Paschal tables, and he could therefore use AD.³⁰⁴ This argument founders on the fact that ch. 66 contains much of the same material found in the *Ecclesiastical History*, but dated according to AM. The choice, as Peter Darby and Máirín MacCarron have demonstrated, was deliberate, not constrained by Bede's sources. Bede's purpose in ch. 66, as in the earlier chronicle in *On Times*, was to demonstrate the sequence and articulation of the World Ages, but it was now also to refute the notion that the timing of the End could be predicted. To have begun the count of years afresh at the birth of Christ – in other words, to have introduced a separate count for the Sixth Age – would have interrupted this sequence and worked against Bede's purpose.³⁰⁵

Ironically, Bede unwittingly solved the problem of presumptuous prediction by popularizing *annus Domini* reckoning, both through his *Ecclesiastical History* and through his Dionysian Paschal tables.³⁰⁶ Taken up by the Carolingians, the *annus Domini* era eventually ended the reign of the Creation era in the West and drew the millennial sting out of the schema of the Six World Ages.³⁰⁷

Landes argues that Bede's new *annus mundi* chronology was almost universally rejected, but this is not the case. It was endorsed after some discussion by the 'Aachen Examination <of Computists> of 809'³⁰⁸ and

304 'Bede's Place' 50.

305 Darby, *Bede and the End of Time* ch. 1. MacCarron's *Bede and Time*, esp. chs 1–3, is an extended argument that his *annus mundi* chronology in the chronicles was considered and deliberate. Notably, MacCarron argues that Bede knew the Victorian-Insular 'Twelve Cycles of the World' as found in the *Munich Computus* and other Irish texts. This schema articulated history into 532-year cycles, matching the computistical Great cycle (Nothaft's 'computistical chronology': *Dating the Passion* 58–64). Bede's choice of the continuous *annus mundi* chronology refutes this model of time: see MacCarron's *Bede and Time* 54 and 'Bede, Irish Computistica and Annus Mundi' 299–300.

306 Landes, 'Lest the Millennium' 178.

307 *Ibid.* 140–1.

308 Ed. Borst (under the title *Cap. Comp.*), *Schriften* 3.1042: *Interrogati, quot annos a mundi initio usque ad Christi incarnationem dicerent? Qui cum propter diversorum auctoritates primum diversa protulissent, postremo in Ebraice veritatis numero fidem facere consensuerunt.* (<The computists> were asked how many years they would say had passed from the beginning of the world to the Incarnation of Christ. They agreed that because the

is enshrined in the ‘Aachen Encyclopaedia’,³⁰⁹ Many Carolingian and post-Carolingian historians used it without demur.³¹⁰ Tristram even argues that the persistent success of the Six Ages doctrine was largely due to Bede.³¹¹ In one case, Bede’s *annus mundi* reckoning seems to have taken up precisely to sidestep a countdown to the End Times. The manuscript Leiden Scaliger 28 is a ninth-century *computus* manuscript of the ‘Sirmond’ type, with Bedan Easter cycles extending from AD 1 to AD 1006. The closing date is significant: the tables should have gone to 1063, the end of the second 532-year cycle. Did the scribe imagine that the world might end in AD 1000, and terminate his table at the completion of the nineteen-year cycle closest to the fatal year? Certainly one of the readers of Scaliger 28 might have entertained such apocalyptic anxieties. He collated the AD years to their AM equivalent. He used both the Eusebian and the Bedan chronology, but discontinued the Eusebian one after AD 789, the year 5990 in the Eusebian scheme. Thereafter, he continued up to his own time (AD 806) only with Bede’s new chronology, which was still safely on this side of *annus mundi* 6000.³¹²

The content of Bede’s world chronicle has until recently not inspired much attention, on the assumption that Bede assembled information from prior chronicles without an articulate plan or overarching purpose.

authorities of diverse <schools> had beforehand pronounced diverse things, in the end it was the number recorded in the Hebrew Truth which should be trusted.)

309 Ed. Borst (under the title *Lib. Comp.*), *Schriften* 3.1145–6 (*argumentum* for finding AM).

310 Cf. von den Brinken, *Studien* 113–20 and Appendix, Table IV. For its use by Irish chroniclers see Miller, ‘Chronological Structure’ and Ó Cróinín, *The Irish ‘Sex Aetates Mundi’* (Dublin: Institute for Advanced Sciences, 1983). For use by Freulf of Lisieux and by St Gall historians see Allen, ‘Bede and Freulf’ 78–80.

311 Tristram, *Sex aetates mundi* 30.

312 Landes, ‘Lest the Millennium’ 188–9. On this MS, see Appendix 5, no. 105. The issue of Carolingian ‘terrors of the year 800’ due to the convergence of that year with AM 6000 has generated a body of scholarship on its potential relationship to the imperial coronation of Charlemagne in that year and its impact on Carolingian providentialist political ideology. Johannes Heil seeks to ground the case in *computus* writings of the time, but his argument is weakened by some misreading of the sources and a broader lack of familiarity with *computus*: “‘Nos nescientes de hoc velle manere’ – ‘We wish to remain ignorant about this’; Timeless End, or: approaches to Reconceptualizing Eschatology after A.D. 800 (A.M. 6000)”, *Traditio*, 55 (2000): 73–103. For criticism of this theory see Palmer, *The Apocalypse in the Early Middle Ages* 6, and ‘Calculating Time’, esp. 1313–16, who notes that it has not captured wide interest or consensus.

However, recent studies provide evidence that Bede was following a coherent tradition by strategically selecting material for ch. 66.³¹³

As we noted above, Bede's main chronological 'policies' in ch. 66 are largely derived from Isidore: the continuous *annus mundi* chronology, the articulation of Hebrew history according to patriarchs, judges, and kings, the dating of reigns at their close rather than their inception, and the choice of the Incarnation as the beginning of the Sixth Age.³¹⁴ These were the principles that governed his earlier chronicle in *On Times*. In *The Reckoning of Time*, he significantly extended and diversified the content.

In the first five Ages and the beginning of the Sixth, the guiding thread is essentially the biblical narrative. It is only in the Sixth Age where we see Bede selecting and foregrounding certain themes. His choices were limited by the basic formula for the world chronicle established in Hellenistic Alexandria and followed by Eusebius: a world chronicle should include battles, victories, political events, games and festivals, literary figures, and memorable natural phenomena.³¹⁵ For 'literary figures', Bede could substitute Church Fathers and ecclesiastical writers, culled from the biographical reference works of Jerome and Gennadius. Political events were expanded to include heresies, a subject of intense importance to Bede. The capacity of the world chronicle to absorb the histories of new peoples as they appear on the global scene permits Bede to include much material about Britain, while at the same time decentering Rome.³¹⁶ But there are two kinds of information which seem to be peculiar to Bede, and not accounted for by his sources and models: architecture and

313 The earliest modern study, Georg Wetzels, *Die Chroniken des Baeda Venerabilis* (Halle: Plötz'sche Buckdruckerei, 1878), opens by describing the chronicles in *On Times* and *The Reckoning of Time* as 'an sich unbedeutend und Compilationen (3)'. Wilhelm Levison dismissed the chronicle as 'a compressed Jerome': 'Bede as Historian', in *Bede: His Life, Times and Writings*, ed. A.H. Thompson (Oxford: Clarendon Press, 1935), 121. Jones, 'Bede's Place' 32.

314 For tables comparing the content of the chronicles in *On Times* and *The Reckoning of Time* see MacCarron, *Bede and Time* Appendices 3 and 4.

315 Croke, 'Origins' 119.

316 See esp. Rabin, 'Historical Re-Collections'; Sören Kaschke, 'Mediterranean Lessons for Northumbrian Monks in Bede's *Chronica Maiora*', in *Western Perspectives on the Mediterranean: Cultural Transfer in Late Antiquity and the Early Middle Ages*, ed. Andreas Fischer and Ian Wood (London: Bloomsbury, 2014), 87–100 and 146–51; Paul Hilliard, 'Bede and the Changing Image of Rome and the Romans', in *Writing the Early Medieval West*, ed. Elina Screen and Charles West (Cambridge: Cambridge University Press, 2014), 181–205. Nicholas Brooks' 1999 Jarrow Lecture *Bede and the English* catalogues the references to English history in the ch. 66 Chronicle (32 n. 60).

computus. Bede combed the *Liber pontificalis* for items of general ecclesiastical interest, but building projects exercised a disproportionate fascination for him. Constantine's churches are listed in loving detail, while the Council of Nicaea is dispatched in a mere sentence (*s.a.* 4290). The building projects of Damasus (*s.a.* 4328), Innocent (*s.a.* 4362), Sixtus (*s.a.* 4403), and others are also carefully chronicled.³¹⁷ So are the milestones in the history of *computus*: the writings of Theophilus (*s.a.* 4338), Paschasius of Lilybaeum (*s.a.* 4403), Victorius (*s.a.* 4427), and Dionysius and Victor of Capua (*s.a.* 4518). Above all, Bede marks out the bounds of the Paschal controversy in the British Isles: the detection of the error of the Insular 84-year Paschal tables (*s.a.* 4591), and the conversion of Iona by Egbert (*s.a.* 4670) – the latter event, significantly, is also dated according to *annus Domini*.³¹⁸ In short, Bede stretched the conventions of world history to accommodate some his distinctive interests, such as the history of his own nation, and some subjects especially pertinent to *The Reckoning of Time*: *computus* itself, and architecture, whose permanence and order made it an allegory of *computus*.³¹⁹

Finally, the value of ch. 66 as a chronicle is demonstrated by the ways in which it was extended or otherwise enhanced within full-text versions of *The Reckoning of Time*. Leiden Scaliger 28 (to which we referred above) substitutes the 'Universal Chronicle of 741' for ch. 66; this work is based on Bede's but enlarged with material about the Frankish kingdoms, and the years are identified by both 'Hebrew' and Septuagint numbers.³²⁰ In sum, its role within *The Reckoning of Time* was affirmed, even when its content was modified and brought up to date.

317 Duchesne, in the preface of his edition of the *Liber Pontificalis*, argued that Ceolfrith's party returned to Wearmouth-Jarrow with a copy of the *Liber Pontificalis*: vol. 1, pp. ccxxii–ccxxiii. Cf. Story, 'Bede, Willibrord' 787.

318 Cf. *Historia Ecclesiastica* 5.22 (552–4). What Bede omitted from ch. 66 may also have been conditioned by his focus on *computus*. Alan Thacker argues that Aidan and Oswald are not mentioned in the chronicle because Bede was reluctant 'to give prominence to two saints who, however much esteemed, nevertheless celebrated Easter incorrectly, in a work designed to illustrate the proper reckoning of time and the triumph of its orthodox exponents' ('Bede and the Irish' 57).

319 Cf. Wallis, 'Bede's Eye' *passim*, and 'Images of Order in the Medieval Computus', in *ACTA XIV: Ideas of Order in the Middle Ages*, ed. Warren Ginsberg (Binghamton: State University of New York Press, 1990), 45–67.

320 Sören Kaschke, 'Enhancing Bede: the *Chronicon Universale* to 741', in *History and Identity III: Carolingian Approaches*, ed. Rutger Kramer, Helmut Reimitz, and Graeme Ward (Turnhout: Brepols, 2021), 201–29 and literature cited therein; Palmer, 'The Ends and Futures' 155 and n. 68.

CHAPTER 67

In *On Times* Bede did not discuss future time, or the end of time, or the notion of the Seventh and Eighth Ages; neither did his model, Isidore, in *Etymologiae* 5.³²¹ Yet he deemed it essential to do so in *The Reckoning of Time*. In one respect, this coda, and particularly chapter 67 on ‘the remainder of the Sixth Age’, is a natural extension of the chronicle of the Six Ages. These Six Ages articulate the *cursus* of time of this fleeting world: they are *sex aetates ... mundi labentis*. *Labens* in a temporal context means ‘passing away’, but in fact its primary meaning is spatial: gliding, sliding, slipping in a gentle and almost insensible manner. The flavour of the word is slightly sinister, as of the silent beginnings of an avalanche, or the first careless footstep into quicksand: hence the extended meanings ‘to sink into ruin’, ‘to fall into error’.³²² To Bede, the *saeculum* began with the Fall, and the ‘passage’ of time describes a decline, a decline which will be played out to the end of the Age. But it would be played out in a fashion which was all but insensible. There is no telling when the End has come ... until it has come.

The closing chapters of *The Reckoning of Time* are also a continuation of the argument against presumptuous predictions begun in ch. 66. At the outset of ch. 67 Bede strikes a pose of cool detachment: there may be those who object to his chronology, but, if so, they are under no obligation to read it, or they can use the same sources to construct one that pleases them better. Details of chronology are not matters of principle, and it is to matters of principle that Bede wishes to direct his reader’s attention. These are three. First, no matter what chronology one proposes, it is not licit to use it to speculate about the timing of the end of the Age, for that is known to God alone. Bede may well have regretted not following the example of Isidore’s *Chronicle* by ending his *On Times* chronicle with an admonition against calculating the remainder of the Age. If so, he made up for it in

321 Tristram, *Sex aetates mundi* 25. In comparing the six days of Creation to the World Ages, Isidore does, however, refer vaguely to a Seventh Age in *requie sanctorum, quae scilicet uesperum non habet, quia eam iam nullus terminus claudet* (‘the repose of the saints which has no evening, because no endpoint will bring it to a close’): *Expositio in Vetus Testamentum: Genesis* 2, ed. Michael M. Gorman and Martine Dulaey (Freiburg im Breisgau: Herder, 2009), 9.199–202. This ‘Seventh Age’ would appear to combine Bede’s and Augustine’s Seventh Age (the Sabbath rest of the saints) with their Eighth Age, which will have no end.

322 It is invoked in the Preface (see above, p. 129 and n. 2).

The Reckoning of Time by a lengthy demonstration of the impossibility and inadvisability of such computations. The problem was all the more acute in that the widespread availability of Paschal tables equipped with an era (Victorius' *annus Passionis* or Dionysius' *annus Domini*) made it very easy to track the progress of the current Age: all one had to know was the *annus mundi* of the initial year of the era, and one could find out readily where one stood with respect to the end. Indeed, 'countdowns' are closely associated with Victorian tables, and with the Frankish stronghold of Victorian *computus*, in the manuscript record.³²³

Secondly, Bede wishes to remind his reader that the belief that each of the six World Ages is 1000 years long has no biblical or patristic authority. This is closely bound up with his third point, namely his attack on millenarianism, the belief that there will be a post-Judgement seventh historical World Age of 1000 years, in which the saints will reign with Christ on Earth. Like the advocates of prediction, proponents of this view based their contention on an analogy between the World Ages and the week of Creation, and the prophecy of Revelation 20:2–6. Bede, on the other hand, endorses Augustine's concept that the Seventh Age is the 'sabbath rest' of the souls of the righteous in heaven. This sabbath runs in parallel to the World Ages. It began with the division of humanity into two 'cities' when Cain murdered his brother Abel, and will last until the end of the world, so it is evidently longer than 1000 years. Bede's resistance to millenarianism is measured by his enthusiasm for this Augustinian Seventh Age, which he not only unfolds in *The Reckoning of Time*³²⁴ but discusses in other theological and homiletic writings.³²⁵

The Augustinian posture which Bede adopts in this chapter as well as the next has been described as 'psychological imminence', as distinct from 'chronological imminence'.³²⁶ One cannot know when the end will come,

323 Warntjes, 'The Final Countdown' esp. 60–1; Landes, 'Lest the millennium' 168–9.

324 Cf. *The Reckoning of Time* chs 10 and 71.

325 E.g. *Hom.* 2.19 (Vigil of St John the Baptist) describes the Seventh Age as a time of tranquillity for the soul *in the next life* (320.86.92); *Hom.* 2.6 (Easter) describes Christ's repose in the tomb on Holy Saturday as representing the sabbath rest of the saints in heaven (225.17–226.26). Bede's reading of Revelation 20:2–6 in *Expositio Apocalypseos* is firmly Augustinian, being a chain of quotations from *De civitate Dei*, as mediated through Primasius.

326 Bernard McGinn identifies psychological imminence as the defining quality of early medieval apocalyptic: 'The End of the World and the Beginning of Christendom', in *Apocalypse Theory and the End of the World*, ed. Marcus Bull (Oxford: Wiley, 1995), 58–89;

and so one must be constantly alert. Psychological imminence is thus no less ‘apocalyptic’ than chronological imminence – indeed, it is perhaps more intense, precisely because the end can come at any time. This is the burden of ch. 68.

CHAPTER 68

Bede also draws upon Augustine in this chapter to parry any attempt to speculate about the time of the end. Augustine’s *Letter* 199, itself a miniature treatise on the Day of Judgement, is the patristic high ground on which Bede will take his stand. Our first consideration in speaking about the end of time should be the ethical implications of such discourse. If we say that the Lord will come soon, we risk, however sincere our motives, bringing discredit upon the faith if we are wrong. But if we remain agnostic, or acknowledge that His coming may be delayed, we can only be pleasantly surprised if we are wrong, and we put no one’s faith in peril. Of course, both Bede and Augustine assume that Christians are eagerly looking forward to Christ’s Second Coming. The following chapter will state a rather obvious corrective: the End of Time will be accompanied by terrors, and finally by Judgement.

CHAPTER 69

The crucial feature of psychological imminence is that, while the End can never be scheduled, it can nonetheless be foreseen. There are, indeed, only two certain signs that the End is coming, though even these do not tell us precisely when it will come. These are the appearance of Antichrist and the conversion of the Jews initiated by the preaching of Enoch and Elijah. The conversion of the Jews was a significant theme in the commentary on Revelation composed at the outset of Bede’s career, and resurfaces in other exegetical works.³²⁷ The subject of the Antichrist is more complex. Bede’s own commentary on Revelation took a strongly Augustinian approach to

James Palmer endorses and applies this approach in his *Apocalypse in the Early Middle Ages* 7–8.

³²⁷ For discussion and references see Wallis, *Bede: Commentary on Revelation*, Introduction, esp. 78–9. On the identification of the two witnesses as Elijah and Enoch see

this work, interpreting it not as a blueprint of time to come but as an allegory of the continuous troubles of the Church in this world. At the same time, it devoted considerable attention to Antichrist, even though Antichrist does not explicitly appear in Revelation.³²⁸

The 'biography' of Antichrist in ch. 69 is interested in Antichrist's character, but not in his career in the End Times. Bede brings him up because the prophet Daniel, the evangelist John, and their patristic interpreters seem to have provided a precise chronological framework for his reign. But, as Bede points out, these figures are highly ambivalent. Daniel says that Antichrist's reign will be 1290 days, and yet he also says that the faithful will have to wait forty-five days more. So even the appearance of Antichrist does not give us licence to speculate on the exact timing of the Last Judgement.

Considering that Bede ended his Chronicle in ch. 66 with a notice about the Saracen attacks on Constantinople and Sardinia, and their desecration of Augustine's tomb, it is noteworthy that he refrained from identifying their appearance with the advent of Antichrist. By the time he composed the *Ecclesiastical History* ten years later, he clearly regarded the Saracens as a *lues* ('pestilence') and linked their arrival with the ominous appearance of two comets. But he still held back on declaring that Antichrist had appeared.³²⁹ In this he stands apart from the Irish *Einseideln Computus*, which openly links the advent of the Saracens to a final conflict with the Roman Empire *in ultimo tempore, ut nunc est*.³³⁰ Leovenich points to the Canterbury of Theodore and Hadrian, where the Einsiedeln computist may have received part of this training, and whose biblical commentaries intrude sharply negative remarks about the Saracens.³³¹ He also addresses the possibility that the Latin translation of the *Revelationes* of ps-Methodius might have

Darby, *Bede and the End of Time* 111–13, 216, and Wallis, *Bede: Commentary on Revelation* 186 n. 539.

328 See *ibid.* 80–1. On Bede's Augustinian approach to Revelation see Gerald Bonner, *Saint Bede and the Tradition of Western Apocalyptic Commentary* (Jarrow Lecture, 1966), and Wallis' introduction to *Commentary on Revelation*.

329 On Bede's growing awareness and increasingly negative views of Islam see Kendall, 'Bede and Islam' and John Victor Tolan, "A wild man, whose hand will be against all": Saracens and Ishmaelites in Latin Ethnographic Traditions from Jerome to Bede', in *Visions of Community in the Post-Roman World: the West, Byzantium and the Islamic World, 300–1100*, ed. Walter Pohl, Clemens Gantner, and Richard Payne (Farnham: Ashgate, 2012), 513–30, esp. 521–2, 525–6, 527–9.

330 *Einsiedeln Computus* 6, ed. Leovenich 22.54–60.

331 *Einsiedeln Computus*, ed. Leovenich xxxvii–xlv.

been circulating in England in the early decades of the eighth century. This text, composed originally in Syriac around 690 as a response to the Muslim conquests, laid out a history of the world in seven millennia, book-ended by the wars of Gideon against the sons of Ishmael and the revived attacks of the Ishmaelites in the seventh millennium, when they would be overcome by a ruler of the Romans. This last emperor would lay down his crown, ushering in the End. There is evidence that the Latin translation of the *Revelationes* was known in the West, and notably in circles linked to Ireland, by about 718–719 and certainly by 727;³³² moreover, its transmission is strikingly associated with computistical literature. But, even if we take into account Bede's awareness of certain chronological errors connected to the school of Canterbury, he shows no awareness of ps-Methodius. Loevenich cautiously concludes that 'the stern rejection [of] any concrete prediction of the end of the world in Bede's texts ... appears to be directed against the milieu that shaped the mindset behind <the *Einsiedeln Computus*> eschatology'.³³³ That being said, Bede's mounting concern with the Saracens, when added to his determined argument against predicting the time when Antichrist will appear, is evidence that this 'mindset' was in the air.

CHAPTER 70

The first part of this chapter seems like a digression, but, in the light of Bede's commitment to integrating *computus* into astronomy and cosmology, it carries an important message. It aims to refute the idea that the 'new heavens' which will appear at the Last Judgement will entail the destruction of the present heavens, with their planets and stars. Drawing on Augustine, Bede argues that the 'heavens' to be destroyed at the Judgement are only those which were destroyed at the Flood, namely the lower heavens or atmosphere. The darkening of the heavenly bodies

332 There are three Latin recensions of the *Revelationes* or *Apocalypse* of ps.-Methodius. The oldest is *Die Apokalypse des Pseudo-Methodius: die ältesten griechischen und lateinischen Übersetzungen*, ed. W.J. Aerts and G.A.A. Kortekass, *Corpus Scriptorum Christianorum Orientalium* 569, *Subsidia* 97 (Louvain: Peeters, 1998). However, the other two were also in circulation by the ninth century: see Cinzia Grifoni and Clemens Gantner, 'The Third Recension of the *Revelationes* of Pseudo-Methodius – Introduction and Edition', in *Cultures of Eschatology*, ed. Veronika Wieser, Vincent Eltschinger, and Johann Heiss (Berlin: De Gruyter Oldenbourg, 2020), 194–253.

333 *Einsiedeln Computus*, ed. Loevenich liii.

foretold by Christ is nothing more than the occultation of their light by the overwhelming splendour of the Lord's advent; it does not mean that they will be annihilated. Even if the stars fell, their 'place', the upper heaven itself, would have to remain, or there would be no place for them to fall *from*. The 'new heavens' are 'renewed by fire and glorified by a certain power of resurrection', not annihilated. Bede evidently thought much of this argument, for it is substantially repeated in his commentary on 2 Peter 3:5–6 and 10,³³⁴ as well as in his book on the Tabernacle³³⁵ and his commentary on Luke.³³⁶ Though not formally developed in his early *Expositio Apocalypseos*, it is already implicitly present, for Bede quotes Augustine (via Primasius) to the effect that the new heavens and earth will be a transformation of the old world, not its destruction.³³⁷ Moreover, when he comes to comment on Revelation 21:23 ('And the city had no need of the Sun, neither of the Moon ...'), he allegorizes the verse rather than commenting on the fate of the physical Sun and Moon.³³⁸

Bede's concern with this point is intriguing, and could point to Irish influence. In his commentary on Genesis Bede explains that the Sun and Moon belong to 'our heaven', as distinct from the 'upper heaven' of God and his angels, created on the first day.³³⁹ 'Our heaven' is the firmament, which 'God called ... heaven' (Genesis 1:8), and in which the heavenly bodies are stationed.³⁴⁰ Thus the world of the elements, the Earth, and the

334 Ed. Hurst, CCSL 121 (1983), 277.35–48, 279.110–25.

335 *De tabernaculo* 2, ed. Hurst 72.1199–1207; trans. Holder 80–1.

336 Ed. Hurst 371.315–44; trans. Kendall and Wallis 579–80.

337 Ed. Gryson 517.55–519.66, trans. Wallis 259–60, quoting Primasius, *Commentarius in Apocalypsin*, ed. Adams 21.2–9, 11–10, who in turn draws on Augustine, *De civitate Dei* 20.16, ed. Dombart and Kalb 726.8–727.23.

338 Ed. Gryson, 561.396–8; trans. Wallis 278.

339 *Ipsum est enim caelum superius quod, ab omni huius mundi uolubilis statu secretum, diuinae gloria praesentiae manet semper quietum (nam de nostro caelo, in quo sunt posita luminaria huic saeculo necessaria, in sequentibus scriptura uel quomodo uel quando sit factum declarat): In Genesim* 1.1, ed. Jones 4.37–41; '[The heaven created on the first day] is the upper heaven which, having been kept distinct from every condition of this mutable world, remains forever undisturbed in the glory of the divine presence (concerning our heaven, in which are placed the lights necessary for this life, Scripture declares in the following verses both how and when it was made)', trans. Kendall 69 (slightly modified). Cf. *The Nature of Things* chs 5 and 7, ed. Fontaine 197–8, trans. Kendall and Wallis 76–7, and Commentary 139–40.

340 *In Genesim*, 1.1.6–8, ed. Jones 10.247–8.

lower atmosphere will be transmuted by fire; but the Sun, Moon, and stars will remain unscathed, even though they are inside the world of time.

Since the Sun and Moon are within the world of time, and essentially the reckoners of time, Bede's insistence on their survival must say something about the relationship of time to eternity. If the Sun and Moon were destroyed, the reckoning of time would be destroyed as well, for these are the Creator's signs of times and seasons. Indeed, the Irish *De mirabilibus sacrae scripturae* deduced that because time was not destroyed in the Deluge the waters of the Flood could not have reached the heavenly bodies.³⁴¹ If the Sun and Moon are preserved at the Last Judgement, then time will be transformed, not annihilated. The ninth- or tenth-century Irish poem *In Tenga Bithnua* ('The Ever-New Tongue') argues that Christ's saving work would extend to 'our heavens':

With <Christ> the whole world rose again; for the nature of all creation was in the body which Jesus had put on. For if the Lord had not suffered for the sake of the race of Adam, and if he had not risen again after death, the whole world would be destroyed together with the race of Adam at the coming of the Judgement, and no creature of sea or land would be redeemed, but the heavens would burn up as far as the third heaven: save for the three heavens of the lofty *riched* ['royal throne', i.e. upper heaven] alone, nothing would survive unburnt. There would be no earth, nor any race of the living or the dead in the world, but only hell as far as heaven, unless the Lord had come for their redemption: all things would perish thus, without renewal.³⁴²

The Ever-New Tongue post-dates Bede, but it is just as likely that Bede was drawing on Irish exegetical material shared by the poet than that the poet was influenced by Bede. This is significant because the Irish poem is a homily for the Easter Vigil. Bede's concern with the fate of the heavens and time, I believe, derives its meaning from the chapter which follows, the closing one of *The Reckoning of Time*, and its interpretive capstone. The meaning of Resurrection – Christ's at Easter, our own at the end of the Age – is not annihilation but transfiguration. Christ, who is the same yesterday and today, is also the same forever. So also the Creation, and even time, are caught up into eternity, not destroyed by it.³⁴³

341 *De mirabilibus* 1.8 (2160); cf. Smyth, *Understanding the Universe* 164–5.

342 *The Ever-New Tongue: the Text of the Book of Lismore*, trans. J. John Carey (Turnhout: Brepols, 2018), 114–15.

343 Cf. Bede's commentary on 2 Peter 3:11: *Praeterit enim figura huius mundi*, [1 Cor. 8:31] *non substantia, sicut et carnis nostrae non substantia perit sed figura immutabitur quando*

CHAPTER 71

Easter is the *figura* of both the Seventh and the Eighth Ages, the sabbath rest of the saints, and the new Age of the world to come.³⁴⁴ Bede reinforces this by engaging with a bit of word-play on *computus* jargon to describe this new age as ‘the endless *ogdoas* to come’.³⁴⁵ Here, once again, Bede reveals his deep indebtedness to the Irish cosmographers of the seventh century. The author of the *Liber de ordine creaturarum* envisages the new heaven and new Earth as an improved version of the old. They will share in the glorification of man at the resurrection, transformed and perfected, but not destroyed. The new Earth will have a spiritual nature, impervious to change; the Sun and Moon will shine at all times.³⁴⁶ In short, what is now experienced as time will then be experienced as eternity. The Eighth Age is still an age, but it is an age without end, an age which, unlike those of this *mundus labens*, will never decline and fall. Time will not cease to *exist*, but it will cease to *run out*, and the ‘fleeting and wave-tossed’ course of the ages will be redeemed in ‘eternal stability and stable eternity’.

quod ‘seminatur corpus animale surgit corpus spiritale’[I Cor. 15.44]: ed. Hurst 280.134–6 (‘For the shape of this world passes away not its substance, just as with our bodies too, the shape will be changed, [but] the substance [will] not perish when *what is sowed as a physical body rises as a spiritual body*’: trans. Hurst, *On the Seven Catholic Epistles* (Kalamazoo, MI: Cistercian Publications, 1985), 151.

344 On the patristic tradition of the analogy between Holy Week and the Six Ages see Siniscalco, ‘Le età del mondo’ 319–20; A. Quacquarelli, *L’ogdoade patristica e suoi riflessi nella liturgia et nei monumenti* (Bari: Adriatica, 1973); W. Rordorf, *Sabbat et dimanche dans l’Eglise ancienne* (Neuchâtel: Delachaux et Niestle, 1972).

345 On the *ogdoas* (the eight years that formed the first part of the nineteen-year Paschal table) see above, pp. 486–7. Bede’s figural usage was perhaps influenced by Jerome, who used the term *ogdoas* to denote an ‘eighth week’, i.e. the Age to Come, e.g. in *In Hezechielem* 13, ed. Glorie 44.1826: *septem dies numerabuntur ei uel perfectus numerus paenitudinis uel post consummationem mundi, quando ad ueram transierimus ogdoadem, ut introeat sancta sanctorum*.

346 *De ordine creaturarum* 5.4, ed. Díaz y Díaz 114 and 11.4–7 (170–2); Smyth, *Understanding the Universe* 292–3 and 307. Cf. *De ordine creaturarum* 5.5–7 (114–16), where the author invokes the prophecy of Isaiah 30:25–26 and 65:17 that in the new Age the Moon will outshine the Sun and the Sun be seven times brighter than it now is, to prove that the luminaries will not be destroyed, but restored to the brilliance they lost at Adam’s fall: cf. Smyth, *Understanding the Universe* 174. The cosmographers’ emphasis on transformation and glorification is in strong contrast to the images of doom and annihilation conveyed by other Irish depictions of the end-time, such as the *Altus Prosator*, or even by Bede’s own *De die iudicii*: see the critical edition of this poem in *Bede’s Latin Poetry*, ed. Lapidge 165–79 and discussion 34–70, as well as Darby, ‘Apocalypse and Reform in Bede’s *De die iudicii*’.

The striking epithet for the *cursus* of time – *uolubili ac fluctuago ... lapsu* – is mirrored in other works by Bede,³⁴⁷ and even in a piece of computistical poetry often ascribed to Bede, beginning *Me legat annales*:

Let anyone who might wish to know the months of the year, reckoning the times of the age and of transient life (*uitaeque caducae*), read me. Time drives on all things; all things are dragged along with time. The elements change places and times change. Day and night receive increments in turn. There are times of flowers, the harvest keeps to its time: thus the field is covered once again with thick grass. There are certain times for rejoicing and certain times for grieving; there are times for living, and sad times of dying. Time and the hour fly by. Life slips by moment by moment. Fleeting time (*uolatile tempus*) grants all things, takes them away, and reduces them (to nothing). Spring summer autumn winter: the year comes back annually [*lit.* ‘year comes back in year’].³⁴⁸

Such sentiments inevitably conjure up echoes of Old English sea poetry. Parker comments that, in *The Wanderer*,

every aspect of human society is *læne*, a word which implies ‘fleeting, transitory’, but literally means ‘on loan’: friends, wealth, family have been lent to us for a while, but can be taken away at any time. The only place to seek for stability, the poem concludes, is with God, eternal and unchanging. Its last lines offer the prospect of finding ‘comfort from the Father in heaven, where for us all permanence stands’.³⁴⁹

When we leave the fleeting and wave-tossed course of time for ‘stable eternity and eternal stability’, however, we pass from *The Wanderer* into the world of Augustine, the Father closest to Bede himself in his interest in time. When he composed the closing words of *The Reckoning of Time*, Bede may have been thinking of the opening words of *The City of God*: *Gloriosissimam ciuitatem Dei siue in hoc temporum cursu, cum inter impios peregrinatur ex fide uiuens, siue in illa stabilitate sedis aeternae, quam nunc expectat per patientem.. hoc opere... defendere... suscepi* (‘In this work I have undertaken to defend the most glorious City of God, whether in this period of time when, living by faith, it sojourns amongst the ungodly, or in that stability of the eternal home, which now we look forward to with patience.’)³⁵⁰

347 See p. 393 n. 1386.

348 *Bede's Latin Poetry*, ed. and trans. Lapidge 516–17.

349 Parker, *Winters in the World* 59.

350 1, Praefatio, ed. Dombart and Kalb 1.2–8; my trans.

Between wave-tossed time and eternal stability lies *computus*. There is no evidence that Bede knew Augustine's *Soliloquies*, but he would surely have embraced the image of the reckoning of time expressed there:

O God, by whose laws the poles revolve, the stars follow their courses, the Sun rules the day, and the Moon presides over the night; and all the world maintains, as far as this world of sense allows, a great constancy of things by means of the orders and recurrences of the seasons: through the days by the changing of light and darkness, through the months by the Moon's progressions and declines, through the years by the succession of spring, summer, autumn and winter, through the cycles by the completion of the Sun's course, through the great eras of time by the return of the stars to their starting points.

O God, ... by whose ever enduring laws the varying movement of moveable things is not suffered to be disturbed, and is always restored to a relative stability (*ad similitudinem stabilitatis*) by the controls of the encompassing ages ...³⁵¹

Computus, based on the 'enduring laws' of the Sun and the seasons, the Moon and the planets, anticipates the Eighth Age of eternal stability and stable eternity through a hierarchy of units of temporal measurement and an order based on interlocking rhythms and reiterations. Its ultimate product is the cycle of the Paschal table, which weaves the erratic courses of Sun and Moon into a perfectly paced ballet, whose figures never jar and which will be repeated without error until the end of the Age. The Paschal table embraces all time to come, and all time past. Within that system, the histories of all the peoples of the earth are synchronized and subordinated to the truth of Scripture and the Church. In the tables and formulae of the *computus* time 'moves' but 'is not suffered to be disturbed'; the stability it achieves is 'relative' and yet it is grounded in 'enduring laws'. *Computus*-time is, in short, a sacrament of eternity: not merely the shadow or symbol, but the pledge and foretaste of the everlasting Age to come.

351 *Deus cui serviunt quae serviunt omnia, cui obtemperat omnis bona anima. Cuius legibus rotantur poli, cursus suos sidera peragunt, sol exercet diem, luna temperat noctem omnisque mundus per dies vicissitudine lucis et noctis, per menses incrementis decrementisque lunaribus, per annos, veris, aestatis, autumnus et hiemis successionibus, per lustra perfectione cursus solaris, per magnos orbis recursu in ortos suos siderum magnam rerum constantiam, quantum sensibilis materia patitur, temporum ordinibus replicationibusque custodit. Deus, cuius legibus in aevo stantibus motus instabilis rerum mutabilium perturbatus esse non sinitur frenisque circumeuntium saeculorum semper ad similitudinem stabilitatis revocatur ...: Soliloquiorum libri duo 1.1.4, ed. W. Hörmann, CSEL 89 (1986), 7.20–8.12; trans. Thomas F. Gilligan, Fathers of the Church 5 (New York: Cima, 1948), 347–8 (slightly modified).*

APPENDIX 1. BEDE'S SOLAR CALENDAR

This appendix presents a skeletal Julian solar calendar designed to display the elements addressed by Bede in *The Reckoning of Time*. It does not claim to be a historical reconstruction of the calendar Bede knew or used. Such a reconstruction was proposed by Paul Meyvaert, 'Discovering the Calendar (*annalis libellus*) attached to Bede's own Copy of *De Temporum Ratione*'; however, it has been strenuously criticized, notably by Arno Borst, *Der Streit um den karolingischen Kalender* ch. 3; cf. Warntjes, 'Origin(s) of the Medieval Calendar Tradition' 136 n. 24. That being said, the layout and contents of the calendar presented here are broadly replicated in many hundreds of post-Bedan calendars from the ninth century onwards: see the helpful structural analysis laid out by Arno Borst, *Die karolingische Reichskalender* 1.350–62. I have, however, not included commonly found features such as the alphabetical (A–G) or numerical (I–VII) keys for weekdays, as Bede does not refer to these in his text.

