GEMINUS AND THE PS.-PROCLAN *SPHAERA*

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FORTUNA*

Geminus was a Greek author, probably from Rhodes, who was active in the first century B.C.[1] He may have been a Stoic since he was familiar with the ideas of Posidonius of Apamea (ca. 135–ca. 50 B.C.), whose *Meteorologica* he epitomized.[2] Geminus also wrote works on mathematics and optics, which survive mainly in quotations in the commentary by Proclus (ca. 410–485 A.D.) on Euclid's *Elements.*[3] This article will deal with the only work by Geminus to survive independently, namely, an elementary survey of astronomy entitled the *Εἰσαγωγὴ εἰς τὰ φαινόμενα (Elementa astronomiae),*[4] and also with an excerpt from it misattributed to Proclus and known as the *Sphaera.* Translations and commentaries involving quotations from Geminus' mathematical treatise (*Περὶ τῆς τῶν μαθημάτων τάξεως* [or *θεωρίας*]) will be fully treated in the article on Proclus.

*The following abbreviations will be used:

Aujac = G. Aujac, ed., *Géminos: Introduction aux phénomènes* (Paris, 1975);

Manitius = K. Manitius, ed., *Gemini Elementa astronomiae* (Leipzig, 1898; rpt. Stuttgart, 1974);

Todd, "The Manuscripts" = R. B. Todd, "The Manuscripts of the Pseudo-Proclan *Sphaera,*" *Revue d'histoire des textes* 23 (1993) 57–71.

The text of Geminus and the ps.-Proclan *Sphaera* is cited according to the page and line numbers of Manitius' edition. I acknowledge the support of grants from the Social Sciences and Humanities Research Council of Canada, and I am grateful for the help and advice of the CTC editors.

1. On his origins and date see Aujac xiv–xxiv.

2. Simplicius (sixth century A.D.) supplies in his commentary on Aristotle's *Physics* 193b22–35 the fragment of Geminus' epitome of the *Meteorologica* of Posidonius; it is Fragment 18 in L. Edelstein and I. G. Kidd, eds., *Posidonius,* vol. 1: *The Fragments* (Cambridge, 1972), with a commentary by Kidd in vol. 2.1 of this edition (Cambridge, 1988), 129–36. See Aujac 111–13 for the Greek text and French translation; for English translations see T. L. Heath, *Aristarchus of Samos, the Ancient Copernicus: A History of Greek Astronomy to Aristarchus ...* (Oxford, 1913; rpt. New York, 1981), 275–76 (also reprinted in M. R. Cohen and I. E. Drabkin, *A Source Book in Greek Science* [Cambridge, Mass., 1969], 90–91) and B. Fleet, *Simplicius. On Aristotle's Physics 2* (London and Ithaca, N.Y., 1997), 47–48. Simplicius' commentary was translated by Lucilio Filalteo (ca. 1510–78; CTC 2.92–93), and five editions appeared between 1543 and 1587. The passage from Geminus was used by Benito Pereira (ca. 1535–1610) in his *De communibus omnium rerum naturalium principiis et affectionibus libri XV* (Venice, 1586); see N. Jardine, *The Birth of History and Philosophy of Science: Kepler's A Defence of Tycho against Ursus, with Essays on Its Provenance and Significance* (New York, 1984), 237–38. It was translated by Bernardino Baldi (1533–1617) in his life of Geminus written in 1595 and edited by E. Narducci, "Vite inedite di matematici italiani scritte da Bernardino Baldi," *Bullettino di bibliografia e di storia delle scienze matematiche e fisiche* 19 (1886) 481–83.

3. *Procli Diadochi In primum Euclidis Elementorum librum commentarii,* ed. G. Friedlein (Leipzig, 1873), 38–42 is the most important passage, a classification of the mathematical sciences; French translation by Aujac 114–17; English translation by Cohen and Drabkin, ibid., 2–5 and G. R. Morrow, *Proclus: A Commentary on the First Book of Euclid's Elements* (Princeton, 1970), 31–35. For other studies of Geminus' mathematical ideas see below, Bibliography III. Proclus' reports were known, for example, to Petrus Ramus (*Scholarum mathematicarum libri unus et triginta* [Basel, 1569], 35) and to Bernardino Baldi; the latter noted in his life of Geminus (ed. Narducci, ibid., 483–84) that they had been translated by Giorgio Valla in his *De expetendis et fugiendis rebus opus* 1.21. The Greek text of Proclus' commentary was first published at Basel in 1533; the first Latin translation was made by Francesco Barozzi (1537–1604; CTC 2.209), *Procli ... In primum Euclidis Elementorum librum commentariorum ... libri IV* (Padua, 1560).

4. This Latin title originates with Hilderich's edition. The Greek title means "Introduction to the phenomena", i.e., the observational data of astronomy. Attempts have been made to interpret *τὰ φαινόμενα* as the title of Aratus' astronomical poem, but this view has not won wide acceptance. It was proposed as early as Bernardino Baldi (d. 1617), *Cronica di matematici overo Epitome dell'istoria delle vite loro* (Urbino, 1707), 48–49.

ANTIQUITY

The *Elementa astronomiae* may have been written for pedagogical purposes. It contains a description of the signs of the zodiac (chs. 1–2), a list of constellations (ch. 3), an account of the risings and settings of stars (chs. 7, 13, 14), and surveys of terrestrial and celestial geography (chs. 4, 5, 15, 16), lunar phases (ch. 9), lunar and solar eclipses (chs. 10–11), and variations in days and months (chs. 6, 8). Geminus denied (ch. 17) that the stars had any influence on meteorological predictions, and he generally rejected astrology. His discussion of planetary motion is elementary (ch. 12) and contributes nothing to planetary theory. A final chapter (18) deals with calendaric computation. An appended calendar (or παράπηγμα) is thought to be derived from an earlier source.

Unlike Cleomedes' *Caelestia,* the other major elementary astronomical manual surviving in Greek, Geminus' treatise does not deal with the geocentric cosmology presupposed by spherical

astronomy.[5] There are references to the Hellenistic writers Crates of Mallos and Pytheas of Marseilles; Aratus and Homer are quoted, but Posidonius is not named. Karl Reinhardt argued that the whole treatise was pre-Posidonian, and not the work of the Geminus to whom sophisticated mathematical writings are attributed.[6] His view has won some support but not universal acceptance. Unlike Geminus' other writings, the *Elementa* is also not mentioned by any later ancient author, but this does not in itself throw his authorship into doubt.

The Middle Ages and the Renaissance

The medieval *fortuna* of the *Elementa* began with an Arabic translation made perhaps as early as the eighth century. This is lost, but we know that it identified the *Elementa* as Ptolemy's introduction to the *Almagest*.[7] Gerard of Cremona (ca. 1114–87) produced a Latin translation from the Arabic ca. 1170 in Toledo (see I.1 below), and Moses ben Samuel ibn Tibbon (fl. 1240–83) made a Hebrew version in 1245, perhaps at Naples.[8] The limited circulation of both translations can be gauged from references in Albert the Great (1206–80), Roger Bacon (ca. 1212–ca. 1292), and two thirteenth-century Jewish authors.[9] These sources all mention a passage (Geminus ch. 16, p. 74.11–18 Manitius) in which Crates is reported as quoting Homer regarding the location of the Ethiopians. This suggests reliance on an intermediary source.[10]

Neither the Hebrew nor the Latin version influenced the transmission of Geminus in Western Europe in the fifteenth and sixteenth centuries. The Hebrew text, however, was translated into Latin in the early sixteenth century by Abraham de Balmes ben Meir (d. 1523), an Italian Jewish physician, but his version was never published and only a fragment survives (I.2 below). An English scholar, Thomas Savile, acquired an apparently complete copy of de Balmes' translation from Gian Vincenzo Pinelli (1535–1601) during a visit to Padua in 1589 and cited it in marginal notes to his own translation of Geminus (I.3 below) and in marginalia on a Greek text of Geminus.[11] This copy was later used by James Ussher (1581–1656) and John Selden (1584–1654) in their chronological studies (p. 11 and n. 23 below).

The Greek text of the *Elementa* was preserved by Byzantine scribes, but in far fewer manuscripts than Cleomedes' *Caelestia* and without scholia. The earliest surviving witnesses of the *Elementa* consist of four manuscripts from the fourteenth century, whereas there are at least twelve manu-

5. For Cleomedes see CTC 7.1–11. Geminus ch. 7, p. 86.19 Manitius, for example, simply takes the earth's sphericity as an assumption from physical theory.

6. K. Reinhardt, *Poseidonios* (Munich, 1921), 178–83.

7. There are no specific references to this work in the Arabic tradition; see M. Steinschneider, "Geminus in arabischer, hebräischer und zweifacher lateinischer Übersetzung," *Bibliotheca mathematica*, N. F., 1 (1887) 98. There are also no references to Geminus himself, since it is now accepted that the "Aghanis" mentioned in the commentary on Euclid by Anaritius (al-Nayrizi) (translated by Gerard of Cremona) is not Geminus, as M. Curtze claimed in his edition of the Latin translation, *Anaritii In decem libros priores Elementorum Euclidis commentarii* (Leipzig, 1899); see "Geminus," DSB 5.346 (D. R. Dicks) and earlier P. Tannery, "Le philosophe Aganis est-il identique à Géminus?," *Bibliotheca mathematica*, N. F., 3 (1901) 9–11.

8. The Hebrew manuscripts are Paris, Bibliothèque Nationale de France, hébr. 1027, s. XIV, fols. 1–56 (J.-A. Taschereau, *Catalogues des manuscrits hébreux et samaritains de la Bibliothèque Impériale* [Paris, 1866], 185); Mantua, Biblioteca Comunale, ebr. 4, undated, fols. 1–50 (M. Mortara, *Catalogo dei manoscritti ebraici della Biblioteca della Communità israelitica di Mantova* [Livorno, 1878], 3); for a third codex, dated to 1554 and privately owned in the nineteenth century (current location unknown), see M. Steinschneider, "Zur Geschichte der Übersetzungen aus dem Indischen ins Arabische und ihres Einflusses auf die arabische Literatur," *Zeitschrift der deutschen morgenländischen Gesellschaft* 25 (1871) 378–428 at 394 and 403–404. It was Steinschneider who first identified the Hebrew version as the text of Geminus.

9. Albert the Great, *De natura loci*, Tr. 1, cap. 7, lines 52–67, ed. P. Hossfeld (Aschendorf, 1980) (= *Alberti Magni Opera omnia* 5.2). Albert refers specifically to Ptolemy "in libro de dispositione sphaerae qui est introductorius ad Almagesti". Roger Bacon uses only the title "de dispositione sphaerae" (J. H. Bridges, ed., *The 'Opus maius' of Roger Bacon*, vol. 1 [Oxford, 1907], 294). On the Jewish authors Gerson ben Salomo and Levi ben Abraham, see M. Steinschneider, "Geminus in arabischer, hebräischer und zweifacher lateinischer Übersetzung," 97; Steinschneider, *Die hebräischen Übersetzungen des Mittelalters und die Juden als Dolmetscher. Ein Beitrag zur Literaturgeschichte des Mittelalters, meist nach handschriftlichen Quellen* (Berlin, 1893), 539.

10. Steinschneider, "Geminus in arabischer, hebräischer und zweifacher lateinischer Übersetzung," 97–98, referred it to Geminus. Albert the Great offers a translation that corresponds closely to Geminus p. 174.13–20 Manitius. Hossfeld (ed. cit. in the preceding note) does not identify this source, and he does not notice that the whole of *De natura loci*, Tr. 1, cap. 7, lines 58–67 is a quotation.

11. Oxford, Bodleian Library, ms. Savile 10, fols. 51r–77r (see I.a below).

scripts of Cleomedes for the period around 1300.[12] The absence of manuscripts in Western Europe in the fifteenth and most of the sixteenth centuries partly explains why the first printed edition of the *Elementa* did not appear until 1590, and why the excerpt known as the *Sphaera* and attributed to Proclus (see below) took so long to be identified as a section of Geminus' *Elementa.* Janus Lascaris (1445–1535) had the work on his list of desiderata for the library of the Medici, but he did not acquire a manuscript.[13] Konrad Gesner (1516–65) knew of only two manuscripts of the *Elementa* in Italy and thought that their different titles indicated different treatises.[14] Petrus Ramus (1515–72), who knew of Geminus only as a mathematician (see n. 3 above), regarded the *Sphaera* as one of Proclus' mathematical treatises.[15]

By the 1580s, however, manuscripts of the Greek text of the *Elementa* were finally becoming available. A copy of a Greek manuscript at Constantinople was brought to Vienna by Ogier Ghiselin de Busbecq (1522–92) in the 1560s and served as the source of several other witnesses.[16] One of these copies was written in part by Sir Henry Savile (1549–1622) during a visit to Vienna in mid-1581.[17] He took this manuscript to Italy where it was copied twice for Gian Vincenzo Pinelli by Camillo Veneto (fl. 1540–89).[18] The Paduan scholar Francesco Barozzi (1537–1604) may have intended to use one of Pinelli's copies for an edition of Geminus.[19]

Barozzi's edition never appeared, but Henry Savile initiated the process that led to the Greek *editio princeps.* His younger brother Thomas had translated the *Elementa* by 1588 and subsequently studied the text, but he published nothing (see I.3). The elder Savile, however, sent an apograph of the manuscript copied at Vienna to Andreas Dudith (1533–89),[20] and he and Dudith both sent copies to the astronomer Johannes Praetorius (1537–1616). The latter then arranged for his colleague at the Academy of Altdorf, Edo Hilderich von Varel (1533–99), to prepare the *editio princeps;* it was published in 1590 along with a Latin translation on the basis of these manuscripts (I.4 below).

12. The editions of Aujac and Manitius provide inventories for Geminus; for Cleomedes see CTC 7.2.

13. See K. K. Müller, "Neue Mittheilungen über Janos Laskaris und die Mediceische Bibliothek," *Centralblatt für Bibliothekswesen* 1 (1884) 333–412 at 369.