The graphic format is that of the standard ancient and medieval Julian calendar. The days are arranged in a vertical column, with the two systems of key-letters mentioned by Bede to the left, and notes to the right. This right-hand zone contains a martyrology in liturgical calendars, but also many of the computistical elements included here, such as the dates of the solstices and equinoxes. My model is Jones' in *BOT* 567–76, except that I have omitted the martyrology and altered the dates for the entry of the Sun into each zodiac sign to agree with Bede's main source, *De causis quibus nomina acceperunt duodecim signa* (see ch. 16). Bede himself merely states that the Sun enters each zodiac sign 'in the middle' of the month (ch. 16). The month-names are taken from chs 11–15, the beginnings of the seasons from ch. 35, the lunar–zodiac letters from ch. 19, the *litterae punctatae* from ch. 23, and the dates of the embolisms from ch. 45.

JANUARY

The Hebrew month Tevet; the Egyptian month Tybi; the Greek month Eudymios; the English month Giuli.

a	a	[1]	Kalends
	b	[2]	4 Nones
b	c	[3]	3 Nones
	d	[4]	2 Nones
c	e	[5]	Nones
	f	[6]	8 Ides
d	g	[7]	7 Ides
	h	[8]	6 Ides
e	i	[9]	5 Ides
	k	[10]	4 Ides
f	l	[11]	3 Ides
	m	[12]	2 Ides
g	n	[13]	Ides
	o	[14]	19 Kalends of February
h	p	[15]	18 Kalends
	q	[16]	17 Kalends
i	r	[17]	16 Kalends
	s	[18]	15 Kalends
k	t	[19]	14 Kalends
	u	[20]	13 Kalends
l	a.	[21]	12 Kalends
	b.	[22]	11 Kalends
m	c.	[23]	10 Kalends
	d.	[24]	9 Kalends
n	e.	[25]	8 Kalends
	f.	[26]	7 Kalends
o	g.	[27]	6 Kalends
a	h.	[28]	5 Kalends
	i.	[29]	4 Kalends
b	k.	[30]	3 Kalends
	l.	[31]	2 Kalends

SUN IN AQUARIUS

FEBRUARY

The Hebrew month Shevat; the Egyptian month Mecheir; the Greek month Peritios; the English month Solmonath.

c	m.	[1]	Kalends	
	n.	[2]	3 Nones	
d	o.	[3]	2 Nones	
	p.	[4]	Nones	
e	q.	[5]	9 Ides	
	r.	[6]	8 Ides	SPRING BEGINS ACCORDING TO GREEKS AND ROMANS
f	s.	[7]	7 Ides	
	t.	[8]	6 Ides	
g	u.	[9]	5 Ides	
	.a	[10]	4 Ides	
h	.b	[11]	3 Ides	
	.c	[12]	2 Ides	
i	.d	[13]	Ides	
	.e	[14]	16 Kalends of March	
k	.f	[15]	15 Kalends	
	.g	[16]	14 Kalends	SUN IN PISCES
l	.h	[17]	13 Kalends	
	.i	[18]	12 Kalends	
m	.k	[19]	11 Kalends	
	.l	[20]	10 Kalends	
n	.m	[21]	9 Kalends	
	.n	[22]	8 Kalends	SPRING BEGINS ACCORDING TO ISIDORE
o	.o	[23]	7 Kalends	
a	.p	[24]	6 Kalends	LOCATION OF LEAP-YEAR DAY
	.q	[25]	5 Kalends	
b	.r	[26]	4 Kalends	
	.s	[27]	3 Kalends	
c	.t	[28]	2 Kalends	

Remember in leap year to compute the Moon of February as one of thirty days, so that the Moon of March will still be one of thirty days, as usual, lest the Easter reckoning waver [cf. ch. 41].

MARCH

The Hebrew month Adar; the Egyptian month Phamenoth; the Greek month Dystros; the English month Hrethmonath.

	a	[1]	Kalends	
d	b	[2]	6 Nones	
	c	[3]	5 Nones	
e	d	[4]	4 Nones	
	e	[5]	3 Nones	SEVENTH EMBOLISM
f	f	[6]	2 Nones	THIRD EMBOLISM
	g	[7]	Nones	
g	h	[8]	8 Ides	
	i	[9]	7 Ides	
h	k	[10]	6 Ides	
	l	[11]	5 Ides	
i	m	[12]	4 Ides	
	n	[13]	3 Ides	
k	o	[14]	2 Ides	
	p	[15]	Ides	
l	q	[16]	17 Kalends of April	
	r	[17]	16 Kalends	
m	s	[18]	15 Kalends	SUN IN ARIES. FIRST DAY OF CREATION (cf. ch. 6)
	t	[19]	14 Kalends	
n	u	[20]	13 Kalends	
	a.	[21]	12 Kalends	EQUINOX ACCORDING TO THE EGYPTIANS (chs 6, 30, 38)
o	b.	[22]	11 Kalends	LOCATION OF EPACTS (cf. chs 20, 41)
	c.	[23]	10 Kalends	
a	d.	[24]	9 Kalends	LOCATION OF CONCURRENTS (cf. ch. 53)
	e.	[25]	8 Kalends	EQUINOX ACCORDING TO THE ROMANS (cf. ch. 30)
b	f.	[26]	7 Kalends	
	g.	[27]	6 Kalends	
c	h.	[28]	5 Kalends	
	i.	[29]	4 Kalends	
d	k.	[30]	3 Kalends	
	l.	[31]	2 Kalends	

APRIL

The Hebrew month Nisan; the Egyptian month Pharmouthi; the Greek month Xanthicos; the English month Eosturmonath.

e	m.	[1]	Kalends
	n.	[2]	4 Nones
f	o.	[3]	3 Nones
	p.	[4]	2 Nones
g	q.	[5]	Nones
	r.	[6]	8 Ides
h	s.	[7]	7 Ides
	t.	[8]	6 Ides
i	u.	[9]	5 Ides
	.a	[10]	4 Ides
k	.b	[11]	3 Ides
	.c	[12]	2 Ides
l	.d	[13]	Ides
	.e	[14]	18 Kalends of May
m	.f	[15]	17 Kalends
	.g	[16]	16 Kalends
n	.h	[17]	15 Kalends
	.i	[18]	14 Kalends
o	.k	[19]	13 Kalends
a	.l	[20]	12 Kalends
	.m	[21]	11 Kalends
b	.n	[22]	10 Kalends
	.o	[23]	9 Kalends
c	.p	[24]	8 Kalends
	.q	[25]	7 Kalends
d	.r	[26]	6 Kalends
	.s	[27]	5 Kalends
e	.t	[28]	4 Kalends
	a	[29]	3 Kalends
f	b	[30]	2 Kalends

SUN IN TAURUS

MAY

The Hebrew month Iyyar; the Egyptian month Pachons; the Greek month Artemisios; the English month Thrimilchi.

	c	[1]	Kalends	
g	d	[2]	6 Nones	
	e	[3]	5 Nones	
h	f	[4]	4 Nones	
	g	[5]	3 Nones	
i	h	[6]	2 Nones	
	i	[7]	Nones	
k	k	[8]	8 Ides	
	l	[9]	7 Ides	SUMMER BEGINS ACCORDING TO THE GREEKS AND ROMANS
l	m	[10]	6 Ides	
	n	[11]	5 Ides	
m	o	[12]	4 Ides	
	p	[13]	3 Ides	
n	q	[14]	2 Ides	
	r	[15]	Ides	
o	s	[16]	17 Kalends of June	
a	t	[17]	16 Kalends	
	u	[18]	15 Kalends	SUN IN GEMINI
b	a.	[19]	14 Kalends	
	b.	[20]	13 Kalends	
c	c.	[21]	12 Kalends	
	d.	[22]	11 Kalends	
d	e.	[23]	10 Kalends	
	f.	[24]	9 Kalends	
e	g.	[25]	8 Kalends	SUMMER BEGINS ACCORDING TO ISIDORE
	h.	[26]	7 Kalends	
f	i.	[27]	6 Kalends	
	k.	[28]	5 Kalends	
g	l.	[29]	4 Kalends	
	m.	[30]	3 Kalends	
h	n.	[31]	2 Kalends	

JUNE

The Hebrew month Sivan; the Egyptian month Payni; the Greek month Daisios; the English month Litha.

	o.	[1]	Kalends
i	p.	[2]	4 Nones
	q.	[3]	3 Nones
k	r.	[4]	2 Nones
	s.	[5]	Nones
l	t.	[6]	8 Ides
	u.	[7]	7 Ides
m	.a	[8]	6 Ides
	.b	[9]	5 Ides
n	.c	[10]	4 Ides
	.d	[11]	3 Ides
o	.e	[12]	2 Ides
	.f	[13]	Ides
a	.g	[14]	18 Kalends of July
	.h	[15]	17 Kalends
b	.i	[16]	16 Kalends
	.k	[17]	15 Kalends
c	.l	[18]	14 Kalends
	.m	[19]	13 Kalends
d	.n	[20]	12 Kalends
	.o	[21]	11 Kalends
e	.p	[22]	10 Kalends
	.q	[23]	9 Kalends
f	.r	[24]	8 Kalends
	.s	[25]	7 Kalends
g	.t	[26]	6 Kalends
	a	[27]	5 Kalends
h	b	[28]	4 Kalends
	c	[29]	3 Kalends
i	d	[30]	2 Kalends

SUN IN CANCER

SOLSTICE ACCORDING TO
ANATOLIUS (ch. 35)
SOLSTICE ACCORDING TO
THE ROMANS (ch. 30)

JULY

The Hebrew month Tammuz; the Egyptian month Epieph; the Greek month Panemos; the English month Litha.

	e	[1]	Kalends	
k	f	[2]	6 Nones	
	g	[3]	5 Nones	
l	h	[4]	4 Nones	
	i	[5]	3 Nones	
m	k	[6]	2 Nones	
	l	[7]	Nones	
n	m	[8]	8 Ides	
	n	[9]	7 Ides	
o	o	[10]	6 Ides	
a	p	[11]	5 Ides	
	q	[12]	4 Ides	
b	r	[13]	3 Ides	
	s	[14]	2 Ides	
c	t	[15]	Ides	
	u	[16]	17 Kalends of August	
d	a.	[17]	16 Kalends	
	b.	[18]	15 Kalends	SUN IN LEO
e	c.	[19]	14 Kalends	
	d.	[20]	13 Kalends	
f	e.	[21]	12 Kalends	
	f.	[22]	11 Kalends	
g	g.	[23]	10 Kalends	
	h.	[24]	9 Kalends	
h	i.	[25]	8 Kalends	
	k.	[26]	7 Kalends	
i	l.	[27]	6 Kalends	
	m.	[28]	5 Kalends	
k	n.	[29]	4 Kalends	
	o.	[30]	3 Kalends	
l	p.	[31]	2 Kalends	

AUGUST

The Hebrew month Av; the Egyptian month Mesore; the Greek month Loios; the English month Weodmonath.

	q.	[1]	Kalends	
m	r.	[2]	4 Nones	SIXTH EMBOLISM
	s.	[3]	3 Nones	
n	t.	[4]	2 Nones	
	u.	[5]	Nones	
o	.a	[6]	8 Ides	
a	.b	[7]	7 Ides	AUTUMN BEGINS ACCORDING TO THE GREEKS AND ROMANS
	.c	[8]	6 Ides	
b	.d	[9]	5 Ides	
	.e	[10]	4 Ides	
c	.f	[11]	3 Ides	
	.g	[12]	2 Ides	
d	.h	[13]	Ides	
	.i	[14]	19 Kalends of September	
e	.k	[15]	18 Kalends	
	.l	[16]	17 Kalends	
f	.m	[17]	16 Kalends	
	.n	[18]	15 Kalends	SUN IN VIRGO
g	.o	[19]	14 Kalends	
	.p	[20]	13 Kalends	
h	.q	[21]	12 Kalends	
	.r	[22]	11 Kalends	
i	.s	[23]	10 Kalends	AUTUMN BEGINS ACCORDING TO ISIDORE
	.t	[24]	9 Kalends	
k	a	[25]	8 Kalends	
	b	[26]	7 Kalends	
l	c	[27]	6 Kalends	
	d	[28]	5 Kalends	
m	e	[29]	4 Kalends	
	f	[30]	3 Kalends	
n	g	[31]	2 Kalends	

SEPTEMBER

The Hebrew month Elul; the Egyptian month Thoth; the Greek month Gorpaios; the English month Halegmonath.

	h	[1]	Kalends	
o	i	[2]	4 Nones	SECOND EMBOLISM
	k	[3]	3 Nones	
a	l	[4]	2 Nones	
	m	[5]	Nones	
b	n	[6]	8 Ides	
	o	[7]	7 Ides	
c	p	[8]	6 Ides	
	q	[9]	5 Ides	
d	r	[10]	4 Ides	
	s	[11]	3 Ides	
e	t	[12]	2 Ides	
	u	[13]	Ides	
f	a.	[14]	18 Kalends of October	
	b.	[15]	17 Kalends	
g	c.	[16]	16 Kalends	
	d.	[17]	15 Kalends	SUN IN LIBRA
h	e.	[18]	14 Kalends	
	f.	[19]	13 Kalends	
i	g.	[20]	12 Kalends	
	h.	[21]	11 Kalends	
k	i.	[22]	10 Kalends	
	k.	[23]	9 Kalends	
l	l.	[24]	8 Kalends	EQUINOX ACCORDING TO THE ROMANS (ch. 30) AND ANATOLIUS (ch. 35). INDICTIONS BEGIN (ch. 48)
	m.	[25]	7 Kalends	
m	n.	[26]	6 Kalends	
	o.	[27]	5 Kalends	
n	p.	[28]	4 Kalends	
	q.	[29]	3 Kalends	
o	r.	[30]	2 Kalends	

OCTOBER

The Hebrew month Tishri; the Egyptian month Phaophi; the Greek month Hyperberetaios; the English month Winterfylleth.

a	s.	[1]	Kalends	
	t.	[2]	6 Nones	
b	u.	[3]	5 Nones	
	.a	[4]	4 Nones	
c	.b	[5]	3 Nones	
	.c	[6]	2 Nones	
d	.d	[7]	Nones	
	.e	[8]	8 Ides	
e	.f	[9]	7 Ides	
	.g	[10]	6 Ides	
f	.h	[11]	5 Ides	
	.i	[12]	4 Ides	
g	.k	[13]	3 Ides	
	.l	[14]	2 Ides	
h	.m	[15]	Ides	
	.n	[16]	17 Kalends of November	
i	.o	[17]	16 Kalends	
	.p	[18]	15 Kalends	SUN IN SCORPIO
k	.q	[19]	14 Kalends	
	.r	[20]	13 Kalends	
l	.s	[21]	12 Kalends	
	.t	[22]	11 Kalends	
m	a	[23]	10 Kalends	
	b	[24]	9 Kalends	
n	c	[25]	8 Kalends	
	d	[26]	7 Kalends	
o	e	[27]	6 Kalends	
a	f	[28]	5 Kalends	
	g	[29]	4 Kalends	
b	h	[30]	3 Kalends	
	i	[31]	2 Kalends	

NOVEMBER

The Hebrew month Marheshvan; the Egyptian month Hathyr; the Greek month Dios; the English month Blodmonath.

c	k	[1]	Kalends	
	l	[2]	4 Nones	FIFTH EMBOLISM
d	m	[3]	3 Nones	
	n	[4]	2 Nones	
e	o	[5]	Nones	
	p	[6]	8 Ides	
f	q	[7]	7 Ides	WINTER BEGINS ACCORDING TO THE GREEKS AND ROMANS
	r	[8]	6 Ides	
g	s	[9]	5 Ides	
	t	[10]	4 Ides	
h	u	[11]	3 Ides	
	a.	[12]	2 Ides	
i	b.	[13]	Ides	
	c.	[14]	18 Kalends of December	
k	d.	[15]	17 Kalends	
	e.	[16]	16 Kalends	
l	f.	[17]	15 Kalends	SUN IN SAGITTARIUS
	g.	[18]	14 Kalends	
m	h.	[19]	13 Kalends	
	i.	[20]	12 Kalends	
n	k.	[21]	11 Kalends	
	l.	[22]	10 Kalends	
o	m.	[23]	9 Kalends	
	n.	[24]	8 Kalends	WINTER BEGINS ACCORDING TO ISIDORE
a	o.	[25]	7 Kalends	
	p.	[26]	6 Kalends	
b	q.	[27]	5 Kalends	
	r.	[28]	4 Kalends	
c	s.	[29]	3 Kalends	
	t.	[30]	2 Kalends	

DECEMBER

The Hebrew month Kislev; the Egyptian month Choiac; the Greek month Apellaios; the English month Giuli.

d	u.	[1]	Kalends	
	.a	[2]	4 Nones	FIRST EMBOLISM
e	.b	[3]	3 Nones	
	.c	[4]	2 Nones	FOURTH EMBOLISM
f	.d	[5]	Nones	
	.e	[6]	8 Ides	
g	.f	[7]	7 Ides	
	.g	[8]	6 Ides	
h	.h	[9]	5 Ides	
	.i	[10]	4 Ides	
i	.k	[11]	3 Ides	
	.l	[12]	2 Ides	
k	.m	[13]	Ides	
	.n	[14]	19 Kalends of January	
l	.o	[15]	18 Kalends	
	.p	[16]	17 Kalends	
m	.q	[17]	16 Kalends	
	.r	[18]	15 Kalends	SUN IN CAPRICORN
n	.s	[19]	14 Kalends	
	.t	[20]	13 Kalends	
o	a	[21]	12 Kalends	
a	b	[22]	11 Kalends	
	c	[23]	10 Kalends	
b	d	[24]	9 Kalends	
	e	[25]	8 Kalends	SOLSTICE ACCORDING TO THE ROMANS (ch. 30) AND ANATOLIUS (ch. 35)
c	f	[26]	7 Kalends	
	g	[27]	6 Kalends	
d	h	[28]	5 Kalends	
	i	[29]	4 Kalends	
e	k	[30]	3 Kalends	
	l	[31]	2 Kalends	

APPENDIX 2. BEDE’S 532-YEAR DIONYSIAN PASCHAL TABLE

This table shows the 532-year cycle with AD years -1–531 and 532–1063, in the eight-column format discussed by Bede in *The Reckoning of Time* chs 46–62 and reproduced in Jones, *BOD* 551–562. Note, however, that the Indictions column applies only to the 532–1063 cycle. As Bede points out in *Reckoning of Time*, ch. 65, the fifteen-year indictional cycle is not cyclic across 532 years, but this does not matter, as it has no computistic significance. While some tables in manuscripts include an indicator for leap years (the letter B<issextilis>) I have not included these here, as they are not a universal feature, and Bede’s discussion of finding leap-year day (ch. 54) implies that one will *not* find this information in the Paschal table.

First cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
-1/532	10	nil	4	17	5 April	11 April	20	O
1/533	11	11	5	18	25 March	27 March	16	G
2/534	12	22	6	19	13 April	16 April	17	D
3/535	13	3	7	1	2 April	8 April	20	O
4/536	14	14	2	2	22 March	23 March	15	A
5/537	15	25	3	3	10 April	12 April	16	S
6/538	1	6	4	4	30 March	4 April	19	
7/539	2	17	5	5	18 April	24 April	20	
8/540	3	28	7	6	7 April	8 April	15	E
9/541	4	9	1	7	27 March	31 March	18	N
10/542	5	20	2	8	15 April	20 April	19	D
11/543	6	1	3	9	4 April	5 April	15	E
12/544	7	12	5	10	24 March	27 March	17	C
13/545	8	23	6	11	12 April	16 April	18	A
14/546	9	4	7	12	1 April	8 April	21	S
15/547	10	15	1	13	21 March	24 March	17	
16/548	11	26	3	14	9 April	12 April	17	
17/549	12	7	4	15	29 March	4 April	20	
18/550	13	18	5	16	17 April	24 April	21	

Second cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
19/551	14	nil	6	17	5 April	9 April	18	O
20/552	15	11	1	18	25 March	31 March	20	G
21/553	1	22	2	19	13 April	20 April	21	D
22/554	2	3	3	1	2 April	5 April	17	O
23/555	3	14	4	2	22 March	28 March	20	A
24/556	4	25	6	3	10 April	16 April	20	S
25/557	5	6	7	4	30 March	1 April	16	
26/558	6	17	1	5	18 April	21 April	17	
27/559	7	28	2	6	7 April	13 April	20	E
28/560	8	9	4	7	27 March	28 March	15	N
29/561	9	20	5	8	15 April	17 April	16	D
30/562	10	1	6	9	4 April	9 April	19	E
31/563	11	12	7	10	24 March	25 April	15	C
32/564	12	23	2	11	12 April	13 April	15	A
33/565	13	4	3	12	1 April	5 April	18	S
34/566	14	15	4	13	21 March	28 March	21	
35/567	15	26	5	14	9 April	10 April	15	
36/568	1	7	7	15	29 March	1 April	17	
37/569	2	18	1	16	17 April	21 April	18	

Third cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
38/570	3	nil	2	17	5 April	6 April	16	O
39/571	4	11	3	18	25 March	29 March	18	G
40/572	5	22	5	19	13 April	17 April	18	D
41/573	6	3	6	1	2 April	9 April	21	O
42/574	7	14	7	2	22 March	25 March	17	A
43/575	8	25	1	3	10 April	14 April	18	S
44/576	9	6	3	4	30 March	5 April	20	
45/577	10	17	4	5	18 April	25 April	21	
46/578	11	28	5	6	7 April	10 April	17	E
47/579	12	9	6	7	27 March	2 April	20	N
48/580	13	20	1	8	15 April	21 April	20	D
49/581	14	1	2	9	4 April	6 April	16	E
50/582	15	12	3	10	24 March	29 March	19	C
51/583	1	23	4	11	12 April	18 April	20	A
52/584	2	4	6	12	1 April	2 April	16	S
53/585	3	15	7	13	21 March	25 March	18	
54/586	4	26	1	14	9 April	14 April	19	
55/587	5	7	2	15	29 March	30 March	15	
56/588	6	18	4	16	17 April	18 April	15	

Fourth cycle

AD	In- diction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
57/589	7	nil	5	17	5 April	10 April	19	O
58/590	8	11	6	18	25 March	26 March	15	G
59/591	9	22	7	19	13 April	15 April	16	D
60/592	10	3	2	1	2 April	6 April	18	O
61/593	11	14	3	2	22 March	29 March	21	A
62/594	12	25	4	3	10 April	11 April	15	S
63/595	13	6	5	4	30 March	3 April	18	
64/596	14	17	7	5	18 April	22 April	18	
65/597	15	28	1	6	7 April	14 April	21	E
66/598	1	9	2	7	27 March	30 March	17	N
67/599	2	20	3	8	15 April	19 April	18	D
68/600	3	1	5	9	4 April	10 April	20	E
69/601	4	12	6	10	24 March	26 March	16	C
70/602	5	23	7	11	12 April	15 April	17	A
71/603	6	4	1	12	1 April	7 April	20	S
72/604	7	15	3	13	21 March	22 March	15	
73/605	8	26	4	14	9 April	11 April	16	
74/606	9	7	5	15	29 March	3 April	19	
75/607	10	18	6	16	17 April	23 April	20	

Fifth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
76/608	11	nil	1	17	5 April	7 April	16	O
77/609	12	11	2	18	25 March	30 March	19	G
78/610	13	22	3	19	13 April	19 April	20	D
79/611	14	3	4	1	2 April	4 April	16	O
80/612	15	14	6	2	22 March	26 March	18	A
81/613	1	25	7	3	10 April	15 April	19	S
82/614	2	6	1	4	30 March	31 March	15	
83/615	3	17	2	5	18 April	20 April	16	
84/616	4	28	4	6	7 April	11 April	18	E
85/617	5	9	5	7	27 March	3 April	21	N
86/618	6	20	6	8	15 April	16 April	15	D
87/619	7	1	7	9	4 April	8 April	18	E
88/620	8	12	2	10	24 March	30 March	20	C
89/621	9	23	3	11	12 April	19 April	21	A
90/622	10	4	4	12	1 April	4 April	17	S
91/623	11	15	5	13	21 March	27 March	20	
92/624	12	26	7	14	9 April	15 April	20	
93/625	13	7	1	15	29 March	31 March	16	
94/626	14	18	2	16	17 April	20 April	17	

Sixth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
95/627	15	nil	3	17	5 April	12 April	21	O
96/628	1	11	5	18	25 March	17 March	16	G
97/629	2	22	6	19	13 April	16 April	17	D
98/630	3	3	7	1	2 April	8 April	10	O
99/631	4	14	1	2	22 March	24 March	16	A
100/632	5	25	3	3	10 April	12 April	16	S
101/633	6	6	4	4	30 March	4 April	19	
102/634	7	17	5	5	18 April	24 April	20	
103/635	8	28	6	6	7 April	9 April	16	E
104/636	9	9	1	7	27 March	31 March	18	N
105/637	10	20	2	8	15 April	20 April	19	D
106/638	11	1	3	9	4 April	5 April	15	E
107/639	12	12	4	10	24 March	28 March	18	C
108/640	13	23	6	11	12 April	16 April	18	A
109/641	14	4	7	12	1 April	8 April	21	S
110/642	15	15	1	13	21 March	24 March	17	
111/643	1	26	2	14	9 April	13 April	19	
112/644	2	7	4	15	29 March	4 April	20	
113/645	3	18	5	16	17 April	24 April	21	

Seventh cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
114/646	4	nil	6	17	5 April	9 April	18	O
115/647	5	11	7	18	25 March	1 April	21	G
116/648	6	22	2	19	13 April	20 April	21	D
117/649	7	3	3	1	2 April	5 April	17	O
118/650	8	14	4	2	22 March	28 March	20	A
119/651	9	25	5	3	10 April	17 April	21	S
120/652	10	6	7	4	30 March	1 April	16	
121/653	11	17	1	5	18 April	21 April	17	
122/654	12	28	2	6	7 April	13 April	20	E
123/655	13	9	3	7	27 March	29 March	16	N
124/656	14	20	5	8	15 April	17 April	16	D
125/657	15	1	6	9	4 April	9 April	19	E
126/658	1	12	7	10	24 March	25 March	15	C
127/659	2	23	1	11	12 April	14 April	16	A
128/660	3	4	3	12	1 April	5 April	18	S
129/661	4	15	4	13	21 March	28 March	21	
130/662	5	26	5	14	9 April	10 April	15	
131/663	6	7	6	15	29 March	2 April	18	
132/664	7	18	1	16	17 April	21 April	18	

Eighth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
133/665	8	nil	2	17	5 April	6 April	15	O
134/666	9	11	3	18	25 March	19 March	18	G
135/667	10	22	4	19	13 April	18 April	19	D
136/668	11	3	6	1	2 April	9 April	21	O
137/669	12	14	7	2	22 March	25 March	17	A
138/670	13	25	1	3	10 April	14 April	18	S
139/671	14	6	2	4	30 March	6 April	21	
140/672	15	17	4	5	18 April	25 April	21	
141/673	1	28	5	6	7 April	10 April	17	E
142/674	2	9	6	7	27 March	2 April	20	N
143/675	3	20	7	8	15 April	22 April	21	D
144/676	4	1	2	9	4 April	6 April	16	E
145/677	5	12	3	10	24 March	29 March	19	C
146/678	6	23	4	11	12 April	18 April	20	A
147/679	7	4	5	12	1 April	3 April	16	S
148/680	8	15	7	13	21 March	25 March	18	
149/681	9	26	1	14	9 April	14 April	19	
150/682	10	7	2	15	29 March	30 March	15	
151/683	11	18	3	16	17 April	19 April	16	

Ninth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
152/684	12	nil	5	17	5 April	10 April	19	O
153/685	13	11	6	18	25 March	26 March	15	G
154/686	14	22	7	19	13 April	15 April	16	D
155/687	15	3	1	1	2 April	7 April	19	O
156/688	1	14	3	2	22 March	29 March	21	A
157/689	2	25	4	3	10 April	11 April	15	S
158/690	3	6	5	4	30 March	3 April	18	
159/691	4	17	6	5	18 April	23 April	19	
160/692	5	28	1	6	7 April	14 April	21	E
161/693	6	9	2	7	27 March	30 March	17	N
162/694	7	20	3	8	15 April	19 April	18	D
163/695	8	1	4	9	4 April	11 April	21	E
164/696	9	12	6	10	24 March	26 March	16	C
165/697	10	23	7	11	12 April	15 April	17	A
166/698	11	4	1	12	1 April	7 April	20	S
167/699	12	15	2	13	21 March	23 March	16	
168/700	13	26	4	14	9 April	11 April	16	
169/701	14	7	5	15	29 March	3 April	19	
170/702	15	18	6	16	17 April	23 April	20	

Tenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
171/703	1	nil	7	17	5 April	8 April	17	O
172/704	2	11	2	18	25 March	30 March	19	G
173/705	3	22	3	19	13 April	19 April	20	D
174/706	4	3	4	1	2 April	4 April	16	O
175/707	5	14	5	2	22 March	27 March	19	A
176/708	6	25	7	3	10 April	15 April	19	S
177/709	7	6	1	4	30 March	31 March	15	
178/710	8	17	2	5	18 April	20 April	16	
179/711	9	28	3	6	7 April	12 April	19	E
180/712	10	9	5	7	27 March	3 April	21	N
181/713	11	20	6	8	15 April	16 April	15	D
182/714	12	1	7	9	4 April	8 April	18	E
183/715	13	12	1	10	24 March	31 March	21	C
184/716	14	23	3	11	12 April	19 April	21	A
185/717	15	4	4	12	1 April	4 April	17	S
186/718	1	15	5	13	21 March	27 March	20	
187/719	2	26	6	14	9 April	16 April	21	
188/720	3	7	1	15	29 March	31 March	16	
189/721	4	18	2	16	17 April	20 April	17	

Eleventh cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
190/722	5	nil	3	17	5 April	12 April	21	O
191/723	6	11	4	18	25 March	28 March	17	G
192/724	7	22	6	19	13 April	16 April	17	D
193/725	8	3	7	1	2 April	8 April	20	O
194/726	9	14	1	2	22 March	24 March	16	A
195/727	10	25	2	3	10 April	13 April	17	S
196/728	11	6	4	4	30 March	4 April	19	
197/729	12	17	5	5	18 April	24 April	20	
198/730	13	28	6	6	7 April	9 April	16	E
199/731	14	9	7	7	27 March	1 April	19	N
200/732	15	20	2	8	15 April	20 April	19	D
201/733	1	1	3	9	4 April	5 April	15	E
202/734	2	12	4	10	24 March	28 March	18	C
203/735	3	23	5	11	12 April	17 April	19	A
204/736	4	4	7	12	1 April	8 April	21	S
205/737	5	15	1	13	21 March	24 March	17	
206/738	6	26	2	14	9 April	13 April	18	
207/738	7	7	3	15	29 March	5 April	21	
208/740	8	18	5	16	17 April	24 April	21	

Twelfth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
209/741	9	nil	6	17	5 April	9 April	18	O
210/742	10	11	7	18	25 March	1 April	21	G
211/743	11	22	1	19	13 April	14 April	15	D
212/744	12	3	3	1	2 April	5 April	17	O
213/745	13	14	4	2	22 March	28 March	20	A
214/746	14	25	5	3	10 April	17 April	21	S
215/747	15	6	6	4	30 March	2 April	17	
216/748	1	17	1	5	18 April	21 April	17	
217/749	2	28	2	6	7 April	13 April	20	E
218/750	3	9	3	7	27 March	29 March	16	N
219/751	4	20	4	8	15 April	18 April	17	D
220/752	5	1	6	9	4 April	9 April	19	E
221/753	6	12	7	10	24 March	25 March	15	C
222/754	7	23	1	11	12 April	14 April	16	A
223/755	8	4	2	12	1 April	6 April	19	S
224/756	9	15	4	13	21 March	28 March	21	
225/757	10	26	5	14	9 April	10 April	15	
226/758	11	7	6	15	29 March	2 April	18	
227/759	12	18	7	16	17 April	22 April	19	

Thirteenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
228/760	13	nil	2	17	5 April	6 April	15	O
229/761	14	11	3	18	25 March	29 March	18	G
230/762	15	22	4	19	13 April	18 April	19	D
231/763	1	3	5	1	2 April	3 April	15	O
232/764	2	14	7	2	22 March	25 March	17	A
233/765	3	25	1	3	10 April	14 April	18	S
234/766	4	6	2	4	30 March	6 April	21	
235/767	5	17	3	5	18 April	19 April	15	
236/768	6	28	5	6	7 April	10 April	17	E
237/769	7	9	6	7	27 March	2 April	20	N
238/770	8	20	7	8	15 April	22 April	21	D
239/771	9	1	1	9	4 April	7 April	17	E
240/772	10	12	3	10	24 March	29 March	19	C
241/773	11	23	4	11	12 April	18 April	20	A
242/774	12	4	5	12	1 April	3 April	16	S
243/775	13	15	6	13	21 March	26 March	19	
244/776	14	26	1	14	9 April	14 April	19	
245/777	15	7	2	15	29 March	30 March	15	
246/778	1	18	3	16	17 April	19 April	16	

Fourteenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
247/779	2	nil	4	17	5 April	11 April	20	O
248/780	3	11	6	18	25 March	26 March	15	G
249/781	4	22	7	19	13 April	15 April	16	D
250/782	5	3	1	1	2 April	7 April	19	O
251/783	6	14	2	2	22 March	23 March	15	A
252/784	7	25	4	3	10 April	11 April	15	S
253/785	8	6	5	4	30 March	3 April	18	
254/786	9	17	6	5	18 April	23 April	19	
255/787	10	28	7	6	7 April	8 April	15	E
256/788	11	9	2	7	27 March	30 March	17	N
257/789	12	20	3	8	15 April	19 April	18	D
258/790	13	1	4	9	4 April	11 April	21	E
259/791	14	12	5	10	24 March	27 March	17	C
260/792	15	23	7	11	12 April	15 April	17	A
261/793	1	4	1	12	1 April	7 April	20	S
262/794	2	15	2	13	21 March	23 March	16	
263/795	3	26	3	14	9 April	12 April	17	
264/796	4	7	5	15	29 March	3 April	19	
265/797	5	18	6	16	17 April	23 April	20	

Fifteenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
266/798	6	nil	7	17	5 April	8 April	17	O
267/799	7	11	1	18	25 March	31 March	20	G
268/800	8	22	3	19	13 April	19 April	20	D
269/801	9	3	4	1	2 April	4 April	16	O
270/802	10	14	5	2	22 March	27 March	19	A
271/803	11	25	6	3	10 April	16 April	20	S
272/804	12	6	1	4	30 March	31 March	15	
273/805	13	17	2	5	18 April	20 April	16	
274/806	14	28	3	6	7 April	12 April	19	E
275/807	15	9	4	7	27 March	28 March	15	N
276/808	1	20	6	8	15 April	16 April	15	D
277/809	2	1	7	9	4 April	8 April	18	E
278/810	3	12	1	10	24 March	31 March	21	C
279/811	4	23	2	11	12 April	13 April	15	A
280/812	5	4	4	12	1 April	4 April	17	S
281/813	6	15	5	13	21 March	27 March	20	
282/814	7	26	6	14	9 April	16 April	21	
283/815	8	7	7	15	29 March	1 April	17	
284/816	9	18	2	16	17 April	20 April	17	

Sixteenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
285/817	10	nil	3	17	5 April	12 April	21	O
286/818	11	11	4	18	25 March	28 March	17	G
287/819	12	22	5	19	13 April	17 April	18	D
288/820	13	3	7	1	2 April	8 April	20	O
289/821	14	14	1	2	22 March	24 March	16	A
290/822	15	25	2	3	10 April	13 April	17	S
291/823	1	6	3	4	30 March	5 April	20	
292/824	2	17	5	5	18 April	24 April	20	
293/825	3	28	6	6	7 April	9 April	16	E
294/826	4	9	7	7	27 March	1 April	19	N
295/827	5	20	1	8	15 April	21 April	20	D
296/827	6	1	3	9	4 April	5 April	15	E
297/829	7	12	4	10	24 March	28 March	18	C
298/830	8	23	5	11	12 April	17 April	19	A
299/831	9	4	6	12	1 April	2 April	15	S
300/832	10	15	1	13	21 March	24 March	17	
301/833	11	26	2	14	9 April	13 April	18	
302/834	12	7	3	15	29 March	5 April	21	
303/835	13	18	4	16	17 April	18 April	15	

Seventeenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
304/836	14	nil	6	17	5 April	9 April	18	O
305/837	15	11	7	18	25 March	1 April	21	G
306/838	1	22	1	19	13 April	14 April	15	D
307/839	2	3	2	1	2 April	6 April	18	O
308/840	3	14	4	2	22 March	28 March	20	A
309/841	4	25	5	3	10 April	17 April	21	S
310/842	5	6	6	4	30 March	2 April	17	
311/843	6	17	7	5	18 April	22 April	18	
312/844	7	28	2	6	7 April	13 April	20	E
313/845	8	9	3	7	27 March	29 March	16	N
314/846	9	20	4	8	15 April	18 April	17	D
315/847	10	1	5	9	4 April	10 April	20	E
316/848	11	12	7	10	24 March	25 March	15	C
317/849	12	23	1	11	12 April	14 April	16	A
318/850	13	4	2	12	1 April	6 April	19	S
319/851	14	15	3	13	21 March	22 March	15	
320/852	15	26	5	14	9 April	10 April	15	
321/853	1	7	6	15	29 March	2 April	18	
322/854	2	18	7	16	17 April	22 April	19	

Eighteenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
323/855	3	nil	1	17	5 April	7 April	16	O
324/856	4	11	3	18	25 March	29 March	18	G
325/857	5	22	4	19	13 April	18 April	19	D
326/858	6	3	5	1	2 April	3 April	15	O
327/859	7	14	6	2	22 March	26 March	18	A
328/860	8	25	1	3	10 April	14 April	18	S
329/861	9	6	2	4	30 March	6 April	21	
330/862	10	17	3	5	18 April	19 April	15	
331/863	11	28	4	6	7 April	11 April	18	E
332/864	12	9	6	7	27 March	2 April	20	N
333/865	13	20	7	8	15 April	22 April	21	D
334/866	14	1	1	9	4 April	7 April	17	E
335/867	15	12	2	10	24 March	30 March	20	C
336/868	1	23	4	11	12 April	18 April	20	A
337/869	2	4	5	12	1 April	3 April	16	S
338/870	3	15	6	13	21 March	26 March	19	
339/871	4	26	7	14	9 April	15 April	20	
340/873	5	7	2	15	29 March	30 March	15	
341/873	6	18	3	16	17 April	19 April	16	

Nineteenth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
342/874	7	nil	4	17	5 April	11 April	20	O
343/875	8	11	5	18	25 March	27 March	16	G
344/876	9	22	7	19	13 April	15 April	16	D
345/877	10	3	1	1	2 April	7 April	19	O
346/878	11	14	2	2	22 March	23 March	15	A
347/879	12	25	3	3	10 April	12 April	16	S
348/880	13	6	5	4	30 March	3 April	18	
349/881	14	17	6	5	18 April	23 April	19	
350/882	15	28	7	6	7 April	8 April	15	E
351/883	1	9	1	7	27 March	31 March	18	N
352/884	2	20	3	8	15 April	19 April	18	D
353/885	3	1	4	9	4 April	11 April	21	E
354/886	4	12	5	10	24 March	27 March	17	C
355/887	5	23	6	11	12 April	16 April	18	A
356/888	6	4	1	12	1 April	7 April	20	S
357/889	7	15	2	13	21 March	23 March	16	
358/890	8	26	3	14	9 April	12 April	17	
359/893	9	7	4	15	29 March	4 April	20	
360/892	10	18	6	16	17 April	23 April	20	

Twentieth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
361/893	11	nil	7	17	5 April	8 April	17	O
362/894	12	11	1	18	25 March	31 March	20	G
363/895	13	22	2	19	13 April	20 April	21	D
364/896	14	3	4	1	2 April	4 April	16	O
365/897	15	14	5	2	22 March	27 March	19	A
366/898	1	25	6	3	10 April	16 April	20	S
367/899	2	6	7	4	30 March	1 April	16	
368/900	3	17	2	5	18 April	20 April	16	
369/901	4	28	3	6	7 April	12 April	19	E
370/902	5	9	4	7	27 March	28 March	15	N
371/903	6	20	5	8	15 April	17 April	16	D
372/904	7	1	7	9	4 April	8 April	18	E
373/905	8	12	1	10	24 March	31 March	20	C
374/906	9	23	2	11	12 April	13 April	15	A
375/907	10	4	3	12	1 April	5 April	18	S
376/908	11	15	5	13	21 March	27 March	20	
377/909	12	26	6	14	9 April	16 April	21	
378/910	13	7	7	15	29 March	1 April	17	
379/911	14	18	1	16	17 April	21 April	18	

Twenty-first cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
380/912	15	nil	3	17	5 April	12 April	21	O
381/913	1	11	4	18	25 March	28 March	17	G
382/914	2	22	5	19	13 April	17 April	18	D
383/915	3	3	6	1	2 April	9 April	21	O
384/916	4	14	1	2	22 March	24 March	16	A
385/917	5	25	2	3	10 April	13 April	17	S
386/918	6	6	3	4	30 March	5 April	20	
387/919	7	17	4	5	18 April	25 April	21	
388/920	8	28	6	6	7 April	9 April	16	E
389/921	9	9	7	7	27 March	1 April	19	N
390/922	10	20	1	8	15 April	21 April	20	D
391/923	11	1	2	9	4 April	6 April	16	E
392/924	12	12	4	10	24 March	28 March	18	C
393/925	13	23	5	11	12 April	17 April	19	A
394/926	14	4	6	12	1 April	2 April	15	S
395/927	15	15	7	13	21 March	25 March	18	
396/928	1	26	2	14	9 April	13 April	18	
397/929	2	7	3	15	29 March	5 April	21	
398/930	3	18	4	16	17 April	18 April	15	

Twenty-second cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
399/931	4	nil	5	17	5 April	10 March	19	O
400/	5	11	7	18	25 March	1 April	21	G
401/	6	22	1	19	13 April	14 April	15	D
402/	7	3	2	1	2 April	6 April	18	O
403/	8	14	3	2	22 March	29 March	21	A
404/	9	25	5	3	10 April	17 April	21	S
405/	10	6	6	4	30 March	2 April	17	
406/	11	17	7	5	18 April	22 April	18	
407/	12	28	1	6	7 April	14 April	21	E
408/	13	9	3	7	27 March	29 March	16	N
409/	14	20	4	8	15 April	18 March	17	D
410/	15	1	5	9	4 April	10 April	20	E
411/	1	12	6	10	24 March	26 March	16	C
412/	2	23	1	11	12 April	14 April	16	A
413/	3	4	2	12	1 April	6 April	19	S
414/	4	15	3	13	21 March	22 March	15	
415/	5	26	4	14	9 April	11 April	16	
416/	6	7	6	15	29 March	2 April	18	
417/949	7	18	7	16	17 April	22 April	19	

Twenty-third cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
418/950	8	nil	1	17	5 April	7 April	16	O
419/951	9	11	2	18	25 March	30 March	19	G
420/952	10	22	4	19	13 April	18 April	19	D
421/953	11	3	5	1	2 April	3 April	15	O
422/954	12	14	6	2	22 March	26 March	18	A
423/955	13	25	7	3	10 April	15 April	19	S
424/956	14	6	2	4	30 March	6 April	21	
425/957	15	17	3	5	18 April	19 April	15	
427/958	1	28	4	6	7 April	11 April	18	E
428/959	2	9	5	7	27 March	3 April	21	N
429/960	3	20	7	8	15 April	22 April	21	D
430/961	4	1	1	9	4 April	7 April	17	E
431/962	5	12	2	10	24 March	30 March	20	C
432/963	6	23	3	11	12 April	19 April	21	A
433/964	7	4	5	12	1 April	3 April	16	S
434/965	8	15	6	13	21 March	26 March	19	
435/966	9	26	7	14	9 April	15 April	20	
436/967	10	7	1	15	29 March	31 March	16	
436/968	11	18	3	16	17 April	19 April	16	

Twenty-fourth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
437/969	12	nil	4	17	5 April	11 April	20	O
438/970	13	11	5	18	25 March	27 March	16	G
439/971	14	22	6	19	13 April	16 April	17	D
440/972	15	3	1	1	2 April	7 April	19	O
441/973	1	14	2	2	22 March	23 March	15	A
442/974	2	25	3	3	10 April	12 April	16	S
443/975	3	6	4	4	30 March	4 April	19	
444/976	4	17	6	5	18 April	23 April	19	
445/977	5	28	7	6	7 April	8 April	15	E
446/978	6	9	1	7	27 March	31 March	18	N
447/979	7	20	2	8	15 April	20 April	19	D
448/980	8	1	4	9	4 April	11 April	21	E
449/981	9	12	5	10	24 March	27 March	17	C
450/982	10	23	6	11	12 April	16 April	18	A
451/983	11	4	7	12	1 April	8 April	21	S
452/984	12	15	2	13	21 March	23 March	16	
453/985	13	26	3	14	9 April	12 April	17	
454/986	14	7	4	15	29 March	4 April	20	
455/987	15	18	5	16	17 April	24 April	21	

Twenty-fifth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
456/988	1	nil	7	17	5 April	8 April	17	O
457/989	2	11	1	18	25 March	31 March	10	G
458/990	3	22	2	19	13 April	20 April	21	D
459/991	4	3	3	1	2 April	5 April	17	O
460/992	5	14	5	2	22 March	27 March	19	A
461/993	6	25	6	3	10 April	16 April	20	S
462/994	7	6	7	4	30 March	2 April	16	
463/995	8	17	1	5	18 April	21 April	17	
464/996	9	28	3	6	7 April	12 April	19	E
465/997	10	9	4	7	27 March	28 March	15	N
466/998	11	20	5	8	15 April	17 April	16	D
467/999	12	1	6	9	4 April	9 April	19	E
468/1000	13	12	1	10	24 March	31 March	21	C
469/1001	14	23	2	11	12 April	13 April	15	A
470/1002	15	4	3	12	1 April	5 April	18	S
471/1003	1	15	4	13	21 March	28 March	21	
472/1004	2	26	6	14	9 April	16 April	21	
473/1005	3	7	7	15	29 March	1 April	17	
474/1006	4	18	1	16	17 April	21 April	18	

Twenty-sixth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
475/1007	5	nil	2	17	5 April	6 April	15	O
476/1008	6	11	4	18	25 March	28 March	17	G
477/1009	7	22	5	19	13 April	17 April	19	D
478/1010	8	3	6	1	2 April	9 April	21	O
479/1011	9	14	7	2	22 March	25 March	17	A
480/1012	10	25	2	3	10 April	13 April	17	S
481/1013	11	6	3	4	30 March	5 April	20	
482/1014	12	17	4	5	18 April	25 April	21	
483/1015	13	28	5	6	7 April	10 April	17	E
484/1016	14	9	7	7	27 March	1 April	19	N
485/1017	15	20	1	8	15 April	21 April	20	D
486/1018	1	1	2	9	4 April	6 April	16	E
487/1019	2	12	3	10	24 March	29 March	19	C
488/1020	3	23	5	11	12 April	17 April	19	A
489/1021	4	4	6	12	1 April	2 April	15	S
490/1022	5	15	7	13	21 March	25 March	18	
491/1023	6	26	1	14	9 April	14 April	19	
492/1024	7	7	3	15	29 March	5 April	21	
493/1025	8	18	4	16	17 April	18 April	15	

Twenty-seventh cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
494/1026	9	nil	5	17	5 April	10 April	19	O
495/1027	10	11	6	18	25 March	26 March	15	G
496/1028	11	22	1	19	13 April	14 April	15	D
497/1029	12	3	2	1	2 April	6 April	18	O
498/1030	13	14	3	2	22 March	29 March	21	A
499/1031	14	25	4	3	10 April	11 April	15	S
500/1032	15	6	6	4	30 March	2 April	17	
501/1033	1	17	7	5	18 April	22 April	18	
502/1034	2	28	1	6	7 April	14 April	21	E
503/1035	3	9	2	7	27 March	30 March	17	N
504/1036	4	20	4	8	15 April	18 April	17	D
505/1037	5	1	5	9	4 April	10 April	20	E
506/1038	6	12	6	10	24 March	26 March	16	C
507/1039	7	23	7	11	12 April	15 April	17	A
508/1040	8	4	2	12	1 April	6 April	19	S
509/1041	9	15	3	13	21 March	22 March	15	
510/1042	10	26	4	14	9 April	11 April	16	
511/1043	11	7	5	15	29 March	3 April	19	
512/1044	12	18	7	16	17 April	22 April	19	

Twenty-eighth cycle

AD	Ind- iction	Lunar epact	Con- current	Lunar cycle	14th Moon	Easter	Moon on Easter Day	
513/1045	13	nil	1	17	5 April	7 April	16	O
514/1046	14	11	2	18	25 March	30 March	19	G
515/1047	15	22	3	19	13 April	19 April	20	D
516/1048	1	3	5	1	2 April	3 April	15	O
517/1049	2	14	6	2	22 March	26 March	18	A
518/1050	3	25	7	3	10 April	15 April	19	S
519/1051	4	6	1	4	30 March	31 March	15	
520/1052	5	17	3	5	18 April	19 April	15	
521/1053	6	28	4	6	7 April	11 April	18	E
522/1054	7	9	5	7	27 March	3 April	21	N
523/1055	8	20	6	8	15 April	16 April	15	D
524/1056	9	1	1	9	4 April	7 April	17	E
525/1057	10	12	2	10	24 March	30 March	20	C
526/1058	11	23	3	11	12 April	19 April	21	A
527/1059	12	4	4	12	1 April	4 April	17	S
528/1060	13	15	6	13	21 March	26 March	19	
529/1061	14	26	7	14	9 April	15 April	20	
530/1062	15	7	1	15	29 March	31 March	16	
531/1063	1	18	2	16	17 April	20 April	17	

APPENDIX 3A. *LETTER TO PLEGWINE*

The circumstances surrounding Bede's letter to Plegwine are discussed in the Introduction, pp. 1–2. Nothing is known of Plegwine except what can be inferred from Bede's *Letter*, namely that he was a cleric in the entourage of Wilfrid and sympathetic to Bede.

/617/ To his dearest brother Plegwine, worthy of honour *in the bowels of Christ*,¹ Bede sends greetings in the Lord.²

1. Two days ago, beloved brother, a messenger from your Sanctity came to me, bearing gladsome words of peaceful salutation from you. But soon thereafter he threw these into disorder by adding something very unfortunate, namely that you had heard it babbled out by lewd rustics in their cups that I was a heretic. I confess I was aghast; blanching, I asked of what heresy I was accused. He replied that it was because I had denied that our Lord and Saviour had come in the flesh in the Sixth Age of the world. So I began to enquire how this had been expressed – whether because the Lord had not come in the flesh when it was already the Sixth Age, or because it was not yet the Sixth Age when the Lord came, or that the Seventh Age had indeed already come, although patently the Sixth Age could not have begun save with his Incarnation.³ I discovered that whether accused of one thing or the other, I shared on both points the faith and consensus of the Church.

2. For if I had denied that Christ had come, how could I be a priest in Christ's Church? Or how could it follow that I, believing the evangelical and apostolic words, could fail to believe that He was incarnated in the Sixth Age, when the evangelist Matthew in his book of the genealogy of Jesus Christ discerns the four final Ages by very particular distinctions of time through fourteen generations?⁴ The Apostle Peter, indeed, distinguishes the first two <Ages>⁵ by such an arrangement, asserting that the Earth together with the heavens were destroyed by the Flood and replaced by others,⁶ so that we could call these not so much two Ages of the world as two worlds, were not the Valentinian heresy to be feared.⁷

1 Philippians 1:8.

2 On the numerous echoes of Augustine's language and vocabulary in the *Letter to Plegwine*, including this salutation see Darby, 'Heresy and Authority' 154–61.

3 The first option represents the Eusebius–Jerome chronology, where Christ's birth is assigned to AM 5199, almost 200 years after the beginning of the sixth millennium. The second is Bede's revised Vulgate dating of AM 3952, which is in the fourth millennium. The third option, that Christ's incarnation occurred in the Seventh Age, refers to the chronology of John Malalas, which dated the Crucifixion to AM 6000: see Commentary, pp. 522–3.

4 Matthew 1:1–18.

5 I.e. the first two ages of the world, from Adam to Noah, and from Noah to Abraham. Matthew's genealogy of Christ began with Abraham.

6 2 Peter 3:5–12.

7 Both Prosper 634 (ed. Mommsen, 425) and Rufinus' trans. of Eusebius, *Historia*

3. So when I perceived that I was innocent of denying this very thing, I began very carefully to consider how this calumny could have been launched against me. At length I called to mind that I once showed to one of your number /618/ my short work *On Times* which I wrote five years ago.⁸ In this work, the sequence of the years was given according to the Hebrew Truth;⁹ this is far shorter than the Septuagint, so that, up to the Advent of the Saviour in the flesh, 5000 years were not completed. And I believe that I advised, in consideration of fraternal charity and truth itself, that credence be given to Holy Scripture as it is translated by our Christian interpreter, rather than to Jewish translators, or the ignorance of chronographers, pointing out how Eusebius in his designation of times followed neither Hebrew Truth nor the version of the Seventy in every <instance>.¹⁰ I will undertake to do this very thing here in writing. To be sure, he, whoever he was to whom I intimated these things, twisted the office of brotherly love into the loathing of envy, and the high Judge transformed the light of patent truth into the darkness of blind error, as he deserved.

4. But lest you think, beloved, that now that my ‘heresy’ has been discovered, I prefer to make my escape under the protection of denial rather than receive the grace of truth, listen to what I wrote concerning the Ages in that little book I mentioned. For after I touched upon moments and hours, day and night, weeks and months, the year and what pertains to the year, the nineteen-year cycle and its distinctive points (as far as I believed it sufficed for me and my <readers>), it happened that something was also briefly set down concerning the Ages. I began the sixteenth chapter as follows: I said, *The times of the world are divided into Six Ages. The First Age from Adam to Noah contained ten generations and 1656 years; this all perished in the Flood, just as infancy is wont to be drowned in oblivion. The Second, from Noah to Abraham, is likewise compounded of ten generations, but 292 years. In it language – that is, the Hebrew language – was discovered,*

Ecclesiastica 4.14 mention the Valentinian heresy, but do not provide details about its content. Bede did not, it would appear, have access to either Irenaeus, *Adversus haereses* or Tertullian’s *Adversus Valentinianos* (Lapidge, *Anglo-Saxon Library*).

8 *On Times* was composed in 703: see Kendall and Wallis’s introduction to their translation, 2–3. If Bede was counting inclusively, the letter to Plegwine was composed in 707; if not, in 708.

9 That is, Jerome’s Vulgate translation of the Old Testament, made from the Hebrew version.

10 No such ‘advice’ was included in *On Times*.

for in childhood a person learns to speak after infancy, which derives its name from the fact that he cannot 'fari', that is, speak. The Third <Age>, from Abraham to David, contains fourteen generations and 942 years, and because a human being can begin to generate at adolescence, Matthew begins the generations <of Christ> from Abraham, who was also made the father of nations. /619/ The Fourth <Age> from David to the Babylonian exile likewise extends in fourteen generations, according to Matthew, and 473 years. Then the time of kings began, for the dignity of a man in the prime of life is appropriate for ruling. The Fifth Age, up to our Lord's advent in the flesh, extends for fourteen generations and 589 years, and in it the Hebrew people, as if exhausted by the burdens of old age, were battered by ever-increasing evils. The Sixth Age, which is unfolding now, has no fixed sequence of generations or times, but, like extreme dotage itself, will end in the death of the whole world age.¹¹

5. Considering these matters in a prefatory note on the Ages in the aforementioned short work, I immediately added thereto another chapter in which the course and order of the whole World Age was to be laid open, beginning as follows: *So the First Age comprises 1656 years according to the Hebrews, and according to the Seventy Translators 2242 <years>. When he was 130 years old, Adam begat Seth, who was born in place of Abel. When he was 105, Seth begat Enosh, and so on, down to the Flood.*¹² Then I added: *The Second Age comprises 292 years according to the Hebrews, and according to the Seventy Translators 942, or if one adds in Cainan, 1072 <years>. In the second year after the Flood Shem begat Arfaxat, from whom the Chaldeans <are descended>. When he was thirty-five Arfaxat begat Sela.*¹³ Here the Seventy Translators, whom Luke follows,¹⁴ insert Cainan, who had begotten Sela when he was thirty years old. Again, concerning the Third Age, I say, *The Third Age comprises 942 years.*¹⁵ Again, when it came to the Fourth <Age>, I say, *The Fourth Age comprises 473 years*

11 *On Times* 16, ed. Jones 600–1; trans Kendall and Wallis 117–18. This passage is reproduced in the 'first Introduction' to ch. 66 of *Reckoning of Time* (pp. 293–4); for Bede's sources, see p. 294 n. 615.

12 *On Times* 17, ed. Jones 601.2–5; trans. Kendall and Wallis 118.

13 *On Times* 18, ed. Jones 602.2–5; trans. Kendall and Wallis 119.

14 Luke 3:34–6. This implicit criticism of Luke apparently added to Bede's troubles at the court of Bishop Wilfrid and played a significant role in spurring Bede to compose a commentary on Luke: see Kendall and Wallis's introduction to *Bede: Commentary on the Gospel of Luke* 1–10.

15 *On Times* 19, ed. Jones 603.1, trans. Kendall and Wallis 120.

according to the Hebrews; the Seventy Translators add on twelve.¹⁶ *The Fifth Age*, I say, comprises 589 years.¹⁷ When therefore in the course of the work I arrived at the Nativity of our Lord and Saviour, I wrote thus: *Octavian reigned for fifty-six years. In his forty-second year, our Lord was born in the forty-second year <of his reign>, when 3952 (or according to others, 5199) years had passed since Adam.*¹⁸

6. These are the things which, according to the faith of Holy Scripture, I was solicitous to summarize for myself, and for those of my circle who asked me, in a concise and simple manner, as I believe and think, offering not the slightest contradiction to such an erudite and praiseworthy chronographer [i.e. Eusebius], /620/ at least in those things in which he himself did not contradict Holy Scripture. Dreading the rod of Origen's *Hexapla*, he removed the generation of Cainan. Also he called into doubt (*fidem derogavit*) both the Gospel of Luke and the Seventy Translators, and erased 130 years from their translation.¹⁹ He corrected the generations according to the Hebrew books, but he did not take care to emend in a similar fashion the number of years according to <their reckoning>, and so he removed 1032 years in the sum total of his computation of these years. Thus observing neither road, he proceeded by <the way> he wished.

7. In the case of the First and Second Age, there is a discrepancy between the codices transmitted to us (that is, from the Hebrew source) and those of the Greeks. As Jerome the translator of sacred history relates in his *Hebrew Questions*, *Before the birth of the aforementioned son, we find that the age of his father is 100 years less in the Hebrew version; but after <the son> is born, we find that he lives 100 years less in the Greek than in the Hebrew <version>, and thus the grand total <of years> agrees in both.*¹⁷ *From this corruption of the Greek manuscripts arises that notorious question about Methuselah, who is reckoned to have lived fourteen years after the Flood, although it is certain, according to the Hebrew manuscripts, that he died in the same year as the Flood.*²⁰

8. *Should any say that the Hebrew books were falsified later on by the Jews*

16 *On Times* 20, ed. Jones 604.1–2, trans. Kendall and Wallis 122.

17 *On Times* 21, ed. Jones 606.2, trans. Kendall and Wallis 124.

18 *On Times* 22, ed. Jones 607.2–4, trans. Kendall and Wallis 126.

19 Cf. *Reckoning of Time* 66, s.a. 1693.

20 This section of the quotation is not from Jerome, but is slightly adapted from Augustine, *De civitate Dei* 15.10, ed. Dombart and Kalb 466.6–10. The father is Adam, the son is Seth.

and that they, when they begrudge authority to us,²¹ deprive themselves of the truth, let them listen to Origen, who in the seventh book of his commentary on Isaiah, solves this trivial problem, <saying> that our Lord and the Apostles, who accuse the scribes and Pharisees of other crimes would never have refused to speak about this crime, which is a very grave one.²² Let him listen to Josephus the historian of the Jews who in the first book ἀρχαιότητος [i.e. *Antiquities*] against the grammarian Apion²³ openly and lucidly demonstrates that the lesser number of years is correct, and that Holy Scripture was in no way /621/ falsified by the Jews. He says, *Nor are there among us innumerable books which disagree with one another, but there are twenty-two books which contain the entire sequence of time and which are justly believed to be divinely inspired, of which five are by Moses containing the laws of life and tracing the lineage of human succession down to the death of Moses himself, encompassing slightly less than 3000 years.*²⁴ And a little later: *The great respect with which we treat our Scriptures is evident from this fact. For although so many ages have intervened, no one has ever dared to add or delete or change anything. But for all the people of our nation, this faith is implanted and, as it were, inborn: to believe these <Scriptures> to have been inspired by God, and to remain steadfastly attached to them, and should the occasion demand, willingly to die for them.*²⁵

9. Let him listen to the blessed Jerome who says that the Greek, and not the Hebrew manuscripts are false. For when he was compelled to translate the Book of Chronicles, he for this very reason wrote the following preface to the book: *If the version of the Seventy Translators had remained pure and as it had been translated by them into Greek, O Chromatus, most holy and learned of bishops, it would not have been necessary for you to impel me to translate the Hebrew volumes into Latin for you. For it was just that <the translation> which once had captured the ears of men and strengthened the faith of the new-born Church should also be confirmed by our silence.*²⁴ *But now that many proofs have appeared from various corners of the world that the genuine and ancient translation is corrupted and violated, you consider our choice <to be> either to judge which of the*

21 *Ibid.* 15.11; cf. Jerome, *Hebraicae quaestiones in Geneseos* 5.25–7 (8.18–9.17).

22 ‘when they begrudge authority to us’: cf. Augustine, *De civitate Dei* 15.11 (468.33–5).

23 *Against Apion* is a separate treatise, and not the first book of the *Antiquities*.

24 Josephus, *Contra Apionem* 1.38–9 (11.7–13).

25 *Ibid.* 1.42 (11.20–12.4).

many <versions> is true, or to hammer out a new work in place of the old work ...²⁶ and so on, in the same vein.

10. The sainted Bishop Augustine agrees with this viewpoint. Since he did not wish to ascribe the cause of this discrepancy either to the malice of the Jews or to the error or jealousy of the *Seventy Translators, who were Jews themselves*, lest he indiscriminately accuse of falsehood those men whom the spirit of God had filled in their seventy cells, he therefore says: *So he is more worthy of credence /622/ who said that when these <Scriptures> first began to be transcribed from the library of Ptolemy, then some <error> of this sort could have happened in one codex, and from that original transcription could have been disseminated at large, where a scribal error could have happened. This could plausibly be the case in the question of <the length of> Methuselah's life. And later on: For even nowadays, whenever numbers contribute nothing to ease of comprehension, or useful knowledge, they are carelessly written down and carelessly corrected. For who would consider it worth learning how many thousand men were in each of the tribes of Israel, when it is not thought to be of any benefit. And a little later on: But however this is interpreted, I should certainly in no way doubt that when some divergence is found in both codices [i.e. Septuagint and Hebrew], and when it is impossible for both to be true to the historical facts, greater faith should be placed in <the version in> the language from which the translation was made into another language by interpreters.*²⁷

11. Read Book 15 of *The City of God*: *We ought not to listen to those who think that in <Old Testament> times, years were computed in a different way, that is, who believe that they were so short that one of our years equals ten of theirs, or in other words, that they comprised thirty-six days. They use the argument that it is found in many historians that the Acarnianians had a year of six months, the Arcadians of three, and the Egyptians of four months, and that these people sometimes closed their year with the end of the lunation.*²⁸ Scripture itself directly refutes any such meaning. Where the Hebrew <version> reads: *And Adam lived 130 years and begot*

26 Jerome, *In libros Paralipomenon praefatio* 1, ed. Donatien De Bruyn, *Prefaces to the Latin Bible* (Turnhout: Brepols, 2015), 30.1–6.

27 Augustine, *De civitate Dei* 15.13, ed. Dombart and Kalb 471.17–22, 37–42; cf. ch. 66 s.a. 874 and 1656.

28 Augustine, *De civitate Dei* 15.12, ed. Dombart and Kalb 468.1–3, 469.37–9, 50; cf. *The Reckoning of Time* ch. 37.

*Seth, and the days of Adam after he had begotten Seth were 800 years and he begat sons and daughters; and all the days that Adam lived were 930 years, and he died,*²⁹ *the Seventy say: And Adam lived 230 years and begot Seth, and the days of Adam after he had begotten Seth were 700 years; and all his days were 930 years, and so on in the same vein. What then? Is it possible that they posited shorter years in the first part of each verse, longer ones in the middle, and equal ones at the end? To come to such <a conclusion> is both to fall into error and to be suspected of stupidity.*

12. Some people wonder why the great and famous translator of Holy Scripture Jerome – of whom it is justly said, *Jerome, translator most learned in diverse languages, Bethlehem /623/ extols you, the whole world sings your <praise>*³⁰ – why, I say, although he translated the *Chronicle* <of Eusebius>, he did not wish to pass on to the Latins the truth he had learned from the Hebrews? Whoever is disturbed by this should know that, just as he himself stated in the preface to the book on times [i.e. Eusebius] he wished to be either a translator or a creator of a new work.³¹ And perhaps <it was> because he did not wish, where there was no pressing necessity, to provoke the fury of the insane against himself on his own initiative, but to leave this matter to posterity, as he says to Eustochium the virgin in a certain place, <and> to wish to buy shuttles and heddles for oneself, but to leave to others the trouble of weaving.³² Indeed, on account of such a

29 Genesis 5:3–5.

30 Isidore of Seville, *Versus in bibliotheca* 7.1–2, ed. José María Sánchez Martín, *Isidori Hispalensis Carmina (vel Versus vel Tituli)*, CCSL 113A (Turnhout: Brepols, 2000), 219. These lines were also inscribed on fol. 4v of the *Codex Amiatinus*: Chazelle, *The Codex Amiatinus and its 'Sister' Bibles* 339–40.

31 Bede is loosely paraphrasing Jerome's preface to his translation of Eusebius' *Chronicle*: *Sciendum etenim est me et interpretis et scriptoris ex parte officio usum quia et Graeca fidelissime expressi et nonnulla, quae mihi intermissa uidebantur, adieci, in Romana maxime historia ...* ('I ought to know the difference between what is within the mandate of either a translator or an author, for I have rendered <Eusebius> Greek very faithfully, and have added only a few facts that were missing, mostly about Roman history ...') ed. Helm 6.8–12.

32 Jones (623.212–3) puts this last phrase in italics as a quotation. However, it is a paraphrase of Jerome *Ep.* 119 (not to Eustochium, but to Minervius and Alexander), ed. Hilberg 55, 446.17–447.2: *Itaque subtegmen et stamina liciaque et telas, quae mihi ad uestram tunicam parauerem, uobis confecta transmissi, ut, quicquid mihi deest, uestro texatur eloquio.* ('Therefore I have passed it all on to you – the warp and the woof, the heddles and the cloth, which I would have prepared for your tunic -- so that whatever I lack might be woven by your eloquence'.) The almost identical wording is found in Jerome, *In*

necessary translation of Holy Scripture, he was pelted with stones by both the Latins and the Hebrews, almost at the same time – by the Hebrews, because he had robbed them of the opportunity to mock and revile the Christians on account of their fallacious books, but by the Latins because he had introduced new and unfamiliar, albeit better, things in place of old and familiar ones.

13. St Augustine, in letters transmitted across so great a space of land and sea with friendly brotherly love, took care to insert the following: *But I would not wish you to labour at turning the canonical books into the Latin language, save in that manner in which you translated Job, so that what is divergent between your translation and the Septuagint (which is a very weighty authority) might be manifest through editorial marks. I would be extremely surprised if anything were to be found in the Hebrew exemplars which escaped such expert translators from that tongue. But I exempt the Seventy: when it comes to their decisions, and their greater agreement of mind, just as if they had been one man, I dare not pass categorical judgement on any score, save that I think that there can be no doubt that they are the pre-eminent authority in this domain. I am more disturbed by those later translators who, although they stuck more closely to the pattern of Hebrew words and locutions (as it is said), not only did not agree amongst themselves, but also left many things which remained long after to be unearthed and discovered. For if these matters are obscure, you likewise could be mistaken concerning them; if they are evident, it is not to be believed that those men would have been able to make a mistake in this regard.*³³

14. On the subject of times and years, /624/ I warn your simplicity, dearest brother, lest seduced by vulgar opinion you should expect that this present world will endure 6000 years, as it were. According to a book of I know not what heretic which I remember seeing as a lad, written in old-fashioned script, though the day and hour of Judgement cannot be known, the year can. In fact you think that man can foresee this, because the Lord said, *But of that day and hour knoweth no man*,³⁴ and yet said nothing about

Hieremiam, preface, ed. S. Reiter, CCSL 74 (Turnhout: Brepols, 1960), 3.12. This and the preceding reference indicate that Bede was writing in haste, and in some cases paraphrasing from memory and misidentifying his sources.

³³ Augustine, *Ep.* 66.2 to Jerome, ed. Hilberg 54.497.18–498.14.