14. *Bibliotheca universalis,* vol. 1 (Zurich, 1545), 267r: "Geminus philosophus, cuius alicubi meminit Proclus diadochus [cf. n. 3 above], scripsit Isagogen in Meteora, et in Phaenomena graece. Prima extat Romae in Vaticana, alteram servat Diegus Hurtadus à Mendoza Caesareus legatus Venetiis" (Petrus Ramus, *Scholarum mathematicarum libri unus et triginta,* 35 paraphrases this report). The rare title "in Meteora" proves that the Vatican manuscript is the present Vat. gr. 318. Mendoza's manuscript was later at the Escorial but has not survived; see E. Miller, *Catalogue des manuscrits grecs de la bibliothèque de l'Escurial* (Paris, 1848; rpt. Amsterdam, 1966), 345; C. Graux, *Essai sur les origines du fonds grec de l'Escurial . . .,* Bibliothèque de l'Ecole des Hautes Etudes, Sciences historiques et philologiques 41 (Paris, 1880), 243–44, 390; and G. de Andrés, *Catálogo de los códices griegos desaparecidos de la Real Biblioteca de El Escorial* (El Escorial, 1968), no. 186. Mendoza's manuscript may have been copied from the present Vat. gr. 381, which, like Vat. gr. 318, was in the Vatican Library by the late fifteenth century (R. Devreesse, *Le fonds grec de la Bibliothèque Vaticane des origines à Paul V,* Studi e testi 244 [Vatican City, 1965], 58, 59) and in circulation (M. Bertòla, *I due primi registri di prestito della Biblioteca Apostolica Vaticana . . .,* Codices e Vaticanis selecti quam simillime expressi 27 [Vatican City, 1942], 10 n. 4, and 19 n. 6).

15. Petrus Ramus, ibid., 35 and 37.

16. The Greek manuscript at Constantinople is the present Istanbul, Topkapi Sarayi Müzesi, G.I.40; see F. W. Blass, "Die griechischen und lateinischen Handschriften im Alten Serail zu Konstantinopel," *Hermes* 23 (1888) 622–25 ("Nachtrag"); D. A. Deissmann, *Forschungen und Funde im Serai, mit einem Verzeichnis der nichtislamischen Handschriften im Topkapu Serai zu Istanbul* (Berlin and Leipzig, 1933), 74–78; Aujac xciii. De Busbecq's manuscript is now Vienna, Österreichische Nationalbibliothek, Phil. gr. 89; see H. Hunger, *Katalog der griechischen Handschriften der Österreichischen Nationalbibliothek,* vol. 1: *Codices historici. Codices philosophici et philologici* (Vienna, 1961), 199.

17. Oxford, Bodleian Library, Savile 10, fols. 80r–117v was copied jointly by Henry Savile and George Carew and dated (on fol. 117v) to 18 June 1581. Fols. 51r–77v are entirely in Carew's hand and may have been copied at the same time. The description in E. Gamillscheg and D. Harlfinger, *Repertorium der griechischen Kopisten 800–1600,* vol. 1 A (Vienna, 1981), 58, no. 64 is incorrect.

18. See P. Costil, *André Dudith: humaniste hongrois 1533–1589. Sa vie, son oeuvre, et ses manuscrits grecs* (Paris, 1935), 306–308. The two copies are now Milan, Biblioteca Ambrosiana, C 263 inf. and I 90 inf.

19. See the preface to Barozzi's *Cosmographia in quatuor libros distributa . . .* (Venice, 1585): "Gemini institutio ad Phaenomena . . . quam nos brevi perfectam ex vestustissimo exemplari recognitam edituri sumus." The "exemplar vetustissimum" could be one of Pinelli's recent copies, if Barozzi is referring to the authority of this source.

20. Costil, *André Dudith,* 307–308 and also 442–44, 446–47 where Costil prints letters sent from Italy at this time by Savile to Dudith that provide the circumstantial evidence for Savile's having also sent him a copy of his manuscript of Geminus.

Modern Studies

Joseph Scaliger (1540–1609) used the calendar in the *Elementa* for his chronological studies,[21] as did later James Ussher, John Selden, and the French Jesuit Denys Petau (Dionysius Petavius) (1583–1652). Petau produced the first critical edition of Geminus in 1630 from a manuscript then at Paris (now Berlin, Staatsbibliothek zu Berlin-Preussischer Kulturbesitz, Phillipps 1546). Through Lucas Holstenius (1596–1661)[22] Petau also obtained from the Savilian professor of geometry at Oxford, Henry Briggs (1561–1630), readings acquired by Sir Henry Savile from Vatican City, Biblioteca Apostolica Vaticana, Vat. gr. 318.[23] These confirmed readings in Petau's Paris manuscript and established the basis for his edition and revised version of Hilderich's translation.[24]

Geminus was discussed in histories of astronomy during the seventeenth and eighteenth centuries. For example, Ismael Bouillaud (1605–94), a pioneer historian of astronomy, compiled extensive notes on the text.[25] Petau's edition was reprinted in 1703 and once in the early nineteenth century. In 1819 Nicolas Halma (1755–1828) produced a Greek edition with a French translation as part of his extensive editorial work on ancient astronomical texts. Then, apart from an edition of the calendar in 1866 by Kurt Wachsmuth (1837–1905), there was no further editorial work until the Greek edition and accompanying German translation of Karl Manitius in 1898. Manitius was unable to consult the manuscript at Constantinople from which, as we have seen, many sixteenth-century copies were derived. His account of the manuscript tradition was incomplete, and he relied heavily on the readings of other printed editions.

The *Elementa* continued to interest historians of astronomy in the nineteenth century, while at the turn of that century classical philologists in the heyday of *Quellenforschung* tried to link it to Posidonius (see Bibliography III) and generated some hypercritical theories about its provenance and constitution. There has been little recent scholarship, and the relationship of the *Elementa* to other writings by Geminus has not been reassessed.

Germaine Aujac's edition (1975) with a French translation offered a more precise account of the manuscript tradition and made fuller use of the Latin translation. Its notes are more extensive

21. See J. Scaliger, *Opus de emendatione temporum*, 2d ed. (Leiden, 1598), pp. 58, 63, 68, 69, 75, 80, and A. Grafton, *Joseph Scaliger: A Study in the History of Classical Scholarship*, vol. 2: *Historical Chronology* (Oxford, 1993), 411–12 on Scaliger's use of Hilderich's edition.

22. Holstenius' request was made to Patrick Young (1584–1652), the Royal Librarian, in a letter of 2 November 1624 from Paris; see J. Kemke, ed., *Patricius Junius (Patrick Young): Bibliothekar der Könige Jacob I und Carl I von England. Mitteilungen aus seinem Briefwechsel* (Leipzig, 1898), 53. Holstenius spent 1622–24 in England where he established the contacts used here; see M. Feingold, *The Mathematicians' Apprenticeship: Science, Universities and Society in England 1560–1640* (Cambridge, 1984), 141–42. Patrick Young confirmed that he had sent Holstenius the information requested in a letter of May 1625; see Kemke 55.

23. A copy of Briggs's letter to Holstenius, along with his comments on readings that he had entered in the margins of a printed edition, is found in a copy of the *editio princeps* of Geminus (London, British Library, C.44.c.14). Another copy of the *editio princeps* (Oxford, Bodleian Library, Savile C.c.7) has the same readings in its margins, although the Bodleian copy (possibly Briggs's source) is missing the prefatory pages that may have included Briggs's letter. The copy that Petau received from Briggs via Holstenius has not been traced. The original source of Briggs's readings is Vat. gr. 318. At p. 17 of both editions reference is made to a diagram missing "in Vaticana" [*sic*] that is indeed absent from the manuscript (see Aujac xcv). Savile's readings from Vat. gr. 318 were originally in a manuscript (as the British Library copy notes), which he subsequently loaned to James Ussher; see Ussher's *De Macedonum et Asianorum anno solari dissertatio* (London, 1648), 63. This manuscript, no longer extant, must have been annotated after the death of Thomas Savile in 1593, since there are no readings from Vat. gr. 318 in his marginalia on Geminus (I.a below). As Henry Savile's brother, he would surely have had access to this material (had it been available). The elder Savile probably obtained the readings of the Vatican manuscript while preparing his famous edition of John Chrysostom in the 1590s.

24. Manitius, praef. v, misunderstood Petau's preface and thought that the readings which Petau had received from Briggs came from one of the texts of Geminus in Oxford, Bodleian Library, Savile 10 (see n. 17 above). Manitius consequently reconstructed a phantom "cod.^{2} Pet." that was identical with the *editio princeps*, rather than, as Petau himself says, an improvement on it; see, for example, Manitius' apparatus at 6.1, 14.10, 48.28, 60.16 etc. Manitius' "cod.^{1} Pet.", on the other hand, is the consensus of the readings from Briggs and Petau's own Paris manuscript. These readings Manitius was able to identify only where they were rejected and therefore noted in Petau's apparatus.

25. See Paris, Bibliothèque Nationale de France, suppl. gr. 20, fols. 65r–70r, described by C. Astruc et al., *Bibliothèque Nationale. Catalogue des manuscrits grecs*, part 3: *Le supplément grec*, vol. 1, fasc. 1: *N^{os} 1 à 50* (Paris, 1989), 38.

than those of Manitius and represent the only modern commentary on the work.

The Ps.-Proclan *Sphaera*

Four chapters excerpted from the *Elementa* first appeared in manuscripts written in Italy in about the last quarter of the fifteenth century.[26] The chapters (4, 5, 15, 3) are out of sequence; they were probably deliberately rearranged to create a short manual.[27] In the process they lost their link with Geminus and were mistakenly attributed to Proclus, the Athenian Neoplatonist of the fourth century A.D., and entitled *Sphaera* (*Σφαῖρα*).[28] This transformation seems to have been completed by the middle of the fifteenth century.

The first Latin translation (II.1) was a partial one made before 1491 by Giorgio Valla (1447–1500). Thomas Linacre (ca. 1460–1524) did the first complete Latin translation (II.2); it was published by Aldus Manutius at Venice in 1499 and became by far the most popular Latin version of the *Sphaera,* with forty-four printed editions by the early seventeenth century. Linacre's translation, based on a manuscript different from Aldus' accompanying Greek text, was sometimes revised. For example, in the early 1520s Thomas Lupset (ca. 1498–1530), an English scholar and friend of Linacre, lectured on the *Sphaera* at Oxford.[29] He must have used Linacre's translation, and he may have been involved in the revised edition of that version published at London around 1522. Most later editions, however, followed the edition published at Basel in 1523. Of the other six Latin translations published, only those by Elie Vinet (II.4) and Georg Henisch (II.6) were reproduced. Editions of Linacre's translation thus represent about seventy percent of all printed editions of Latin translations, while ten of the remaining nineteen editions contain Elie Vinet's translation.

There were five vernacular translations, the earliest of which was French (by Vinet, the only translator to use both Latin and the vernacular) and appeared in 1544; it was followed by one English and three Italian versions, each of which appeared only once.[30]

The earliest recorded commentary on the *Sphaera* was written in 1511 by Georg Tanstetter (1482–1535) of the University of Vienna (see II.a below). By 1526 the *Sphaera* was being used at the University of Wittenberg where Georg Joachim Rheticus' lectures on the text survive in a student's notes from the 1530s (II.d).[31]

Most of the commentaries on the *Sphaera* published in the sixteenth century were designed for students competent in mathematics and geometry.[32] Two exceptions were the humanist commentaries by the French scholars Jacques Toussain (II.e) and Elie Vinet (II.f), in which philological notes were combined with parallel passages from ancient poets and ancient elementary manuals. Toussain was a *lecteur* of the so-

26. On the manuscript tradition and the early printed editions of Linacre's translation, see Todd, "The Manuscripts," passim.

27. The *Sphaera* consists of Geminus chs. 4 and 5 (the general description of the celestial sphere), with chs. 15 (terrestrial zones) and 3 (constellations) added in that order. Ch. 5 was often subdivided into twelve or thirteen chapters in editions of the sixteenth century; see M. C. P. Schmidt, "Philologische Beiträge zu den griechischen Mathematikern," *Philologus* 45 (1886) 315.

28. This title is retained in most of the printed editions. The title *De sphaera* is first found in the 1547 Basel edition of Linacre's translation and in some subsequent editions.

29. See J. A. Gee, *The Life and Works of Thomas Lupset* (New Haven and London, 1928), 96–97. The source is Lupset's letter to Linacre from the University of Oxford, dated 1521 (Oxford, Bodleian Library, Bodley 282, fol. 44v); see F. Madan et al., *A Summary Catalogue of the Western Manuscripts in the Bodleian Library at Oxford,* vol. 2.1 (Oxford, 1922), no. 2949 and the translation in J. N. Johnson, *The Life of Thomas Linacre,* ed. R. Graves (London, 1835), 180–82. Lupset was Cardinal Wolsey's reader in "humanitas" at Oxford from 1520 to 1523.

30. On Vinet's translation see II.4 below. The other vernacular translations (in chronological order) were by William Salysbury (ca. 1520–ca. 1584) (London, 1550) (STC 20398.7, 20399); Tito Giovanni Scandanese (1518–82) (Venice, 1556) (S. Bongi, *Annali di Gabriel Giolito de'Ferrari da Trino di Monferrato, stampatore in Venezia,* vol. 1 [Rome, 1890], 485); Pietro Catena (1501–76) (Padua, 1565) (R. B. Todd, "Pietro Catena's Vernacular Translation of the Pseudo-Proclan *Sphaera* in Context," *Physis* 32 [1995] 105–107, and II.2 below under the edition of Padua, 1565); and Egnazio Danti (1536–86) (Florence, 1573) (L. S. Camerini, *I Giunti tipografi editori di Firenze 1571–1625. Annali inediti, con un'appendice sui bibliografi dei Giunti* [Florence, 1979], 47–48, no. 22). On Danti see also CTC 8.5–6.

31. See W. Friedensburg, ed., *Urkundenbuch der Universität Wittenberg,* vol. 1 (Magdeburg, 1926), 146 and II.d below for Rheticus.