³⁴ Matthew 24:36; Mark 13:32.

the year. And again when he said, *It is not for you to know the times or the seasons*,³⁵ he did not add *the years* thereto. And again this heresiarch chronographer exerted himself to add that 5500 years had passed before the Incarnation, and from thence to the Day of Judgement only 500 remained, of which 300 and some had passed at the time when he uttered his ravings. Accumulating the sum of this number partly from Genesis, partly from the Book of Judges, but attributing forty years each to Samuel and Saul, he used the argument that in the Lord's vineyard, the workers hired last will work one hour, and that John had said, *Little children, it is the final hour*, as if 500 years out of 6000 ought to be as one hour out of a day, when evening falls after twelve hours of daylight. So when twelve times 500 years had passed, that is, 6000 years, the eternal retribution of the just Judge would come to pass.³⁶

15. On this matter I confess I am quite grieved, and often irritated to the

35 Acts 1:7.

36 Jones (*BOT* 135 n. 2) identified the 'heretical work' as the 'Cologne Prologue', ed. Krusch, *Studien I* 227–35; cf. Jones, *BOT* 90–1, who points out that it was known in Irish circles. Bede tells us that this book set the limits of history at 6000 years, dated the Incarnation to AM 5500, and that 300 years had already passed at the time of writing – i.e. the text was written in the fourth century. The text furnished a chronology in which the tenure of the prophet Samuel and the reign of King Saul were both forty years in length (cf. *The Reckoning of Time* ch. 66 s.a. 2790) and argued that Christ's parable of the labourers in the vineyard (Matthew 20:1–6) and 1 John 2:18 ('Little children, it is the final hour') justified dividing the 6000 years of world history into twelve 'hours' of 500 years each. By dating Christ's Passion to *annus mundi* 5531, the *Cologne Prologue* implicitly argues that Christ was born in 5500; it also invokes 1 John 2:18, together with the allegory of the 500-year 'hour' (*Cologne Prologue* 5, ed. Krusch, *Studien I* 231–2). However, not all the details furnished by Bede fit this text. For example, the *Cologne Prologue* includes neither the lengths of the careers of Samuel and Saul nor the allusion to the parable of the workers in the vineyard. Wilhelm Levison ('Bede as Historian' 115) thought it more likely that Bede's source was Q. Julius Hilarianus' *De cursu temporum*, composed around 397, and surviving only in a fragmentary state: ed. C. Frick, *Chronica minora* 1 (Leipzig: Teubner, 1892), 155–74. Hilarianus, unlike the 'Cologne Prologue', presents a detailed chronology of the Old Testament. He assigns forty years to Saul, and sixty (not forty) to Samuel (ed. Frick 164), but Bede's copy could easily have altered LX to XL by inversion, or his memory may have been influenced by Eusebius. More to the point, Hilarianus explicitly lays out a timetable for the end of the world, which is not the case in the 'Cologne Prologue'. Hilarianus mentions neither the parable of the vineyard nor 1 John 2:18; on the contrary, he focuses on the 470 years from the Passion to the Last Judgement, which he compares to the 470 years between God's promise to Abraham and the entry of the Hebrews into the Promised Land, and not the 500 years from Incarnation to the end of the age (ed. Frick 170–1). In short, neither the 'Cologne Prologue' nor Hilarianus exactly matches the profile of Bede's *chronographus heresiarches*.

limit of what is permissible, or even beyond, when every day I am asked by rustics how many years are left in the final millennium of the world, or learn from them that they know that the final millennium is in progress, when our Lord in the Gospel did not testify that the time of His advent was near at hand or far off, but commanded us to keep watch *with our loins girded and our lamps lit*, and to *wait for Him until He should come*.³⁷ For I notice that when in conversation with the brothers the occasion arises for us to dispute concerning the Ages of the world, certain of the less learned ones allege that we are speaking of 6000 years, and there are those who think that this world will end at 7000 years because it unfolded in seven days.³⁸ /625/ The said doctor Augustine in his explanation of Psalm 6 often openly accused these people of temerity, saying amongst other things: *For if this day is to come after 7000 years, everybody can add these to the computed years of his Advent. How will it be that the Son does not know <the time>? It means, of course, that men cannot know this through the Son, not that He does not know it in himself, according to the saying, 'The Lord your God proveth you, to know',*³⁹ *and 'Arise, O Lord',*⁴⁰ *that is, make us arise. Therefore although it is said that the Son does not know the day, <it is> not that He does not know, but that He does not cause them to know, that is, He does not show this to them. What does this strange presumption seek, which hopes <to find> the most certain day of the Lord by counting 7000 years?*⁴¹

16. I send these letters, signs of charitable friendship, dearest brother, as pledges of my innocence, lest you judge me deeply lacking in secular or sacred learning. Rather, <we shall> state openly that our Lord and Saviour took mortal flesh for our sake in the Sixth Age of the world, according to the Scriptures or acknowledging the faithful and catholic voice of the Fathers. But the course of the world is not defined for us in any fixed number of years, and is known only to the Judge himself. And if anyone were to say to me, 'Lo, Christ is here', or 'Lo, He is there',⁴² that is, <that Christ is> to

37 Cf. Luke 12:35–7.

38 The latter was the view of the *Laterculus Malalianus*: see Commentary on ch. 66, p. 519 n. 286.

39 Deuteronomy 13:3.

40 Psalm 3:7.

41 Augustine, *Enarrationes in Psalmos* 6.1, ed. Dekkers and Fraipont 27.15–26.

42 Cf. Luke 17:23. Bede's *Commentary*, in addressing this verse, rebukes those who claim to predict the Second Coming: ed. Hurst 316, trans. Kendall and Wallis 505–6.

come to Judgement at such and such a time, I would not listen to or follow him at all.⁴³ For I know that *as the lightning, that lightneth under heaven shineth on those things which are under heaven; so shall the Son of Man be in his day.*⁴⁴ For you know by what opinion of the multitude it will come in 6000 or 7000 years, and by what authority I build the assertion of my computation: namely by the Hebrew Truth, recorded by Origen, published by Jerome, praised by Augustine, confirmed by Josephus. I have found none more learned in such matters than these. Nor is it to be wondered at that that praiseworthy man Eusebius, although he was able, as they say, to bind iron and brick by his marvellous talent in speaking and thinking, nevertheless could not do what he had not learned to do, that is, to know the Hebrew language. By his justly reverend fear, he himself had no fear of corrupting what he knew, as we showed above. /626/

17. I beseech you to present this account of my exoneration to our religious and very learned brother David,⁴⁵ that he may read it before our venerable lord and father Bishop Wilfrid, so that, because I was earlier assailed in his presence and hearing by the abusive talk of the foolish, it may now be made plain to him in his hearing, and with him as the final judge, how unworthily I suffer this same abuse. Also I ask this same David, above all others, to follow the example of the boy whose namesake he is, and to exert himself sedulously to expel the madness of spirit from the unreasonable brother by the exhortation of healthful words, as if by the sweet modulation

43 Jones (625) signals a similarity between this part of section 16 and Julian of Toledo's *Prognosticum futuri saeculi* 3.1-5, ed. J. Hillgarth, Bernhard Bischoff, and Wilhelm Levison, CCSL 115A (Turnhout: Brepols, 1976), 82–6. However, Julian does not cite the same biblical texts, nor are there any significant verbal parallels.

44 Luke 17:24.

45 The identity of 'David' is not known, though he was evidently, like 'Plegwine', someone in Wilfrid's entourage. He was, moreover, held in sufficient regard by the bishop that Bede thought he could successfully intervene on his behalf: see Dieter Schaller, 'Der verleumdete David: zum Schlusskapitel von Beda's *Epistola ad Plegwinum*', in *Literatur und Sprache im europäischen Mittelalter: Festschrift für Karl Langosch* (Darmstadt: Wissenschaftliche Buchgesellschaft, 1974), 39–43. 'David' might be Acca, Wilfrid's successor and the dedicatee of a number of Bede's works. He is described by Bede in the *Historia ecclesiastica* as a highly experienced musician (*cantator ... peritissimus*: 5.30, ed. Colgrave and Mynors 530–1), which might explain the identification with the Psalmist. This remains, however, speculative: Clare Stancliffe, 'Bede and Bishop Acca', in *Cities, Saints and Communities in Early Medieval Europe: Essays in Honour of Alan T. Thacker*, ed. Scott DeGregorio and Paul Kershaw (Turnhout: Brepols, 2020), 178.

of psalmody.⁴⁶ In any event, the man who, tipsy with drink, strove to incriminate me in that banquet – who ought rather to have made himself blameless by paying heed to his reading – was unable to bring it off, for he did not realize that he was extolling my own meaning and my very words. For truly it is said that *if a serpent will bite in silence, there is no wealth for the enchanter*.⁴⁷ May the almighty Lord deign to preserve your fraternity in safety.

46 An allusion to the biblical David's ability to sooth the 'evil spirit' of King Saul by playing the harp: 1 Samuel 16:14–23. In *On First Samuel*, Bede again compares David's therapeutic harp-music to the gentle remonstrance and exhortation to humility of a 'spiritual brother' when another 'brother' is assailed by an evil spirit: ed. Hurst 144.299–310, trans. DeGregorio and Love 330.

47 Ecclesiastes 10:11.

APPENDIX 3B. LETTER TO HELMWALD

This appendix contains the opening paragraphs of Bede's letter to Helmwald. The remainder of the text was incorporated by Bede without change into chs 38–9. The full letter is preserved only in the fifteenth-century MS Oxford, Merton College 49, fols 189v–191r, whence it was transcribed by J.A. Giles in his *Anecdota Bedae, Lanfranci et aliorum* (London: D. Nutt for the Caxton Society, 1851), 1–6. These prefatory sentences alone also appear in Vatican City, BAV Reg. lat. 123 (see Appendix 5, no. 252). Who Helmwald was, or where he lived, is not known. Bede's letter indicates that he lived overseas, perhaps in Ireland or Francia. The reference in the opening sentence to *peregrinatio* might favour Ireland.⁴⁸

/629/ To Helmwald, his most beloved brother in Christ, Bede the servant of Christ (*famulus Christi*) <sends> greeting.

I confess that I rejoiced greatly, dearest brother in Christ, to learn that in the place where, at the will of God, you joined the long-desired pilgrimage, you begin to pursue peace and virtue, and even to devote some effort to reading. And therefore I shall not delay to expound plainly to you, as I see it, those things which you inquired of me in <your> letters, desiring with grateful expectation that I may deserve to see you restored to the <heavenly> homeland in the company of the eminent persons of our age, at once endued with the light of spiritual knowledge, and ministering the radiant joys of celestial teaching and life. So you asked to have explained to you, briefly and plainly, the calculation of the fourth year which is called *bissextus*, in so far as this is possible, and, if I may so express it, to have opened up to the full view of free and serene understanding the depths of more secret nature by the keys of straightforward writing. Nor do you who ask such things deserve to be refused by my insignificance, whom you decided should be appealed to by <your> letters, and consulted concerning

48 I am grateful to Dr Immo Warntjes for these observations.

matters of importance to the Church, though such vast distances of land and sea lie between us ...

APPENDIX 3C. LETTER TO WICTHED

This letter was evidently a response to a query raised by Bede's discussion of the equinox and the leap-year day in *The Reckoning of Time*. Its close connection to *The Reckoning of Time* is revealed by the manuscripts, where it often accompanies *The Reckoning of Time*, *The Nature of Things*, and *On Times* as part of a bundle of Bede's scientific writings. Indeed, the *Letter to Wicthed* never appears apart from *The Reckoning of Time*. Occasionally it is incorporated into the text of *The Reckoning of Time*.⁴⁹

At various points in *The Reckoning of Time* Bede insists that the spring equinox falls on 21 March, and cites Anatolius as his authority. However, the text of Anatolius which he and his readers held to be authentic clearly stated that the equinox was on 22 March. In this letter, Bede explains that the equinox can fall on in the evening of 21 March or at midnight between 21 and 22 March in the final year or two of the leap-year cycle (see *Reckoning of Time* ch. 6, ch. 38), and hence on 22 March if one considers sunset as the boundary of the day. However, this should not inhibit Christians from celebrating Easter on 22 March.

The date of composition is unknown, but since it follows *The Reckoning of Time*, and is found in Bede's autobiography in *Historia ecclesiastica*, it must have been written between 725 and 731. Masako Ohashi argues that the letter was an 'open' one, addressing *latercus* loyalists, be they the Irish monks expelled from Pictland by King Nechtan or the British in Wales.⁵⁰

/635/ To his most reverend and holy brother Wicthed, priest, Bede <sends> longed-for greeting in the Lord.

1. Beloved brother in Christ, I gladly received the letters of your benevolence, and I made haste to copy out promptly the chapters which you requested and to send them to you, recalling the friendliness and kindness with which you

49 See Jones, *BOT* 138–9; in Appendix 5 see, for example, nos 46, 63, 85, 117 etc.

50 Ohashi, 'The "real" addressee(s) of Bede's Letter to Wicthed' 131–5.

received me when I came thither.⁵¹ But now I have undertaken to explain at greater length that justly famous question about the *Ecclesiastical History* <of Eusebius> which you asked me when I was with you, and to which I then replied briefly, as I was able. This concerns the spring equinox, which in the aforementioned book the most reverend bishop Anatolius is held to have place on the eleventh Kalends of April [22 March],⁵² although the other masters of the Egyptians decreed that it should rather be placed on the twelfth Kalends of the same month [21 March]. For the holy Proterius, bishop of the church of Alexandria, writing to the most blessed Pope Leo on the subject of Easter, says: *The equinox is plainly identified according to the course of the Sun as the twenty-fifth day of <the Egyptian month> Phamenoth, which is the twelfth Kalends of April [21 March]. But we should not start the first month according to the Moon straightaway from this equinox, though in all other respects the course of the Moon ought to harmonize with the cycle of the Sun.*⁵³ St Cyril, prelate of the same church, also said: *For the Sun itself terminates in land and sea at the close of the day, and at the beginning of the day is unveiled in like manner, and the Sun finishes the course of the whole year on the twelfth Kalends of April.*⁵⁴

2. For this reason Anatolius disturbs you, just as he disturbs other scholars, when he writes, in contradiction to the Egyptian teachers (although he is by birth and education an Egyptian) that the equinox is wont to occur on the eleventh Kalends of April [22 March], saying: *Therefore in the first year, which is the beginning of the nineteen-year cycle, the beginning of the first month, according to the Egyptians, /636/ is the twenty-sixth day of the month Phamenoth; according to the Macedonians the twenty-second day of the month of Dystri; and according to the Romans the eleventh Kalends of April [22 March]. On this day the Sun is found not only to have climbed up to the first part, but to have in that day a quarter, that is, in the first of twelve parts. For this little part (particula) is the spring equinox, and it is the beginning of months and the starting-point of the cycle and the completion of the course of the stars called 'planets' (that is, 'wandering') and the end of the twelfth little part is the close of the whole cycle.*⁵⁵

51 Where Wicthed lived is not known, nor when Bede might have visited him.

52 Anatolius 2, in Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.32.14, ed. Mommsen 723.10–14. Cf. *Reckoning of Time* ch. 14.

53 Proterius, *Ep. ad Leonem* 8, ed. Krusch, *Studien I* 276–7.

54 *Ep. Cyrilli*, ed. Krusch, *Studien I* 346.

55 Anatolius 2, in Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.32.14–15, ed.

3. But I think that it is possible to demonstrate by a very simple reckoning that he is not opposed to the other teachers of Egypt and the East on this point. For the calculation of the quarter-day which is called *bissextus* is made so that the Sun reaches the equinoctial point of its cycle in the zodiac now at dawn, now at noon, now at sunset, and now in the middle of the night.⁵⁶ And whenever the equinox happens at dawn or at midday, it is on the twelfth Kalends of April [21 March], and when it happens at sunset or midnight, it pertains to the eleventh Kalends of April [22 March]. For it is beyond dispute that the entire night on which our Lord rose from the dead is moved forward to the time of the following day, and not placed with the preceding <day>.⁵⁷

4. Therefore Anatolius prudently does not forbid Easter to be celebrated on the eleventh, but rather *before* the eleventh Kalends of April [22 March], for immediately after those statements of his which we set down <above>, he adds: *And so we declare that those who think that Easter ought to be celebrated before the beginning of the new year commit no small offence.*⁵⁸ So he does not say that it is forbidden to celebrate Easter *on* that beginning which is the equinox, but rather *before* that beginning of the new year, since he himself in the same book assiduously affirms, from the writings of ancient and modern Fathers alike, that Easter cannot happen before the equinox has passed. For he is his own witness when he writes that he indicates not the earliest time of the seat of the equinox, but the latest, after which, he knew, the celebration of Easter could begin. For although Easter Sunday can fall on the eleventh Kalends of April [22 March] in the second or third year after the leap year, /637/ it is nevertheless agreed that the Paschal season begins with the equinox. For its ceremonies are partly celebrated in the beginning of the night, although no one doubts that the equinox can take place in the middle <of that night> or even at the beginning <of the day>, because undoubtedly the hour of the Lord's Resurrection is rightly to be celebrated at dawn.

Mommsen 723.10–19. In the *Liber Anatolii* the Roman date is rendered as 25 March: ed. McCarthy and Breen 46.38–9.

56 See *The Reckoning of Time* ch. 38, p. 243; cf. Victor of Capua, *De pascha* 2, ed. Pitra 297.

57 A point Bede makes in *Reckoning of Time* chs 5, 6, and 71.

58 Anatolius 2, in Rufinus' trans. of Eusebius, *Historia ecclesiastica* 7.35.15, ed. Mommsen 723.19–21. The same statement is found in *Liber Anatolii* 2, ed. McCarthy and Breen 46.43–4.

5. And so that you may plainly observe that Anatolius writes specifically about an evening equinox, after which Easter can begin, and that he regards the eleventh Kalends of April [22 March] according to the rule (*regulariter*), notice what he adds in the following, <drawn> from the opinion of the ancient Fathers: *For since there are two equinoxes, spring and autumn, separated by equal lengths <of time>, and since the solemnity is prescribed for the fourteenth day of the first month, when the Moon is detected in the region opposite the Sun after sunset, as can be verified with the eyes, the Sun is without doubt found reaching the position of the spring equinox, and the Moon, the autumn <equinox>.*⁵⁹

6. Is it any wonder that he says that the equinox happens on the eleventh Kalends of April [22 March]? After all, when he speaks about this hour, he declares that in the evening when the Sun sets, the Moon on the other hand begins to rise, while at the same time it is understood that he said that the equinoxes of spring and autumn are separated by equal lengths <of time>. So it follows that we should compute half a year from equinox to equinox, and that the autumn <equinox> is fixed on the thirteenth Kalends of October [19 September], separated from the spring equinox by 182 days. Inspection of the sundial demonstrates this, especially since <Anatolius> adduces this perfectly equal separation of the year between the equinoxes in the words of the ancient and most learned doctor Aristobolus, who was one of those famous Seventy Translators of Holy Scripture.⁶⁰ /638/ The same Anatolius says: *On this day the Sun is found not only to have climbed up to the first part, but to have in that day a quarter, that is, in the first of twelve parts.* The twelve parts denote the twelve signs of the zodiac, each of which holds the Sun for thirty days and a few hours longer. Here Maro says, on the same subject:

*thus the golden Sun holds sway over the sphere,
divided into fixed sections, by the twelve stars.*⁶¹

7. The first of these parts begins according to nature (*iuxta naturam*) from the place of the spring equinox. This first of twelve <parts> is the

59 Anatolius 2, 7.32.18, ed. Mommsen 725.10–14; *Liber Anatolii* 2, ed. McCarthy and Breen 46.53–7.

60 Anatolius 2, 7.32.17, ed. Mommsen 723.8; *Liber Anatolii* 2, ed. McCarthy and Breen 46.47–8.

61 Vergil, *Georgics* 1.231–2. Bede quotes the same passage in *The Reckoning of Time*, ch. 16.

spring equinox, because without doubt the beginning of this part (that is, where the Sun was positioned at the beginning <of the world>) contains the equinox itself.⁶² <Anatolius> correctly stated by way of preface that ‘the Sun on that day not only climbs to the first part but also already has a quarter on that same day’, because whenever the equinoctial time according to the aforementioned calculation falls on the eleventh Kalends of April [22 March], then at that same moment of time the fourth part of the day which ought to accrue annually is recognized to be complete according to nature (*secundam naturam*). For when the equinox falls on the eleventh Kalends [22 March], then the quarter-day is finished on the very same day, and in the same equinoctial hour. We add it thus according to nature, because according to human custom, it is <added> at various times of the year, as it pleases each people to insert it.⁶³ But according to natural computation (*naturalis ... rationis*) it is to be added at the completion of the solar cycle. Cyril also indicates this in that statement which we cited above, saying: *And the Sun finishes the course of the whole year on the twelfth kalends of April* [21 March].⁶⁴

8. And should someone perhaps object that we have not <respected> what Anatolius himself /639/ understood in this statement, I wish to add what the learned Victor, bishop of the city of Capua, wrote on the subject of the parts and of the equinox: *The celestial circle, through which the Sun and Moon and the stars called planets are borne with their proper motion, against the impulse of the whole heaven, is divided into twelve parts according to the judgement of wisdom. These are completed in 365 days, in which sum of time the year is completed. When the Sun regains the beginning of the first part of the aforementioned circle, the year begins, and this happens from the twelfth Kalends of April [March 21] to the eleventh [March 22]. <The equinox> is ascertained to take place at evening, sometimes at night, and occasionally on the day of eleventh Kalends of April [March 22] itself. On the twenty-fifth or twenty-sixth day of the month of March according to the Alexandrians – that is, according to the Latins, the twelfth or eleventh Kalends of April – the beginning of the first month according to the course*

62 Cf. *Reckoning of Time* ch. 6.

63 E.g. on 24 February by the Romans, on 31 December in Visigothic Spain, and on 2 March in some manuscripts of Isidore. Bede’s ‘natural date’ on the equinox was also proposed by the Einsiedeln Computus and the Munich Computus: see Warntjes, ‘The Origin(s) of the Western Calendar Tradition’ 170–1.

64 See *The Reckoning of Time* ch. 38, p. 242.

of the Sun takes place. Lest anyone wish to accuse us of inconsistency because we do not define the day of the first month, using (so to speak) the ambiguous phrases of a waverer, let this fault-finder, or rather, inquisitor know that the most skilful and very subtle investigation of the Egyptians teaches that the first hour of the latter day begins in the seventh hour of the day. And although the twenty-fifth day of March is the twelfth kalends of April [March 21],⁶⁵ if the Sun lights up the space of the first part on the evening of the same day, it is already ascribed to the twenty-sixth day, as we said, following the subtle and without doubt probable Egyptian tradition. And a little later he says: Therefore if the fourteenth Moon is found, with the Sun established in the first part of its cycle, it is rightly to be assigned to the first month. But if the fourteenth Moon should have shone forth with the full light of its orb before the Sun has reached the aforementioned first part of its cycle, it is considered to belong to the <preceding> twelfth month. And therefore every time this happens, the solemnity of Easter is postponed until the next full Moon, which must take place while the Sun is still established in the first part of the twelve parts of the circle.⁶⁶ It has pleased us to include these words of the blessed Victor, /640/ seeing that the statement of the holy father Anatolius, which in his own work on Easter and in the *Ecclesiastical History* is, for many people, obscure, may through his statement be rendered more clear to you.

9. But it should not be overlooked that there are those who contend that Anatolius did not write ‘the eleventh’ but ‘the eighth Kalends of April [25 March]’.⁶⁷ They say that Eusebius, when he quoted this statement in the *Ecclesiastical History*, substituted the former date for the latter. He saw that the rest was well and philosophically said, and so he wished to correct one word which he perceived had been expressed less perfectly, lest by introducing into his histories what <Anatolius> originally said, he openly expose to ridicule a man whom he was disposed to praise. But it would be astounding if Eusebius, a writer circumspect in word and meaning, had been so eager to praise others as to pretend that they had said things which

65 Victor means, of course, the Egyptian month corresponding to March, i.e. Phamenoth, not the Roman month of March: 25/26 Phamenoth = 21/22 March (cf. *The Reckoning of Time*, ch. 11). This is a rather unfortunate expression, because it might suggest that Victor supported the 25 March equinox.

66 Victor of Capua, *De pascha* 2–4, ed. Pitra 297.

67 This is the reading of the *Liber Anatolii*, ed. McCarthy and Breen 46.38–9. See Introduction, p. 45.

they did not say when he excerpted their writings, and yet not be afraid that he would be criticized when his readers came upon the complete works of these men, and took umbrage that what he himself had taken from these men was found to be otherwise in his authorities. It would be astounding had such an imposture escaped the notice of Victor, whose statement we have quoted above, a man of equally exceptional learning who, writing about Easter in another work, inserted this same statement of Anatolius from the *Ecclesiastical History*,⁶⁸ adopting it, so to speak, as justly praiseworthy and memorable, when it might readily have been refuted. And he himself wrote 'eleventh Kalends of April' and not eighth.⁶⁹

10. But it is also to be wondered why Dionysius, surnamed Exiguus, a man outstanding in knowledge, would have pressed into service in his letters on Easter the support of Anatolius from the *Ecclesiastical History*, if he thought his statements had been falsified. The watchfulness of one who was very expert in the Greek language would make it impossible to conceal from him how these <statements> had first been published: *But because this month, whence it starts or where it ends, /641/ could not be inferred there*, that is, in the writings of Moses, *the aforementioned 318 venerable bishops*,⁷⁰ *investigating in a resourceful manner the observance of ancient custom, and what was handed down thence by holy Moses, as is recounted in the seventh book of the Ecclesiastical History, stated that a new Moon from the eighth Ides of March [8 March] up to the Nones of April [5 April] defines the beginning of the first month, and the fourteenth Moon should be skilfully sought for from the twelfth Kalends of April [21 March] up to the fourteenth Kalends of May [18 April].*⁷¹

11. Therefore it seems likely that Eusebius faithfully inserted into his histories what he found in the Greek authority. But that same treatise by Anatolius afterwards became corrupted in certain Latin exemplars, by whose considerable fraud those who did not know the true time of Easter would eagerly desire to defend their erroneous observance with the authority of so great a Father. But they who prefer to think that Eusebius emended one sentence, rather than that certain others falsified all of

68 What 'other work' by Victor Bede might be referring to is not clear. No quotation from Anatolius is found in the fragments of *De pascha* printed in *Spicilegium Solesmense*.

69 See quotation in section 8 above. Cf. *Reckoning of Time*, ch. 14.

70 At the Council of Nicaea.

71 Dionysius Exiguus, *Ep. ad Petronium*, ed. Krusch, *Studien II* 65.

Anatolius, enquire how it could be written in the same treatise: *But is it any wonder that they err about the twenty-first Moon, who add three days before the equinox in which, they proclaim, the Pasch can be sacrificed, which surely is utterly absurd?*⁷² To them it ought to be replied that Anatolius could have known many who believed one thing or another about Easter, but of which we, however, have no knowledge. On the contrary, they should be asked how it could be written in the same treatise *Therefore in the first year, the beginning of the first month (which is the beginning of the nineteen-year cycle) according to the Egyptians, is the twenty-sixth day of the month Phamenoth, according to the Macedonians the twenty-second day of the month of Dystros, and according to the Romans the twenty-fifth day of March, which is the eighth Kalends of April,*⁷³ when the twenty-sixth day of the Egyptian month Phamenoth and the twenty-second day of the Macedonian month Dystros are not the eighth Kalends of April [25 March] but the eleventh Kalends of April [21 March]. /642/ When the person who changed the eighth Kalends of April to the eleventh Kalends forgot to change the dates of the Greek and Egyptian months, but left them as they were because they were less familiar, and changed only that which was evident to himself and his <readers>, does it not seem highly probable that the statement could be falsified?

12. Let those who can read Anatolius in Greek see which of these is more true. Indeed, if Eusebius altered one statement, or if someone else altered the entire treatise from its <original> state, it nevertheless remains beyond doubt, although great numbers of ancient <authorities> confirm <it>, that the equinox cannot be found on the eighth Kalends of April [25 March], which is proved both by inspecting the sundial and by transparent reasoning.⁷⁴ The rule of ecclesiastical observance, which is confirmed both by the edicts of the Fathers of old and more clearly by the Nicene Council, is that Easter Sunday is to be sought from the eleventh Kalends of April [22 March] to the eighth Kalends of May [25 April]. Indeed the rule of catholic instruction prescribed that Easter should not be celebrated before the spring equinox has passed. Whoever thinks that the eighth Kalends of April [25 March] is the equinox is either obliged to state that it is licit for Easter to be celebrated before the equinox, or to deny that it is licit for

72 *Liber Anatolii* 6, ed. McCarthy and Breen 48.107–9.

73 *Liber Anatolii* 2, ed. McCarthy and Breen 48.36–9; identical to the Rufinus' translation in section 2 above.

74 Cf. *Reckoning of Time* ch. 30, p. 224.

Easter to be celebrated before the eighth Kalends of April. Also, he will confirm that the Passover which our Lord kept with His disciples either was not on the ninth Kalends of April [24 March],⁷⁵ or was before the equinox.

Beloved brother, may you always fare well in the Lord.

⁷⁵ Virtually the same sentence occurs at the end of *The Reckoning of Time* ch. 30, p. 223.

APPENDIX 4. BRIEF GLOSSARY OF *COMPUTUS* TERMINOLOGY

bissextus: Leap year or leap-year day. In the Julian calendar, the leap-year day was inserted on the sixth kalends of March (24 February). The intercalated day was thus the ‘second sixth (Kalends)’ or *bissextus*. A leap year is an *annus bissextilis*.

common year: A year in which there are twelve lunar months, in contrast to an embolismic year (q.v.).

concurrent: In the context of the nineteen-year cycle used by Bede, the concurrent is the number of the weekday of 24 March, counted from Sunday. Since the tropical year of 365 days contains fifty-two weeks plus one day, the concurrent will advance by one each year. However, the insertion of leap-year day will advance the concurrent by two every fourth year. It therefore requires twenty-eight years for the cycle of concurrents to be complete: seven weekdays, times 4 for the leap years.

cycle: see ‘luni-solar cycle’, ‘Paschal cycle’.

embolism: Because the Julian solar calendar is 365 days long, and twelve lunar months of $29\frac{1}{2}$ days total 354 days, the age of the Moon on any given calendar date increases by eleven days each year. When the accumulation tops thirty days, the maximum length of a calculated lunar month, an additional thirteenth lunar month is deemed to be inserted within the calendar year. This additional intercalated lunation is called an ‘embolism’ and a year with thirteen lunations is ‘embolismic’.

embolismic year: A year in which there are thirteen lunar months, due to the insertion of the embolism (q.v.). Contrasts with common year (q.v.).

epact: Generally, the age of the Moon on any given day. Specifically, and in the context of Dionysius Exiguus’ nineteen-year cycle, the annual lunar ‘epact’ refers to the age of the Moon on 22 March.

'full' lunar month: A synodic lunar month or lunation is slightly more than 29½ days. However, in order to harmonize solar and lunar cycles (see 'luni-solar cycle' and 'luni-solar calendar' below) a normalized lunar month expressed as a number of whole solar calendar days must be adopted. Medieval computists consequently adopted the fiction that lunations are alternately twenty-nine and thirty days long. twenty-nine-day lunations are 'hollow' and thirty-day lunations 'full'. Full and hollow lunations alternate throughout the year, January's being full, February's hollow, etc. All embolisms (q.v.) are full.

hendecas: The final eleven years of the nineteen-year cycle, where the pattern of common and embolismic years (q.v.) is CCECCECCECE. See also *ogdoas*.

'hollow' lunar month: see 'full' lunar month.

leap of the Moon: See *saltus lunae*.

lunation: The period between one new Moon and the next (a synodic lunar month), now calculated as approximately 29.5306 days. Computists consider a lunation to 'belong' to the solar month in which it ends, i.e. the lunation of January is the lunation which ends within the calendar month of January.

luni-solar calendar: A lunar calendar adjusted to maintain the relationship of lunar months to solar seasons by the insertion of embolisms (q.v.).

luni-solar cycle: A whole number of solar years into which a whole number of lunar months can be divided, so that the lunar phases fall on the same solar calendar dates after the end of the cyclic period.

Nisan: A month in the Jewish lunar calendar corresponding to the first lunation of spring. Bede identifies Nisan with April.

ogdoas: The first eight years of the nineteen-year cycle, where the pattern of common and embolismic years (q.v.) is CCECCECE. See also *hendecas*.

Paschal cycle: A luni-solar cycle (q.v.) modified to permit repeated projection of the dates of Easter into the future, normally by the incorporation of a third cycle to accommodate the shifting date of Sunday in the Julian calendar (see *concurrent*).

Paschal table: A table projecting the dates of Easter for a discrete number of years into the future. A Paschal table may or may not be based on a Paschal cycle.

regular: Bede uses the term ‘regular’ to denote a number of computistical constants, but the most important and commonly used are the solar and lunar regulars. The solar regular is a number assigned to each month which represents the interval between the weekday of 24 March (the concurrent: q.v.) and the weekday of the first day of the month in question. Solar regular plus annual concurrent yields the weekday of the first day of the month in the year in question. The lunar regular is the age of the Moon on the first day of the month in year one of the nineteen-year cycle. The lunar regular, when added to the annual epact (q.v.), will yield the age of the Moon on the first of the month in that year.

saltus lunae: All luni-solar cycles gradually accumulate an additional *calculated* lunar day, because the average lunation is slightly longer than the notional month of $29\frac{1}{2}$ days. Seven thirty-day embolismic months accumulated over nineteen years, which amount to 210 days, while the astronomical increment is only 209 days. To bring the lunar count back into phase with reality, the calculated age of the Moon must ‘jump over’ a day. This is called the *saltus lunae*. In the nineteen-year cycle used by Bede there is one *saltus* in each cycle, and it occurs in the final year of the cycle.

year: The tropical or solar year is the period required for the Earth to orbit the Sun, or, in medieval terms, the time required for the Sun to complete its journey through the zodiac. The modern length of the tropical year is 365.2422 days. A lunar year is twelve or thirteen lunations, depending on whether the year is common (q.v.) or embolismic (q.v.).

APPENDIX 5. A CHECKLIST OF MANUSCRIPTS OF *THE RECKONING OF TIME*

This provisional checklist aims to demonstrate the extent of the diffusion of *The Reckoning of Time* (*DTR*) and the variety of contexts in which the work was presented. References are primarily to other reference works and manuscript lists (to which the reader should turn for information about printed catalogues) and comprehensive surveys of secondary literature.

The date assigned to a manuscript is generally taken from the most recent scholarship consulted. In a number of cases I have provided alternative dates assigned to the relevant authority. The authority for ninth-century manuscripts is always Bischoff, unless otherwise indicated.

The checklist is in alphabetical order by repository. The symbol * following the shelf-mark indicates that I have seen the manuscript, either in the repository, on a scan or microfilm, or digitized on the Internet.

ABBREVIATIONS

Bischoff, *Katalog* = Bernhard Bischoff and Birgit Ebersperger, *Katalog der festländischen Handschriften des neunten Jahrhunderts: (mit Ausnahme der wisigotischen)*. 3 v. (Wiesbaden: Harrassowitz, 1998–2014). When Bischoff is named within parentheses as authority on the dating or origin of a manuscript, see the reference to *Kataloge* at the end of the relevant entry.

Borst, *Schriften*. = Arno Borst, *Schriften zur Komputistik im Frankenreich von 721 bis 818*. 3v. MGH, Quellen zur Geistesgeschichte des Mittelalters 21 (Hannover: Hahnsche Buchhandlung, 2006). When Borst is named within parentheses as authority on the dating or origin of a manuscript, see the reference to *Schriften* at the end of the relevant entry.

CLA = E.A. Lowe [et al.], *Codices Latini Antiquiores: a Palaeographical Guide to Latin Manuscripts prior to the Ninth Century*. 11 v. + Supplement. (Oxford: Clarendon Press, 1934–1971).

Computus in the Carolingian Age = website created by Trinity College Dublin and Irish Research Council: <https://computus.huma-num.fr/> Note that this is an ongoing project, and that many more manuscripts in the present list will be included as work progresses.

A Descriptive Handlist of Breton Manuscripts, c. AD 780–1100 = website of the IrCaBritT Project, NIU Galway: <https://ircabritt.nuigalway.ie/handlist>

DNR = *De natura rerum*

DT = *De temporibus*

EpPleg = *Epistola ad Pleguinam*

EpW = *Epistola ad Wicthedum*

Gneuss–Lapidge = Helmut Gneuss and Michael Lapidge, *Anglo-Saxon Manuscripts. A Bibliographical Handlist of Manuscripts and Manuscript Fragments Written or Owned in England up to 1100* (Toronto: University of Toronto Press, 2014).

Handschriftencensus = website created by Philipps Universität Marburg and Akademie der Wissenschaften und der Literatur, Mainz. <https://handschriftencensus.de>

Jones, *BOD* = C.W. Jones' list in *BOD* 242–56

Jones, *BOT* = C.W. Jones' list in *BOT* 140–61

Jones, *BP* = C.W. Jones' list in *BP* 111–40

Jordanus = *Jordanus. An International Catalogue of Medieval Scientific Manuscripts*. Bayerische Akademie der Wissenschaften. <https://ptolemaeus.badw.de/jordanus/start>

Mirabile = list of manuscripts of *Reckoning of Time* assembled on Mirabile (Archivio digitale della cultura medievale/Digital archives for Medieval Culture (SISMEL – Edizioni del Galluzzo) <https://www.mirabileweb.it/title/de-temporum-ratione-title/2315>

Mommsen = 'Codices Chronicorum Maiorum', in Theodor Mommsen, *Chronica minora* 3, MGH AA 13 (1898), 231–40.

orig. = origin

prov. = provenance

Complete copies (chs 1–71; *glossed)

1*; 22; 25*; 39; 45*; 48; 50*; 53*; 54*; 58*; 59*; 60*; 62*; 67*; 70; 74*; 75; 85; 87; 89*; 98; 99*; 100*; 113*; 114*; 115*; 117*; 121*; 123*; 129*; 133*; 139; 146?; 151; 155*; 157; 160; 161; 162; 163*; 172; 174; 181.1; 190*; 194*; 200; 201; 205; 206; 210*; 213*; 214; 214; 219?*; 221*; 224?; 225; 226; 231; 233; 235; 239; 240*; 241*; 245*; 255; 256.1; 260; 264; 274; 281?; 282

Complete copies (chs 1–65 + 66–71 separated; *glossed)

24; 56; 63*; 122; 137*; 187*; 237; 251; 261; 266*; 277*

Complete copies (ch. 66 chronicle omitted; *glossed)

102; 105; 107; 265*; 272; 285*

Complete copies (ch. 1–65 or 1–66 Introduction only; * glossed)

6*; 8*; 23; 46; 49; 94; 95; 154; 156*; 156.1; 171; 188*; 191*; 229*; 234; 236*

Complete copies (chs 67–71 omitted; *glossed)

136*; 232

Fragments (*glossed)

31; 279; 47; 66*; 101; 112; 124*; 127; 159; 198; 216; 220; 278*; 280; 283

Excerpts (various)

3; 5; 7; 10; 11; 12; 16; 17; 18; 22; 24; 28; 33; 34; 36; 37 (Pref. and capitula); 38; 39; 41; 55; 61; 65; 67; 69; 72; 73; 77; 85; 93; 103; 106; 108; 116; 130; 143; 147; 149; 150; 152; 156.1; 158; 165; 174; 175; 181; 182; 193; 195; 203; 204; 209; 218; 219; 220; 222; 223; 227; 228; 229; 230; 240; 250; 252; 253; 259; 262; 267; 280; 284

Excerpts (ch. 1 only)

4; 9; 20; 21; 29; 31; 32; 35; 51; 65; 68; 80; 90; 97; 104; 111; 125; 126; 128; 134; 134; 140; 145; 166; 177; 180; 192; 196; 202; 211; 215; 222; 242; 247; 248; 256; 258; 270; 273

Excerpts (ch. 4 only)

19; 57; 92; 113; 153; 178; 207; 208; 243; 254

Excerpts (ch. 9 only)

144; 179; 268

Excerpts (ch. 19; * with *Pagina regularis*)

15; 59; 67*; 71; 103*; 117; 147; 154; 176; 195*; 199; 218*; 242; 250; 251; 260

Excerpts (ch. 23; * with *litterae punctatae* table)

2; 15; 71; 103; 128*; 131; 158; 174*; 218; 225*; 260*

Excerpts (Chronicle only or Chronicle + succeeding chapter(s))

13; 27; 39?; 40; 42; 43; 44; 52; 64; 78; 79; 81 (+ chs 67–71); 82; 83?; 84; 86; 88; 96 (+ chs 67–71); 109?; 110; 118; 119; 120; 138; 141 (+ chs 67–71); 142; 148 (+ chs 67–71); 164; 167; 168; 169; 170; 173; 183 (+ ch. 67); 184; 185 (+ ch. 67); 186; 189; 197 (+ chs 67–71); 212?; 238; 246; 249; 263; 269; 271

Excerpts (chs 67–71 or 68–71)

14; 26; 276

1. Admont. Stiftsbibliothek 111* s. XI or XII. Fols 9v–93v = *DTR*. Glosses, diminishing after about ch. 25, though there are fairly extensive ones in ch. 66. Some graphic glosses, e.g. of an eclipse on fol. 18r. Additional marginal notes in a later (14th c.?) hand. Also contains *DNR*, *EpPleg*, and texts on astronomy by Hyginus and Priscian. Jones, *BOT* no. 105; Jones, *BOD* no. 1.