32. On the wider issue of the different ways in which an ancient scientific text was received in the Renaissance, see C. G. Nauert, Jr., "Humanists, Scientists, and Pliny: Changing Approaches to a Classical Author," *American Historical Review* 84 (1979) 72–85.

called Collège Royal from 1530 until 1547, and his commentary, of which there were six editions between 1543 and 1562, was derived from his lectures.[33] Elie Vinet taught at the Collège de Guyenne in Bordeaux, and his translations into both Latin and the vernacular as well as his short commentary all show the use of the *Sphaera* at an elementary level.

This humanist approach was rare and even resisted. The English mathematician Robert Recorde (ca. 1510–58) urged that the ps.-Proclan *Sphaera* be used only in a mathematical curriculum.[34] He recommended that Johann Stöffler's magisterial commentary (II.b) be read along with Euclid's *Phaenomena* and Cleomedes' *Caelestia,* and he distinguished this more technical approach to astronomy from the study of authors such as Pliny, Hyginus, and Aratus, all of whom are widely cited in the commentaries by Vinet and Toussain. Jakob Ziegler's commentary (II.c) certainly exemplified the approach recommended by Recorde. Indeed, in the preface to an earlier commentary on book 2 of Pliny's *Naturalis historia,* Ziegler had criticized the humanists' reliance on "vulgati auctores", such as poets and other non-technical writers (see CTC 4.376). Other commentators on the *Sphaera* followed Ziegler's approach, notably Egnazio Danti in the notes to his vernacular translation (see n. 30), the "Anonymus Hauniensis" (II.h), and Johannes Hagius (II.i)

The popularity of the ps.-Proclan *Sphaera* never equalled that of Sacrobosco's *Sphaera,* a work on which some of the authors included in this article also wrote commentaries. Juan Luis Vives (1492–1540) may have regarded the two works as interchangeable.[35] Yet Elie Vinet's commentary on Sacrobosco, for example, appeared in three times as many editions as his versions of the ps.-Proclan work.[36] At Wittenberg a local edition of Sacrobosco's *Sphaera* with the imprimatur of a preface by Philipp Melanchthon (1497–1560) appeared in at least seventeen editions between 1531 and 1591, while there were only four editions in that location of the ps.-Proclan *Sphaera.*[37] Since there may have been between two and four hundred editions of Sacrobosco's *Sphaera* in the sixteenth century, clearly it was vastly more popular than the ps.-Proclan work.[38]

Competition came also from numerous other astronomical manuals by sixteenth-century authors for whom the ps.-Proclan work was just a minor ancient source.[39] Examples include the *Cosmographia* of Peter Apian (1495–1552)[40] and the *Cosmographia* of Oronce Finé (1494–1555), a work particularly popular in England and prescribed at Oxford together with Sacrobosco.[41] Frequently reprinted as well were the commen-

33. By 1566, however, the *Sphaera* was being read at the "Collège Royal" together with Sacrobosco's *Sphaera,* Euclid's *Elements,* and Aristotle's *De caelo;* see C. T. Waddington, *Ramus (Pierre de la Ramée): sa vie, ses écrits et ses opinions* (Paris, 1855), 174–79, with references to the *Sphaera* at 178–79.

34. R. Recorde, *The Castle of Knowledge* (London, 1556), 98–99; see also 179–80 and 269.

35. *De tradendis disciplinis libri quinque* 4.5. For an English translation see F. Watson, *Vives: On Education. A Translation of the* De tradendis disciplinis *of Juan Luis Vives* (Cambridge, 1913), 206.

36. There were ten editions of both Vinet's French and Latin translations of the ps.-Proclan *Sphaera* between 1544 and 1593, but twenty-nine editions of his commentary on Sacrobosco's work between 1551 and 1629. For the latter see the inventory in L. Desgraves, *Elie Vinet, humaniste de Bordeaux (1509–1587): vie, bibliographie, correspondance, bibliothèque,* Travaux d'humanisme et Renaissance 156 (Geneva, 1977), 75–82.

37. The figures for Sacrobosco are taken from the bibliographies in E. Zinner, *Geschichte und Bibliographie der astronomischen Literatur in Deutschland zur Zeit der Renaissance,* 2d ed. (Stuttgart, 1964) and J. Hamel, *Zentralkatalog alter astronomischen Drücke in den Bibliotheken der DDR (bis 1700),* Veröffentlichungen der Archenhold-Sternwarte 16–19 (Berlin, 1987–90).

38. See F. R. Johnson, "Astronomical Textbooks in the Sixteenth Century," in *Science, Medicine and History. Essays on the Evolution of Scientific Thought and Medical Practice Written in Honour of Charles Singer,* ed. E. A. Underwood, vol. 1 (Oxford, 1953), 285–302 at 293–94.

39. The standard account of these handbooks remains Johnson, ibid. For a general survey of astronomy and its textbooks in sixteenth-century universities see J. Gascoigne, "A Reappraisal of the Role of Universities in the Scientific Revolution," in D. C. Lindberg and R. S. Westman, eds., *Reappraisals of the Scientific Revolution* (New York, 1990), ch. 5, 229–32.

40. The work was revised by Gemma Frisius, and there were at least sixteen editions in Latin as well as translations into Dutch, French, Spanish, and Italian. In the definition of the axis of the sphere, this manual offers an expanded version of the first chapter of the ps.-Proclan *Sphaera;* see fol. 3v of the 1564 Antwerp edition. Apian's manual is the only contemporary work cited in Jacques Toussain's primarily philological commentary (II.e below).

41. S. Gibson, ed., *Statuta antiqua Universitatis Oxoniensis* (Oxford, 1931), 390. On Finé's use in England see S. K. Heninger, Jr., "Oronce Finé and English Textbooks for the Mathematical Sciences," in D. B. J. Randall and G. W. Williams, eds., *Studies in the Continental Background of English Literature. Essays presented to John L. Lievsay* (Durham, N. C., 1977), 171–85 at 172 and 176.

tary on Sacrobosco by Christopher Clavius (1538–1612) and the *Epitome astronomiae* by Michael Mästlin (1550–1631), Kepler's teacher at Tübingen.[42] These manuals were often a prelude to more advanced works on planetary theory, such as the *Theoricae novae planetarum* of Georg Peurbach (1423–61), itself often printed with editions of Sacrobosco, though never with the ps.-Proclan *Sphaera*.[43] Later in the sixteenth and the early seventeeth centuries we can find copies of the ps.-Proclan *Sphaera* owned by Tycho Brahe (1546–1601) and by some English contemporaries.[44] Johannes Kepler (1571–1630) used the work in his treatise on optics.[45] Elie Vinet's successor at the Collège de Guyenne at Bordeaux, Robert Balfour (ca. 1550–ca. 1620), used the *Sphaera* in lectures and in a commentary on Cleomedes.[46] After 1600 there were few translations and only one commentary (see n. 54 below).[47] Yet when in 1619 Sir Henry Savile established a chair in astronomy at Oxford, he included the ps.-Proclan *Sphaera* as a required text in a statute that also prescribed the works of Copernicus and Brahe.[48] Indeed, it was the first occupant of the Savilian chair, John Bainbridge (1582–1643), who in 1620 published at London the last Latin translation of the work (STC 20398).[49]

Geminus' authorship of the *Sphaera* seems to have been first noted in print in 1585 by Francesco Barozzi.[50] It was also evident to Thomas Savile around 1590.[51] Edo Hilderich likewise acknowledged Geminus as the author of the *Sphaera* (I.4 below). While Barozzi referred circumspectly to the circulation of an incomplete portion of Geminus "under the false title of the Sphere of Proclus" *(sub falso Sphaerae Procli titulo),* Hilderich reasoned that the quotations attributed to Geminus in Proclus' commentary on book 1 of Euclid's *Elements* (n. 2 above) showed that Proclus must have appropriated material from Geminus.[52] But it would then be unclear why Proclus cited Geminus punctiliously in one case, while appropriating material from him in another. The result was that, for nearly three more centuries, Proclus was widely thought to have, as one nineteenth-century historian of astronomy put it, committed a brazen act of plagiarism.[53] Nonethe-

42. On Clavius' work see J. M. Lattis, *Christopher Clavius and the "Sphere" of Sacrobosco: The Roots of Jesuit Astronomy on the Eve of the Copernican Revolution* (Diss. University of Wisconsin, 1989), who lists (p. 358) twenty-one editions (five doubtful) between 1570 and 1618. The edition of Rome, 1606 (pp. 18, 258–59, 357, 369) has references to the ps.-Proclan *Sphaera.* There were seven editions of Mästlin's handbook between 1582 and 1624; see R. A. Jarrell, *The Life and Scientific Work of the Tübingen Astronomer Michael Maestlin, 1550–1631* (Diss. University of Toronto, 1971), 128–37, 206. For the definition of the horizon cited from the ps.-Proclan work, see the edition of Tübingen, 1597 (pp. 132–33).

43. There were at least fifty-six editions between 1472 and 1619; see E. J. Alton, "Peurbach's *Theoricae Novae Planetarum,*" *Osiris,* 2d Ser., 3 (1987) 5–44 at 7. Philip Apian (1531–89), the son of Peter Apian, used the ps.-Proclan *Sphaera* in his lectures at Tübingen in the 1570s along with Peurbach's treatise and his father's *Cosmographia.* See R. S. Westman, "Three Responses to the Copernican Theory: Johannes Praetorius, Tycho Brahe, and Michael Maestlin," in *The Copernican Achievement,* ed. R. S. Westman (Berkeley, 1975), 285–345 at 330. Erasmus Schreckenfuchs (II.g below) produced an edition of Peurbach's treatise as well as a set of notes on the ps.-Proclan *Sphaera.*

44. Brahe had a copy of the 1547 Basel edition of Linacre's translation, now Prague, Národní knihovna České republiky, 5.J.20); see Westman, ibid., 324. For examples of ownership at Oxford in the 1570s and 1580s see Feingold, *The Mathematicians' Apprenticeship* (n. 22 above), 116–18.

45. *Ad Vitellionem paralipomena, quibus astronomiae pars optica traditur* (Frankfurt, 1604) in W. van Dyck and M. Caspar, eds., *Johannes Kepler: Gesammelte Werke,* vol. 2 (Munich, 1939), 135 and 136.

46. On Balfour see CTC 7.10. His lectures on astronomy are preserved in Bordeaux, Bibliothèque Municipale, ms. 1588; the reference to Proclus is at fol. 10v of the section "Astrologia". Balfour's commentary on Cleomedes, published at Bordeaux in 1605 (CTC 7.10–11), has references to the ps.-Proclan *Sphaera* at pp. 148, 215, and 216.

47. In addition to the Latin translation by Bainbridge (n. 49 below), the only other new Latin translation made after 1600 was by Johannes Laurenberg (1590–1658); it was published at Rostock in 1611 (copies at Oxford, Bodleian Library and Göttingen, Niedersächsische Staats- und Universitätsbibliothek).

48. For this statute see Gibson, *Statuta antiqua Universitatis Oxoniensis* (n. 41 above), 528–30.

49. Bainbridge's Latin translation was based on Oxford, Bodleian Library, Savile 10 (see n. 17 above).

50. Barozzi, *Cosmographia* (n. 19 above), praef., fol. b3v. Bernardino Baldi, in his life of Geminus of 1595, recorded Barozzi's view; see the edition cited in n. 2 above, 487 and also Baldi, *Cronica di matematici* (n. 4 above), 55.

51. See Thomas Savile's notes on his brother's manuscripts in Oxford, Bodleian Library, Savile 10, where he cites the ps.-Proclan *Sphaera* in connection with textual matters at fols. 69v, 85v, 86v, and 90v.

52. "Proclus . . . in suam Sphaeram multa ad verbum transferre non dubitat;" see I.4 below for this passage in context.

53. J.-B.-J. Delambre, *Histoire de l'astronomie ancienne,* vol. 1 (Paris, 1817; rpt. New York, 1965), 313: "Un des plagiats les plus impudents qui aient jamais été commis." Denys Petau, in the preface to his edition in the *Uranologion sive Systema variorum authorum qui de sphaera ac*

less, the misunderstanding was insignificant since, except for a few editions of the Greek text in the eighteenth century and a German translation in the early nineteenth century, the *Sphaera* was then ignored.[54] Karl Manitius (praef. xxiv–xxv) finally showed conclusively in 1898 that the manuscript tradition of the *Sphaera* was derived from fifteenth-century manuscripts of Geminus and had no Proclan origins.[55]

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sideribus eorumque motibus graece commentati sunt (Paris, 1630), judiciously states that "Procli Sphaera nihil aliud est praeter Isagoges Gemini capita quaedam," but J. F. Weidler, *Historia astronomiae sive De ortu et progressu astronomiae liber singularis* (Wittenberg, 1741), 145, paraphrases him as saying that "Proclum capita quaedam in Sphaeram suam transtulisse," making this a deliberate act by Proclus.

54. Editions of the Greek text were published at Sedan in 1629 (V. F. Goldsmith, *A Short Title Catalogue of French Books 1601–1700 in the Library of the British Museum,* vol. 5 [London, 1971], 447, no. 1484) and at Yanina in 1730 and 1749 (copies at BL). I have not been able to locate the edition of the Greek text reportedly published at Vienna in 1801 (Fabricius-Harles 9.414) as a supplement to a Greek translation by a certain Athanasius Georgius Manusius of a work identified as "Wuchereri Physica" (presumbly the treatise by the Jena theologian, J. F. Wucherer [1682–1737], on physics and mathematics published in the first two decades of the eighteenth century). The German version is the work of J. Gutenäcker: *Πρόκλου Σφαῖρα iam primum in linguam vernaculam translata notisque illustrata,* Program: Gymnasium Regium Münnerstadt, September 1830 (Würzburg, 1830) (copy provided by the Universitätsbibliothek, Bayreuth). There are also notes, mainly in German, in a manuscript at Uppsala, Universitetsbibliotek, Gr. 54; see C. Graux and A. Martin, *Notes sommaires des manuscrits grecs de Suède* (Paris, 1889), 68. These were written at Strasbourg, probably in the seventeenth century.

55. See further Todd, "The Manuscripts," passim.

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Genuine Work of Geminus

I. *Elementa Astronomiae*

translations

1. Gerardus Cremonensis

Soon after his arrival at Toledo ca. 1144, Gerardus Cremonensis (Gerard of Cremona, ca. 1114–87) translated into Latin the Arabic version of Geminus' *Elementa astronomiae* known as the

Liber introductorius Ptolomei ad artem spericam. This is no. 23 in the list of Gerard's works appended to his translation of Galen's *Tegni;* see F. Wüstenfeld, "Die Übersetzungen arabischer Werke in das Lateinische seit dem XI. Jahrhundert," *Abhandlungen der Gesellschaft der Wissenschaften zu Göttingen* 22.3 (1877) 55–81 at 64 and K. Sudhoff, "Die kurze 'Vita' und das Verzeichnis der Arbeiten Gerards von Cremona," *Archiv für Geschichte der Medizin* 8 (1914) 73–82 at 77. (For an English translation of the list see M. McVaugh in E. Grant, ed., *A Source Book in Medieval Science* [Cambridge, Mass., 1974], 35–38). On the medieval *fortuna* of the translation see p. 9 above. No Arabic manuscript is extant.

The Latin version differs from the Greek in the arrangement of chapters (see Manitius xxix–xxx) and in having a complete version of Geminus ch. 1 (sct. 9 Aujac; Manitius 285–86). There is no critical edition, but Manitius 285–89 edited *Elementa,* ch. 1, scts. 9–12 and ch. 3 from the manuscripts at Dresden and Florence. Both he and Aujac also cite the Latin version in the apparatus criticus of their editions and adopt some of its readings.

The titles in three of the manuscripts listed below are *Sperica Ptolomei* (Mazarinus 3635); *Abbreuiatio libri introductorii Almagesti Ptolomaei* (Fiesol. 168); and *Ptholomei Liber introductorius in Almagesti* (Kues 208). The index in Dresden Db 87 identifies it as *Introductiones Ptholomaei in Almagesti* (see Manitius xviii–xix). The titles of the two fragments in Digby 168 are variants on the form *Ptholomei Liber introductorius ad artem spericam.*

Elementa astronomiae (Florence, Biblioteca Medicea Laurenziana, Fiesol. 168). [*Inc.*]: (fol. 112ra; p. 2.5-6 Manitius) Dividitur orbis signorum in XII partes et nominatur unaquaeque partium eius nomine . . . / . . . [*Expl.*]: (fol. 118r; p. 232.21–22 Manitius) Et in XXIX secundum considerationem Democriti incipit stella Superbi oriri et accidit cum eo aqua. Explicit quod abbreviatum est de libro introductorii Ptolomei ad librum nominatum Almagesti.

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(micro.) Florence, Biblioteca Medicea Laurenziana, Fiesol. 168, s. XIV, fols. 112r–118r (A. M. Bandini, *Bibliotheca Leopoldina Laurentiana seu Catalogus manuscriptorum qui iussu Petri Leopoldi nuper in Laurentianam translati sunt,* vol. 3 [Florence, 1793], cols. 112–113; Aujac cvi).

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(micro.) Paris, Bibliothèque Mazarine, 3635, s. XIII–XIV, fols. 123r–135r (A. Molinier, *Catalogue des manuscrits de la Bibliothèque Mazarine,* vol. 3 [Paris, 1890], 147; Aujac cvi). This manuscript omits chs. 17, 18, and the calendar.

(micro.) Paris, Bibliothèque Nationale de France, lat. 16198, s. XIV in., fols. 166r–177v (Aujac cvii).

(*) St. Petersburg, Biblioteka Rossiiskoi Akademii Nauk, AB-III, F. N. 8, s. XII, fols. 25r–35v ("Gerard of Cremona," DSB 15.178 [R. Lemay]). The manuscript has no title, but its *incipit* and *explicit* are exactly as given above, and its subscription is identical with that in the manuscripts at Florence and Paris (Bibliothèque Nationale de France).

Edition:

1898 (rpt. 1974), Lipsiae (Leipzig): in aedibus B. G. Teubneri. K. Manitius, editor of the Greek text, included (pp. 285–89) an edition from two manuscripts of *Elementa,* ch. 1.9–12 and ch. 3.

Biography:

CTC 1.89, 170–71. Add to the *Bibliography:* "Gerard of Cremona," DSB 15.173–92 (R. Lemay).

2. Abrahamus de Balmes

Abrahamus (Abraham) de Balmes' Latin version of Geminus (under the title of Ptolemy's introduction to the *Almagest*) was made from a manuscript, no longer extant, of a thirteenth-century Hebrew translation from the Arabic by Moses ibn Tibbon (see p. 9 above and Manitius xxii). De Balmes' work should probably be dated to the first quarter of the sixteenth century when he was associated at Padua with Cardinal Domenico Grimani who may have supplied the manuscript.

Only a part of ch. 1 of the translation survives (Milan, Biblioteca Ambrosiana, P 167 sup.), but originally it must have included the whole work. John Selden (1584–1654) certainly used a copy that contained the parapegma at the end of the *Elementa* (see Selden's *Θεάνθρωπος, or God Made Man. A Tract Proving the Nativity of Our Saviour to be on the 25. of December* [London, 1661], 17–18), while Thomas Savile cited it for all parts of the text in marginalia to Oxford, Bodleian Library, Savile 10 (see I.a below).

De Balmes' translation was never published. Later in the century Gian Vincenzo Pinelli owned a copy that he made available to, and probably had copied for, Thomas Savile when the latter visited him in Padua in 1589–90 (see I.3 below). A note in Savile's hand on the text of Geminus in ms. Savile 10 (fol. 53r) describes a reading as "ex Arabica versione G. V. Pin(elli)". The surviving fragment, which is preserved in a manuscript owned by Pinelli, is interleaved with a folio of notes in Thomas Savile's hand (see I.a below).

Sir Henry Savile later loaned his brother's manuscript of de Balmes' translation to James Ussher (1581–1656); see Ussher's *De Macedonum et Asianorum anno solari dissertatio* (London, 1648), ch. 6, p. 63. Ussher in turn loaned it to John Selden (see *Θεάνθρωπος, or God Made Man,* 17–18). The libraries of both Ussher and Selden are known to have suffered extensive losses during the seventeenth century, and this manuscript may have been among those codices that were dispersed.

The fragment quoted below is from Geminus, *Elementa,* ch. 1, scts. 1–9. Like the medieval Latin translation of Gerard of Cremona (I.1 above), it contains material not found in the Greek; for Gerard's version see Aujac at ch. 1, sct. 9, and Manitius 285.9–286.28.

Elementa astronomiae (Milan, Biblioteca Ambrosiana, P 167 sup., unnumbered fol. 45r). Incipit Isagogicon Astrologiae Ptolomaei interprete Abramo de Balmes. [*Inc.*] (unnumbered fol. 45r; p. 2.5–7 Manitius) Orbis signorum partitur in duodecim partes quarum unaquaeque graece vocatur communi nomine dodecatemorion .../... [*Expl.*]: (unnumbered fol. 47v; p. 286.23–25 Manitius) sed in toto anno dies coaequatur nocti in duobus diebus qui sunt dies duorum aequinoctiorum.

Manuscript:

Milan, Biblioteca Ambrosiana, P 167 sup., s. XVI, unnumbered fols. 45r–v and 47r–v (Kristeller, *Iter* 1.306b).

Biography:

Abrahamus (Abraham) de Balmes ben Meir was born at Lecce, probably in the third quarter of the fifteenth century, and died at Venice in 1523. He was a physician and during his last decades served Cardinal Domenico Grimani (d. 1523) in this capacity at Padua. He may also have taught at the University of Padua.

Works:

De Balmes' translations from Hebrew into Latin include the *Epistolae expeditionis* of Avempace (ibn Bājja) and an astronomical treatise (the *Liber de mundo*) by Ibn al-Heitham, both found in Vatican City, Biblioteca Apostolica Vaticana, Vat. lat. 3897. He also translated into Latin Averroes' *epitomes* of Aristotle's *Sophistici elenchi* (Vatican City, Biblioteca Apostolica Vaticana, Ottob. lat. 1401) and *Rhetorica* (Vatican City, Biblioteca Apostolica Vaticana, Ottob. lat. 1861), both of which were published at Venice in 1523. Vols. 1, 2, and 9 of the Giunta edition of Aristotle (Venice, 1550–52) contain corrected versions of several of his Latin translations of Averroes' commentaries on Aristotle (see vol. 1, fol. 8r for the preface by Marcus de Odis who criticized de Balmes). His Hebrew grammar, published at Venice in 1523, was later translated into Latin (Antwerp, 1564). For manuscripts of his other works see the indices to Kristeller, *Iter,* vols. 1 and 2.

Bibliography:

Fabricius-Harles 4.33; G. Mazzuchelli, *Gli scrittori d'Italia* 2.1 (Brescia, 1758), 191; *Enciclopedia italiana* 12.434; *Encyclopaedia judaica* 3.1008–1009; *The Jewish Encyclopedia* 1.99; *Jüdisches Lexicon* 1.701; *Bibliotheca judaica* 1.82; J. Winter and A. Wünsche, *Die jüdische Litteratur seit Abschluss des*

Kanons, vol. 2: *Geschichte der rabbinischen Litteratur während des Mittelalters und ihrer Nachblüthe in der neueren Zeit* (Trier, 1894), 226.

M. Steinschneider, *Catalogus librorum hebraeorum in Bibliotheca Bodleiana* (Berlin, 1852–60), cols. 667–668; Steinschneider, "Une dédicace d'Abraham de Balmes au Cardinal Dom. Grimani," *Revue des études juives* 5 (1882) 112–17; Steinschneider, "Geminus in arabischer, hebräischer und zweifacher lateinischer Übersetzung," *Bibliotheca mathematica,* N. F., 1 (1887) 98 and n. 7; Steinschneider, *Die hebräischen Übersetzungen des Mittelalters und die Juden als Dolmetscher. Ein Beitrag zur Literaturgeschichte des Mittelalters, meist nach handschriftlichen Quellen* (Berlin, 1893), 54, 358, 539–40, 560, 972–73; N. Ferorelli, "Abramo de Balmes ebreo di Lecce e i suoi parenti," *Archivio storico per le province napoletane* 31 (1906) 632–54; H. A. Wolfson, "Plan for the Publication of a *Corpus commentariorum Averrois in Aristotelem,*" in H. A. Wolfson, *Studies in the History of Philosophy and Religion,* vol. 1 (Cambridge, Mass., 1973), 430–54 at 437–38; F. E. Cranz, "Editions of the Latin Aristotle Accompanied by the Commentaries of Averroes," in E. P. Mahoney, ed., *Philosophy and Humanism: Renaissance Essays in Honor of Paul Oskar Kristeller* (Leiden, 1976), 116–28 at 123 and n. 30, 124, 126.

3. Thomas Savilius

Three manuscripts are presently known to contain Thomas Savilius' (Thomas Savile's) translation of Geminus. Of these, two witnesses (Milan, Biblioteca Ambrosiana, R 124 sup. and Munich, Bayerische Staatsbibliothek, Clm 719) date the completion of the translation to 14 November 1588, at Breslau, while Savile was visiting Andreas Dudith (1533–89). If composed entirely at Breslau, then the translation was probably based on a Greek manuscript which Dudith had acquired from Savile's brother Henry; this codex, now apparently lost, seems to have been derived from the present Vindobonensis Phil. gr. 89 (see p. 10 above and n. 20).

Although none of the surviving manuscripts of the translation is an autograph, Milan, Biblioteca Ambrosiana, R 124 sup. contains corrections and insertions in Savile's hand (fols. 1r, 1v, 24r, 33r, 36r, 39r, 42r, 47r, 47v; see also I.a below). They could have been added when this copy was made for Gian Vincenzo Pinelli (1535–1601) during Savile's visit to Padua in 1589–90. Ms. R 124 sup. was then probably used for the fair copy (Milan, Biblioteca Ambrosiana, P 227 sup.), which also belonged to Pinelli.

Elementa astronomiae (Milan, Biblioteca Ambrosiana, R 124 sup., fol. 1r). Gemini in phaenomena, interprete Thoma Savilio Anglo. Breslae. 1588. 14 Nov. [*Inc.*]: (fol. 1r; p. 2.5–7 Manitius) Circulus zodiacus in partes XII secatur et communi quidem nomine quodlibet segmentum dodecatemorion vocatur . . . / . . . [*Expl.*]: (fol. 48v; p. 232.20–22 Manitius) Eudoxo Orion incipit oriri. XXIX Democrito Orion incipit oriri soletque in eius ortu tempestas esse. Finis.

Manuscripts:

Milan, Biblioteca Ambrosiana, P 227 sup., s. XVI, fols. 6r–49r (A. Martini and D. Bassi, *Catalogus codicum graecorum Bibliothecae Ambrosianae* [Milan, 1906; rpt. Hildesheim, 1978], no. 652; Kristeller, *Iter* 1.307a).

———, R 124 sup., s. XVI, fols. 1r–48v (Martini and Bassi, *Catalogus,* no. 726; Kristeller, *Iter* 1.312a).

Munich, Bayerische Staatsbibliothek, Clm 719, s. XVI, fols. 71r–74v (C. Halm et al., *Catalogus codicum latinorum Bibliothecae Regiae Monacensis,* vol. 1.1, 2d ed. [Munich, 1892], 184). A fragment of chs. 1 and 2 of the *Elementa astronomiae:* [*Expl.*]: (fol. 74v; p. 34.9 Manitius) est enim ex australi aequinoctialis parte. Quomodo igitur Aries Librae com . . . .

Biography:

Thomas Savilius (Thomas Savile), Sir Henry Savile's younger brother, was from a family of gentry in Over-Bradley, near Halifax, in the West Riding of Yorkshire. The place and date of his birth are unknown. He obtained his bachelor's degree at Oxford in 1580, became a fellow of Merton College in 1581, and was admitted as Master of Arts in 1584.