2. Albi, Médiathèque Pierre Almaric (Bibliothèque municipale) 38bis (61) AD 876 × 900; southern France; prov. Albi (Cathedral chapter). Fols 58r–65v = *DTR* ch. 23, followed by calendar, *computus* tables and texts, and Easter tables. Within a large compendium of canon law, dogmatic and penitential texts etc. Bischoff, *Katalog* 1, no. 20; *Computus in the Carolingian Age*; Mirabile.

3. Amiens. Bibliothèque Louis Aragon (Bibliothèque municipale) 222 (Corbie 221Q)* s. IX^{3/4}; northern France. Fol. 1 = parts of *DTR* chs 6–7; fols 2–7 and 9–17 = *DTR* from middle of ch. 8 to middle of ch. 22. Followed by Bede *DNR* (fols 19r–27r), astronomica and computistica. Bischoff, *Katalog* 1, no. 14 (only fols 1–17); Jones, *BOT* no. 16; Jones, *BOD* no. 2, who says that it is like Paris, BnF n.a.l. 1632 (no. 213). Jordanus 3824.

4. Angers. Médiatèque Toussaint (Bibliothèque municipale) 48 (41)* s. XII; St Aubin, Angers. Fols 307vb–308ra = *DTR* ch. 1 (first half: ends at ‘Decies centena milia ... digitis implicabis’). Added in main scribe’s hand at the end of Peter Lombard’s commentary on the Psalms. Jones, *BOD* no. 3; Jones, *BOT* no. 106; Jordanus 3827.

5. Angers. Médiathèque Toussaint (Bibliothèque municipale) 476 (460)* s. IX²; Brittany; prov. St Aubin, Angers. Fols 6r, 7v–8r = *DTR* chs 19 and 1 (first half); interlinear glosses. Within a *computus* album with cosmological and historical materials, numerous diagrams. Bischoff, *Katalog* 1, nos 21–2. Borst, *Schriften* 1.207–8. Jones, *BOD* no. 4; *Descriptive Handlist of Breton Manuscripts*.

6. Angers. Médiathèque Toussaint (Bibliothèque municipale) 477 (461)* AD 879; Brittany (Léon); prov. Angers (St-Aubin: Bischoff). Fols 44v–86v = *DTR* chs 1–66 (introduction). Extensive glosses (Latin, Old Welsh, and Breton), many deriving from Irish *Computus Einsidlensis* or its Irish sources. Preceded by *DNR* and *DT* (ending at ch. 13), both heavily glossed. Bischoff, *Katalog* 1, no. 22; Jones, *BOT* no. 107; Jones, *BOD* no. 5; *Descriptive Handlist of Breton Manuscripts*.

7. Ansbach. Staatliche Bibliothek (Schlossbibliothek), lat. 15 s. XV^{1/3}, prov. Riedfeld (Franciscan convent of St Wolfgang). Fols 292rb–292vb contain an extract from *DTR* ch. 5 (ed. Jones 288.105–end). Part of a clerical anthology including Isidore *De differentiis*, Honorius Augustodunensis' *Imago mundi*, *postillae* by Nicholas of Lyra et al., sermons etc. Mirabile.

8. Auxerre. Bibliothèque Jacques Lacarrière (Bibliothèque municipale) 14 (108)* s. XII; Pontigny. Fols 36r–83r = *DTR* chs 1–66 (intro. only) with interlinear and marginal glosses. Preceded by *De templo* and followed by a dialogue on *computus*, Helperic. Jones, *BOT* no. 108; Jones, *BOD* no. 6; Jordanus 3837.

9. Avranches. Bibliothèque municipale Edouard Le Héricher 135* s. XII/XIII; Mont Saint-Michel. Fols 199v–120r = excerpt of *DTR* ch. 1 in a MS otherwise devoted to Alan of Lille's *Ars praedicandi* and Peter Comestor's commentary on the Gospel of John. Jones, *BOD* no. 7; Jordanus 3846.

10. Avranches. Bibliothèque municipale Edouard Le Héricher 236 fols 82bisv–97r* s. X/XI; Mont Saint-Michel. Chs 5–10 of *DTR* (fols 88v–95r), added to a volume containing Boethius, *De institutione musica* and Bede's *De arte metrica*. Gneuss–Lapidge no. 784; Jones, *BOD* no. 8; Lapidge, *Anglo-Saxon Library* 167–73; Jordanus 3849; Mirabile.

11. Baltimore. Walters Art Gallery 73* ca. 1190; England. Fols 6v–7r = ch. 24 of *DTR* incorporated into a richly illustrated album of cosmology and astronomy, which includes several chapters from *DNR*. Other chapters

in this compendium are modelled on sections of *DTR*, e.g. fol. 8v a diagram illustrating *occeani cum luna concordiam ... ut Beda docet*. Borst, *Schriften* 1.211; Jones, *BOD* no. 9.

12. Bamberg. Staatsbibliothek Class. 55 (H J. IV. 22) s. X, XI, IX; prov. Bamberg (Cathedral). Fol. 1 = extract from *DTR* ch. 1; fol. 25r = extract from ch. 4, rearranged. In a volume of texts largely on surveying and measurement, but which includes an abbreviated chronicle and *argumenta* ascribed to Bede, as well as excerpts from Pliny, Martianus, and Macrobius. Bischoff, *Katalog* 1, p. 49; Borst, *Schriften* 1.211–12; Jones, *BP* 111; Jordanus 1061.

13. Bamberg. Staatsbibliothek Patr. 62 (E III 18) s. XIⁱⁿ.; orig. Lobbes; prov. Weissenburg (?). Fols 61–78 = *DTR* ch. 66, within a collection of historical writings that also includes Jerome's, Isidore's, and Bede's chronicles. Historical and not computistical context. Borst, *Schriften* 1.212–13; Jones, *BOD* no. 10; Mommsen 231.

14. Bamberg. Staatsbibliothek Misc. lit. 131 (A II 53)* s. IX (2nd third), s. Germany (Bischoff); prov. Bamberg Cathedral. Fols 166r–176r = extracts from *DTR*, chs 68–71, at the end of a clerical handbook containing catechetical and liturgical texts, Hrabanus' *De institutione clericorum* etc. Bischoff, *Katalog* 1, no. 222; Jones, *BOD* no. 11; Mirabile.

15. Barcelona. Arxiu de la Corona d'Aragó, Ripoll 59* s. XI; prov. S. Maria Ripoll. Fols 318v–319r = *DTR* chs 19 and 23. Part of an anthology on grammar (Priscian with Eriugena's commentary; Isidore ...). Mirabile.

16. Barcelona. Arxiu de la Corona de Aragó, Ripoll 106* s. X, XII; prov. S. Maria Ripoll. Fol. 25v = *DTR* ch. 45. Part of an extensive collection of theological and computistical materials. Jordanus 12553.

17. Barcelona. Arxiu de la Corona de Aragó, Ripoll 225* s. XI^l, prov. S. Maria Ripoll. Fols 39v–64v = *DTR* chs 25–8, 30–5 within a volume of astronomy and mathematics, including numerous treatises on the astrolabe: Juan Gómez Pallarés, 'Los *excerpta* de Beda (*De temporum ratione*, 23–5) en el MS. ACA, Ripoll 225', *Emerita*, 59 (1991): 101–22. Jordanus 12563; Mirabile.

18. Basel. Universitätsbibliothek F III 15k s. IX^{1/3} (820–40: Corradini), Benediktbeuren (Bischoff); later Mainz. Fols 57r–59r and 60r–v (the latter added in the tenth century, according to Richard Corradini, 'The Rhetoric

of Crisis: *Computus and liber annalis in Early Ninth-Century Fulda*, in *The Construction of Communities in the Early Middle Ages: Texts, Resources, and Artefacts*, ed. R. Corradini, M. Diesenberger, and Helmut Reimitz (Leiden: Brill, 2003), 305) = extracts from chs 18–19. Corradini states there are two further chapters from *DTR* and a computistical dialogue influenced by Hrabanus on fols 24v–36r. Bound with Isidore *DNR* and *De divisionibus temporum*. Bischoff, *Katalog* 1, no. 282; Jones, *BP* 110; Jones, *BOD* no. 12; Jordanus 7962.

19. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 189 (lat. oct. 155) s. XII¹; northern France or England. Fol. 42r–v = *DTR* ch. 4, within a *computus* album. Jordanus 1668.

20. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 963 (lat. fol. 192) s. XV; Trier (St Maximin). Fol. 198r–v = *DTR* ch. 1. Part of a composite MS of computistica and astronomica. Jones, *BOD* no. 21; Jordanus 1132.

21. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 1729 s. XII–XIII; prov. Rouen Jesuits. Fol. 150v = *DTR* ch. 1, following Hrabanus, *Allegoriae biblicae*. Jordanus 3144.

22. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 1831 (128) ca. 800; Verona, later at Metz. Fols 16r–89v = *DTR*. Preceded by a calendar which Meyvaert argues is close to Bede's own ('Discovering the Calendar' 37). The MS also includes *DNR*, *DT*, Isidore, *Etym.* 3.24–70 (on astronomy) and 13.1–11 (*de mundo*), extracts from Pliny, computistical 'encyclopedias' and compilations of the later eighth century, including a dialogue on *computus*. Bischoff, *Katalog* 1, no. 437; Borst, *Schriften*, 214–15, who compares this codex to Cologne 83-II (no. 61) and Paris, BnF nouv. acq. lat. 1613 (no. 209); *Computus in the Carolingian Age*; *Handschriftencensus* 6874; Jones, *BP* 112; Jones, *BOT* no. 1; Jones, *BOD* no. 13; Jordanus 3148; Mirabile; Mommsen 231.

23. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 1832 (130) s. IX (ca. 860–873; Bischoff IX^{2/3}), orig. Laon (*membrum disiectum* of Philipps 1830); prov. Metz. Fols 16r–54v, 56r–78v = *DTR*. The text is interrupted at the beginning of ch. 66 (fol. 54v), but resumes on fol. 59r with a new layout, the rubric *INCIPIUNT CHRONICA BEDAE*, and a precis of the Six Ages inspired by the first part of ch. 66. The ch. 66 chronicle is extended to the beginning of the ninth century. Contains 'Laon

glosses' in the hand of Martin the Irishman, who also corrected the text and was supervisory scribe for the whole volume. These are the glosses contained in the apparatus of Jones' *BOD* edition. The MS also includes a heavily glossed *DNR* not glossed by Martin, but augmented and corrected by him. Context is a composite *computus* volume. Bischoff, *Katalog* 1, no. 436; Borst, *Schriften* 1.215–16; *Handschriftencensus* 6875; Jones, *BP* 112; Jones, *BOT* no. 18; Jones, *BOD* no. 14 (his MS *B*); Jordanus 3149; Mommsen 231 (his MS *F*); Mirabile.

24. Berlin. Staatsbibliothek Preussischer Kulturbesitz Phill. 1833 (138)* s. X; Fleury: created under the direction of Abbo of Fleury. Fols 4r–v = *DTR* chs 17–19. This first part of the MS is largely occupied by Victorius of Aquitaine's *Calculus* and Abbo's commentary on this text, but also includes computistical texts. Abbo's distinctive *computus* album begins with the calendar on fol. 23r. Jones, *BP* 112; Jones, *BOD* no. 18; Jordanus 3150. Transcription of Abbonian section in *Abbonis Floriacensis Miscellanea*, ed. Lohr, CCCM 300.

25. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 1869 (131) s. IX^{2/3}, orig. Prüm; prov. Mettlach and St Maximinus, Trier. Fols 15r–139r = *DTR* with glosses, following calendar and computistica, *De signis coeli*. Bischoff, *Katalog* 1, no. 438; Borst, *Schriften* 1.216; Jones, *BP* 112; Jones, *BOT* no. 15; Jones, *BOD* no. 15 (his MS *T*); Jordanus 3151; Mirabile; Mommsen 231.

26. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 1895 (132) s. IX^{2/3}; Saint-Amand, later St Vincent, Metz. *DTR* chs 66 (Chronicle)–71. Bischoff, *Katalog* 1, no. 443; Jones, *BOD* no. 16; Mommsen 231.

27. Berlin. Staatsbibliothek Preussischer Kulturbesitz Philipps 1896 (137) s. VIII/IX (before 846: Bischoff); Verona. *Membrum disiectum* of a volume now in St Petersburg, Public Library MSS Lat. Q.v.9 and Lat. Q.v.IV.5, and Berlin Staatsbibliothek Preussischer Kulturgebiet Philipps 1885, containing chronicles. Contains Mommsen's 'Epitome H' i.e. end of *DTR* ch. 66 with continuation to AD 820. Bischoff, *Katalog* 2, no. 2333; Jones, *BOD* no. 17; Mommsen 321.

28. Berlin. Staatsbibliothek Preussischer Kulturbesitz lat. fol. 307 s. XII²; prov. Havelberg (Cathedral). Fol. 8r = extracts from *DTR* chs 16–22. Preceded by Sacrobosco's *Computus*, excerpts from Martianus Capella,

and Bede's *DT*; followed by works on the astrolabe and geometry, Honorius Augustodunensis' *Imago mundi*, Alcabitus' *Introductorius*, Marbod *Liber Lapidum* etc. Mirabile.

29. Berlin. Staatsbibliothek Preussischer Kulturbesitz lat. fol. 436 s. XV. Fol. 1r–2v = *DTR* ch. 1, with illustrations. These two leaves constitute the whole MS. Jordanus 1141.

30. Berlin. Staatsbibliothek Preussischer Kulturbesitz lat. q. 710 (Görres 152) s. IX; region of Trier. Fragments. *DTR* chs 38 end–39 beg., and chs 35–6 beg. are paste-downs on front and back cover of a fourteenth-/fifteenth-century book. Other fragments of the original codex, now flyleaves or paste-downs are listed by Bischoff, but without indication of whether these contain *DTR*. I have been able to confirm that Paris, BnF n.a.l. 763 (fols 1 and 171) contains part of ch. 44 and 38, while Paris, BnF n.a.l. 2199 fol. 3 contains Paschal tables, and fols 9–10 is from a *computus* treatise but not *DTR*. Fragments of the same manuscript also appear in the binding of Warsaw, Bibl. Narodowa, Rps 8100 (no. 279) with excerpts from *DTR*. The others listed by Bischoff are: Ghent, Rijksuniversiteit Centrale Bibl. 301 (paste-downs); London, British Library Add. 10940 (fols 1 and 134). Bischoff, *Katalog* 1, no. 394; Jones, *BOD* no. 22; Jordanus 1233.

31. Berlin. Staatsbibliothek Preussischer Kulturbesitz theol. lat. fol. 119 s. XII; south-eastern Germany? Lippstadt? Fols 240v–248v = *DTR* ch. 1 (illustrated). This follows Jerome's *Epistolae* and *Contra Iovinianum*, and is followed in turn by other short texts on numbers. *Handschriftencensus* 6885; Jones, *BOD* no. 19 (under the shelfmark 294); Jordanus 1241; Mirabile.

32. Berlin. Staatsbibliothek Preussischer Kulturbesitz th. f. 337 s. XII; Liesborn. Fol. 124r = *DTR* ch. 1, following Augustine, *De civitate Dei*. Jones, *BOD* no. 20; Jordanus 1242.

33. Berlin. Geh. Staatsarchiv R. 94 IX A 3 s. X/XI; prov. Werden. Fol. 1v = ch. 39; fol. 4r = ch. 29; fols 18v–22r = chs 24, 18. Part of a *computus* album. Jones, *BP* 111; Jones, *BOT* no. 17; Jones, *BOD* no. 23.

34. Bern. Burgerbibliothek 110 s. X; Metz. Fol. 1r–v = parts of *DTR* chs 1 and 4; this is a single, separate leaf, not related to the rest of the codex. Jones, *BP* 113; Jones, *BOT* no. 19; Jones, *BOD* no. 24; Jordanus 7991.

35. Bern. Burgerbibliothek 207* s. VIII–IX; Fleury. The manuscript is an album of *computistica* and *grammatica*, followed by Donatus. Fols Ar–v =

DTR ch. 1, including the table of Greek letter numbers, along with Ogham and runic alphabets. Jones (*BOT*) speculates that this may be the earliest surviving witness to the separate copying of ch. 1. Bischoff, *Katalog* 1, no. 551a; *CLA* 5.568; *Descriptive List of Breton Manuscripts, c. AD 780–1100* <https://ircabritt.nuigalway.ie/handlist/catalogue/22>; Jones, *BOT* no. 20; Jones, *BOD* no. 25; Jordanus 7993; Mirabile.

36. Bern. Burgerbibliothek 417 s. IX^{1/2}; region of Tours. An album of *computus* and astronomy, including *DTR* chs 16–18 on fols 27r–31v (Jones, *BOD*) or 29r–31v (Jones, *BOT*). Bischoff, *Katalog* 1, no. 592; Borst, *Schriften* 1.217–18; Jones, *BP* 113; Jones, *BOT* no. 21; Jones, *BOD* no. 26.

37. Bern. Burgerbibliothek 610 s. IX^{2/3}; Fleury (region of Tours: Bischoff). Fols 81v–82v = *DTR* Pref. and capitula for chs 1–33 only. The manuscript is an album of *computus* and astronomy, which includes Isidore, extracts from *Etym.* and *DNR*, and Bede's *DNR* and *DT* (the latter two run together as one work). Bischoff, *Katalog* 1, no. 609; Jones, *BP* 113; Jones, *BOT* no. 22; Jones, *BOD* no. 27.

38. Besançon. Bibliothèque municipale 186* s. IX^{2/3} (Bischoff); Lotharingia? Fols 41v–43v = *DTR* ch. 39; fols 45r–46r = chs 46 and part of 45; fols 70v–161v = full text of *DTR*. Within a composite volume containing (1) Bede's verse Life of Cuthbert and *DNR*, and (2) a compilation on *computus* with ninety numbered chapters with *annus praesens* 819, closely related to **105**; Jones; Borst). Bischoff, *Katalog* 1, no. 626; Borst, *Schriften* 1.219; Jones, *BP* 114; Jones, *BOD* no. 23; Jones, *BOD* no. 28.

39. Bologna. Biblioteca Comunale dell'Archiginnasio, Serie A 144 s. XIV^{ex}. Fols 33v–50r = *DTR* (Chronicle?), followed by Bede's *HE* and preceded by two other chronicles. Mirabile. This may be identical to the MS of the same date listed as Bologna, Biblioteca civica B II 10 by Jones (*BOD* no. 29, with no details as to contents) and Mommsen 231–2, 'inter excerpta ex Bedae operibus varia librum quoque de temporum ratione exhibet ...'. Mommsen adds that the Chronicle has been 'edited' with additional information.

40. Bologna. Biblioteca universitaria M XV 50 (n. 2537) s. XV; San Salvatore. *DTR* chronicle with interpolations from Isidore's chronicle. Jones, *BOD* no. 30, who provides no details; Mommsen 232.

41. Bordeaux. Bibliothèque Mériadeck (Bibliothèque municipale) 11 (109)* s. XII; La Sauve Majeure. Appended to a volume of the Gospels

is a *computus* collection. Fols 198v–213r = *lectiones* on *computus*, many consisting of abbreviated excerpts from *DTR* including chs 11–15, 36, 1 and edited versions of 22, 17, 43, 60, 65, 17. These are interlarded with non-Bede materials, including *argumenta*, excerpts from Macrobius. Also contains the ‘Melk Commentary’ (fols 210v–211v; no rubric) and Heleric’s *De computo*. Jones, *BOD* no. 31; Jordanus 3855.

→ **Braunschweig Stadtbibliothek Fragm. 70** see 47.

42. Brussels. Bibliothèque royale 1791–1794* s. IX^{3/3}; Auxerre (Bischoff). *Ado, Martyrologium* and lives of saints, followed on fol. 98v–99v with abbreviated extracts from ch. 66 chronicle, AM 4362–4518. Bischoff, *Katalog* 1, no. 702; Jones, *BOD* no. 32; Mommsen 232.

43. Brussels. Bibliothèque royale 6439–6451* s. X or XI; St-Bertin?. This is a volume of histories, chronicles, and annals. Fols 116v–117r contain an extract from the ch. 66 chronicle from AM 3648 to the end, with some interpolations. Jones, *BOD* no. 33; Mommsen 232.

44. Brussels. Bibliothèque royale 9706–9725 s. XII; St Laurent, Liège. fols 1r–30r = *DTR* ch. 66 Chronicle (with interpolations relating to Frankish and Byzantine history), heading up a volume of conciliar *acta* and papal letters. Jones, *BOD* no. 34; Mommsen 232–3.

45. Brussels. Bibliothèque royale 9837–9840 s. XII; St-Amand. Fols 25r–109v = *DTR* with ‘Valenciennes’ glosses (see Introduction, p. 118). Jones considered it likely to be a copy of Valenciennes 174 (no. 240), another St-Amand manuscript. This volume also contains Bede *DNR*, *DT*, *EpW*, as well as calendar and *computus* tables. Jones, *BP* 114; Jones, *BOT* no. 24; Jones, *BOD* 35; Jordanus 659; Mommsen 233.

46. Brussels. Bibliothèque royale 9932–9934 s. XI; orig. St-Amand; prov. St-Laurent, Liège. Fols 26v–90v = *DTR* chs 1–65. Preceded by Bede’s *DNR* and *DT* and Abbo of Fleury’s *Ephemerida*. Jones, *BP* 114; Jones, *BOT* n. 25; Jones, *BOD* n. 36; Jordanus 661; Hubert Silvestre, ‘Le Hand-List de Laistner–King et les manuscrits bruxellois de Bède’, *Scriptorium*, 6.2 (1952): 287–93 at 289.

47. Bückeburg. Niedersächsisches Landesarchiv Dep. 3/1 fols i–viii s. VIII; Wearmouth?; prov. Fulda, Corvey. This is a fragment of a codex, portions of which also survive as Münster, Nordrhein-Westfälisches Staatsarchiv Msc I, no. 243 fols 1–2, 11–12 (intervening folios written at

Fulda) and Braunschweig Stadtbibliothek Fragm 70. The Bückeburg section contains *DTR* chs 46–50, 56–9, 63–4. The Münster section was begun before 740 and contains Paschal tables from 532–1063 with Lindisfarne annals for 532–703 and Corvey annals for 658–1148 (n.b. not *DTR* ch. 66, as Jones claims). The Münster section probably arrived in Fulda around 778 at the latest and then was transferred to Corvey. Jones, *BOD* n. 37; Corradini, ‘Rhetoric of Crisis’ 281–5; *CLA* 9, nr. 1233–4; J.J. John, ‘Addenda to *Codices latini Antiquiores* (II)’, *Mediaeval Studies*, 54 (1992): 286–307 at 303. Gneuss–Lapidge no. 856 (Münster section); Lapidge, ‘Beda Venerabilis’ 68; Mirabile; Petersohn, ‘Neue Bedafragments’; Story, ‘The Frankish Annals’ 61–6. Braunschweig fragment listed on Trismegistos under reference 67374 www.trismegistos.org/text/67374. For discussion see Introduction, pp. 90–1.

48. Cambrai. Le Labo (Bibliothèque municipale) 245 (235) s. XII–XIII; Cambrai Cathedral. *DTR* forms the entire contents of this volume. Jones, *BOD* no. 38.

49. Cambrai. Le Labo (Bibliothèque municipale) 925 (824) s. IX^{2/3}; north-eastern Germany? (Bischoff); prov. Cambrai Cathedral. Fols 1v–63v = *DTR* 1–66 (intro.); this is the entire contents of this volume. Bischoff, *Katalog* 1, no. 809; Jones, *BOT* no. 26; Jones, *BOD* no. 38; Jordanus 3870.

50. Cambridge. Corpus Christi College 291* s. XI/XII (ca. 1000: Borst); Canterbury (St Augustine). Fols 1r–112r = *DTR* with sparse glosses, followed by *EpW*, within a *computus* album. Borst, *Schriften* 1.222–3; Gneuss–Lapidge, no. 85; Jones, *BP* 114; Jones, *BOT* no. 27; Jones, *BOD* no. 40; Mirabile; Mommsen 233.

51. Cambridge. Corpus Christi College 313* s. XII/XII. Fol. 2r = *DTR* ch. 1. The remainder of the volume contains Florus’ Epitome of Livy and Ralph Diceto, together with numerous historical and geographical notes. Jones, *BOD* no. 41; Jordanus 5867.

52. Cambridge. Corpus Christi College 315* s. XIV. Works by Richard and Andrew of St Victor, together with numerous extracts on the geography and history of the Holy Land. Pp. 115–135 = *DTR* ch. 66 Chronicle, preceding Bede’s *De locis sanctis*. Jones, *BOD* no. 42; Mommsen 233.

53. Cambridge. St John’s College 22 (A.22)* s. XII (1132?); Reading Abbey. Fol. 1r–87v = *DTR* with sparse glosses, followed by *EpW*, Helperic, Paschal tables, and computistica. Jones compares to London, British

Library Royal 12 D IV (no. 121). Jones, *BP* 114; Jones, *BOT* no. 28; Jones, *BOD* no. 43; Mirabile.

54. Cambridge. St John's College 221 (I.15)* s. XII; prov. Whitefriars, London. Fols 1r–98r (pp. 19–224) = *DTR* with 'graphic glosses' (Wallis, 'Diagrams as Glosses'); Paschal tables interpolated into ch. 44. Followed by *EpW*; Dionysius Exiguus; Helperic, *De computo*; Abbo of Fleury, *Ephemerida* and texts on astronomy; Walcher of Malvern; cosmographical anthology; Robert of Hereford; Gerlandus Compotista, *De computo*. An extensive *computus* album. Jones, *BP* 115; Jones, *BOT* no. 29; Jones, *BOD* no. 44.

55. Cambridge, Trinity College B.3.5 s. XII; Canterbury. Jerome's commentaries on the Minor Prophets and Daniel. Fol. 144 = *DTR* ch. 8, added in a later hand.

56. Cambridge. University Library Ff.I.27 (1160) s. XII; Sawley (*membrum disiectum* of Cambridge, Corpus Christi College 66). Pp. 73–114 = *DTR*. Explicit at end of ch. 65, but then continues directly with chs 66–71. Embedded within a collection of historical works (Gildas, Gerald of Wales...). Jones, *BOD* no. 45.

57. Carpentras. Bibliothèque Inguimbertaine (Bibliothèque municipale) 1792 s. XV–XVII. A collection of historical and computistical materials, once part of Fabri de Peiresc's library. Fol. 123r = *DTR* ch. 4. Jones, *BP* 115; Jones, *BOD* no. 46.

58. Cava. Biblioteca statale del Monumento Nazionale della Badia di Cava 3* s. XI^{med}. Fols 1r–76r = *DTR* in Beneventan script with full figure illustrations of finger reckoning positions for ch. 1 (incomplete) on fols 3v–4v; occasional marginal glosses in chronicle. This is the first item in a monumental and impressive *computus* album. It is followed by *computus* tables, calendar, an anthology of *computus* poetry, Paschal tables from BC 1 to AD 1538 with marginal annals, etc. Closely related to Madrid 19 (no. 129). Borst, *Schriften* 1.223; Jones, *BOT* no. 109a; Jones, *BOD* no. 47; Jordanus 8318; Mommsen 233.

59. Chartres. Médiathèque L'Apostrophe (Bibliothèque municipal) 19 (destroyed) s. X, Chartres Cathedral. Fols 16r–87r = *DTR* with 'Auxerre' glosses. Also contained a separate extract of ch. 19, and Bede's *DNR*, within a *computus* album. Jones, *BP* 115; Jones, *BOT* no. 30; Jones, *BOD* no. 48.

60. Chartres. Médiathèque L'Apostrophe (Bibliothèque publique) 75 (destroyed) s. IX¹ (but Bischoff thinks it contained more recent material, notably by Abbo); Chartres (Cathedral). Fols 8r–122r = *DTR*, glossed. Also included *EpW*. Jones (*BOD*) says it resembled Melk 412 (no. 133). Bischoff, *Katalog* 1, n. 885; Jones, *BOT* no. 31; Jones, *BOD* no. 49; Jordanus 3895.

61. Cologne. Dombibliothek 83-II* 798 and 805; Cologne (Cathedral). An extensive album of astronomy, cosmology and *computus*, with conspicuous Irish materials. Fols 86–125v = *DTR* in a radically re-ordered and abbreviated version, with its own *capitula* list. Almost every chapter is represented, except those dealing with astronomy and cosmology and chs 66–71. Not coincidentally, Septuagint reckoning is used at other points in the compilation: see Palmer, 'Ends and Futures', 154 n. 62. Bischoff, *Katalog* 1 no. 1907; Borst, *Schriften* 1.236–238; *CLA* 8.1154; Jones, *BP* 115; Jones, *BOT* no. 32; Jones, *BOD* no. 50; Jordanus 1921; Mirabile. See also Introduction, pp. 92–3.

62. Cologne. Dombibliothek 102* s. X and XI; Cologne. Fols 21r–48v, 54r–94r = chs 5–65 (the final gatherings are missing), with glosses. Jones (*BP* 12) identifies this MS, along with Dombibliothek 83-II, as the source of Noviomagus's *incerti auctoris* glosses (see Introduction, p. 123) Preceded by calendar and Paschal tables. Jones, *BP* 116; Jones, *BOT* no. 33; Jones, *BOD* no. 51; von Euw in *Glaube und Wissen*, 313–314.

63. Cologne. Dombibliothek 103* s. VIII/IX (ca. 795; Borst: shortly after 810); Cologne. Fols 52v–184r = *DTR* with glosses. There is an *explicit* after ch. 65, but the text immediately continues to the end of ch. 71. Follows *DNR*, *DT*, and *EpW*. A *computus* album designed to showcase the works of Bede: see Introduction, pp. 92–3. Bischoff, *Katalog* 1 no. 1916; Borst, *Schriften* 1.23; *CLA* 8.1158; *Computus in the Carolingian Age*; Jones, *BP* 116; Jones, *BOT* no. 2; Jones, *BOD* n. 52 (his MS C); Jordanus 1929; Mirabile; Mommsen 234.

64. Darmstadt. Universitäts- und Landesbibliothek 146 ca. 1500; Wesal, Carthusian monastery. Fols 221r–248v = *DTR* ch. 66 Chronicle. Jones, *BOD* no. 53; Mommsen 233.

65. Darmstadt. Universitäts- und Landesbibliothek 1020 s. XII (Borst: before 1150); Liège (St Jacques). Fols 1r–17v = excerpts from *DTR* chs 5, 8 (beg.), 7, 38, 40, and 42. Ch. 1 also appears on fols 50r–v. A *computus* album with calendar and tables, Helperic, Abbo of Fleury, a fragment

of Hermannus Contractus' *Compotus abbreviatus*, his *De utilitatibus astrolabii*, Petrus Alfonsi, and other astronomica and computistica. Borst, *Schriften* 1.224; Jordanus 1279.

66. Darmstadt. Universitäts- und Landesbibliothek 4262* s. VIII¹; Wearmouth-Jarrow. This bifolium, used as a wrapper for a sixteenth-century printed book, contains *DTR* chs 26 (latter half)–28 with interlinear glosses. Described, transcribed, and illustrated in Staub, 'Ein Beda-Fragment des 8. Jahrhunderts'. *CLA* Suppl. 1, no. 1822; Gneuss–Lapidge no. 818; Jones, *BOD* n. 53; Mirabile. See Introduction, pp. 90–1.

67. Dijon. Bibliothèque municipale 448 (269)* s. XI and s. X; unidentified Benedictine abbey, possibly St Peter and St Paul at Bèze near Dijon (Jeudy and Riou, 499); Borst says in bishopric of Toul, or at least in a Benedictine monastery between Lorraine and Burgundy, Moselle and Marne; prov. St-Bénigne (where it arrived by 1060 at the latest). Part 1 (s. XI) (fols 2v–93) is a lavish Abbonian *computus* album that contains *DTR* ch. 4 (fol. 1r), ch. 65 (fol. 18r), and chs 23 and 19 (fol. 83r, with *Pagina regularis* on 83v). Part 2 (s. X, fols 94r *sqq.*) contains Helperic with glosses and three treatises by Bede: fols 108r–172v, 194r–200v (separated due to misbinding of a gathering) = *DTR* (glossed), followed by *DNR* and *DT*, *De divisionibus temporum*, and other computistica, including the opening section of 'Melk commentary'. Colette Jeudy and Yves-François Riou, *Les manuscrits classiques latins des bibliothèques publiques de France. Tome 1 Agen-Évreux* (Paris: Éditions du CNRS, 1989), 483–500; Borst, *Schriften* 1.224–5; Jones, *BP* 116; Jones, *BOT* no. 110; Jones, *BOD* no. 54; Jordanus 3924; Mirabile.

68. Douai. Bibliothèque Marceline Desbordes-Valmore (Bibliothèque municipale) 246 s. XII; Anchin. Fol. 38r = *DTR* ch. 1 within a collection of patristic texts, mostly by Jerome. Jones, *BOT* no. 111; Jones, *BOD* no. 55; Jordanus 3926.

69. Einsiedeln. Stiftsbibliothek 174 s. X²; orig. Einsiedeln?; prov. Einsiedeln. Fols 68r, 78r–v, 82r = *DTR* chs 30, 32, and beginning of ch. 4. Preceded by Bede's commentary on Acts, computistica and calendar. Jones, *BP* 116; Jones, *BOT* no. 34; Jones, *BOD* no. 56.

70. Einsiedeln. Stiftsbibliothek 178 s. X¹; orig. Einsiedeln? St Gall?; prov. Einsiedeln. Pp. 1r–203r = *DTR*, followed by astronomica (pp. 204–13). Jones, *BOT* no. 35; Jones, *BOD* no. 57; Mommsen 233.

71. Einsiedeln. Stiftsbibliothek 321 pt 2* After 874; Strassbourg (Borst) or St Gall (Loevenich) or Lake Constance region (Bischoff). *Computus* anthology containing extracts of *DTR* chs 19 and 23 (pp. 125–6), following directly on the end of the *Computus Einsidlensis*. Bischoff, *Katalog* 1, no. 1131; Borst, *Schriften* 1.227–8; Jones, *BP* 117; Jones, *BOD* no. 58.

72. El Escorial. Real Biblioteca de San Lorenzo lat. R III 9, pt 2 s. XII. Fol. 120r = *DTR* ch. 11. Followed by extracts from *DNR*. Jones, *BOT* no. 117; Jones, *BOD* no. 109; Jordanus 12769.

73. El Escorial. Real Biblioteca de San Lorenzo &. I. 3 1047. Isidore, *Etymologiae*, followed by a suite of extracts from *DNR* (fols 234–9) which includes *DTR* ch. 11 on fol. 237v. Jordanus 12703.

74. Évreux. Médiathèque centrale (Bibliothèque municipale) 60* s. XII; prov. Abbaye de Lyre. Fols 45r–136r = *DTR* with glosses, within *computus* album which also includes Helperic and *EpW*. Jones, *BOT* no. 112; Jones, *BOD* no. 60; Mommsen 233.

75. Évreux. Médiathèque centrale (Bibliothèque publique) 67 s. XI^{ex}–XIIⁱⁿ; prov. Abbaye de Lyre. Fols 1r–83v = *DTR*. Apart from a few tables, this is the only item in this codex. Jones, *BOT* no. 113; Jones, *BOD* no. 61.