Between 1588 and 1591 he travelled extensively in Europe. His college's records show that he left on 4 June 1588 and returned in late 1590 or early 1591; see *Registrum annalium Collegii Mertonensis 1567–1603,* ed. J. M. Fletcher, Oxford Historical Society N. S. 24 (Oxford, 1976), 237 and 273.

He probably first visited Johannes Praetorius (1537–1616) at Altdorf; his letter of 28 February 1589 to Praetorius from Breslau (copy at Paris, Bibliothèque Nationale de France, Dupuy 348, fols. 128v–129v) refers to their "studia communia" and suggests prior contact. While at Breslau he

visited Andreas Dudith and witnessed Dudith's death in February 1589: see Costil 218, 342 and the letter of 10 October 1588 from Breslau to his Oxford colleague John Rainolds (1549–1607) (Oxford, Corpus Christi College, 318, fols. 141r–142r). Savile assisted Dudith in a contribution to a new edition by Friedrich Sylburg (1536–96) of Apollonius Dyscolus' *De constructione verborum* (Frankfurt, 1590); see Sylburg's preface in E. Legrand, *Bibliographie hellénique,* vol. 2 (Paris, 1885), 72, and Costil, *André Dudith,* 317–21.

After visiting Prague and Vienna, Savile reached Italy by mid-1589 (*Registrum* 248; Costil, *André Dudith,* 97 and n. 4) and by the second half of 1590 was in Germany whence he corresponded with Isaac Casaubon (1559–1614) (London, British Library, Burney 366, fol. 54r) and Tycho Brahe (1546–1601) (see J. O. Halliwell, *A Collection of Letters Illustrative of the Progress of Science in England* [London, 1846], 32–33). In Europe he purchased books (*Registrum* 248, 273, 274, 277) and made numerous scholarly contacts (see Feingold). He also visited Gian Vincenzo Pinelli (1535–1601) at Padua; see Costil, *André Dudith,* 97 n. 4, and also Savile's letters of July 1589 and May 1590 to Hugo Blotius (Vienna, Österreichische Nationalbibliothek, 9737, vol. 17, fols. 55r and 85r), in which he refers to his contacts with Pinelli. On his return to England, Savile served as Senior Proctor at Oxford in 1592. He died at London in January 1593 (*Registrum* 289).

Savile's scholarly activities and connections can be traced through his correspondence (see the indices to Kristeller, *Iter* and also Feingold and Levy) with contemporaries such as Casaubon (London, British Library, Burney 366, fols. 54r–55v; *Isaaci Casauboni Epistolae* [Rotterdam, 1710], 568), Brahe (see above), Tadeas Hajek (ca. 1525–1600) (London, British Library, Harley 7011, fol. 1r), Jean Hotman (1552–1636) (see *Francisci et Joannis Hotmanorum . . . Epistolae* [Amsterdam, 1700]), and the imperial librarian at Vienna, Hugo Blotius (ca. 1533–1608) (see Feingold). Like his elder brother Henry, Thomas Savile had an interest in English antiquities, and this was reflected in some of his letters to William Camden (1551–1623) (edition cited below).

Thomas Savile was an accomplished philologist, mathematician, and astronomer who, given a longer life, might have undertaken important editorial work on ancient mathematical and astronomical texts.

Works:

None of Thomas Savile's surviving works has been published. In addition to the translation and notes on Geminus, there are mathematical treatises *De rationum additione et subtractione* (Milan, Biblioteca Ambrosiana, P 227 sup., fols. 69r–80v) and *De rationibus* (Milan, Biblioteca Ambrosiana, S 83 sup., fols. 3r–13r); notes on Strabo (Milan, Biblioteca Ambrosiana, D 251 inf., fols. 2r–12r; *Iter* 1.307a); adversaria on an edition of Ptolemy's *Geography* (Oxford, Bodleian Library, Rawl. C. 850, fol. 126r); notes on Ptolemy's *Almagest* dated January 1589 and thus written at Breslau (Dublin, Trinity College, 382, fols. 45r–51r); and notes on manuscripts of Ptolemy made at Vienna (Milan, Biblioteca Ambrosiana, R 119 sup., fols. 34r–37v; see Costil, *André Dudith,* 306 n. 4). A translation of Theodosius' *De diebus et noctibus* mentioned in a letter to William Camden (*Gulielmi Camdeni . . . Epistolae* [London, 1691], Ep. 8, p. 12) has not survived. Savile also copied some Greek astronomical and mathematical treatises in Oxford, Bodleian Library, Savile 10, fols. 132r–152v (these folia were incorrectly assigned to Henry Savile by E. Gamillscheg and D. Harlfinger, *Repertorium der griechischen Kopisten 800–1600,* vol. 1 A [Vienna, 1981], 79, no. 116).

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DNB 16.859; Jöcher 4.167; J. Foster, *Alumni oxonienses 1500–1714,* 1319; A. à Wood, *Athenae oxonienses,* ed. P. Bliss (London, 1813), 1.591 and 2.257–58; à Wood, *Fasti oxonienses,* ed. P. Bliss, vol. 2 (London, 1815), 227; B. W. Henderson, *Merton College* (Oxford, 1899), 240; G. C. Brodrick, *Memorials of Merton College* (Oxford, 1886), 62; A. C. Clark, ed., *Register of the University of Oxford,* vols. 2.1 (Oxford, 1887), 93, 246 and 2.2 (1887), 190, 194 and 2.3 (1889), 88–89; C. Plummer, ed., *Elizabethan Oxford. Reprints of Rare Tracts,* Oxford Historical Society 8 (Oxford, 1887), 250, 252, 256; G. H. Martin and J. R. L. Highfield, *A History of Merton College, Oxford* (Oxford, 1997), 167, 170–71.

P. Costil, *André Dudith: humaniste hongrois 1533–1589. Sa vie, son oeuvre, et ses manuscrits grecs* (Paris, 1935), 306–307 and index; R. Birley, "The History of Eton College Library," *The Library,* 5th Ser., 11 (1956) 231–61 at 244 (on Savile's books now at Eton); F. J. Levy, "The Making of Camden's *Britannia,*" *Bibliothèque d'humanisme et Renaissance* 26 (1964) 70–97 at 84–85; D. B. Quinn and N. M.

Cheshire, eds. and trans., *The New Found Land of Stephen Parmenius. The Life and Writings of a Hungarian Poet, Drowned on a Voyage from Newfoundland, 1583* (Toronto, 1972), 13–16, 26–37, 216; M. Feingold, *The Mathematicians' Apprenticeship: Science, Universities and Society in England 1560–1640* (Cambridge, 1984), 130–33; R. B. Todd, "Henry and Thomas Savile in Italy," *Bibliothèque d'humanisme et Renaissance* 58 (1996) 439–44; J. Woolfson, *Padua and the Tudors: English Students in Italy, 1485–1603* (Toronto and Buffalo, 1998), 269–70.

4. Edo Hildericus

In 1590 Edo Hildericus (Edo Hilderich) produced the first published translation of Geminus' *Elementa astronomiae* into Latin, along with the *editio princeps* of the Greek text. He used manuscripts which Andreas Dudith (1533–89) and Sir Henry Savile (1549–1622) had sent to his colleague at the University of Altdorf, the astronomer and mathematician Johannes Praetorius (1537–1616), who proposed the project to Hilderich. These manuscripts were virtually identical, since Dudith's codex was itself acquired from Savile; see Costil, *André Dudith*, 307–308 (cited in I.3 above).

Hilderich's manuscripts and Dudith's copy have not survived, but Henry Savile's manuscripts of Geminus are extant in Oxford, Bodleian Library, Savile 10, fols. 51r–77r and 80r–117v. Both are copied from the present Vienna, Österreichische Nationalbibliothek, Phil. gr. 89 (Manitius xvi and p. 10 nn. 17, 20 above). Manitius' apparatus criticus records the frequent agreement between Hilderich's edition and the Vienna manuscript (e.g., 56.7, 61.22, 126.12, 128.7, 132.18, 136.23, 148.17, 172.26, 184.22–24, 196.1, 196.14, 204.28), with only occasional deviations (e.g., 20.18, 60.23, 90.16–17, 94.23–24, 122.13–14).

Hilderich's introduction links his edition with Nuremberg's traditions both in astronomy and in the publication of astronomical works by references to Johannes Regiomontanus (1436–76), Johannes Schöner (1477–1547), Johannes Werner (1468–1522), and Willibald Pirckheimer. The passage quoted below from Regiomontanus is from a dedicatory letter to Cardinal Bessarion in the *Epitome in Claudii Ptolemaei Magnam compositionem*, first published in 1493 (= *Ioannis de Monte Regio et Georgii Purbachii Epitome in Cl. Ptolemaei Magnam compositionem* [Basel, 1543], 2). Hilderich's humanist justification for the study of astronomy may also be modelled on a widely reproduced preface by his former teacher Philipp Melanchthon (1497–1560) to an edition of Sacrobosco's *Sphaera;* for the text see *Corpus Reformatorum*, vol. 2 (Halle, 1838), 530–37.

The dedication to Christian I, Elector of Saxony (1586–91) and the concluding reference to *periculosissima tempora* reflect the religious tensions of the period. In 1586 Kaspar Peucer (1525–1602), who had taught Hilderich at Wittenberg, was released by the Elector from an imprisonment of twelve years for his Calvinist tendencies, while a decade earlier Hilderich himself was dismissed from the University of Heidelberg on similar grounds (see below).

Dedication (ed. of Altdorf, 1590). Illustrissimo Principi ac Domino, Domino Christiano, Sacri Romani Imperii Archimarschallo atque Electori, Duci Saxoniae, Landgravio Thuringiae, Marchioni Misniae, et Burggravio Magdeburgensi, etc. Domino suo clementissimo, s. p. d. [*Inc.*]: (fol. aiir) Si qui homines tantum ingenium divinitus sint adepti ut ex optimarum artium studio sibi solidae eruditionis laudem ad gloriam Dei et utilitatem ecclesiae et reipublicae comparare possint, hi certe etiam in astronomia, nobilissima philosophiae parte, cognoscenda ponere debent tempus non contemnendum . . . (fol. avr) Item nunc experior verum esse quod de iucunditate studii astronomici Iohannes Regiomontanus in sua *Epitome* profert cum inquit: "Quid iucundius, quid amoenius, quid denique suavius afficere oculos potest quam illa tot et tantorum luminum venustissima atque ordinatissima series? Eo quippe si rapieris animo, experieris nihil te umquam in omni vita sensisse delectabilius." Haec Regiomontanus.

Cum igitur astronomia sit praestantissima philosophiae pars et dignissima quam homines summo studio excolant, expetenda et magni facienda sunt etiam illa summorum artificum scripta quae nobis huius artis initia erudite et perspicue tradunt. Talis artifex est Geminus, et tale hoc eius scriptum quod nunc primum in lucem editur. Quantus enim philosophus et quam excellens mathematicus apud Graecos Geminus fuerit, facile apparet ex Proclo Diadocho Lycio, summo et ipso philosopho platonico et mathematico, magni illius Syriani philosophi et auditore et successore, qui in quattuor libris suorum doctissimorum commentariorum quos in primum librum Elementorum Euclidis scripsit,

passim eius scripta mathematica citat, eiusdemque auctoritatem et demonstrationes ubique in difficillimis philosophicis et mathematicis disceptationibus multorum veterum philosophorum sententiis non dubitat anteponere. Ita cum Geminus a Proclo laudatissimo viro laudetur, eam laudem veram esse non dubium est. Quod satis etiam probat ipsa Sphaera Gemini in qua multa digna cognitu leguntur quae alibi non facile reperiuntur. Unde Proclus etiam ipse in suam Sphaeram multa ad verbum transferre non dubitat, ut facile apparebit ei qui utriusque Sphaeram inter se conferre voluerit.

Ad meas autem manus huius tam praestantis philosophi Sphaera, ne quis sua laude defraudetur, hac occasione pervenit. Viennae enim accepit a clarissimo viro Domino Iohanne Sambuco Henricus Savilius Anglus, vir non minus generis nobilitate quam philosophiae et mathematum cognitione clarus. Ab hoc Anglo Vratislaviae eandem accepit magnificus et generosus Dominus Andreas Duditius, Caesareae Maiestatis consiliarius, vir pietatis et eruditionis laude per totam Europam celeberrimus. Horum uterque postea hanc Gemini Sphaeram communicavit suo amico M. Iohanni Praetorio, publico mathematum professori in hac Altorphiana Noribergensium Academia. Huius rogatu ego hunc Gemini sphaericum libellum ex graeco idiomate in latinam linguam transtuli, qua potui perspicuitate, quod tamen ipse, si voluisset, propter maiorem rerum cognitionem felicius me, qui nunc in alio doctrinae genere versor, praestare potuisset.

Cum autem summi reipublicae noribergensis gubernatores et scholarchae per doctissimos viros M. Esromum Rüdingerum et M. Iohannem Praetorium intellexissent maximam fuisse et eruditionem et auctoritatem philosophi et mathematici Gemini eiusque hanc Sphaeram non parum utilitatis posse afferre elementa astronomiae discentibus, et eandem hactenus nusquam, quod sciamus, praelo fuisse excusam et nunc primum a me in latinum sermonem esse conversam, mandaverunt huius suae academiae typographis, me nihil tale petente aut sperante, ut hunc Gemini sphaericum libellum quam primum typis expressum in lucem ederent. Qua in re nihil alienum neque a sua dignitate neque a perpetua suae laudatissimae civitatis consuetudine fecerunt. Nam quanti haec urbs aliquot iam saeculis sanctissima mathematum studia fecerit et quantis sumptibus ea excitari curaverit, satis testantur edita in hoc genere scripta Iohannis Regiomontani, Iohannis Schoneri, Iohannis Werneri Noribergensis, Bilibaldi Pirckheimeri Noribergensis et aliorum insignium mathematicorum, quae non minus urbem hanc quam multa alia civilia ornamenta perpetua nominis fama nobilitant.

Quod autem illustrissime Princeps Elector, Domine clementissime, hunc Gemini libellum a me latine translatum tuae Celsitudinis nomini inscribere volui, non aliam ob causam factum est quam ut aliquam saltem mei grati animi erga Academiam Witebergensem, eius professores et pios nutricios eiusdem, inclitos Saxoniae Duces, Electores significationem praeberem. Nam si quid profeci in studio vel doctrinae christianae, cuius Dei beneficio iam professorem ago, vel linguarum vel liberalium artium et mathematum, id totum magna ex parte secundum Deum debeo acceptum referre et Philippo Melanchthoni et collegis eius et multis aliis viris doctis qui meo tempore in Academia Witebergensi adolescentes discendi cupidos partim publice, partim privatim docebant. Divino enim beneficio mihi adolescenti contigit illud immortale decus Germaniae Philippum Melanchthonem per sex postremos aetatis eius annos [*sc.* 1553–60] audire, et post obitum eius fere per novennium in eadem Academia mea studia continuare cum discendo, tum etiam docendo, sicut utrumque, Domino Philippo Melanchthone adhuc vivo, per annos aliquot feci . . . / . . . [*Expl.*]: (fol. aviiir) et reipublicae utilitatem in hisce periculosissimis temporibus nobis diu incolumem servet, ex animo precor. Datae Altorphii Noricorum, Calendis Maii, anno Christi 1590. Celsitudini tuae deditissimus Edo Hildericus D.

Elementa astronomiae (ed. of Altdorf, 1590). Gemini De apparentiis caelestibus liber. [*Inc.*]: (p. 2; p. 2.5–7 Manitius) Zodiacus circulus in duodecim dividitur partes, atque horum segmentorum unumquodque generaliter quidem vocatur dodecatemorium, id est, pars duodecima . . . / . . . [*Expl.*]: (p. 266; p. 232.20–22 Manitius) Die 29 Democrito Orion incipit oriri et solet Democritus in ipso significare. Nihil restat amplius. Laus Deo.

Editions:

1590, Altorphii (Altdorf): Christophorus Lochnerus et Johannes Hofmannus. Hamel 1279; VD G-1077; Zinner 3377; NUC. BL; BNF; Bodleian Library; (CtY; DLC; MH; NN; NNC).

1603, Lugduni Batavorum (Leiden): Altorphii, Christopherus Lochnerus et Johannes Hofmannus (*sic*). Contents the same as in the preceding entry. Hamel 1280; NUC. BL; BNF; (NN).

Biography:

Edo Hildericus (Edo Hilderich von Varel) was born in 1553 at Jevern, in the Frisian region of Germany. He studied at the University of Wittenberg between 1553 and 1560, where one of his teachers was Philipp Melanchthon (see the Dedication above). Hilderich obtained the degree of magister in 1556 and taught mathematics at the universities of Jena (1564–67), where he published a *Carmen gratulatorium* (Adams H-560), and Wittenberg (1567–70), where in 1568 he published *Logistice astronomica* (Hamel 1527). In the preface to the latter he mentions as his teachers at Wittenberg Kaspar Peucer and Sebastian Theodoricus. In 1573 Hilderich was rector of the University of Magdeburg and taught subsequently at Frankfurt an der Oder and at Heidelberg (where he obtained the degree of Doctor of Theology). He was dismissed from Heidelberg for refusing to sign the Formula of Concord and spent the last nineteen years of his life (1581–99) at the Academy of Altdorf, the institute of higher education for Nuremberg. On his appointment see his letter of 1 May 1581 (London, British Library, Add. ms. 22960, fol. 20r) to the Calvinist theologian Sibrandus Lubbert (1555–1625), and for his presence at Altdorf see Costil, *André Dudith,* 443. At Altdorf he was professor of theology and also taught Greek, Hebrew, and history.

Works:

In addition to the works mentioned above, Hilderich published in 1581 an edition of Aeschines and Demosthenes with notes by Johannes Sturm. For Hilderich's letters see London, British Library, Add. ms. 22960, fols. 17r–20v; Munich, Bayerische Staatsbibliothek, Clm 10359, nos. 304–305; Nuremberg, Stadtbibliothek, Cent. V, App. 34 m, fasc. 4.

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Zedler 46.561; Jöcher 2.1603; ADB 39.483–84; G. A. Will, *Nürnbergerisches Gelehrten-Lexicon,* vol. 2 (Nuremberg and Altdorf, 1756), 125–27 and vol. 5, rev. C. C. Nopitch (Altdorf, 1802), 92–93.

COMMENTARY

a. Thomas Savilius

Thomas Savilius (Thomas Savile) did not write a full commentary on Geminus but left four sets of critical and exegetical notes prepared in the course of his private study. They are discussed below according to their most probable chronological order.

1. Annotationes dublinenses (before 1589?)

These untitled, undated, and incomplete notes on Geminus are preserved in one of the manuscripts (Dublin, Trinity College, 383) that belonged to John Bainbridge (1582–1643), the first Savilian Professor of Astronomy at Oxford. They may be preparatory notes for Savile's translation and could antedate his continental travel in 1589–91 since there is no reference to Abraham de Balmes' translation which he acquired in that period; see nos. 2 and 3 below.

Notes (Dublin, Trinity College, 383). [*Inc.*]: (fol. 9r) *Εἰσὶ γάρ τινες ὁρίζοντες* (5.37; p. 56.6 Manitius). Iam autem reperiuntur quidam horizontes quorum circuli paralleli sunt . . . / . . . [*Expl.*]: (fol. 10v) *Ἀπὸ μὲν γὰρ ἡλίου* (17.17; p. 186.17 Manitius). A sole vero et luna notum est ab iis mitti vim . . . . ex stellarum ortu et occasu maximam novitatem inducente et [. . .] raritas atque aestus, et aliquando in regione fit [. . .].

Manuscript:

Dublin, Trinity College, 383, s. XVI, fols. 9r–10v (T. K. Abbott, *A Catalogue of the Manuscripts in the Library of Trinity College Dublin* [Dublin and London, 1900; rpt. Hildesheim, 1980], 59).

2. Marginalia mediolanensia (1590–91)

These philological and exegetical notes are found in the margins of Milan, Biblioteca Ambrosiana, R 124 sup., one of Savile's copies of his own Latin translation of Geminus. The notes include corrections in Savile's own hand to the translation, two of which cite the "Arabic" version (i.e., Abraham de Balmes' translation; I.2 above) in connection with lacunae in the text; see Manitius xxiii and the *explicit* below. Other notes are written in another hand but were presumably composed by Savile and, like the translation itself, were probably copied from Savile's papers on his visit to Gian Vincenzo Pinelli at Padua in 1589–90 (see I.3 above). These additional notes include references to ancient authorities and (fol. 43r) a

critical comment on Joseph Scaliger's *Opus de emendatione temporum* (see p. 11 n. 21 above). Milan, Biblioteca Ambrosiana, P 227 sup., a fair copy of Savile's translation of Geminus, contains a slightly revised version of both sets of notes in an appendix (fols. 51r–54r).

Notes (Milan, Biblioteca Ambrosiana, R 124 sup.). *In Geminum Notae.* [*Inc.*]: (fol. 1v) *Ac stellis formata* (1.4; p. 4.1 Manitius): *Καταστηριγμένα.* Sed legendum, ut puto, et hic et ubique *κατηστερισμένα* . . . / . . . [*Expl.*]: (fol. 47v) [Ad lacunam inter *Euctemoni* et *Vesperi* (p. 226.8 Manitius)] "Sagitta" ex Arabica versione. (See the *explicit* of the *Marginalia oxoniensia* below and Manitius' apparatus criticus at p. 226.8).

Manuscripts:

Milan, Biblioteca Ambrosiana, P 227 sup., s. XVI, fols. 51r–54r. See I.3 above.

———, R 124 sup., s. XVI, fols. 1r–47v (marginalia). See I.3 above.

3. Annotationes mediolanenses (1590–91)

A folio interleaved in a fragment of Abraham de Balmes' translation of Geminus (I.2 above) contains three notes on Geminus ch. 1. They represent the beginnings of a detailed comparison between de Balmes' version and the Greek text that Savile continued in the marginal notes in Oxford, Bodleian Library, Savile 10 (no. 4 below). Since this folio is from a manuscript belonging to Gian Vincenzo Pinelli, Savile probably wrote it during his stay in Italy.

Notes (Milan, Biblioteca Ambrosiana, P 167 sup.). [*Inc.*]: (unnumbered fol. 46r) i. *Ὁ τῶν ζῳδίων . . . ζῴδιον* (1.1; p. 2.5–8 Manitius). Arabs: Orbis signorum partitur in xii partes . . . / . . . [*Expl.*]: (unnumbered fol. 46v) *Τὰ κατεστεριγμένα* (1.4; p. 4.1 Manitius). Arabs: Signa vero quae describuntur stellis. Sicut apparet eum legere *κατεστερισμένα* (cf. p. 4.1 Manitius), quomodo nos legendum dicimus.

Manuscript:

(micro.) Milan, Biblioteca Ambrosiana, P 167 sup., s. XVI, unnumbered fol. 49 (Kristeller, *Iter* 1.306b, who does not record these notes).

4. Marginalia oxoniensia (1591–92)

These marginal notes accompany the Greek text of Geminus in Oxford, Bodleian Library, Savile 10, fols. 51r–77v. Most refer to the "Arabic" version of Geminus, i.e., Abraham de Balmes' translation (I.2 above), although some contain Savile's own emendations. The opening note (see below) records a reading derived from the copy of de Balmes' translation acquired by Savile during his visit to Gian Vincenzo Pinelli in 1589–90, i.e., after the completion of Savile's translation at Breslau in November 1588 (see I.3 above). This chronology explains the paucity of references to de Balmes' version in the *Marginalia mediolanensia* described in no. 2 above. Savile must have compared ms. Savile 10 with de Balmes' translation only after his return to England in late 1590 or early 1591 (see I.3 above).

Notes (Oxford, Bodleian Library, Savile 10). [*Inc.*]: (fol. 51r) *Ἑαυτῶν ζῳδίων* (1.1; p. 2.8 Manitius). Legendum *τῶν ζῳδίων* ex arabica versione J. V. Pinellii . . . / . . . [*Expl.*]: (fol. 77r) *Εὐκτήμονι ἑσπέριος δύνει* (Aquarius; p. 226.8 Manitius). Occidit Sagitta vesperino occasu. Arab.

Manuscript:

Oxford, Bodleian Library, Savile 10, fols. 51r–77r (F. Madan et al., *A Summary Catalogue of Western Manuscripts in the Bodleian Library at Oxford,* vol. 2.2 [Oxford, 1937], no. 6557).

Biography:

See I.3 above.

Pseudonymous Work

II. Ps. Procli *Sphaera*

TRANSLATIONS

1. Georgius Valla

Georgius Valla (Giorgio Valla) included a partial translation of the *Sphaera* in his encyclopedia *De expetendis et fugiendis rebus opus* 16.1 (books 15–19 of this work deal with astrological matters). The translation must have been composed before December 1491 when Valla reported in a letter to Jacobus Antiquarius (Jacopo Antiquario) of Perugia (1445–1512) the completion of the first nineteen books of the *De expetendis et fugiendis rebus opus;* see J. L. Heiberg, *Beiträge zur Geschichte Georg Vallas und seiner Bibliothek,* Beiheft zum Centralblatt für Bibliothekswesen 16 (Leipzig, 1896), 47 and 65. Books 15–19 were probably written at Venice where Valla was public professor of Latin from 1485 until his death in 1500 (Heiberg 16–26). Valla is not known to have lectured on the *Sphaera* at Venice or elsewhere, although he did lecture on another elementary astronomical

manual, namely, book 2 of Pliny's *Naturalis historia* (Heiberg 26 and CTC 4.350–51).

Book 16.1 *(De pertinentibus ad sphaeram)* introduces the geometry of the celestial and terrestrial spheres. Valla used material from all parts of the *Sphaera* except the chapter (Geminus ch. 3) on constellations. He summarizes the account of celestial circles (Geminus ch. 5) and ends with the chapter on terrestrial zones (Geminus ch. 15) before moving on to the related issue of the size of the earth by translating material from Cleomedes, *Caelestia* 1.7 (as noted by Ruffo, "Le fonti dei libri dell'astronomia," [see below], 365–66; add to CTC 7.4a).

This translation is one of several in the *De expetendis et fugiendis rebus opus.* For others see P. L. Rose, "Humanist Culture and Renaissance Mathematics: The Italian Libraries of the *Quattrocento,*" *Studies in the Renaissance* 20 (1973) 46–105 at 97–98; P. L. Ruffo, "Note sulla *Physiologia* di Giorgio Valla," *Physis* 13 (1971) 13–21; Ruffo, "Le fonti dei libri dell'astronomia nell'enciclopedia di Giorgio Valla," in *Il Rinascimento nelle corti padane,* [no editor] (Bari, 1977), 363–78 (at p. 365 Ruffo identifies the ps.-Proclan text but does not give detailed references); Ruffo, "Le fonti della "Medicina" nell'enciclopedia di Giorgio Valla," in V. Branca, ed., *Giorgio Valla: tra scienza e sapienza* (Florence, 1981), 55–68.

Valla's Greek manuscript was, as Ruffo, "Le fonti dei libri dell'astronomia," 366 suspected, Modena, Biblioteca Estense, Est. gr. 24 (alpha R.7.14) (Gr. 24 in V. Puntoni, "Indice de' codici greci della biblioteca Estense di Modena," *Studi italiani di filologia classica* 4 [1896] 396; see also Todd, "The Manuscripts," 58–59 and 69–70). Its contents may originally have been in another manuscript; see G. Mercati, *Codici latini Pico Grimani Pio e di altra biblioteca ignota del secolo XVI esistenti nell'Ottoboniana e i codici greci Pio di Modena,* Studi e testi 75 (Vatican City, 1938), 213, no. 75, and Heiberg, *Beiträge,* 123, no. 87.

Valla's manuscript was less corrupt than any other manuscript of the *Sphaera,* and the superior readings transmitted in his translation were noted by Johann Stöffler in his commentary (II.b below). But the work had no title or indication of authorship and, since Valla refers to Proclus' agreement with the definition of the horizon in the *Sphaera,* he was clearly unaware that Proclus was elsewhere identified as the author.