76. Florence. Biblioteca Marucelliana A 251 s. X. Contents not confirmed, but includes ch. 66 Chronicle. Jones, *BOD* no. 69; Mommsen 234.

77. Florence. Biblioteca Medicea Laurenziana Ashburnham 10 (54–11) s. IX^{4/4}; northern France; prov. Beauvais (St-Pierre). Psalter, canticles, and prayers, with at the end excerpts from *DTR* comprising at least chs 35–37, 44, and possibly chs 47, 49, 56–57, 45, 60 (rubrics are listed in *I codici Ashburnhamiani della Biblioteca Medicea Laurenziana di Firenze* (Indici e Cataloghi, Vol. 1, 1 (Rome: I Principale Librai, 1887), 16–17). Bischoff, *Katalog* no. 1211 (under shelf-mark 54); Jones, *BOD* no. 70 (under shelf mark as above).

78. Florence. Biblioteca Medicea Laurenziana Faes. 108 s. XV. Ch. 66, Chronicle. Jones, *BOD* no. 66; Mommsen 234. Jones says this is a copy of no. 79.

79. Florence. Biblioteca Medicea Laurenziana Plut. 22 dextr. n. 12 s. XIII. *DTR* ch. 66, chronicle only. Mommsen 234.

80. Florence. Biblioteca Medicea Laurenziana Plut. 65.35* s. X. Fol. 2r = *DTR* ch. 1, prefacing a volume of chronicles and histories (Isidore, Eutropius, Paul the Deacon ...). Jones, *BOD* no. 63.

81. Florence. Biblioteca Medicea Laurenziana Plut 66.19* s. XIV. copy of no. 79 (Jones). Justin's epitome of Pompeus Trogus; Honorius Augustodunensis, *Imago mundi*; Orosius; and on fols 102v–123v *DTR* ch. 66 (beginning at the second introduction), 67–71, but ending at Jones ed. 543.57; Solinus. Jones, *BOD* no. 64; Mommsen 234.

82. Florence. Biblioteca Medicea Laurenziana Plut. 67.11 s. XV. Copy of no. 79 (Jones). *DTR* ch. 66, Chronicle. Jones, *BOD* no. 65 (with incomplete shelf-mark); Mommsen 234.

83. Florence. Biblioteca nazionale centrale. Magliabechiano J. VII 46 conv. supp. J. VII 46 1472. Contents not confirmed, but contains ch. 66 Chronicle. Jones, *BOD* no. 68. Mommsen (234) says this is related to no. 79.

84. Florence. Biblioteca Riccardiana 410* s. XV. *DTR* ch. 66 chronicle only (fols 68v–107r) within a volume of histories and biographical compendia. Jones, *BOD* no. 67, who says this is a copy of no. 79; Mommsen 234.

85. Geneva. Bibliothèque de Genève 50* s. IX^{1/4}; Massay (Borst: 818–30, prob. ca. 825). A 'Sirmund'-type library of *computus* texts. Fols 45r–120r = *DTR*, following *DNR*, *DT*, and *EpW*, and excerpts from chs 29, 17, and 18 on fols 41v–44r. Also includes materials by Alcuin and items from Carolingian encyclopedias. Bischoff, *Katalog* 1, no. 1351; Borst, *Schriften* 232–3; Jones, *BP* 117; Jones, *BOT* no. 12; Jones, *BOD* no. 71 (his MS *E*); Jordanus 8029; Mirabile.

86. Gerona. Biblioteca Diocesana del Seminari 2 s. XII^{ex}. Fols 82v–99v = *DTR* ch. 66. At the end of a series of exegetical texts by Jerome and ps.-Jerome. A. Cordoliani, 'Inventaire des manuscrits de comput ecclésiastique conservés dans les bibliothèques de Catalogne', *Hispania Sacra*, 4 (1951): 376; Jordanus 12796; Jaume de Puig i Oliver, 'Catàleg dels manuscrits de la Biblioteca Diocesana del Seminari de Girona. I Manuscrits 1–50', *Arxiu de textos catalans antics*, 31 (2014–16): 7–531 at 58–64.

87. Glasgow. University Library Hunter 85 (T.4.2)* s. XII^l; Durham Cathedral Priory. Fols 35r–93v = *DTR*, glossed, including 'graphic glosses'

like those in Oxford, St John's College 17 (no. 174), London, British Library Cotton Tiberius E 4 (no. 113), and Cambridge, St John's College 221 (I.15) (no. 55). Followed by *EpW*, works by Abbo, Walcher of Malvern, and Robert of Hereford, *De ratione computi* (ascribed to Bede in the much later rubric, and also found in Paris, lat. 4860, no. 183), Hyginus. Related to Cotton Tiberius E IV (no. 113), Egerton 3088 (no. 115), Bodleian Auct. F.3.14 (no. 161). Jones, *BP* 117; Jones, *BOT* no. 36; Jones, *BOD* no. 72; Jordanus 6832; Mirabile.

88. Göttweig. Bibliothek des Benediktinerstifts 110 (52, pt 1)* s. XII. *Vitae* of St Remigius and St Otmar, followed by *DTR* Chronicle to AM 3952 (fols 43v–57r) and Swabian *Chronicon Universale* (57v–82v). Mirabile.

89. Graz. Universitätsbibliothek 297 (39/9 Folio)* s. XII¹; St Lambrecht. Fols 9v–111v = *DTR* (glossed), following *DNR* and followed by astronomica. Mirabile.

90. Hamburg. Staats- und Universitätsbibliothek, Cod. Alchim. 730 s. XVI. Pp. 403–17 = *DTR* ch. 1, within a MS of works by Valentin Wiegel (1533–1588) on geomancy and astrology, and related topics. Jordanus 1794.

92. Hannover. Niedersächsische Landesbibliothek, V. 394 s. XII–XIII; prov. Marienrode. Within a MS of astronomical and astrological texts and tables, fol. 82r = *DTR* ch. 4 with 'B' glosses (see Introduction, pp. 114–7). Part of a sub-section on measures. Jordanus 1694.

93. Ivrea. Biblioteca capitolare XXXII (3) s. X/XI. Fols 18r–19r = *DTR* chs 63–65, following *DNR*. Bischoff, *Katalog* 1, no. 1559; Jones, *BOT* no. 37; Jones, *BOD* no. 73; Mirabile.

94. Ivrea. Biblioteca capitolare XLII (6) s. IX^{1/4}; France. fols 2r–58v = chs 7–66 (intro.) Missing first gathering? Also contains computistica and canons. Bischoff, *Katalog* 1, no. 1569; Jones, *BOT* no. 38; Jones, *BOD* no. 74; Jordanus 10568.

95. Karlsruhe. Badische Landesbibliothek Aug. perg. 167* s. IX^{2/3} ca. 848; from an Irish centre in northern France, perhaps Soissons; prov. Reichenau (Bischoff). Fols 23v–46r = *DTR* with Latin and Old Irish glosses. Capitula initially stopped at ch. 65 but a later hand added those for 66–71, even though these chapters are not actually included. Substitutes short chronicle from Isidore's *Etymologiae* with its Septuagint annus

mundi for ch. 66 (fol. 46r–47v). This manuscript also contains *DNR*, *DT*, calendar from Soissons-Laon, Paschal tables with Reichenau annals, and Irish computistica. Bischoff, *Katalog* 1, no. 1676; Corradini, ‘Rhetoric of Crisis’ 297–8; Jones, *BP* 117–18; Jones, *BOD* no. 75 (his MS K); Mirabile.

96. Karlsruhe. Badische Landesbibliothek Aug. perg. 172, pt 1* s. IX¹; south-western Germany. Fols 1r–15v = *DTR* ch. 66 (end of AM 4290)–71 (numbered 72). Bischoff, *Katalog* 1, no. 1678; Jones, *BOD* no. 76; Corradini, ‘Rhetoric of Crisis’ 298 n. 117.

97. Karlsruhe. Badische Landesbibliothek Aug. perg. 229 pt 1* ca. 821; orig. region of Chieti (Santo Stephano in Lucana: Borst); prov. Reichenau (Bischoff). A *computus* album based on an archetype datable to 780, in which fols 24r–30v = *DTR* chs 20, 21, 36, 38, 39, 43, 48, 49, 50, 61, 62, 64, 55 (with *annus praesens* of 725). Bischoff, *Katalog* 1, no. 1719; Borst, *Schriften* 235–6; Jones, *BP* 118; Jones, *BOT* no. 39; Jones, *BOD* no. 77; Jordanus 1745.

98. Karlsruhe. Badische Landesbibliothek Aug. perg. 239* s. Xⁱⁿ; orig. possibly Reichenau. Fols 1r–168v = *DTR* which occupies the entire manuscript. Bischoff, *Katalog* 1, p. 362; Jones, *BOT* no. 40; Jones, *BOD* no. 78; Mommsen 234.

99. Kassel. Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel Astron. fol. 2* *post* 802, *ante* 822; Fulda. Easter tables with Fulda annals, *computus* tables, texts and *argumenta*, are followed by *DTR* with glosses on fols 10–84r: ‘a pedagogical manual produced under the close supervision of Hrabanus’ (Corradini, ‘The Rhetoric of Crisis’ 278–9). Written by several scribes, some writing in Anglo-Saxon hands. Bischoff, *Katalog* 1, no. 1790; Jones, *BP* 118–19; Jones, *BOT* no. 3; Jones, *BOD* no. 79 (his MS F); Jordanus 1811; Mirabile; Mommsen 234.

100. Kassel. Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel Astron. q. 1* s. X (AD 954); Fulda. Fols 1v–112v = *DTR* with glosses, some contemporary and others later (s. XII?). Bischoff, *Katalog* 1, no. 1791; Jones, *BP* 119; Jones, *BOT* no. 41; Jones, *BOD* no. 80.

101. Kassel. Landesbibliothek und Murhardsche Bibliothek der Stadt Kassel 20 ms. Hass. 57 ca. 900; Fulda. Fragments of *DTR* ch. 66, used in the seventeenth century as covers for two notebooks of Landgraf Philipp of Hessen. Corradini, ‘Rhetoric of Crisis’, 294 n. 106.

102. Klosterneuburg, Stiftsbibliothek 685* s. XII. Bede's *DNR* and *DT*, followed by *DTR* (glossed) on fols 14v–64v; ch. 66 is omitted. Followed by Hyginus. Jordanus 11335.

103. Laon. Bibliothèque Suzanne Martinet (Bibliothèque municipale) 422* s. IX^{1/4}; north-western France. Following Isidore *DNR* is a consolidated *computus* encyclopedia entitled *De astronomia et compoto*, containing fol. 57v–59r = extract *DTR* ch. 6; fol. 68v–69r = *DTR* ch. 19 (68v–69r) + *Pagina regularis* on fol. 69v; fol. 70r = *DTR* ch. 23. Bischoff, *Katalog* 2, no. 2114; Bisagni, *From Atoms to the Cosmos* 30–3; Borst, *Schriften* 1.238–9.

104. Leiden. Biblioteek der Rijksuniversiteit BPL 154* s. XIII. Fols 37v–39r = *DTR* ch. 1, embedded in a collection of texts on grammar. Jones, *BOD* no. 84; Jordanus 10897.

105. Leiden. Biblioteek der Rijksuniversiteit Scaliger 28* s. IX (ca. 816); Flavigny; after s. X in Lausanne. Fols 43r–138r = *DTR*, following Irish *De divisionibus temporum* and other 'Sirmond' texts. Some dates in Bede's argumenta have been altered to 800 or 801. Ch. 66 chronicle replaced with the 'Chronicle of 741'. Contains Victorius' and Dionysius' tables, with annals (see p. 492 and Commentary on ch. 66, p. 527). Bischoff, *Katalog* 2, no. 2180; Jones, *BP* 119; Jones, *BOT* no. 42; Jones, *BOD* no. 32; Mommsen 238.

106. Leiden. Biblioteek der Rijksuniversiteit Scaliger 38* s. XI (ca. 1045); somewhere between Fleury and Prüm, in a centre influenced by St Denis (Borst). Fol. 22r–v = *DTR* ch. 18. Part of a larger Abbonian-style, table-based *computus*, particularly attuned to the mathematical writings (astrolabe, abacus, rithmomachia) of Gerbert of Aurillac, Abbo of Fleury, Bernelin of Paris, and Hermann of Reichenau. Borst, *Schriften* 1.239–40; Jones, *BP* 119; Jones, *BOD* no. 83.

107. Leipzig. Universitätsbibliothek Theol. 349* s. XIII; Altleipzig. *DTR* constitutes the second booklet of this composite volume: fol. 73r–112v. No capitula. Text omits ch. 66 but includes chs 67–71. The first booklet is Bede's commentary on the Catholic Epistles. Jones, *BOD* no. 81.

108. London. British Library Additional 19723 s. X; prov. Ottonian Abbey. Fols 54v–55v = excerpts from *DTR* (chapters not confirmed) following texts by Aileranus Sapiens and Juvenius. Mirabile; *Handschriftencensus*.

109. London. British Library Additional 19906 s. XIV. Fols 60v–74r = *DTR* (Chronicle only? rub.: ‘Liber Bedae de temporibus’) following Justin’s epitome of Pompeius Trogus. Jones, *BOD* no. 85; Mommsen 235.

110. London. British Library Additional 22635 s. XIV. Fol. 48r–51r *DTR* ch. 66, ending with the reign of Nero. Jones claims that Harley 4123 (no. 119) is a copy of this. Jones, *BOD* no. 86; Mommsen 235.

111. London. British Library Cotton Faustina A. VIII s. XIII. *DTR* ch. 1 (fol. 41v) within a collection of chronological and historical writings. Jordanus 6671.

112. London. British Library Cotton Julius A 2 pt 1* s. XI or early s. XII. *DTR* fragment (chs 66–70) fols 2–9 (probably a *membrum disiectum* of a full copy, as it begins in the middle of the text). Jones, *BOD* no. 87; Mirabile; Mommsen 234.

113. London. British Library Cotton Tiberius E 4* s. XII/XII or s. XIII in.; Winchcombe. *DTR* fols 46r–125r (*EpW* is interpolated as ch. 66, making for a total of seventy-three chapters). ‘Graphic glosses’ like those in Oxford, St John’s College 17 (no. 174), Glasgow, Hunter 85 (no. 87), and Cambridge, St John’s College 221 (I.15) (no. 55). Fols 134v–135r = excerpt ch. 4. Also contains *DNR* and *DT*, Helperic, Abbo, Walcher of Malvern, and Robert of Hereford. Jones, *BP* 120–1; Jones, *BOT* no. 43; Jones, *BOD* no. 90; Jordanus 6688; Mirabile; Mommsen 234.

114. London. British Library Cotton Vespasian B 6, pt 1* s. IX^{2/4}; northern France (possibly St Denis: Bischoff); in England by s. XI. Fols 1r–102r = *DTR*, missing Preface and *capitula*. Glosses, many added in England, s. XI or early s. XII (ch. 66 especially heavily annotated) Glosses include a marginal comparative table of Hebrew and Latin months fol. 14v; ch. 22 (fol. 26r) adds musical notation to Bede’s list of months and days. Bischoff, *Katalog* 2 no. 2426; Gneuss–Lapidge no. 384; Jones, *BP* 121; Jones, *BOD* no. 5; Jones, *BOD* no. 91 (his MS *L*); Lapidge, *Anglo-Saxon Library* 167–73; Jordanus 6697; Mirabile; Mommsen 234–5; Alma C. Santosuosso, ‘Music in Bede’s *De temporum ratione*: an eleventh-century addition to MS London, British Library, Cotton Vespasian B. VI’, *Scriptorium*, 43 (1989): 255–9.

115. London. British Library Egerton 3088* ca. AD 1244; Dore Abbey. Copy of London, British Library Cotton Tiberius E IV (no. 113). Fols 1r–63r = *DTR* with ‘graphic glosses’ like its exemplar. Missing chs 16–22

due to loss of a gathering. *EpW* is interpolated as ch. 66, making for a total of seventy-three chapters. Followed by *DNR*; letters of Dionysius Exiguus; Abbonian materials; Robert of Hereford; Hugh of St Victor on the Book of Chronicles; Paschal tables with annals. Jones, *BP* 121–2; Jones, *BOT* no. 43; Jones, *BOD* no. 93; Mirabile.

116. London. British Library Harley 3017* 861–864; origin Nevers (?) or Fleury (Borst); prov. Fleury. *Computus* album, including *DTR* excerpts: ch. 19 (fol. 133v–134v), ch. 35, in part (fol. 143r–v), ch. 48 (165r–v), ch. 50, first half (fols 165v–166r), ch. 51, first half (fols 166r–167v), ch. 65 (fol. 167v–168v). Fols 168v–172v = Bede, *DT*. Bischoff, *Katalog* 2 no. 2466; Borst, *Schriften* 1.244–5; Gneuss–Lapidge no. 432.5; Jones, *BP* 122; Jones, *BOT* no. 45; Jones, *BOD* no. 94; Jordanus 6799.

117. London. British Library Harley 3091* s. IX^{2/3} (Bischoff); Nevers. Fols 41r–128v = *DTR* (glossed) complete to middle of ch. 68, due to missing gathering. Volume also includes *DNR* (fols 6r–12), *DT* (fols 12v–17v), *EpW* (fol. 17v–19v), Bede, *In Regum librum XXX quaestiones* (fols 129r–139r), computistica and theological texts. *DTR* ch. 19 is separately excerpted (fols 19v–21v) with section containing calendar and *computus* tables (fols 22r–40r). Bischoff, *Katalog* 2 no. 2476; Borst, *Schriften* 245; Jones, *BP* 122; Jones, *BOT* no. 46; Jones, *BOD* no. 95; Jordanus 6802; Mirabile; Mommsen 235.

118. London. British Library Harley 3668 s. XVI. *DTR* ch. 66 Chronicle (incomplete: ends with reign of Domitian). Jones, *BOD* no. 96; Mommsen 235.

119. London. British Library Harley 4123 s. XV. *DTR* ch. 66 Chronicle, within a collection of histories. A copy of London, British Library Additional 22635 (no. 110). Jones, *BOD* no. 97; Mommsen 235.

120. London. British Library Harley 6503 s. XV. *DTR* ch. 66, within a collection of chronicles and biographical reference works. Jones, *BOD* no. 98; Mommsen 235.

121. London. British Library Royal 12 D IV* s. XIII¹; Canterbury. Fols 36r–127v = *DTR* (occasional marginal glosses, esp. chs 9, 46). Ch. 66 is divided into the first Introduction (Jones 464–5), and the second Introduction + chronicle, which is numbered ch. 67. Subsequent chapters are renumbered in sequence. Part of a science album with calendar, cycles etc. Preceded by Helerpic and followed by *EpW*. Jones (*BP*) thinks it was

probably the exemplar for Royal 12 F II (no. 122), but the dates of these two volumes cast doubt on this hypothesis. The two volumes are nonetheless closely related. Jones, *BP* 122; Jones, *BOT* no. 47; Jones, *BOD* no. 100; Gneuss–Lapidge no. 478.5; Mirabile; Mommsen 234.

122. London. British Library Royal 12 F II s. XII; St Albans. Fols 22r–114v = *DTR*. Chs 66–71 have separate rubric (*Incipit liber secundus eiusdem qui cronica appellatur*). Also contains Helperic and *EpW* (see no. 121). Jones, *BOT* no. 48; Jones, *BOD* no. 101; Mommsen 234, who points out strong similarity to Royal 12 D IV (no. 121).

123. London. British Library Royal 13 A XI* s. XI; Normandy or north-western France (Gneuss–Lapidge); Ramsey *ca.* 1100. Fols 30v–103v = *DTR* with interlinear and some marginal glosses, the latter frequently framed. Glosses decline after ch. 10. Image showing hand positions for *loquela digitorum* in ch. 1 (fol. 33v); marginal illustration showing Sun and Moon ch. 25 (attempt to illustrate why horns of Moon are upright); small zonal map illustrating ch. 34 on fol. 61v; small table in margin of ch. 45 fol. 74r. There is a gap between ch. 54 (fol. 79v) and ch. 66 (AM 1056) (fol. 80r). This may represent the loss of a gathering, but it is noteworthy that fols 80r *sqq.* is also in a different hand. Also contains *DNR*, *DT*, *EpW* (incomplete), Helperic, and Abbonian material. Jones (*BOD*) proposes that it is a transcript of materials brought to England by Abbo, as the text resembles that found in Baltimore Walters Art Gallery 73 (no. 11), London, British Library Tiberius E 4 (no. 113), London, Egerton 3088 (no. 115), and Oxford, St John's College 17 (no. 174). Borst, *Schriften* 245–6; Gneuss–Lapidge no. 483; Jones, *BP* 123; Jones, *BOT* no. 49; Jones, *BOD* no. 102; Jordanus 6931; Mirabile; Mommsen 234.

124. London. British Library Royal 15 B XIX pt 2* s. IX²; Reims, St Remi. Brought to England shortly after the Norman Conquest. Now in a fragmentary state. Fols 38r–78v = *DTR* chs 1–29. Ch. 15 not listed in capitula, but it is included in text (fols 64r–v) in a different hand. Interlinear and sporadic marginal glosses, closely related to 'Valenciennes glosses' (see Introduction, pp. 117–18). List of *capitula* suggests a curious reorganization of the book after ch. 65 (in this MS, 64). The following chapters are: 65 (*De saltu lunae*); 66 (*De XII signis quomodo nominantur*); 67 (*De diuisione temporum*); 68 (*De trina opinatione fidelium quando ueniat dominus*, etc. to the end): cf. BAV Reg. lat. 1038 (no. 256). Bischoff, *Katalog* 2, no. 2497;

Gneuss–Lapidge no. 492; Jones, *BP* 123; Jones, *BOT* no. 9; Jones, *BOD* no. 103 (his MS R); Lapidge, *Anglo-Saxon Library* 167–73; Mirabile.

125. London. Lambeth Palace Library, 228 s. XII/XIII; Lanthony. Fol. 124v = *DTR* ch. 1, added at the end of a commentary on Matthew. Jones, *BOD* no. 105 (under shelf mark 288); Jordanus 7119.

126. London. Lambeth Palace Library, 387 s. XII; Lanthony. Fol. 86v = *DTR* ch. 1, added at the end of a commentary on Mark. Jones, *BOT* no. 115; Jordanus 7121.

127. London. National Record Office PRO SP 46/125 f. 302 s. Xⁱⁿ. Hand is identified by Dumville as Anglo-Saxon Square Minuscule of the 920s: ‘English Square Minuscule Script’. Fragment containing part of *DTR* ch. 47. Gneuss–Lapidge, no. 521.7; Mirabile; Roper, ‘A Fragment of Bede’s *De temporum ratione*’.

128. Luxembourg. Bibliothèque nationale 22 pt 3 s. XII; orig. middle Rhine; prov. Cistercian monastery of Orval. Fols 87–93, 95–116 is a *computus* album with extracts from *DTR*: fol. 87v = part of ch. 1; fol. 89v–90r = ch. 23 + *litterae punctatae* table. Thomas Falmagne, *Die Orvaler Handschriften bis zum Jahr 1628* (Wiesbaden: Harrassowitz, 2017), 1.21–44. Jones, *BOT* no. 116; Jones, *BOD* no. 106 (under the older shelfmark 108).

129. Madrid. Biblioteca nacional 19 (A. 16)* s. XII; Montecassino or Ripoll (Borst: s. Italy) Fol. 1r–48r = *DTR*, with a few glosses in the Chronicle; followed by verse martyrology, calendar and other computistica, Germanicus’ *Aratea*. Spectacular full-figure representations of finger reckoning positions (fols 2v–4v). Related to Cava 3 (no. 58). Borst, *Schriften* 1.247; Jones, *BOT* no. 117a; Jones, *BOD* no. 107; Jordanus 12852.

130. Madrid. Biblioteca nacional 3307* s. IX; orig. Metz; after 826, Prüm. Contains the Carolingian ‘Seven-book Encyclopedia’ (see Introduction, pp. 102–3) with the following extracts from *DTR*: ch. 1 (fol. 31v–32v), ch. 37 (partial)–38 (fols 35v–36r), ch. 42 (fol. 41v–42r) ch. 41 (fol. 42v–43r), ch. 51 (fol. 44v–45v), ch. 29 (paraphrase) (fol. 49r), ch. 28 (fol. 49r–50r). Borst, *Schriften* 248–9; Jones, *BOD* no. 108; Jordanus 12867; Mirabile.

131. Madrid. Biblioteca nacional 9605* 1026; St-André, Avignon. Fol. 38v = *DTR* ch. 23. This is a large and impressive Abbonian *computus* album with numerous tables and diagrams. Borst, *Schriften* 249–50; Jordanus 12901; Wallis, ‘An Eleventh-Century “Science Album”’.

132. Melk. Stiftsbibliothek 348 (382, G 48) s. XII. Pp. 31a–48b = *DTR* (presumably an extract, but this is not confirmed), preceded by *DNR*, *DT*. Jones, *BOD* no. 111; Jordanus 11401.

133. Melk. Stiftsbibliothek 412 (370, G 32)* Before 876 (Borst: 820–840; Bischoff: s. IX^{1/4}); St Germain, Auxerre. Pp. 59–191 = *DTR* glossed by Heiric of Auxerre, often in Tironian notes (see Introduction, p. 113). This manuscript includes *DNR* (pp. 1–16) and *DT* (pp. 16–26) as well as ‘Melk Commentary’ (see Introduction, p. 113). Bischoff, *Katalog* 2 no. 2739; Borst, *Schriften* 1.250–1; Jones, *BP* 123; Jones, *BOT* no. 6; Jones, *BOD* no. 110 (his MS *M*); Jordanus 11402; Mirabile.

134. Milan. Basilica di Sant’Ambrogio, Archivio Capitolare 13 850–874; northern Italy. Fols 145r–17r = *DTR* ch. 1, within a block of computistical material. Bischoff, *Katalog* 2, no. 2663; *Computus in the Carolingian Age*.

135. Milan. Biblioteca Ambrosiana B 163 Sup. AD 1358. Fols 141–2 = *DTR* ch. 1, preceding Alexander of Ville-Dieu’s *Algorismus*. Jordanus 8938.

136. Milan. Biblioteca Ambrosiana D 30 inf. s. IX^{1/3}; Bobbio (n. Italy, perhaps Vercelli: Bischoff). Fols 23r–121r = *DTR* (glossed), omitting chs 67–71. It is followed by *DNR* and *DT*, all copied as if they were a single work, as well as *argumenta* and other computistica. Borst compares the choice and structure of the texts to Vat. lat. 644 (no. 266). Bischoff, *Katalog* 2, no. 2615; Borst, *Schriften* 1.251–2; Jones, *BOT* no. 14; Jones, *BOD* no. 112 (his MS *N*); Jordanus 9022; Mirabile; Mommsen 235 (his MS *B*).

137. Milan. Biblioteca Ambrosiana D 48 Inf. AD 1018; St Martiane in Tortona? Fols 3r–56r = *DTR* chs 1–65, glossed; fols 72r–77r = chs 67–71. *DTR*, *DNR*, and *DT* are presented as if they were a single work, and with glosses throughout. The volume also contains letters of Charlemagne to Alcuin; computistical notes, poetry, and *argumenta*; Gerbert on the abacus; calendar and tables. Jones, *BP* 123; Jones, *BOT* no. 50; Jones, *BOD* no. 113; Jordanus 9031; Mirabile.

138. Milan. Biblioteca Ambrosiana H 187 Inf. s. XII. A copy of Isidore’s *Etymologiae* but with books not in conventional order. Inserted after book 16 (weights and measures) and before book 3 on music is *DTR* ch. 66 (fol. 42r–65v; unascribed), interspersed with extracts from Jerome’s chronicle and other sources, particularly in Old Testament sections. Breaks off incomplete at reign of Justianian. Jones, *BOD* no. 114; Mommsen 235.

139. Milan. Biblioteca Ambrosiana M 12 Sup. s. IX² (ca. 866: Bischoff); written partly in Lobbes and partly in Herford. Pp. 47–201 = *DTR* largely written in Tironian notes on a palimpsest of ca. 700, from southern France (Gallican sacramentary). Preface, capitula, and part of ch. 1 lost. Leaves disarranged (fols 1–212, 227–38: Jordanus). Preceded by *DT* and calendar; followed by Hyginus. Bischoff, *Katalog* 2 no. 2645; *CLA* 3, no. 354; Jones, *BP* 124; Jones, *BOT* no. 51; Jones, *BOD* no. 115; Jordanus 9430; Mirabile; Mommsen 235.

140. Monte Cassino. Archivio dell'Abbazia (Biblioteca Statale del Monumento Nazionale) 189 s. XI^{med}. Pp. 150–4 = *DTR* ch. 1, followed by excerpts from Isidore *Etymologiae* 1.1–3. Boethius *Institutio arithmetica* and Gerbert on the abacus. Mirabile.

141. Monte Cassino. Archivio dell'Abbazia (Biblioteca Statale del Monumento Nazionale) 297 pt 2 s. XI^l. Pp. 138–203 = *DTR* ch. 66 (Chronicle)–71. Jones, *BOD* no. 116; Mirabile.

142. Monte Cassino. Archivio dell'Abbazia (Biblioteca Statale del Monumento Nazionale) 320 s. XIV. Pp. 415–58 = *DTR* ch. 66. Part of a suite of appendices to Isidore's *Etymologiae*. Jones, *BOD* no. 117.

143. Montpellier. Bibliothèque interuniversitaire, Section Médecine H 157 s. IX^{3/4}; written by Manno of St.-Oyen, Jura (Jones) and/or given by Manno to St.-Oyen, Jura (Bischoff), or written in Lyon by a scribe in the circle of Florus of Lyon (Borst). Fols 61v–71r = extracts from *DTR* chs 11, 30, 41–43, 59 (all ascribed), within an anthology of *computus* texts and extracts, in a collection of patristic treatises and tracts on Paschal reckoning. The exemplar seems to be the Lyon codex Rome, Vallicelliana E 26 (no. 218). Bischoff, *Katalog* 2 no. 2839; Borst, *Schriften* 1.254; *Computus in the Carolingian Age*; Jones, *BOT* no. 119; Jones, *BOD* no. 118.

144. Montpellier. Bibliothèque interuniversitaire, Section Médecine H 306* s. IX^{2/4}; northern France (Auxerre?: Bischoff, Borst). Fols 7r–8r = *DTR* ch. 9, within what seems to be a 'clerical handbook' containing materials on grammar and history, and Boethius *De Trinitate*. Bede's *Versus de die iudicii* is on fols 10vb–11va. Bischoff, *Katalog* 2 no. 2857; Borst, *Schriften* 254–5; Jones, *BOD* no. 119; Mirabile.

145. Montpellier. Bibliothèque interuniversitaire, Section Médecine H 384 s. X–XI (Borst). Fols 105v–109r = *DTR* ch. 1, with collection of *computistica*, materials on music, the history of Alexander the Great,

Disticha Catonis. Borst, *Schriften* 1.256; Jones, *BOD* no. 120; Jordanus 4005.

146. Monza. Biblioteca capitolare Cod. F. 9. 176 s. IX^{3/4}; western Germany (Bischoff), at Lobbes after 851. Copy of Aachen Seven-book Encyclopedia with some extracts from Nine-Book or Salzburg Encyclopedia. It is not clear from available descriptions exactly where *DTR* is in this collection. Mommsen implies that it contains the entire text of *DTR*. Bischoff, *Katalog* 2 no. 2892; Borst, *Schriften* 1.256–7; Jones, *BOT* no. 120; Jones, *BOD* no. 121; Mommsen 235.

147. Munich. Bayerische Staatsbibliothek CLM 210* ca. 818; Regensburg, St Emmeram, or Salzburg (Borst). The principal manuscript of the Nine-Book Computus or Salzburg Encyclopedia of 818 (see nos 146, 387). Fols 16r–v and 58v–112r = nearly every chapter of *DTR* except the Chronicle of ch. 66 and chs 67–71, excerpted into a *computus* encyclopedia of 99 chapters. Fols 16r–v = ch. 19 with *Pagina regularis*; fols 68v–71v = ch. 24, 23, 19, 18; fol. 72v–74v = ch. 36, 38, 39, 41; fol. 77r–78v = ch. 42; fol. 79v–82r = ch. 43; fol. 84r–112v = ch. 5, 7, 6, 8, 9, 11–14 (with illustrations of labours of the month), 16, 25–30, 35, 44–50, 53, 55, 56, 59, 61–66 (introduction). Bischoff, *Katalog* 2, no. 2923; Borst, *Schriften* 1.257–8; Jones, *BP* 125; Jones, *BOT* no. 52; Jones, *BOD* no. 122; Jordanus 2222.

148. Munich. Bayerische Staatsbibliothek CLM 246 s. XI; Prühl. Fols 105–13 = *DTR* chs 66–71, preceded by a world chronicle containing both Hebrew and Septuagint *anni mundi*. Jones, *BOD* no. 123; Mommsen 238.

149. Munich. Bayerische Staatsbibliothek CLM 4355 s. XV; Augsburg (St Ulrich). Fols 1r–5v = *DTR* chs 1–4, with glosses. Jones, *BOD* no. 124; Jordanus 2272.

150. Munich. Bayerische Staatsbibliothek CLM 4423* s. XV. The commonplace book of Fr Simon Weinhart of Füssen, containing *inter alia* a tabular summary of the Roman, Egyptian, Greek, Hebrew, and Old English month-names (156v); introduction of *DTR* ch. 66 (157r); chapter titles of *DTR* and summaries of every chapter (158v–164v). Jones, *BOD* no. 125.

151. Munich. Bayerische Staatsbibliothek CLM 5309 s. XV; Chiemsee region. Fols 35r–104r = *DTR*. Jones, *BOD* no. 126; Jordanus 2297; Mommsen 235.

152. Munich. Bayerische Staatsbibliothek CLM 14311* s. X^{med}; Freising. Fol. 50r = *DTR* ch. 7. Within a collection of Alcuin and ps.-Alcuin texts (poems, comm. on Matthew, letters ...) and extracts from Augustine and Gregory. Bischoff, *Katalog* 2, p. 252; Mirabile.

153. Munich. Bayerische Staatsbibliothek CLM 14436* s. X–XI. A collection of mathematical and cosmographical texts (Macrobius, Pliny), including *DTR* ch. 4 (fols 116r–117v). Jordanus 2447.

154. Munich. Bayerische Staatsbibliothek CLM 14725* s. IX^¼; St Amand, later Regensburg (St Emmeram). Fol. 16r–v = *DTR* ch. 19, with a collection of *computus* texts. Fols 25v–166v = *DTR* chs 1–65. Bischoff, *Katalog* 2, no. 3248; *Computus in the Carolingian Age*; Jones, *BP* 126; Jones, *BOT* no. 7; Jones, *BOD* no. 127 (his MS *Mu*); Mirabile.

155. Munich. Bayerische Staatsbibliothek CLM 18158* s. XI (2nd quarter and end); Tegernsee. Fols 1r–62v = *DTR*, with abundant glosses (see Introduction, p. 118). Ch. 66 has the introduction, but not the Chronicle. Remainder of codex contains letters by Jerome and ps-Jerome. Jones, *BP* 126; Jones, *BOT* no. 53; Jones, *BOD* no. 128; Mirabile.

156. Munich. Bayerische Staatsbibliothek CLM 21557 pt 3 s. XI; orig. Freising; prov. Weißenstephan. Fols 26v–83v = *DTR* ch. 1–65, with glosses related to Reichenau and St Gall glosses (Jones). Chs 2 and 3 reversed, and ch. 7 omitted. Also includes *DNR* and *DT*, *computistica*, and Paschal cycles. Jones, *BP* 126; Jones, *BOT* no. 54; Jones, *BOD* no. 129; Jordanus 2575.

→ **Münster, Nordrhein-Westfälisches Staatsarchiv Msc I, no. 243 fols 1–2, 11–12** see 47.

156.1. Naples. Biblioteca nazionale ‘Vittorio Emanuele III’ IV B 12 817 × 835 (Bischoff). Orig. Beneventan script region. Prov. Troia Cathedral, gift of bishop William II. The first part of the manuscript contains Julianus Pomerius, *De vita contemplativa*, the *Forma institutionis canonicorum*, and a *regula formatorum*. Fols 116v–239v = *DTR* chs 1–66. Followed by tables, argumenta, and short texts, as well as excerpts from *DTR* 19, 23, and 1, with a modified version of ch. 30 (fols 245–52v). This is followed by materials on astronomy, multiplication tables, Easter tables AD 817–54, and related *computistica*. Bischoff, *Katalog* 3, no. 3577. I thank Dr Immo Warntjes for bringing this manuscript to my attention and sharing his notes on the contents.