In the following quotations passages that introduce and conclude the translations are cited to provide a context, while Valla's interpolations are italicized.

De expetendis et fugiendis rebus opus 16.1 (ed. of Venice, 1501). *(Introductory statement)* (fol. bb2v7) Satis ergo hoc tempore putaverimus si ipsam [*sc.* terram] ut caelum distribuamus in circulos quo phaenomena melius innotescant; quae astronomorum omnium consensu astrologiae primordia sunt repetemus. Ergo quaedam ex his quae iam dicta cursim et quasi a limine salutabimus, adieciemusque reliqua quae ad hanc capessendam disciplinam videbuntur necessaria. *(Translation)* [*Inc.*]: (fol. bb2v10; p. 42.11–15 Manitius) Axis *itaque* vocatur ipsius mundi diameter (*quem Plinius* [*Naturalis historia* 2.86–87] dimetientem vocat) circum quem volvitur. Axis autem extrema mundi poli nominantur. Polorum unus septentrionalis, austrinus alter appellatur . . . (fol. bb3r24; Geminus p. 62.19–21 Manitius) ratione vero inspectus horizon est qui ad prospectum usque non vagantium astrorum penetrat, *in qua plane sententia Ptolemaeus* [*Syntaxis* 1.6, p. 20.22–23 Heiberg], *Cleomedes* [*Caelestia* 1.4.228–229 Todd] *et Proclus est,* in bina media universum secans mundum . . . / . . . [*Expl.*] (fol. bb4r49; p. 162.5–10 Manitius) Reliqua vero media inter illas quattuor in ipso solis procursu posita torrida nominatur. In duas autem medias haec dividitur ab aequinoctiali partes. Temperatarum autem zonarum solum una a nobis habitatur, *in Asiam Europam Africamque divisa, cuius ut inquiramus magnitudinem primo quidem totius terrae ambitus nobis est indagandus quo diameter proclivius nobis innotescat et perinde universae terrae magnitudo.*

Edition:

1501, Venetiis (Venice): Aldus Romanus. The main title is *De expetendis et fugiendis rebus opus;* the translations from the *Sphaera* are found in book 16.1, fols. bb2v10–bb3r51. A. A. Renouard, *Annales de l'imprimerie des Alde* (Paris, 1834; rpt. Bologna, 1953), 30–31; Adams V-147; NUC. BL; BNF; Oxford, Bodleian Library; (CSmH; DLC; ICJ; MH; MoSU; OU; PU-Penn; PU).

Biography:

See CTC 1.126, 224; 4.351; 6.56–57; 7.8, 11, 305. Add to the *Bibliography:* V. Branca, "L'umanesimo veneziano alla fine del Quattrocento. Ermolao

Barbaro e il suo circolo," in G. Arnaldi and M. Pastore Stocchi, eds., *Storia della cultura veneta,* vol. 3.1: *Dal primo Quattrocento al Concilio di Trento* (Vicenza, 1980), 123–75 at 161–66; E. Rosen, "Nicholas Copernicus and Giorgio Valla," *Physis* 23 (1981) 449–57; M. L. King, *Venetian Humanism in an Age of Patrician Dominance* (Princeton, 1986), 439–40; "Giorgio Valla," *Contemporaries of Erasmus* 3.371 (J. F. D'Amico and T. B. Deutscher).

2. Thomas Linacrus

Thomas Linacrus (Thomas Linacre) began his translation probably toward the end of a lengthy stay (1487–99) in Italy, and it was published at Venice by Aldus Manutius in 1499. The prefatory letter by Linacre's friend William Grocyn (ca. 1446–1519) to Aldus shows that final arrangements for publication were made just after Linacre's return to England, where he may have completed the work (on Grocyn and Linacre see M. Burrows, "Linacre's Catalogue of Books Belonging to William Grocyn," in M. Burrows, ed., *Collectanea: Second Series,* Oxford Historical Series 16 [Oxford, 1890], 319–80; on Grocyn's letter to Aldus see pp. 350–53). Aldus' dedicatory letter to Prince Alberto Pio of Carpi also mentions that Linacre had sent him the translation to be printed. Since the date in the colophon at the end of Linacre's translation is later than that in the earlier part of the composite volume in which it appeared (see below), Linacre's work must have been added in mid-1499. Linacre does, however, quote from one of the other works in the volume, Germanicus Caesar's translation of Aratus' *Phaenomena* (see below), and so he was probably aware before his departure from Italy of the context in which his translation of the *Sphaera* would appear.

The dedicatory letter and a dedicatory aside within the translation are directed to Arthur, Prince of Wales (1486–1502). Hence, on his return to England, Linacre may have become, or have tried to become, Arthur's tutor. Since 1496, however, the blind French scholar and poet, Bernard André (ca. 1455–ca. 1522), had held that position. André, according to Erasmus (*Opus epistolarum . . . Erasmi,* ed. H. M. Allen and H. W. Garrod, vol. 9 [Oxford, 1938], no. 2422, p. 108.65–74), turned King Henry VII against Linacre by claiming that Linacre had plagiarized an earlier version of the *Sphaera.* It is possible that Linacre's dedication caused this reaction on the part of André.

Erasmus himself (*Epist.* 2422, p. 107.43–45) believed that Linacre's translation replaced an inferior version whose author he does not identify. Since this letter was written in 1531, the report of an earlier translation may be doubted. Certainly Linacre's translation could not have superseded the earlier one by Giorgio Valla. This partial version, completed by 1491, was included without overt identification of the *Sphaera* in Valla's *De expetendis et fugiendis rebus opus* and published by Aldus in 1501 (see II.1 above).

Linacre's translation is based on a manuscript different from that used by Aldus for the accompanying Greek text (for the details see Todd, "The Manuscripts," 66–68). The discrepancy may have resulted from the hurried inclusion of the *Sphaera* just before publication (see above). This unaligned text and translation had inadequacies which later editors would address.

Aldus' letter of dedication (ed. of Venice, 1499). Procli Diadochi Sphaera astronomiam discere incipientibus utilissima, Thoma Linacro Britanno interprete, ad Arcturum, Cornubiae Valliaeque illustrissimum Principem. [*Inc.*]: (fol. tiv) Aldus Manutius Romanus Alberto Pio Carporum Principi s. p. d. Etsi scio a plerisque me tarditatis crimine accusari, Alberte, praesidium meum, quod plurimum differre videar. . . . Cum igitur superioribus diebus curassem inprimenda Arati Phaenomena cum Theonis enarratione, visum est illis adiungere Procli Sphaeram, et eo magis quod eam Thomas Linacrus Britannus docte et eleganter latinam nuper fecerit ad meque nostris excudendam formis miserit. Est enim opusculum iis, qui in astronomiam induci atque imbui cupiunt, utilissimum. Quod cum ipse Linacrus noster, acri vir iudicio, percenseret, Arcturo Principi suo hoc a se tralatum opusculum nuncupavit, quod adolescens ille bonarum litterarum studiosus astrologiae operam daret. Quamobrem et nos idipsum opusculum nostra cura impressum ad te legendum mittimus, quod iam peripateticus mathematicis disciplinis navare operam coeperis. Quod eo etiam libentius leges, quod sit a Thoma Linacro summa tibi familiaritate coniuncto interpretatum. Qui utinam et Simplicium in Aristotelis Physica et in eiusdem Meteora Alexandrum [see CTC 1.100], quos nunc summa cura latinos facit, ad me dedisset ut et illos una cum Proclo ad te mitterem. Quamque (ut spero) eosque et alios in philosophia medicinaque perutiles libros aliquando dabit ut ex eadem Britan-

nia, unde olim barbarae et indoctae litterae ad nos profectae Italiam occuparunt et adhuc arces tenent, latine et docte loquentes bonas artis accipiamus ac Britannis adiutoribus fugata barbarie arces nostras recipiamus, ut eadem hasta sanetur a qua illatum est vulnus. Horum ego latinitatem et eloquentiam admiratus, Gulielmi Grocini, viri graece etiam nedum latine peritissimi atque undecunque doctissimi, quam ad me doctam quidem et elegantem dedit epistolam subiungere placuit, ut pudeat philosophos nostros barbare et inepte scribere aemulatique Britannos, non dico grandaevi—γερόντιον γὰρ ψιττακὸς ἀμελεῖ σκυτάλην—, sed ceteri omnes latine et docte philosophentur. Sed quod in ea me plurimum laudat, facit amice. Venetiis pridie Idus Octob. M.ID.

(For a French translation of this letter see A. Firmin-Didot, *Alde Manuce et l'hellénisme à Venise* [Paris, 1875], 129–31; for an annotated Italian translation see C. Dionisotti and G. Orlandi, *Aldo Manuzio editore: dediche, prefazioni, note ai testi,* vol. 2 [Milan, 1975], 216, 329).

William Grocyn's letter to Aldus (ed. of Venice, 1499). Gulielmus Grocinus Britannus Aldo Manutio Romano s. p. d. [*Inc.*]: (fol. t1v) Rediit in Britanniam nuper amicus meus summus idemque tuus, Alde humanissime, Thomas Linacrus, salvus (est deo gratia) et incolumis . . . / . . . [*Expl.*]: (fol. t2v) De iis quae tibi a nobis privatim debentur, noli laborare. Curavimus ut propediem satis tibi fiat. Vale. Ex urbe Londinio, VI Calen. Septembr.

Linacre's letter of dedication (ed. of Venice, 1499). Ad illustrissimum Arcturum Cornubiae Valliaeque Principem Thomae Linacri Britanni in Procli Diadochi Sphaeram praefatio. [*Inc.*]: (fol. t2v) Cum statuissem, Arcture, princeps illustrissime et totius aevi tui decus, pro mea incredibili erga te pietate summaque observantia mearum lucubrationum monumentum aliquid tibi nuncupare, succurrebat in primis Procli Sphaera, dignum ni fallor opus, cui tu praesertim aliquam partem studiorum tuorum impertias. . . . Feci itaque tibi e graeco latinum Proclum de sphaera disserentem, non quod antea latine de ea proditum etiam ab homine nostrate non sit, sed quod multo certe melius a Proclo, ut taceam, si quid in nostrate requirimus, quod etiam per alium e nostris quoquo modo sarciri non fuerit fortassis alienum . . . / . . . [*Expl.*]: Sed nunc Proclum ipsum, si libet loquentem audies, perinde tamen ac si in Graecia esset. Ad cuius certe horizonta sphaeram pinxit. Quod ita statim in ingressu operis significasse, non fuerit fortassis ab re.

Procli Diadochi Sphaera, Thoma Linacro Britanno interprete (ed. of Venice, 1499). [*Inc.*]: (fol. t3r; p. 42.10–15 Manitius) De axi et polis. Axis mundi vocatur demetiens ipsius circa quam volvitur. Axis extrema poli mundi seu vertices sunt nominati. Horum alter septentrionalis, alter austrinus dicitur. . . . (fol. t4r) [aside to the dedicatee] Quos versus [*sc.* Aratus, *Phaenomena* 497–499 cited in Greek within the translation of the *Sphaera*] nos ita vertimus:

Huius in octonis dissecti partibus alta
terrarum invisunt quinque, tres ima frequentant.
Alterni et Phoebi reditus celebrantur eodem.

Quamquam ne dissimulandum censuerim eosdem antea a Germanico Caesare in Arato suo latinos in hunc modum factos:

Hunc octo in partis si quis diviserit orbem,
quinque super terras semper fulgere notabit.
At tres sub terris, brevibusque latere sub umbris.
Hoc Cancrum tetigit cum Titan orbe, timete
aestatem rapidam et solventes corpora morbos.

Quos eo libentius, Arcture decus, commemoravi ut intellegas maximos principes, quorum gloriam te non solum aequaturum sed etiam superaturum auguror, huiuscemodi studiis fuisse delectatos . . . / . . . [*Expl.*]: (t6v; p. 42.3–8 Manitius) At sidus quod in summo Argus gubernaculo fulget Canopus nominatur. Hic in Rhodo aegre conspicitur, aut certe ab editis locis. In Alexandria vero prorsus non cernitur [ἀφανής], utpote vix quarta signi portione supra horizontem extante. Finis. / (ed. of London, [1522?]) (fol. c3v; p. 42.6–8 Manitius) In Alexandrea (*sic*) vero prorsus est conspicuus [φανερός?], cum ferme quarta signi parte supra finitorem feratur (teratur *ed.*). / (ed. of Paris, 1534) (p. 16; p. 42.6–8 Manitius) In Alexandria vero sublimis [ἀναφανείς; correcting ἀναφανής in ed. of Greek text, Paris, 1531] cernitur, utpote quarta signi portione supra horizontem extans.

Manuscripts:

(micro.) Cambridge, Trinity College, 936, s. XVI, part 3, fols. 1r–14r (M. R. James, *The Western Manuscripts in the Library of Trinity College Cambridge,* vol. 2 [Cambridge, 1901], 347, no. 936). An undated calligraphic manuscript, with a text

identical to that in the edition of 1499; perhaps the presentation copy to the dedicatee. Linacre's letter of dedication to Prince Arthur, with the subscription "Arcturus Princeps Wallie" (fol. 14r), is the only prefatory letter found in the manuscript.

(*) Florence, Biblioteca Nazionale Centrale, Magl. XI 121, s. XVI, fols. 320r–330v (Kristeller, *Iter* 1.138a). Reportedly copied from a printed edition.

Doubtful manuscript:

J. P. Tomasini, *Bibliothecae patavinae manuscriptae publicae et privatae* (Udine, 1639), 111, refers to a manuscript of Linacre's translation in the library of Nicolaus Trivisanus. This witness has not been located.

Editions:

(The helpful inventory by G. Barber, "Thomas Linacre: A Bibliographical Survey of His Works," in *Linacre Studies: Essays on the Life and Work of Thomas Linacre, c. 1460–1524,* ed. F. Maddison, M. Pelling, and C. Webster [Oxford, 1977], 290–336 is enlarged and supplemented below).