157. New York. Columbia University Library Plimpton 251 (*olim* Phill. 2651) s. XII. Pp. 3–129 = *DTR* (capitula and Praefatio mutilated due to loss of a single leaf). Jones, *BOT* no. 55; Jones, *BOD* no. 130.

158. New York. Pierpont Morgan Library 925 ca. 1107–1132; northern Italy, possibly district of Pavia. Fol. 15r = *DTR* ch. 23 and fols 37v–39v = ch. 1 complete, illustrated). A *computus* album with strong presence of astronomica. Jones, *BOD* no. 131; Jordanus 228.

→**New York. H.P. Kraus Catalogue 80 (1956) no. 1** see 235.

159. Nürnberg, Germanisches Nationalmuseum, Kupferstichkabinett Kapsel 536/SD 285 ca. 800; written ‘in a German centre with Anglo-Saxon traditions in the Main region or in Hessia’: Bernhard Bischoff and Virginia Brown, ‘Addenda to “Codices Latini Antiquiores”’, *Mediaeval Studies*, 47 (1985): 317–66 n. 1850. A fragment of two leaves, containing *DTR*, chs 6–7, 9. Bischoff, *Katalog* 2, no. 3642; Lapidge, *The Anglo-Saxon Library* 166; Mirabile.

160. Orléans. Médiatèque (Bibliothèque publique) 31 (28)* s. XI²; Loire region (Fleury?). The text of *DTR* on pp. 237–82 was originally complete, but is now missing chs 1–18, 38–64. Preceded by biblical commentaries by Hrabanus and Walafrid Strabo, *DNR*, *DTR*, and *EpW* (incomplete); followed by Paschal tables. Bischoff, *Katalog* 2, no. 3660; Jones, *BOD* no. 133; Mirabile.

161. Oxford. Bodleian Library Auct. F. 3. 14* s. XII; Malmesbury (created for and in part by William of Malmesbury). Fols 35v–102r = *DTR*, preceded by Isidore, *DNR*, Bede, *DT*, and followed by *EpW*, Helperic, Dionysius Exiguus letters and Paschal tables, Hyginus, Gerbert and others on the astrolabe, Robert of Hereford. Jones, *BP* 126; Jones, *BOT* no. 57; Jones, *BOD* no. 134 compares text to London, British Library Tiberius E IV (no. 113) Egerton 3088 (no. 115), Bodleian Auct. F. infra 1.2 (no. 162); Jordanus 7323; Mirabile; Mommsen 235.

162. Oxford. Bodleian Library Auct. F. infra 1.2 s. XIV; Reading Abbey. Fols 193r–229v = *DTR*. Closely resembles Auct. F.3.14 (no. 161). Also contains *DT* and *EpW*. Jones, *BOT* no. 58; Jones, *BOD* no. 135.

163. Oxford. Bodleian Library Bodley 309* s. XI (ca. 1075); Vendôme. The ‘Sirmond Manuscript’ (see Introduction, pp. 57–64). Fols 3v–61v = *DTR*. A few glosses. Ch. 15 originally omitted and added on fol. 146v.

Tipped-in additions to ch. 66 Chronicle. Text of *DTR* resembles that in Geneva 50 (no. 85), Paris, lat. 14088 (no. 203), BAV Rossi lat. 249 (no. 260), but this text has been collated with one like St Gall 250 (no. 255) (Jones, *BOD*). Borst, *Schriften* 1.263; Jones, *BP* 126–7; Jones, *BOT* no. 59; Jones, *BOD* 136; Jordanus 7360. Mirabile.

164. Oxford. Bodleian Library Canon. Pat. lat. (i.e. Script. eccl.) 96 s. XV; palimpsest written over a s. XI Benevantan text. Fols 34r–58v = *DTR* ch. 66 Chronicle, following the chronicles of Eusebius and Marcellinus Comes. Jones, *BOD* 137; Mirabile; Mommsen 235.

165. Oxford. Bodleian Library Digby 56 s. XII; Hereford. Fols 189v–192v *DTR* chs 9–10, 46, and 6 as part of an appendix to Gerlandus, *De computo*. Jones, *BOD* 138.

166. Oxford. Bodleian Library Digby 63 s. IX²; Northumbria? Written by ‘Raegenbold sacerdos’. Fol. 30v = extract from *DTR* ch. 1, with tracts on computus, chronology, and a calendar. Borst indicates there is a second chapter from *DTR*, but this has not been confirmed. Borst, *Schriften* 1.263–4; Gneuss–Lapidge no. 611; Jones, *BP* 127; Jones, *BOD* 139; Jordanus 7523.

167. Oxford. Bodleian Library Laud. misc. 394* s. XII^{ex}; Germany. Fols 29v–30v contains *DTR* ch. 66 from the reign of Justinian (AM 4480) to Heraclius, as a continuation of the abbreviated *Historia Romana* of Paul the Deacon. Jones, *BOD* no. 394 (data corrected); Mommsen 235.

168. Oxford. Bodleian Library Rawlinson B 194 s. XIII. Ch. 66 chronicle to reign of Domitian. Mommsen 235.

169. Oxford. Bodleian Library Rawlinson B 488* s. XV; Ireland. Irish World Chronicle and Annals of Tigernach. Fol. 3ra–b = extract from *DTR* ch. 66 on birth of Christ. See also no. 170. Whitley Stokes, ed. and trans., ‘The Annals of Tigernach’, *Revue Celtique*, 16 (1895): 374–419 [Rawlinson B 502]; 17 (1896) 6–33, 116–263, 337–420; 18 (1897) 9–59, 150–303 [Rawlinson B 488].

170. Oxford. Bodleian Library Rawlinson B 502* s. XI^{ex} or XIIⁱⁿ; Ireland. Irish World Chronicle and Annals of Tigernach (see also no. 169). Fol. 10rb = extract from *DTR* ch. 66 on birth of Christ (ed. Stokes (see no. 169 above) 406).

171. Oxford. Bodleian Library Rawlinson C 308 s. XIII; prov. Hereford Franciscans. The manuscript contains only *DTR* chs 1–65. Text resembles Paris, BnF n.a.l. 1632 (no. 213; Jones, *BOT*). Jones, *BOT* no. 61; Jones, *BOD* no. 142.

172. Oxford. Magdalen College 183 s. XV. Fols 11r–124v = *DTR* with ‘Valenciennes glosses’ (see Introduction, p. 118). Preceded by *DNR*. Jones, *BOT* no. 62; Jones, *BOD* no. 143; Mommsen 235.

173. Oxford. Merton College 88 s. XIII; England. Fols 101r–21r = *DTR* ch. 66 Chronicle, following Hugh of Fleury’s *Historia Ecclesiastica*. Jones, *BOD* no. 145; Mommsen 235.

174. Oxford. St John’s College 17* ca. 1110; Thorney Abbey. An extensive *computus* album with Abbonian materials. Fols 65v–123r = *DTR* with glosses, including ‘graphic glosses’ like those in Glasgow, Hunter 85 (no. 87), Cambridge, St John’s College I.15 (no. 55), London, British Library Cotton Tiberius E 4 (no. 113) and Egerton 3088 (no. 115). Excerpts on fols 22r–23r (ch. 23 + *litterae punctatae* table), fols 33r (ch. 22, partially quoted and partially paraphrased) and fol. 36r (ch. 24). Also contains *DT* and once contained *DNR*. Jones, *BP* 127–8; Jones, *BOT* no. 63; Jones, *BOD* no. 145; Jordanus 7897; Mirabile.

175. Padua. Biblioteca Antoniana 27 s. X (Bischoff); northern Italy (Verona?); prov. Padua (Franciscan convent). Within a volume of astronomica (notably by Pacificus of Verona), computistica (incl. Hrabanus Maurus, *De computo*) and annals (*Chronicon regum Langobardorum* (883), are the following excerpts from *DTR*: fol. 95v (ch. 16, beg.), fol. 96v (ch. 19), fols 98r–v (ch. 22 and beg. of ch. 20), fol. 101r (ch. 65); fol. 101v–102r (ch. 36, beg.) fol. 115v (ch. 1, beg.). Bischoff, *Katalog* 3, p. 3; Jones, *BOD* no. 146; Mirabile.

176. Paris. Bibliothèque Mazarine 175 (710) s. XII/XIII; St-Victor. Fol. 160v = *DTR* ch. 19, following *DNR*. The remainder of the MS is biblical commentaries. Jones, *BOD* no. 147 (shelf mark omitted).

177. Paris. Bibliothèque Mazarine 755* s. XIII. Fol. 214v = *DTR* ch. 1, appended to text of Peter Lombard, *Liber Sententiarum* and followed by other texts on mathematics. Jordanus 4124.

178. Paris. Bibliothèque Mazarine 3642 s. XIII; Italy and England. Fols 64vb–65r = *DTR* ch. 4, Within a collection of texts on mathematics,

astronomy, astrology, divination, *computus*, and physical science. Jordanus 4140.

179. Paris. Bibliothèque national de France lat. 579* s. XII^{ex}. Fol. 21ra–va = *DTR* ch. 9 on the ‘Seventy Prophetic Weeks’. Preceded by glossed Book of Daniel and followed by a second text commenting on Daniel 9:24 (21va–b), which breaks off incomplete. Rest of manuscript contains grammatical and theological texts; sermons. Jones, *BOD* no. 148; Mirabile.

180. Paris. Bibliothèque nationale de France lat. 1800 s. XIII; Tours. Fols 126v–127v = *DTR* ch. 1, within an anthology of texts by St Jerome, including *Aduersus Iouinianum*. Jones, *BOD* no. 129.

181. Paris. Bibliothèque nationale de France lat. 1829 s. XI. Fols 65v–71r = *DTR* chs 8–10, following directly on Jerome’s commentary on Daniel; followed by *DT* and computistical *argumenta* and tables. Jones, *BOT* no. 64; Jones, *BOD* no. 150.

181.1 Paris. Bibliothèque nationale de France lat. 2340 s. XI. This volume is now lost. The description in the 1744 *Catalogus codicum manuscriptorum Bibliothecae Regiae*, 3.267 indicates that it contained *DNR*, *DT*, *DTR* (including Chronicle), and *EpW*, within a *computus* album containing astronomica, alphabets, mathematical games, *computus* poetry etc. Jones, *BOT* no. 122; Jones, *BOD* no. 151; Jordanus 4214.

182. Paris. Bibliothèque nationale de France lat. 2796, pt 1 s. IXⁱⁿ (ca. 815); northern France (Bischoff, Borst); Chartres (St-Père). *Computus* album with additional materials on grammar, liturgy, and medicine. Fol. 82v = *DTR* ch. 57; fol. 85r–86r = *DTR* chs 5 and 7; fol. 96v = *DTR* ch. 45; fols 97v–98r = *DTR* ch. 1 (excerpt); fols 106r–v = *DTR* ch. 1 (another excerpt). Bischoff, *Katalog* 3, no. 4232; Borst, *Schriften* 1.266–7; Jordanus 4223.

183. Paris. Bibliothèque nationale de France lat. 4860* 885–915; orig. Reichenau; prov. Mainz (St Stephen, where it was used by Marianus Scottus). Fols 77v–88r = *DTR* chs 66–67. The MS is a collection of computistica, including Isidore *DNR* and extracts from Pliny, Hrabanus, Victorius, and Dionysius, etc. On fols 111v–117v (following Bede’s *DNR*) *Incipit eiusdem alius libellus Bede Presbiteri de ratione compoti cum interrogationibus et responsionibus*. The question and answer format eventually breaks down into straightforward exposition or *argumenta*. Bischoff, *Katalog*

3, no. 4342; Borst, *Schriften* 1.267–8; *Computus in the Carolingian Age*; Jones, *BP* 128; Jones, *BOD* no. 152; Jordanus 4258; Mommsen 235.

184. Paris. Bibliothèque nationaux de France lat. 4870 s. XV. Fols 66–116 = *DTR* ch. 66 Chronicle. Codex also includes Marcellinus Comes. Mommsen 236.

185. Paris. Bibliothèque nationale de France lat. 4885* s. XII (first gathering somewhat later; a replacement?) Fols 1r–47v = *DTR* chs 66–67, followed by genealogy of Frankish kings. Glosses, largely on classical history, ancient literary and cultural figures; later, heresies, popes, saints, rulers of the Franks. Jones, *BOD* no. 153; Mommsen 236.

186. Paris. Bibliothèque nationale de France lat. 5018 pt 2* s. VIII^{ex} or VIII/IX. Fols 78r–93v = *DTR* ch. 66 (incomplete; end AM 4377), part of an anthology of historical works focused on the Trojan origin of the Franks. Bischoff, *Katalog* 3, no. 4512; *CLA* Supp. no. 1744; Mirabile.

187. Paris. Bibliothèque nationale de France lat. 5239* s. X^{1/3}; Limoges (St.-Martial). Possibly based on BnF lat. 5543 (no. 188) (Borst). A large *computus* album. Fols 40r–95v = *DTR* chs 1–66 (Introduction), with abundant glosses to about ch. 28 (cf. glosses in Strassbourg 326, no. 232). Preceded by *DNR*, *DT*, and *EpW* and followed by Abbonian *computus* and extracts on time and on astronomy from Isidore, *Etym*. Fols 167r–193r = *DTR* 66 Chronicle + chs 67–71. Chronicle has no running list of years. ‘Melk Commentary’ on fols 196r–199v. Borst, *Schriften* 1.269–70; Jones, *BP* 128; Jones, *BOT* no. 65; Jones, *BOD* no. 154; Jordanus 4260; Mirabile; Mommsen 236.

188. Paris. Bibliothèque nationale de France lat. 5543* ca. 847, with s. X–XI Abbonian additions; Fleury or Sens. A *computus* album. Fols 25r–76r = *DTR* ch. 1–66 (intro.) with sparse glossing in introductory chapters. Preceded by Paschal tables and followed by *DNR* (glossed), *DT*, calendar, *argumenta*, computistica including *EpW*, additional Abbonian material. Bischoff, *Katalog* 3, no. 4367; Borst, *Schriften* 1.270–1; Jones, *BP* 128; Jones, *BOT* no. 66; Jones, *BOD* no. 155; Jordanus 4262; *Computus in the Carolingian Age*.

189. Paris. Bibliothèque nationale de France lat. 6161* s. XV. Fols 36r–68r = *DTR* ch. 66 to the reign of Titus (*pace* Mommsen, who says it goes to the reign of Anastasius II), following anonymous *Origo gentis*

Longobardorum and a fragment of a chronicle from 855–1108, and followed by genealogy of Christ. Jones, *BOD* no. 158; Mommsen 236.

190. Paris. Bibliothèque nationale de France lat. 7296 pt.1 s. IX¹; Corbie (Bischoff); Jordanus says s. IX; Borst says after 900. Fols 1r–111r = *DTR*, glossed, once complete but now missing chs 1–middle of 9, part of Chronicle, and ch. 67. Bischoff, *Katalog* 3, no. 4434; Borst, *Schriften* 1.271–2; *CLA* Supp. no. 1748 (dates to s. VIII–IX); Jones, *BP* 128–9; Jones, *BOT* no. 8; Jones, *BOD* no. 159 (his MS *P*); Jordanus 4479; Mirabile; Mommsen 236.

191. Paris. Bibliothèque nationale de France lat. 7297* s. X; France; prov. St-Laumer, Blois. Fols 1v–52r = *DTR* ch. 1–66 (Introduction) followed by an abbreviated chronicle based on ch. 66 but extended to the reign of Charlemagne (52r–54v) (cf. lat. 7362, no. 193). *DTR* is prefaced by a poem ‘Excolat ergo sui quisquis iam pectoris agrum’ by Aganus, possibly bishop Aganus of Chartres (s. 926–41), which is also found in BAV Reg. lat. 755 fol. 28v (no. 255). Auxerre-type glosses: see Introduction, pp. 112–13. Unusual diagram illustrating equinoxes and solstices on fol. 25r; another on fol. 27v illustrates climatic zones. Jones, *BP* 129; Jones, *BOT* no. 67; Jones, *BOD* no. 160; Jordanus 4480; Mirabile; Stock and Synan, ‘A Tenth-Century Preface to Bede’s *De temporum ratione*’.

192. Paris. Bibliothèque nationale de France lat. 7299A* s. XI or XII (before 1150: Borst); south-western France, perhaps in the region of Limoges or at the abbey of Solignac. Part of *DTR* ch. 1 on fol. 95r–v within a *computus* album which includes much of *DNR* as well as Abbonian materials. Borst, *Schriften* 1.272–3; Jones, *BOT* no. 161; Jordanus 4502.

193. Paris. Bibliothèque nationale de France lat. 7362* s. XIII; Cistercian. A *computus* album. Fol. 46r = *DTR* ch. 1 (from *Cum dicis* ...); fol. 68r = opening paragraphs of ch. 70; 68v–end = abbreviated ch. 66 (cf. lat. 7297 no. 191) but ending with Leo 1. This *computus* album also contains Bede’s *De die iudicii*, as well as Helerpic, excerpts from Isidore *Etymologiae*, *computus* poetry, tables etc. Jones, *BP* 129; Jones, *BOD* no. 162; Jordanus 4544.

194. Paris. Bibliothèque nationale de France lat. 7418* s. XIVⁱⁿ; Italy. Fols 1r–57v = *DTR* with a few marginal glosses, including in the Chronicle. Full-length images of finger-reckoning on fols 3r–5r. Related to Cava 3 (no. 58) and Madrid 19 (no. 129). This *computus* anthology also

includes abundant material on medicine and geography, as well as Bede's *DNR*. Jones, *BOT* no. 68; Jones, *BOD* no. 163; Jordanus 4600; Mommsen 236.

195. Paris. Bibliothèque nationale de France lat. 7474* AD 841; northern France. Extracts from *DTR*: fols 28r–30v = ch. 24; fol. 45v–46r = ch. 13 (abbreviated); fol. 46r–49v = ch. 1, beginning *Cum ergo dicis* ...; fol. 66v–67v = ch. 19 with *Pagina regularis*; fols 81v–82v = ch. 3; fols 99v–102r = part of ch. 20 (*Sunt anni tres ... docentur*). All within a consolidated compilation of *argumenta*, *computus* notes, tables, extracts from Macrobius on the climatic zones, etc. Some 'chapters' are extracts from Bede's *DNR*. Bischoff, *Katalog* 3, no. 4440; Jones, *BOD* no. 164; Jordanus 4650.

196. Paris. Bibliothèque nationale de France lat. 7530* s. VIII²; Monte Cassino, later at Reims; possibly compiled by Paul the Deacon. Fols 280v–281r = *DTR* ch. 1, as part of a section on mathematics and *computus* within a large assembly of materials on the *artes*. The section on *computus* occupies fols 276–281. Ends with an abbreviated chronicle and Bede's *De orthographia*. *CLA* 5, no. 569; Jones, *BP* 129; Jones, *BOT* no. 69; Jones, *BOD* no. 165; Jordanus 4668; Mirabile.

197. Paris. Bibliothèque nationale de France lat. 8948* s. XII. Fols 121–51 = *DTR* ch. 66–71 as part of an anthology of chronicles; follows Jerome's trans. of Eusebius, precedes Ado of Vienne's *Chronicon*. Jones, *BOD* no. 166; Mommsen 236.

198. Paris. Bibliothèque nationale de France lat. 10403 fol. 78* s. IX¹ or 2/4; eastern France. Fragment containing *DTR* ch. 64 (end)–66 (beg.) Bischoff, *Katalog* 3 no. 4642; Jordanus 4772; Mirabile; *Handschriftencensus*.

199. Paris. Bibliothèque nationale de France lat. 10851* s. XI. Fols 28v–30 = *DTR* ch. 19 (interlinear glosses) followed by *computus* tables. This volume contains lives of Tours saints interspersed with computistica, Hyginus. Jones, *BOD* no. 167.

200. Paris. Bibliothèque nationale de France lat. 13013* s. IX^{1/4}; Paris (Bischoff) or Auxerre; later Saint-Germain-des-Prés. Fols 48r–161v = *DTR*, following *DNR* and *DT* (missing chs 17–22), *EpW* (treated as continuous with *DT*). Bischoff, *Katalog* 3, no. 4857; Jones, *BP* 130; Jones, *BOT* no. 70; Jones, *BOD* no. 168; Jordanus 4930; Mommsen 236.

201. Paris. Bibliothèque nationale de France lat. 13403 pt 1* s. IX^{med}; western France; by s. XII in Corbie, later Saint-Germain-des-Prés. Fols 1v–110r = *DTR* (which occupies virtually the whole MS). Bischoff, *Katalog* 3, no. 4923; Jones, *BOT* no. 14; Jones, *BOD* no. 169 (his MS *H*); Jordanus 4925; Mommsen 236.

202. Paris. Bibliothèque nationale de France lat. 14069 pt 1* s. XII. Fols 22r–23v = *DTR* ch. 1, following Gerlandus' *Computus*, and preceding *computus* tables and notes. Jones, *BOD* no. 170; Jordanus 4994.

203. Paris. Bibliothèque nationale de France lat. 14088 fols 2–98* s. IXⁱⁿ; Corbie; prov. Saint-Germain-des-Prés. Fols 23r–24v = extracts from *DTR* comprising from chs 14 (acephalous)–15, 35–6. Within a Bede anthology (*De orthographia, De schematibus et tropis, DNR* (fols 50r–61v), *DT* (82r–85v) plus Isidore. Bischoff, *Katalog* 3 no. 4958; Jones, *BOT* no. 71; Jones, *BOD* no. 171; Jordanus 5007.

204. Paris. Bibliothèque nationale de France lat. 14986* s. X. Fol. 107v = *DTR* ch. 16 as part of a collection of *computus* texts. Jones, *BOD* no. 172.

205. Paris. Bibliothèque nationale de France lat. 15008 s. X; prov. Saint-Victor. *DTR* (fols 1r–81v) is the only text in this manuscript. Jones, *BOD* no. 173; Mommsen 236.

206. Paris. Bibliothèque nationale de France lat. 16361* s. XI; orig. Tours?; prov. Sorbonne. Bede *DNR, DT, EpW* (everything missing after ch. 1 due to loss of gathering); other unidentified texts; *DTR* = pp. 27–212. Part of a Sirmond-type manuscript (see Introduction, pp. 57–64). Jones, *BP* 130; Jones, *BOT* no. 72; Jones, *BOD* no. 174; Jordanus 5230; Mommsen 236.

207. Paris. Bibliothèque nationale de France lat. 17160 s. XII; prov. Collège de Navarre. Fol. 159v = *DTR* ch. 4, as part of group of short texts on mathematics following Isidore, *Etymologiae*. Jordanus 5227.

208. Paris. Bibliothèque nationale de France n.a.l. 586, fols 16–132* s. X² or XI¹; England. *Excerptiones de Prisciano* followed by an excerpt from Bede *DTR* ch. 4 (fol. 131r), and a glossary of tree names. Gneuss–Lapidge, no. 902; Mirabile.

→Paris. Bibliothèque nationale n.a.l. 763 see 30.

209. Paris. Bibliothèque nationale de France n.a.l. 1612 + Tours Bibliothèque municipale 334 + Paris, BnF n.a.l. 1613 + Paris, BnF n.a.l. 1614* s. IX^{med.}; Tours. These four items once formed a single manuscript. The first section (n.a.l. 1612) contains Bede *DNR*, a tract on *computus*, and on fols 7r–22r, *DTR* ch. 52–66 (AM 4316). The second part is the Tours volume, and contains the end of ch. 66, followed by chs 67–71 of *DTR*. It is followed by a dossier of patristic letters on Easter reckoning of the Sirmond type; texts relating to the *computus* of Victorius of Aquitaine; *De divisionibus temporum*; argumenta and notes. The two final parts are n.a.l. 1613 and 1614, the latter containing on fols 1v–22 extracts from *DTR* chs 23, 19, and 1. The entire compilation is very close to Paris, BnF lat. 16361 (no. 206), which may have been copied from this manuscript. Bischoff, *Katalog* 3, no. 5101; Borst, *Schriften* 1.281–2; Jones, *BP* 130; Jones, *BOT* no. 73, 85; Jones, *BOD* no. 175–6, 201; Jordanus 5566, 5681.

210. Paris. BnF Bibliothèque nationale de France n.a.l. 1615* s. IX^{1/4} or ^{2/4} (Bischoff); Auxerre; later Fleury and Orléans. A diverse *computus* album. Fols 19r–126v = *DTR*. Auxerre glosses, some in Tironian notes (Introduction, pp. 112–13). The ch. 66 chronicle has been extended to AD 741. Followed by *DNR* (heavily glossed), *DT*, *EpW*; and an album of *argumenta*, short texts on *computus*, cosmology and astronomy, meteorology, and history. Bischoff, *Katalog* 3, no. 5102; Borst, *Schriften* 1.282–3; Jones, *BOT* no. 74; Jones, *BOD* no. 177; Jordanus 5569; Mirabile; Mommsen 237 (his MS *M*).

211. Paris. Bibliothèque nationale de France n.a.l. 1616* s. IX–X or X^{1/2} (Bischoff); orig. Brittany (Bischoff); prov. Fleury. Fol. 6r = extract from *DTR* ch. 1 (*Cum ergo dicis ...*), within a *argumenta* album. Bischoff, *Katalog* 3, no. 5103; Jones, *BOD* no. 178.

212. Paris. Bibliothèque nationale de France n.a.l. 1630 pt 1* s. IX^{1/3} (Bischoff); orig. France; prov. Fleury. Originally the second half of Orléans, Bibliothèque municipale 81 (78), which contains the end of Bede, *Expositio Apocalypseos* and works by Augustine (Bischoff). Fols 1r–9r = fragment of *DTR* ch. 66 beginning with end of reign of Augustus and running to the end of the chapter. Some glosses. Bischoff, *Katalog* 2, no. 3680 (n.b. foliation differs); Jones, *BOD* no. 179; Jordanus 5574.

213. Paris. Bibliothèque nationale de France n.a.l. 1632 pt 1* s. IX^{2/4}; northern France (Bischoff). Fols 10r–67v = *DTR* chs 1–70 (glossed) in two scribal campaigns (1–66 introduction, 66 chronicle–70, incomplete due

to loss of gathering). Preceded by Bede *DNR* (heavily glossed), followed by Jonas of Orléans' *De institutione regia* and Ansegesius of Luxeuil's *Collectio capitularium*. Bischoff, *Katalog* 3, no. 5109; Jones, *BP* 131; Jones, *BOT* no. 11; Jones, *BOD* no. 180 (his MS *A*), who says it is like Amiens 222 (n. 3); Jordanus 5575; Mirabile.

214. Pommersfelden. Gräfische Schönborn'sche Bibliothek 53 s. XII. Fols 31v–125v = *DTR*. Jones, *BOT* no. 124 lists this MS (under mark 2799) and refers to Bethmann, 'Einige Handschriften der Gräfische Schönborn'schen Bibliothek in Pommersfelden', *Serapeum*, 6 (1845): 33–9, who described it as 'Beda de natura rerum; de distinctione temporum; de temporibus et compoto' (p. 34); Jones, *BOD* no. 182 (under shelf mark 53); M.L.W. Laistner and H.H. King, *A Handlist of Bede Manuscripts* (Ithaca, NY: Cornell University Press, 1943), 150. I have not been able to consult Wilhelm Schonath's typewritten catalogue of the library.

215. Princeton. Princeton University Library, Robert Garrett Collection 71 pt 1 s. XII^{4/4}–XIII^{1/4}; southern England; prov. Cistercian abbey of Waverley. Fol. 70v = *DTR* ch. 1. This is the final item in a volume of works by Bede (*In Acta Apostolorum expositio*, *Nomina regionum*, *Libellus retractationis*) and Bernard of Clairvaux (*Libellus de praecepto et dispensatione*). Mirabile.

216. Regensburg, Archiv des Historischen Vereins für Oberpfalz und Regensburg, s.n. s. XI; south-eastern Germany. Fragment of *DTR* containing end of ch. 14, all of ch. 15, and beginning of ch. 16. Hans Ulrich Schmid, 'Ein Regensburger Fragment von Bedas Schrift *De temporum ratione* mit den altenglischen Monatsnamen', *Anglia*, 112 (1994): 103–6.

217. Reims. Bibliothèque Carnegie (Bibliothèque municipale) 431 (E336)* s. XII². Fol. 44r = extract *DTR* ch. 1 (with illustrations), copied at the end of book 5 of Isidore's *Etymologiae*. Jones, *BOD* no. 183.

218. Rome. Biblioteca Vallicelliana E 26* ca. 816; Lyon. A *computus* album: see Introduction, pp. 107–8. Fols 1v–2r = *DTR* ch. 19 (with *Pagina regularis*) and ch. 23. Fols 43–71 contain a consolidated textbook composed of chapters of *DTR*, reordered and in many cases abridged, interspersed with other materials. The chapters excerpted are 1, 4–6, 21–2, 24, 30, 35–6, 38–9, 32–43, 45–6, 55–62. Fols 91r–136v = chs 66–71. Cf. no. 105 above. Bischoff, *Katalog* 3, no. 5361; Borst, *Schriften* 1.285–6; *Computus in the Carolingian Age*; Jones, *BP* 131; Jones, *BOT* no. 75; Jones, *BOD* no. 185; Mirabile.

219. Rouen. Bibliothèque Jacques Villon (Bibliothèque municipale) 524 (I. 49) s. IX (after 814: Bischoff); orig. Normandy (St Wandrille?); prov. Fécamp. Fols 96r–197v = *DTR* with end of chronicle (and subsequent chapters?) lost. ‘Valenciennes Glosses’ (see Introduction, p. 118) to ch. 44; some glosses in Old English. Within a clerical compendium comprising Isidore, *De officiis*, calendar, and computistica. Bischoff, *Katalog* 3, no. 5377; Jones, *BP* 131; Jones, *BOT* no. 76; Jones, *BOD* no. 187; Mirabile.

220. Rouen. Bibliothèque Jacques Villon (Bibliothèque municipale) 3055 (Leber 1157) s. XIII. A fragment of four folios: fols 3v–4r = *DTR* ch. 1 with illustrations. This codex is an album of manuscript fragments. Jones, *BP* 131; Jones, *BOD* no. 188.

221. Salisbury. Cathedral Library 158 pt 2 ca. 969–978; orig. France; prov. Salisbury by s. XI ex. A *computus* album. Fols 20r–83v = *DTR* with a few glosses, some in Tironian notes. Gneuss–Lapidge no. 744; Jones, *BP* 133; Jones, *BOT* no. 81; Jones, *BOD* no. 195; Jordanus 7925; Mirabile.

222. Salzburg. Salzburg Museum (Museum Carolino-Augustum) 2163 pt 1 and pt 3 s. IX^{1/4}; Salzburg. Part 1 fols 10v–11r = *DTR* ch. 1 (excerpt). Part 3 fols 19r–20v = ch. 20, following fragment of Alcuin, *De fide trinitatis*. Bischoff, *Katalog* 3, no. 5416; *Handschriftencensus*; Mirabile.

223. St Gall. Stiftsbibliothek 184 pt 2* s. IX^{ex} (Bischoff). Extracts from *DTR* within a *computus* album. P. 238 = ch. 19; p. 242a = ch. 41; p. 242b = ch. 1 (second half, on ‘cryptography’); p. 243 = ch. 20 (*Sunt autem anni tres ...*); pp. 243–4 = précis of ch. 1 on finger-reckoning; pp. 250–1 = ch. 6; p. 253 = ch. 13; p. 254 = ch. 24; pp. 253–4 = ch. 26; p. 254 = ch. 26; p. 256 = ch. 69; p. 257 = ch. 10; pp. 258–9 = ch. 70; pp. 259–60 = ch. 43. Bischoff, *Katalog* 3, no. 5641; Borst, *Schriften* 1.287; *Computus in the Carolingian Age*; Jones, *BOD* no. 189; Jordanus 8039.

224. St Gall. Stiftsbibliothek 248 pt 3* 835 × 865; northern France (Laon?); Reichenau. Pp. 99–148 (s. IX) and 149–227 (added s. XI): *DTR*. No capitula list or chapter titles until a new scribe takes over in the middle of the text at p. 149. Probably included closing chapters, but text ends in *medias res* on p. 212 at ch. 66, AM 4594. Closely related to Karlsruhe Aug. perg. 167 (no. 95) (Jones). This *computus* album also contains Bede *DNR*, followed by *DT*. Bischoff, *Katalog* 3, nos 1684–5; Borst, *Studien* 1.288; *Computus in the Carolingian Age*; Jones, *BP* 132; Jones, *BOT* no. 77; Jones, *BOD* no. 190; Jordanus 8041; Mirabile; Mommsen 237.

225. St Gall. Stiftsbibliothek 250* 850 × 899; St Gall. A large *computus* album. Pp. 104–5 = *DTR* ch. 23 with *litterae punctatae* table. Pp. 164–425 = *DTR*, followed by *DNR* and *DT*. Bischoff, *Katalog* 3, no. 5688; *Computus in the Carolingian Age*; Jones, *BP* 132; Jones, *BOT* no. 78; Jones, *BOD* no. 191, who says it is closely related to St Gall 251 (n. 226); Mommsen 237.

226. St Gall. Stiftsbibliothek 251* s. IX^{2/4} (Bischoff); St Gall. Pp. 45–181 = *DTR*. Preceded by *DNR* (pp. 33–44), within a large *computus* album. Bischoff, *Katalog* 3, nos 5689–91; *Computus in the Carolingian Age*; *Handschriftencensus*; Jones, *BP* 132; Jones, *BOT* no. 10; Jones, *BOD* no. 192; Mirabile; Mommsen 231 (his MS *H*).

227. St Gall. Stiftsbibliothek 397* 830–867 (Bischoff); orig. partly in Aachen and partly in St Gall. This is the ‘handbook’ of Abbot Grimald of St Gall, part of which is found in Vatican City, BAV Reg. lat. 421, fols 21–5. Extracts from *DTR* on pp. 35–6 (ch. 19), pp. 86–8 (ch. 1, reworked), pp. 98–100 (ch. 46), pp. 100–1 (ch. 45), p. 102 (ch. 39 inc.), pp. 121–2 (ch. 4 inc.), all amidst other computistica. Followed by Bede *DNR* and the Chronicle from *DT* extended to the reign of Charlemagne and with a summary *ab origine mundi in presentem annum* of AM 4761 (p. 141). The rest of the handbook contains poetry, Fulgentius, historical notes on St Gall. Bischoff, *Katalog* 3, no. 5741; Borst, *Schriften* 1.289–90; *Handschriftencensus*; Jones, *BP* 132; Jones, *BOT* no. 79; Jones, *BOD* no. 193; Jordanus 8046; Mirabile.

228. St Gall. Stiftsbibliothek 450* s. X–XI. *Computus* album with liturgical materials. P. 5 = *DTR* ch. 21. Mirabile (which claims in error that there are also *DTR* extracts on pp. 2–3).

229. St Gall. Stiftsbibliothek 459* s. IX^{4/4} with later additions (Bischoff); St Gall. A large *computus* album. Pp. 57–8 = *DTR* ch. 33. Pp. 143–346 = *DTR* complete, but in spite of the capitula it ends (apparently deliberately) at the end of ch. 65. A few glosses, some written in a letter-substitution code. Bischoff, *Katalog* 3, nos 5756–7; Borst, *Schriften* 1.290; Jones, *BP* 132; Jones, *BOT* no. 80; Jones, *BOD* no. 194; Mirabile.

230. St Gall. Stiftsbibliothek 878* 825–849; Reichenau, Fulda, Weissenburg, Ingelheim, Prüm, St-Denis, Worms, and Aachen. Commonly identified as Walahfrid Strabo’s *vademecum*, though not in Walahfrid’s hand: see Introduction, pp. 119–20. The computistica includes Hrabanus’ *De computo*, Bede *DNR* and *DT*. Extracts from *DTR* are copied more or less in a block: ch. 9 (pp. 286–90), ch. 38 (partial) (pp. 293–4), ch. 29

(beginning) (p. 294); ch. 42 (beginning and end) (pp. 295–6); ch. 41 complete (pp. 297–8); ch. 20 partial (pp. 298–300). Stevens, *Rhetoric and Reckoning* 163. The texts are transcribed in his Appendix D. Bischoff, *Katalog* 3, no. 5862; Borst, *Schriften* 1.878–9; *Computus in the Carolingian Age*.

231. Schaffhausen. Stadtbibliothek. Ministerialis 61 s. IX^{3/4}; south-western Germany (Bischoff); in Schaffhausen by fourteenth century. Bede, *DTR* (fols 27r–204r), *DNR* (fols 1r–9r) and *DT* (fol. 9r–15r), followed by *astronomica* and *computistica*. Bischoff, *Katalog* 3, no. 5962; Borst, *Schriften* 1.294; *Handschriftencensus*; Jones, *BP* 133; Jones, *BOT* no. 82; Jones, *BOD* no. 196; Mirabile.

232. Strassbourg. Bibliothèque nationale et universitaire 326* s. IX/X or X (Bischoff). A large *computus* album, closely related to Paris, BnF lat. 5239 (no. 189). *DNR* and *DT*, followed by *DTR* (ch. 66 represented only by the Introduction) (fols 16r–104v). However, the ch. 66 Chronicle is copied immediately afterwards in the same hand. The glosses, like those in the Paris MS, fade out around ch. 29. Contains the ‘Melk Commentary’ (see Introduction, p. 113). Bischoff, *Katalog* 3, no. 6023; Borst, *Schriften* 1.294–6; Jones, *BP* 133; Jones, *BOT* no. 126; Jones, *BOD* no. 197, who compares it to Melk, 412 (no. 133), BAV Reg. lat. 755 (no. 255) and BAV Vat. lat. 643 (no. 265); Jordanus 5670.

233. Stuttgart. Württembergische Landesbibliothek HM XI 30 s. X–XI; orig. Lake Constance region; prov. Weingarten. Fols 1r–77v = *DTR*, followed by Wichram of St Gall’s *Opusculum de Computo*. Jones, *BP* 132; Jones, *BOD* no. 198; Jordanus 2888.

234. Stuttgart. Württembergische Landesbibliothek Theol. Q. 172 s. XII; prov. Chomberg. Fols 8v–53r = *DTR* ch. 1–66 (intro.). Also includes *EpW* (incomplete), *DNR*. Jones, *BP* 132; Jones, *BOT* no. 84; Jones, *BOD* no. 198.

→ **Tours Bibliothèque municipale 334** see 209.

235. Trier. Wissenschaftliche Bibliothek (Stadtbibliothek) 2500 Before 873–874 (860s: Contreni; 840: Borst, de Hamel); Laon, Compiègne, Reims, Trier. It was in Laon in 876, in Trier (St Maximin) by 900; later Koblenz, Bibl. Görres; then owned by Th. Cramer–Klett, and various private owners who purchased it through H.R. Kraus (this is the manuscript listed by Jones, *BOD* no. 132); subsequently Cologne, Ludwig Collection, and the J. Paul Getty Museum. *DNR* = fols 20v–27r, with ‘Laon’ glosses (cf. Berlin

1832 – see Introduction pp. 112–13, *DT* = fols 27v–31r, *EpW* = fols 31r–33r, *DTR* = fols 36v–95r, with other computistica and mathematica. Created by Manno, who taught in the cathedral school of Laon, then at the court of Charles the Bald in Compiègne, and perhaps later at Trier. Contreni argues that this is a direct copy of Berlin 1830+1832 (nos 22, 24). While the *DNR* glosses replicate those in Berlin, the glosses to *DTR* contain only about fifteen of Martin of Laon's glosses, possibly because Manno left Laon for Compiègne before Martin finished glossing *DTR*. Bischoff, *Katalog* 3, no. 2601; Borst, *Schriften* 1.296; Contreni, 'John Scottus and Bede' 131–7; Christopher de Hamel and Reiner Nolden, 'Die neuerworbene Beda-Handschrift aus St. Maximin', in *Karolingische Handschriften aux St Maximin* (Trier: KulturStiftung der Länder, 1990), 8–25; Jones, *BOT* no. 121; Jones, *BOD* no. 132 (identified as New York. H.P. Kraus Catalogue 80 (1956); no. 1); Mommsen 240; Mirabile.

236. Troyes. Médiathèque Jacques-Chirac (Bibliothèque municipale) 422* s. XII; Clairvaux. Fols 72r–140r = *DTR* chs 1–65, with 'Valenciennes glosses' (see Introduction, p. 118). Also contains Bede's *De templo*, *In libros Regum quaestiones XXX*, Heleric. Jones, *BOD* no. 222; Jordanus 5688.

237. Troyes. Médiathèque Jacques-Chirac (Bibliothèque municipale) 1071* s. IX^{med} or IX^{3/4} (Bischoff); Reichenau or vicinity. Fols 8r–62r = *DTR*. The ch. 66 Chronicle and chs 67–71 are treated as separate works. Preceded by Paschal tables based on Augustan Era (AA 41 = AD 1) and calendar. Bischoff, *Katalog* 3, no. 6270; Jones, *BP* 132; Jones, *BOT* no. 86; Jones, *BOD* no. 203.

238. Turin. Biblioteca Reale Varia 105 s. VIII^{4/4}, from a Continental centre with Insular connections, possibly in south-western Germany or Rhineland. Fols 3r–88r = *DTR* ch. 66, chronicle. The other text in this manuscript is the poem *Excidium Troiae*, incomplete (fols 88v–120v). Mommsen 237. Alessandra Terracina, 'Raccontare la storia: un manoscritto poco conosciuto dei "Chronica Maiora" di Beda', *Pecia*, 14 (2011): 243–65.

239. Valencia, Bibl. Cat. 93 (240) s. XIV. Fols 6v–51r = *DTR*. Jones, *BOT* no. 127; Jones, *BOD* no. 204 (who locates *DTR* on fols 1–52).

240. Valenciennes. Médiathèque Simone Veil. (Bibliothèque municipale) 174 (166)* s. IX^{4/4}; Reims and St-Amand. Fol. 1r = *DTR* ch. 71. Fols 42r–168r = *DTR*, glossed. This is the oldest representative of the 'Valenciennes glosses': see Introduction, p. 118. Fols 1v–13v = *DNR*

formally, but incomplete, with ch. 39); fols 13v–22r = *DT*; fols 23v–28v = *EpW*. Other computistica. Bischoff, *Katalog* 3, no. 6364; Borst, *Schriften* 1.296–7; Jones, *BP* 132; Jones, *BOT* no. 87; Jones, *BOD* no. 205.

241. Valenciennes. Médiathèque Simone Veil. Bibliothèque municipale 343 (330 bis)* s. IX¹; northern France (Bischoff); St-Amand. Fols 84r–179v = *DTR* with sparse glosses. Fols 8r–13v = *DT*, glossed; fol. 13v–22v = *DNR*, with some glosses; 22v–80v = a *computus* in numbered chapters ascribed to Bede, consisting of tables, calendar, Paschal tables with annals, *argumenta*, *lectiones* etc.; fols 80v–83v = *EpW*. Bischoff, *Katalog* 3 p. 398; Borst, *Schriften* 1.297–8; Jones, *BP* 132; Jones, *BOT* no. 88; Jones, *BOD* no. 206; Jordanus 5702.

242. Vatican City. Biblioteca Apostolica Vaticana. Barb. lat. 92* s. XII¹; western Germany or France. Fols 1v–2r = *DTR* ch. 19 + *Pagina regularis* (fols 1v–2r), and fol. 47v = *DTR* ch. 1 (fol. 47v) within an anthology of materials on mathematics, geometry, astrology, surveying, and *computus*. Jordanus 9956; Mirabile.

243. Vatican City. Biblioteca Apostolica Vaticana. Ottobon. lat. 6 (pt. 2)* s. XII. Fol. 22v = beginning of ch. 4 (duodecimal fractions), within a collection of extracts and notes on *computus*, cosmology, number, and history. Includes *DNR* (incomplete) and the chronicle from *DT*. Jones, *BP* 134; Jones, *BOD* no. 207.

245. Vatican City. Bibliotheca Apostolica Vaticana. Ottobon. lat 67 pt 2 Fols 1–20 s. XI; fols 21–132 s. IX–X (878?); orig. Angers; prov. St Denis. The first part is an Abbonian *computus*, the second a Carolingian one. Fols 28r–132r = *DTR* with glosses. The ch. 66 chronicle is repositioned before the main text. Jones, *BP* 132; *BOT* no. 89; Jones, *BOD* no. 208; Mirabile; Mommsen 236 (his MS *O*).

246. Vatican City. Biblioteca Apostolica Vaticana. Pal. lat. 243 pt 3* 900–950; Reims? Lorsch? Fols 52r–55r = excerpt from *DTR* ch. 66 Chronicle, followed by Lorsch Chronicle and *Series regum Francorum* (55r–61r); poetry by Alcuin. Bischoff, *Katalog* 3, no. 6505. Mirabile.

247. Vatican City. Biblioteca Apostolica Vaticana. Pal. lat. 562* s. XIII; Worms. Fols 145v–146r = ch. 1 (from *Cum dicis* ...). Part of a MS of Cassian's *Collations*, Jerome's *De viris illustribus*. The Bede extract is followed by notes on the holy places of Jerusalem. Jones, *BOD* no. 210.

248. Vatican City. Bibliotheca Apostolica Vaticana. Pal. lat. 834 pt 1* s. IX¹ (Bischoff); western Germany, but at Lorsch by s. X/XI (Bischoff). Fols 36r–37v = ch. 1 (entire). Preceded by Bede's Martyrology, summary of Eusebian chronology, Dionysian Paschal tables, computistica, astronomical texts. Bischoff, *Katalog* 3, no. 6560; Jones, *BP* no. 135; Jones, *BOD* no. 210.

249. Vatican City. Bibliotheca Apostolica Vaticana. Pal. lat. 927* s. XII; Verona. A large compendium of historical writing (Orosius, Justin's Epitome of Pompeius Trogus, epitome of Eusebius, Eutropius, Cassiodorus, Isidore, Jordanus etc.). Fols 18v–19v = *DTR* ch. 66 introduction, followed by an abbreviated chronicle of the Six Ages, to the reign of the Emperor Michael III (842–69). Jones, *BOD* no. 211; Mommsen 236.

250. Vatican City. Bibliotheca Apostolica Vaticana. Pal. lat. 1448* This manuscript comprises two *computus* albums which were joined in the fifteenth century. Pt 1 s. IX; Trier, later Mainz. Pt 2 AD 840. In part 1: fol. 5v = *DTR* ch 19 following *Pagina regularis* on 4v; fols 40v–41r = ch. 4 (fractions), beginning of ch. 1; fols 45r–59v = chs 2–46 (includes chs 4 and 18, excerpted in previous section). In part 2: fols 73v–74v = ch. 33; fols 86r–98v = chs 44–62; fols 106r–109r = chs 17–18, 2, 3, and 4. Fols 110r–116v = verse summary of sections of *DTR*. Bischoff, *Katalog* 3, no. 6579; Borst, *Schriften* 199–300; Jones, *BP* 135; Jones, *BOT* no. 90; Jones, *BOD* no. 212.

251. Vatican City. Bibliotheca Apostolica Vaticana. Pal. lat. 1449* s. IX¹; Lorsch. The core of this *computus* album is Bede's treatises + *EpW*: this is the earliest surviving MS in which they appear together. Fols 28r–104r = *DTR* chs 1–65; fols 105r–112v = Bede's *DNR*; fols 112v–118r = Bede *DT*, with additional astronomical notes; fol. 118v = illustration of hand positions for *loquela digitorum*; fols 121r–145v = *DTR* ch. 66–71. Bischoff, *Katalog* 3, no. 6580; Borst, *Schriften* 1.300; Corradini, 'Rhetoric of Crisis' 301–2; Jones, *BP* 135; Jones, *BOT* no. 91; Jones, *BOD* no. 213; Mirabile.

252. Vatican City. Bibliotheca Apostolica Vaticana. Reg. lat. 123* 1056; Ripoll. See Introduction, p. 108. The unique surviving copy of a substantial encyclopedia of *computus* created at Ripoll, but drawing in part on a mid-ninth-century Loire valley source and including excerpts from the Irish *De ratione computandi*. It is organized in four books: *De sole*, *De luna* (Paschal tables with annals), *De natura rerum*, and *De astronomia*. *DTR* is broken up and dispersed throughout this consolidated collection except for

Book 3, which is composed of extracts from Bede's and Isidore's *DNR*. Book 1: fols 2r–3r = chs 2–3; fols 6v–7r = ch. 5; fols 8v–10r = ch. 6; fols 11r–v = ch. 7; fols 12r–14v = chs 8–10; fols 15v–16v = ch. 12; fols 19r–v = ch. 13; fols 19v–21r = chs 11, 14, 15; fols 22r–24r = chs 16, 21; fols 24v = ch. 53; fols 25r–26r = chs 55, 22; fols 27v–28r = ch. 30; fols 31r–33r = chs 31–3; fol. 33v = ch. 35; fols 40v–42r = chs 38–9 (followed by *EpHelm*); fol. 45r = ch. 40; fol. 45r–v = ch. 48; fol. 46r–v = ch. 66 introduction, followed by *DT* chronicle; fols 52r–72r = *DTR* ch. 66 Chronicle + chs 67–70; fols 73r–74r = ch. 71. Book 2: fol. 76v = ch. 24; fol. 77v = ch. 17; fols 78v–79v = chs 18–19 (+ *Pagina regularis* on fol. 80r); fols 80v–83r = chs 25–6, 28–9; fols 84r–85r = ch. 43; fol. 86r–v = ch. 42; fol. 89r–v = ch. 41; fol. 91r–v = ch. 50; fol. 91v = ch. 52; fols 91v–92r = ch. 20; fols 94r–95r = ch. 56; fols 95r–98r = chs 58, 44–6; fols 99r–100r = ch. 51; fol. 101r–v = chs 59–60; fols 103r–105r = chs 61–2; fols 107r–109r = chs 63–4; fol. 110v = ch. 65; fol. 118v = ch. 65 (again, in another hand). Book 4: fol. 156r–v = ch. 34; fol. 163r–v = ch. 27. Borst, *Schriften* 1.300–2; Jones, *BP* 138; Jones, *BOT* no. 93; Jones, *BOD* no. 214; Jordanus 10319; Mirabile; Mommsen 236.

253. Vatican City. Bibliotheca Apostolica Vaticana. Reg. lat. 309* s. IX^{med} and s. X² (Bischoff); St-Denis. A large *computus* album containing numerous excerpts from *DTR* within a disrupted version of the Aachen or Seven-Book Encyclopedia (see Introduction, pp. 102–3): fols 12v–14v = chs 19, 23, 17, 18 (beg.), 25; fols 65r–66v = ch. 9; fols 77v–78r = chs 38–9 (beg.); fol. 83 = ch. 41; fols 86v–89r = chs 51, 28; fol. 104v = ch. 4. Bischoff, *Katalog* 3, no. 6654; Borst, *Schriften* 1.303–4; Jones, *BP* 136–7; Jones, *BOT* no. 93; Jones, *BOD* no. 215; Jordanus 10314.

254. Vatican City. Bibliotheca Apostolica Vaticana. Reg. lat. 339, pt 4* s. IX/X. Fol. 53v = *DTR* ch. 4, table of fraction symbols only. The rest of this volume includes Prudentius, Isidore's *Sententiae*, *Vita* of St Amand, *Laterculus* of Polemius Silvius, etc. Bischoff, *Katalog* 3, no. 6672; Jones, *BOD* no. 216.

255. Vatican City. Bibliotheca Apostolica Vaticana. Reg. lat. 755, pt 1* s. X^{2/4} or s. X^{med} (Bischoff); France, possibly Sens. Fol. 29r–88r = *DTR*, glossed. Prefaced by poem on the symbolism of thirty, sixty, and 100 by Aganus, possibly bishop Aganus of Chartres (s. 926–941), also found in Paris, BnF lat. 7297 (no. 191). Manuscript also includes *DNR* and *DT* (acephalous) as well as computistica, including 'Melk Commentary' (see Introduction p. 113). Bischoff, *Katalog* 3, no. 6729; Borst, *Schriften*

1.306; Jones, *BP* 137; Jones, *BOT* no. 94; Jones, *BOD* no. 217; Mommsen 236–7.

256. Vatican City. Bibliotheca Apostolica Vaticana. Reg. lat. 838 pt 2 s. IX^{1/4} or x. IX^{2/4}; western France. Fols 84r–86r = *DTR* ch. 1, leading into other computational tracts and notes, calendar. Follows on Ps-Methodius' *De novissimis temporibus*, *De tonitru*, and *Liber numerorum*. Bischoff, *Katalog* 3, no. 6734; Jones, *BOD* no. 218; Linda McKee, 'A Fragment of Bede's *De temporum ratione* in Vat. Reg. Lat 838', *Manuscripta*, 10 (1966): 43–4.

256.1 Vatican City. Bibliotheca Apostolica Vaticana. Reg. lat. 1038 pt 2* s. IX^{3/4} or s. IX^{4/4} (Bischoff). A *computus* album, containing *DTR* on fols 84v–125v and 126r–128v. Chs 66–67 replaced by non-Bedan 'De saltu lunae', 'De duodecim signa (*sic*) quomodo nominantur', and 'De diuisione temporum'; cf. no. 124, London, British Library Royal 15 B XIX pt 2. *DTR* is followed by *DNR* and *DT*. Bischoff, *Katalog* 3, no. 6756; Jones, *BP* 137; Jones, *BOT* no. 95; Jones, *BOD* no. 219.

257. Vatican City. Bibliotheca Apostolica Vaticana. Reg. lat. 1569 pt 2* Pt 1 (fols 1–30) is a ninth-century copy of Victorius' *Calculus* from St Gall (Bischoff, *Katalog* 3, no. 6784) Pt 2 is a s. XVI volume of what looks like transcriptions from one or more *computus* manuscripts: 'Teutarii Presbyteri S. Galli Liber de Computo Ecclesiastico' (fol. 33r–56v), a textbook with numbered chapters, followed by 'Volcomanni monachi Augiensis Liber De Computo Ecclesiasto' (fols 59r–80r), an album containing calendar, Paschal tables, *argumenta*. (Teutarius) fol. 50r–v = *DTR* ch. 1; fol. 54r–v = ch. 4. (Volcomannus) fol. 72r–v = ch. 19. Jones, *BOD* no. 220.

258. Vatican City. Bibliotheca Apostolica. Vaticana Reg. lat. 1573* s. XI; Ferrières. An Abbonian *computus* album with *DTR* ch. 1 excerpted on fols 122r–124r. Jones, *BOD* no. 221.

259. Vatican City. Bibliotheca Apostolica. Vaticana Rossi. lat. 144* 1024? A *computus* album containing the extracts from *DTR*: fols 18v–19v (ch. 56), 20v–21v (ch. 1 *Cum dicis* ...) and 22r–23r (ch. 19). Jones, *BP* 137; Jones, *BOD* no. 222.

260. Vatican City. Bibliotheca Apostolica Vaticana Rossi. lat. 247* ca. 1018–1020; France. An Abbonian *computus* attached to a copy of a Carolingian compilation, perhaps from Tours (Borst). Included *DNR*, *DT* (ending at ch. 14), and *DTR* (fols 70r–140r). *DNR* and *DTR* are both

abundantly glossed, sometimes with diagrams. Hand-positions for ch. 1 illustrated. The album also contains the following extracts: fol. 25v = ch. 23 + *litterae punctatae* table on 26r; fol. 26v = ch. 19 + *Pagina regularis* on 27r; fols 177v–178r = ch. 23 again, no table; fol. 178r–v = ch. 19 again, no table. Borst, *Schriften* 1.308; Jones, *BP* 137; Jones, *BOT* no. 96; Jones, *BOD* no. 223.

261. Vatican City. Bibliotheca Apostolica Vaticana. Urb. lat. 102* s. XV; Italy (Florence?). Fols 153r–189r = *DTR* 1–66 (introduction). After other computistica, on fols 215r–232v = *DTR* chs 66 (Chronicle)–71. Within an anthology of Bede's writings: preceded by his commentary on Luke, followed by his excerpts from Augustine on Paul's Epistles. Jones, *BOT* no. 128; Jones, *BOD* no. 224; Mommsen 237.

262. Vatican City. Bibliotheca Apostolica Vaticana. Urb. lat. 290* s. XI (1030–1180: Borst); Brauweiler. A sprawling *computus* album containing Abbonian materials, Helperic and astronomica. Fols 28r–v = *DTR* chs 41–2 (beg.); fols 29v–32v = ch. 1 with illustrations; fol. 34r–v = ch. 30 (beg.); fol. 46r = ch. 19. Borst, *Schriften* 1.309; Jones, *BP* 138; Jones, *BOT* no. 97; Jones, *BOD* no. 225; Jordanus 10329.

263. Vatican City. Bibliotheca Apostolica Vaticana. Urb. lat. 382* s. XV. An anthology of works *de viris illustribus* by Jerome, Gennadius, Isidore etc., and chronicles by Eusebius–Jerome, Marcellinus, Matheus Palmieri of Florence, Isidore. Fols 194r–216r = *DTR* ch. 66 Chronicle. Jones, *BOT* no. 129; Jones, *BOD* no. 226 (note that the extract is from ch. 66, not 61, and MS does not contain chs 67–71, as Jones states); Mommsen 237.

264. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 642* After 1100; Lyons. Fols 13v–14v = *DTR* ch. 29. Fols 15v–80v = *DTR*; note that ch. 29 is omitted. Some glosses. Ch. 1 is decorated with lively and unusual illustrations of finger-reckoning positions. This volume also contains Bede *DNR*, *DT*, *EpW* followed by a geographical survey and a unique *computus* composed in 814. Borst, *Schriften* 1.309–10; Jones, *BP* 138; Jones, *BOT* no. 98; Jones, *BOD* no. 227; Jordanus 10005.

265. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 643* s. XII; Melk. An abbreviated copy of Melk, 412 (no. 133) containing *inter alia* *DNR* and *DT*, and an abbreviated version of the 'Melk Commentary' (see Introduction, p. 113) within an Abbonian *computus*. Fols 15v–70r = *DTR* chs 1–66 (intro.), 67–71), glossed. Also contains *De signis coeli* and other

astronomica, medical notes. Borst, *Schriften* 1.310; Jones, *BP* 138; Jones, *BOT* 643; Jones, *BOD* no. 228.

266. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 644* s. IX^{med.}; southern France or northern Italy (Bischoff). Closely related to the slightly younger Milan Ambrosiana D 30 inf. (no. 136). *DTR* is divided into two unequal parts: fols 13r–16v = chs 67–71 (pinned onto the end of *DT*), and fols 33–75v = ch. 1, Preface–65, glossed. *DNR* also included, incomplete but richly glossed. Bischoff, *Katalog* 3, no. 6846; Borst, *Schriften* 1.311; Jones, *BP* 138; Jones, *BOT* no. 100; Jones, *BOD* no. 229; Jordanus 10006.

267. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 645* s. IX^{med.} or IX^{3/4}; north-eastern France, perhaps Reims (Bischoff) or Saint-Quentin, or Saint-Vaast in Arras (Borst). A Carolingian encyclopedia-type manuscript related to Munich CLM 210 (no. 147) and Vienna 387 (no. 275) but in four books. Fols 71v–92v = Bede's *DNR*. *DTR* is represented by extracts: fols 39r–41r = ch. 9; 41r = ch. 38 (beg.); 51r = ch. 39 (beg.); 76v–77v = ch. 4 (beg.). Bischoff, *Katalog* 3, no. 6847; Borst, *Schriften* 1.311–12; Jones, *BP* 138; Jones, *BOT* no. 101; Jones, *BOD* no. 230 (who also compares to BAV Pal. lat. 1448, no. 250); Jordanus 10007.

268. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 1053* s. XIII. Fol. 377 = *DTR* ch. 9 (beg.). Within an anthology of works on history and on the historical exegesis of scripture (e.g. Richard of St Victor on Ezekiel). Jones, *BOD* no. 231.

269. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 3852* s. IX–X; orig. Lyon?; prov. Vienne (St Columba). Fols 1r–30v = *DTR* ch. 66, chronicle only. Within a larger volume of chronicles and exegetical materials, including Bede's commentary on 1 Samuel. Bischoff, *Katalog* 3 no. 6886; Jones, *BOD* no. 232; Jordanus 10167; Mommsen 236.

270. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 3895* s. XVI. Fols 140r–141r = *DTR* ch. 1 (beg.), within a sixteenth-century collection of texts on surveying, geometry, weights and measures. Jones, *BOD* no. 233; Jordanus 10170.

271. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 4162 pt 3* s. IX, but the *DTR* extract added somewhat later. Fol. 61v = *DTR* extract from ch. 66 (s.a. 3866) containing biography of Herod the Great, ends incomplete. Mirabile.

272. Vatican City. Bibliotheca Apostolica Vaticana. Vat. lat. 13014* s. XIII–XIV; Italy. Fols 141r–167v = *DTR* chs 1–66 (Introduction), 67–71. Within an anthology of theological writings by Richard of St Victor on Ezekiel, Augustine, Hugh of St Victor, as well as philosophical writings by Hermes Trismegistus. Jones, *BOD* no. 234; Mirabile.

273. Venice. Biblioteca Nazionale Marciana, Marc. lat. I 51 s. XIV. Fols 84–5 = *DTR* chs 1, 4. Jordanus 10455.

274. Vercelli. Biblioteca capitolare CIII (56) pt 2 s. X–XI. Fols 109–60 = *DTR*. Bischoff, *Katalog* 3, p. 461; Jones, *BOT* no. 130; Jones, *BOD* no. 235.

275. Vienna. Österreichische Nationalbibliothek 387* 809–818 (Bischoff) or 810–830 (Borst); Salzburg. ‘Salzburg (Nine-Book) Encyclopedia of 818’; sister of Munich 210 (no. 147). Contains the following extracts from *DTR*: fol. 16r–v = ch. 19; fol. 58v–60r = ch. 20; fol. 102v–103v = ch. 47 (beg.); fol. 103r–114v = chs 48, 1 (beg.), 53, 55–6; 59 (beg.), 61 (beg.), 62 (beg.), 63, 54–5, 66 Introduction. Bischoff, *Katalog* 3, no. 7114; Borst, *Schriften* 1.313; Jones, *BP* 139; Jones, *BOT* no. 131; Jones, *BOD* no. 236.

276. Vienna. Österreichische Nationalbibliothek 522* s. X; Salzburg (St Peter). Fols 192v–205r = *DTR* chs 67–71. This MS also contains Bede’s *DNR* and works on canon law. Jones, *BOD* no. 237.

277. Vienna. Österreichische Nationalbibliothek 12600* s. XII–XIII; Prüfening. Three *computus* albums joined together. The first part contains *DTR* ch. 1 with illustrations (fol. 22r–23r). Part 3 contains chronicles and annals, a list of the abbots of Prüfening, astronomica, and computistica. Fols 42r–135v = *DTR*, chs 1–65 (glossed, including ‘graphic glosses’ particularly of cosmological chapters), followed by *DNR*, and on fols 105r–135v, *DTR* chs 66–71. Borst, *Schriften* 1.315–16; Jones, *BP* 139; Jones, *BOT* no. 132; Jones, *BOD* no. 238; Jordanus 11684.

278. Vienna. Österreichische Nationalbibliothek 15298 (Supp. 2689)* s. VIII or VIII/IX; Ireland; prov. Aquileia (Cathedral). Formerly pasted to covers of s. XI French volume (now Vienna 2269). Four leaves containing parts of *DTR* chs 7–9, 11–16, and 19–22, with glosses in Latin and Old Irish, many identical to those in the later Karlsruhe Bede (no. 95). *CLA* 10 no. 1511; Dillon, ‘The Vienna Glosses on Bede’; Jones, *BOD* no. 240; Mirabile; Ó Cróinín, ‘The Earliest Old Irish Glosses’; Strachan, ‘The Vienna Fragments of Bede’.

279. Warsaw. Biblioteka Narodowa Rps 8100 III (Akc. 12400)* s. IXⁱⁿ; prov. St Maximin Trier. New Testament (s. VIII^{ex}). Paste-downs (fols II–III, VII–IX) contain parts of *DTR* chs 18–19, 24–5. For other surviving fragments of this manuscript see **30. CLA** 8, no. 1071; *Mirabile*.

280. Wolfenbüttel. Herzog August Bibliothek, 5 Cod. Guelf. 91 Weiss.* s. IX^l; orig. western Germany, possibly Worms; prov. Weissenburg. A collection of poetry, liturgical texts, and computistica. Fols 165v–168r = *DTR* chs 64–5. Bischoff, *Katalog* 3, no. 7427; Borst, *Schriften* 1.316–17; *Computus in the Carolingian Age*; Jordanus 2989.

281. Wolfenbüttel. Herzog August Bibliothek. Cod. Guelf 127 Gud. lat. 2^o s. XI–XII. Fols 1r–64v = *DTR* breaking off at ch. 66 after *sub Iuda et constituit* (AM 3064). Contains ‘Valenciennes glosses’ (see Introduction, p. 118). Jones, *BP* 139; Jones, *BOT* no. 102; Jones, *BOD* no. 241.

282. Würzburg. Universitätsbibliothek M. p. Theol.f. 46* ca. 800; St Amand and shortly thereafter later Salzburg; prov. Würzburg (Cathedral). Fols 23r–144v = *DTR*. One page missing (= ch. 44 and part of 45) and one gathering missing (chs 50–61). Chs 66–71 added by Salzburg scribe. *Annus praesens* in ch. 49 is 800. Preceded by Jerome’s translation of Eusebius’ *Chronicon*. Followed by computistical tables and notes. Bischoff, *Katalog* 3, no. 7484; *CLA* 9, no. 1413; Jones, *BP* 140; Jones, *BOT* no. 103; Jones, *BOD* no. 242, who says it is like **22** and **105**. *Mirabile*.

283. Würzburg. Universitätsbibliothek M. p. theol. f. 183 (olim M. p. ch. 206 frag. 5)* s. VIII ex.; Ireland; prov. Würzburg (St Stephan). Binding fragment with *DTR* preface and capitula. *CLA* 9.1398; Jones, *BOD* no. 243; Petersohn, ‘Bückeburger Fragmente’ 589.

284. Zürich. Zentralbibliothek Car C 176. s. X–XI. Extracts from *DTR*: fols 175–6 = ch. 38; fols 179r–180v = ch. 42; fols 203r–204v = chs 17–18; fols 226r–228r = ch. 35; fols 228r–231v = chs 69–70. Also includes *DT* and *DNR*, astronomica, penitential materials. Borst, *Schriften* 1.317; Jones, *BP* 140; Jones, *BOT* no. 104; Jones, *BOD* no. 244.

285. Zwettl. Stiftsbibliothek 296 pt 1* ca. 1200; Zwettl. Fols 20v–78r = *DTR* ch. 1–66 (introduction), 67–71, with glosses. Preceded by *DNR* and *DT*. Also contains Melk Commentary (fols 86v–87r) on the difference between *natura rerum* and *natura temporum*, *ratio rerum* and *ratio temporum* (see p. 113, 396). Ends with illustrated *Aratea*. Jones, *BOT* no. 133; Jones, *BOD* 245.

Doubtful/unconfirmed manuscripts

Biblioteca Medicea Laurenziana Plut. 21.??? Jones, *BOD* no. 62, who has omitted the second element of the shelf-mark. Jones says this MS contains (presumably excerpts from) *DTR* on fols 21v–23r, and assigns the volume to s. XIII, Santa Croce. A search through all volumes in Plut. 21 on the *Biblioteca Medicea Laurenziana Digital Repository* (<http://mss.bmlonline.it/?Collection=Plutei>) failed to find anything corresponding to this.

London. British Library Cotton Tiberius B 5 pt 1* AD 991–1016, Winchester; in Battle Abbey in the twelfth century. Jones (*BOD*) says there is an extract of ch. 14 (*De mensibus Grecorum*) on fols 16r–17r, but this excerpt cannot be located. Borst also says there is a chapter from *DTR* in this MS, possibly deriving his information from Jones. The final item in the codex is Aelfric's *De temporibus anni* with rubric 'Incipiunt pauca de temporibus Bedae presbiteri'. An important *computus* album with astronomy and geography, influenced by Abbo. Borst, *Schriften* 1.241; Jones, *BP* 120 (which does not mention the presence of *DTR*); Jones, *BOD* n. 88.

London. British Library Cotton Titus D 26 + 27 This is the 'Prayer-book of Ælfwine' (Winchester, 1023–1031), which includes prognostics, calendar, and computistica, as well as offices, prayers, devotional and liturgical material. Brown and Biggs, *Bede* 1.95 claim that the sentence *Pythagoras uero uir sagacis animi ... ad duodecim signa triplicatum* on fol. 5r–v is from *DTR* ch. 26. Bede is quoting Pliny here, so while it is possible or even likely that *DTR* is the immediate source, this cannot be proven. The description of Titus D 26 in Mirable says it contains Bede *DNR* and *DTR* but Gneuss–Lapidge (n. 380) disagree: it contains Ælfric's *De temporibus anni*, which is based on Bede.

London. British Library Cotton Vespasian A 22 s. XIII^l, Rochester. Jones (*BOD* no. 91) says this MS contains *DTR*, but this cannot be found in the description in *Anglo-Saxon Manuscripts in Microfiche Facsimile* (<https://journals.lib.sfu.ca/index.php/asmmf/article/view/5618>) and it has not been digitized. There is a chronicle from creation to AD 743 on 2v–8v; Mommsen says it is an epitome of the ch. 66 *Chronica maiora*. Jones, *BOD* no. 91; Mommsen 234.

Perugia Biblioteca capitolare di San Lorenzo s.n. Jones, *BOT* no. 123; Jones, *BOD* no. 181, says that Mommsen claims not to have seen this MS

(240). A search in Manus Online (<https://manus.iccu.sbn.it/>) produced no MS in the Biblioteca capitolare containing *DTR* or a chronicle.

Rome. Biblioteca Vallicelliana tomo XXI Cannot be identified through Manus Online or through Bibl. Vallicelliana website. Jones, *BOD* no. 186 dates as ‘s. XIII?’ and cites extracts from chs 19, 22, 39 ‘etc.’ on fols 315r–366v.

Rejected manuscripts

Arras. Bibliothèque municipale 129, pt 5 Jordanus 3830 says it contains *DTR* ch. 1, but this cannot be confirmed, as the descriptions on Arca (<https://arca.irht.cnrs.fr/>) and in the *Catalogue général des manuscrits des bibliothèques publiques des départements* T. 4 (Paris: Imprimerie nationale, 1872) 62 say it is a thirteenth-century copy of Deuteronomy with glosses.

Augsburg. Universitätsbibliothek, I. 2. 4^o 14, pt 2 Not *DTR* (as per Jordanus 1031) but works based on it by Lambertus and Wichram of St Gall.

Berlin. Staatsbibliothek Preussischer Kulturbesitz Phillipps 1830 (129) s. IX^{3/3} (Bischoff), Reims or Laon. First part of Phillipps 1832. Mirabile states that Fol. 2v = *DTR* ch. 63, preceded by a poem on the winds, but this is not the case. Bischoff, *Katalog* 1 no. 436; Borst, *Schriften* 1.213–14. I thank Immo Warntjes for sharing images of this manuscript.

Erfurt. Universitäts- und Forschungsbibliothek Erfurt/Gotha, Amploniana 4^o 79 fols 200r–202v = acephalus *DT* Chronicle, not *DTR* as per Jones, *BOD* no. 59.

Innsbruck. Universitätsbibliothek, Ms 193 Jordanus. A single page of computistica which opens with a phrase echoing the second sentence of *DTR* 17.

London. British Library Additional 19725 s. X. Jones, *BP* 119: “Incipit laterculus sive racio compoti bedae presbiteri” (fol. 30r[–32r]). A *computus* containing excerpts from Bede’s works’. However, it does not appear in *BOT* or *BOD*, so Jones may have reconsidered. Biblissima identifies the computistica as pseudo-Bede: <https://iiif.biblissima.fr/collections/manifest/e99a5c01d903b18d5d3a821700baf2e2de6a86eb>

London. British Library Cotton Tiberius C 1* s. XII, Peterborough. Jones says fol. 2 contains extract from *DTR* ch. 13; the extract is actually from *DT* ch. 13. Borst, *Schriften* 1.242 repeats Jones; Jones, *BOD* no. 89.

London. British Library Royal 2 B V* s. X^{med.} -s. XI^{med.} southern England. This is the 'Royal Psalter'. Fols 187v–188r = paraphrase of opening passage of ch. 66, not ascribed to Bede. Also contains *DT* ch. 16. Jones, *BOD* no. 99.

Paris. Bibliothèque nationale lat. 16216 s. XIII; prov. Sorbonne. Fol. 1 = text ascribed to Bede entitled *De diuersitate nominum annorum*. This is a paraphrase of *DTR* 35. Precedes Isidore, *Etymologiae*. Jordanus 5224.

Rome. Biblioteca Casanatensis 641 pt 1 ca. 812; Monte Cassino. Jones, *BOD* no. 184 cites E.A. Lowe, *Die ältesten Kalendarien aus Monte Cassino* (Munich: Beck, 1908), 6, who claims that this MS contains 'Bedas Sex Aetates'. In fact, it contains Borst's *Ser. nov.* (*Schriften* 2, 951–1008), an abbreviated chronicle from Creation to the reign of Louis the Pious. Bischoff, *Katalog* 3, no. 5313; Borst, *Studien* 1.283–4; *Computus in the Carolingian Age*.

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