1499, Venetiis (Venice): Aldus Romanus. Gr.-Lat. Title: *Iulii Firmici Astronomicorum libri octo* etc. With the Latin texts of Julius Firmicus and Manilius; translations of Aratus by Germanicus Caesar, Cicero, and Rufus Festus Avienus; and Greek texts of Aratus and Theon's commentary. The date given in a colophon at the end of the text of Firmicius is June 1499; "October 1499" is given in the colophon at the end of the ps.-Proclan *Sphaera.* A. Firmin-Didot, *Alde Manuce et l'hellénisme à Venise* (Paris, 1875), 124–31; Renouard, *Annales de l'imprimerie des Alde,* 20–21; Barber, "Thomas Linacre," 291–92. BMC 5.560; GW 9881; Goff F-191; Hain* 14559; Klebs 405; Proctor 5570; Sander 2781. BL; BNF; Oxford, Bodleian Library.

(micro.) 1502, Vitebergae (Wittenberg): [Nicolaus Marschalk et Henricus Sertorius]. The single prefatory letter to be included is Linacre's letter of dedication to Prince Arthur. On the printer see D. Rhodes, "Two Early German Editions of Proclus," in *Beiträge zur Geschichte des Buches und seiner Funktion in der Gesellschaft: Festschrift für Hans Widmann* (Stuttgart, 1974), 178–82 at 180–82; reprinted in Rhodes, *Studies in Early European Printing and Book Collecting* (London, 1983), ch. 27. Barber, "Thomas Linacre," 307; VD P-4974. Munich, Bayerische Staatsbibliothek.

(*) 1503, Rhegii Lingobardiae (Reggio Emilia): Franciscus Mazalis. Contents the same as in the edition of Venice, 1499, except that the Greek texts are omitted. The copy at Nuremberg is the only one to be located that also retains the Latin text of the *Sphaera.* The copy at the BNF is incorrectly described in the *Catalogue des livres imprimés* (followed by Barber, "Thomas Linacre," 308); the *Sphaera* is mentioned in the Table of Contents but not actually included in the volume. Renouard, *Annales de l'imprimerie des Alde,* 20; Sander 2782. Nuremberg, Stadtbibliothek (reported by Elisabeth Beare).

(micro.) [1503: Lipsiae (Leipzig): Martinus Landsberg]. The single prefatory letter to be included is Linacre's letter of dedication to Prince Arthur. On the date and publisher see Rhodes, "Two Early German Editions," 181–82, who argues that this edition is not an incunable because it is based on the edition of Wittenberg, 1502. Barber, "Thomas Linacre," 308; BMC 3.643; Hain 13387; Hamel 2654; Klebs 807; Proctor 2982; Zinner 656. BL; Halle, Marienbibliothek; Cracow, Biblioteka Jagiellońska; London, Library of the Royal Society.

[1508–1516], Parisiis (Paris): Egidius Gourmontius. Gr.-Lat. All the dedicatory letters are omitted. The termini for the date accord with the printer's address between 1508 and 1516; see P. Renouard, *Répertoire des imprimeurs parisiens* (Paris, 1965), 178. This edition is omitted from the bibliography of early Greek typography at Paris: H. Omont, "Essai sur les débuts de la typographie grecque à Paris (1507–1516)," *Mémoires de la Société de l'histoire de Paris et de l'Ile-de-France* 18 (1891) 1–72 at 12–38. Omont, however, shows that several editions printed by Gourmont were planned by Girolamo Aleandro (1480–1542; see "Girolamo Aleandro," *Contemporaries of Erasmus* 1.28–32 at 29–30 [M. J. C. Lowry]) for pedagogical purposes and included reprints of Aldine editions such as this one. Aleandro, who taught at the Collège de la Marche between 1509 and 1511 (as did Blaise Madronet, author of the dedicatory letter to this edition), may have arranged for the present edition with Gourmont during this period. Barber, "Thomas Linacre," 308; B. Moreau, *Inventaire chronologique des éditions parisiennes du seizième siècle,* vol. 2 (Abbeville, 1977), 396, no. 1466. Oxford, Corpus Christi College and Bodleian Library; Autun, Bibliothèque Municipale; Bordeaux, Bibliothèque Municipale.

1511, Viennae (Vienna): Hieronymus Vietor et Ioannes Singrenius. All the dedicatory letters are omitted. With an appendix *De ortu et occasu siderum ut est apud poetas* by Georg Tanstetter (Collimitius) (ca. 1482–1535); see also II.a below. Barber, "Thomas Linacre," 308; M. Denis, *Wiens Buchdruckergeschichte bis 1560* (Vienna, 1782), 40–41; Proctor 14426; Panzer 9.10; Hamel 2655; VD P-4975; Zinner 948; NUC. BL; Oxford, Bodleian Library; Leipzig, Universitätsbibliothek; (MH).

(micro.) 1512, Cracoviae (Cracow): Florianus Unglerus. The single prefatory letter to be included is Linacre's letter of dedication to Prince Arthur. Barber, "Thomas Linacre," 308; Hoffman 3.293; Panzer 6.454. Cracow, Biblioteka Muzeum Narodowego w Krakowie, Oddział Zbiory Czartoryskich; Warsaw, Biblioteka Narodowa (two defective copies).

(*) 1515, Coloniae (Cologne): Henricus de Nussia. Barber, "Thomas Linacre," 308; H. Harthausen, "Der Kölner Buchdrucker Heinrich von Neuss," *Annalen des historischen Vereins für den Niederrhein* 171 (1969), no. 47 (following a nineteenth-century catalogue: L. von Bullingen, *Annales typographici colonienses,* preserved in Cologne, Universitäts- und Stadtbibliothek, ms. 5.P.160, vol. 2, fol. 115v); Hoffmann 3.293; Panzer 6.376; Fabricius-Harles 9.413; Zinner 1035. Panzer reports that this edition also contained Linacre's dedicatory letter, and Fabricius-Harles that it had a Greek text. No copies have been located. The copy at Lübeck, Stadtbibliothek reported by Panzer was destroyed in World War II.

[before 1520?], n. p. An edition with the title *Nobilissimus Procli libellus de Sphaera* and the text of Linacre's translation divided into sixteen chapters. The pages that would have identified its place, date, and printer are missing. This is probably not the edition described in the preceding entry since there is no Greek text and the typeface does not mix antiqua with gothic (see Harthausen, "Der Kölner Buchdrucker," 99 and n. 72, 147). VD P-4976. Munich, Bayerische Staatsbibliothek; Tübingen, Universitätsbibliothek.

[1522?], Londinii (London): Richardus Pynson. This edition, perhaps the work of Linacre's friend Thomas Lupset (see p. 12 and n. 29 above), exhibits several revisions; mainly of a stylistic and terminological character, these were not based on new manuscript evidence and did not influence subsequent editions. For one emendation see the *explicit* above. It is the last edition to contain Linacre's dedicatory letter and the aside to Prince Arthur in the translation. Barber, "Thomas Linacre," 309; STC 20398.3; S. H. Johnston, Jr., *A Study of the Career and Literary Publications of Richard Pynson* (Diss. University of Western Ontario, London [Ontario, Canada], 1977), 401–402. BL.

1523, Basileae (Basel): Johannes Bebelius. Gr.-Lat. This was a revision of both text and translation with the help of a Greek manuscript belonging to the textual family of the manuscript used by Linacre. The editor was probably Jacobus Ceporinus (Jacob Weisendanger) (1499–1525); see CTC 3.40–41 and Todd, "The Manuscripts," 66 and n. 16. The text and translation were more precisely aligned, although some discrepancies and false readings remained. The sixteen chapters of Linacre's translation were reduced to fifteen, an arrangement followed in all subsequent editions except that described next. All editions of Linacre's translation published after 1526 follow the text of this edition, although some include emendations. With the Greek texts and Latin translations of Dionysius Periegetes and Aratus, but without the scholia on the *Sphaera* by Jacobus Ceporinus sometimes reported (Houzeau-Lancaster 565; ADB 4.89) or implied (Zinner 1207, 1558, 1820, 1910). "Cum scholiis Ceporini" on the title page refers only to the works by Dionysius Periegetes and Aratus. Adams D-645; Barber, "Thomas Linacre," 309; Hamel 901; Panzer 6.241 (1526 incorrectly given as the date of publication); VD P-4963; CTC 3.25; NUC. BL; BNF; (CtY; IU; MH; MiU; NNC).

1526, Bonon[iae] (Bologna): Cynthius Achillinus. 1525 given on the title page, but 23 July 1526 in the colophon. With a dedicatory letter by Ludovicus Vitalis (Luigi Vitali, d. 1554) addressed to "Scholastici studiosissimi" and Vitali's "Supplementa . . . in Sphaeram Procli" on elementary astronomy but not directly on the *Sphaera.* These appendices were not reprinted in *Theodori Prisciani Phaenomenon euporiston* (Basel, 1532) as G. Fantuzzi, *Notizie degli scrittori bolognesi,* vol. 8 (Bologna, 1790), 185, reports, nor were the translation and supplement reprinted in that work, as Houzeau-Lancaster 429 (who give 1632 as its date) claim. Revisions were based on the evidence of a manuscript of a branch of the tradition different from that represented both by Linacre's translation and by the Aldine text; see Todd, "The Man-

uscripts," 70 and n. 20. Vitali also glossed extensively Linacre's translation. Barber, "Thomas Linacre," 310; Sander 5910; NUC. Munich, Bayerische Staatsbibliothek; (ICJ; InU; MB; MH; NNNAM).

1534, Basileae (Basel): Thomas Wolffius. Contents the same as in the edition of Basel, 1523. No edition was published by Johannes Bebelius at Basel in the same year, as reported by Panzer 6.302 and Zinner 1558. The error starts with Maittaire 2.807; see Fabricius-Harles 4.99-100. Adams D-646; Hamel 903; VD P-4964; CTC 3.25; NUC. BNF; Paris, Bibliothèque Mazarine; Nuremberg, Stadtbibliothek; (DLC; MH).

1534 *(P)*, Parisiis (Paris): Christianus Wechelus. This edition, which followed the text of the Basel, 1523 edition, introduced emendations found earlier in an edition of the Greek text (Paris, 1531: C. Wechelus; copy at Oxford, Bodleian Library). See the revised *explicit* above. The translation appeared in several editions published at Paris and marked *P* here and below, including editions of the commentary by Jacobus Tusanus (Jacques Toussain) (II.e below). Its Greek text was also used by Elie Vinet (II.4 and II.f below). Editions of the Greek text only were published by Christianus Wechelus (Paris, 1536 and Paris, 1542, with copies at, respectively, BL and Universität Bonn, Astronomisches Institut) and by Petrus Colonaeus (Louvain, 1554, copy at BL). Barber, "Thomas Linacre," 314; Bibliotheca Osleriana 3740. BL; Paris, Bibliothèque Sainte-Geneviève.

1534, Tubingae (Tübingen): Hulderrichus Morhart. Commentary of Johann Stöffler (Johannes Stoeflerus) (II.b below) with lemmata from Linacre's translation. Adams S-1897; Graesse 5.454; Hamel 3155; VD P-4977; Zinner 1579; *L'humanisme allemand*, Colloque international de Tours 18 (Paris, 1979), 617 and no. 41; NUC (under Stöffler). BL; BNF; Paris, Bibliothèque de l'Arsenal; (DLC; ICN; InU; MH; NIC; NN; NNC; NNH; RPJCB).

1535, Basileae (Basel): Johannes Hervagius. Gr.-Lat. The editor of this composite volume, Jakob Molsheym (Jacobus Micyllus), was responsible only for the *editio princeps* of Hyginus' *Fabulae*. Barber, "Thomas Linacre," 314; Fabricius-Harles 4.100; Hamel 1509; Zinner 1592; VD P-4965; NUC (under Hyginus). BL; BNF; Paris, Bibliothèque Mazarine; (CtY; MH; NcD; NN; PU).

1536, Basileae (Basel): [Johannes] Valderus. Gr.-Lat. With scholia and revisions by Jakob Ziegler (Jacobus Zieglerus) (see II.c below) to the Greek text and Linacre's translation. K. Schottenloher, *Jakob Ziegler aus Lindau an der Isar* (Münster i. W., 1910), 386; Adams S-1577; Barber, "Thomas Linacre," 314 (under *Sphaerae . . . ratio*); Fabricius-Harles 4.100; Panzer 6.315; Zinner 1653. BL; BNF; Manchester, John Rylands University Library; (CtY-M; ICU; MiU; NN; NNC; RPB; RPJCB).

(micro.) 1538, Vitebergae (Wittenberg): Josephus Clug. Also includes *In sphaericum instrumentum prolegomena* by Johannes Schöner (1477–1547); mnemonic verses listing the constellations; and Manilius, *Astronomica* 1.263–482. Zinner 1695; Hamel 2657. Neuburg (Bavaria), Staatliche Bibliothek; Dresden, Sächsische Landesbibliothek; Zwickau, Ratsschulbibliothek.

1539, Ex libera Argentina (Strasbourg): Wendelinus Rihelius. Gr.-Lat. *Répertoire bibliographique des livres imprimés en Alsace au seizième siècle de la Bibliothèque Nationale et Universitaire de Strasbourg*, vol. 3 (Strasbourg, 1945), no. 1932; Barber, "Thomas Linacre," 317; M. U. Chrisman, *Bibliography of Strasbourg Imprints 1480–1599* (New Haven and London, 1982), 251; Zinner 1724; VD P-4967; NUC. BL; Oxford, Bodleian Library; Strasbourg, Bibliothèque Nationale et Universitaire; (MH).

1543 *(P)*, Parisiis (Paris): Jacobus Bogardus. Gr.-Lat. With notes later (edition of Paris [Bogardus], 1547) attributed to Jacques Toussain (Jacobus Tusanus) (II.e below). Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle* 5.173-74, nos. 163–164; Adams P-2131 (notes not recorded); Barber, "Thomas Linacre," 318; Graesse 5.453. Cambridge, Trinity College; Göttingen, Niedersächsische Staats- und Universitätsbibliothek; Madrid, Biblioteca Nacional.

1543, Lipsiae (Leipzig): Jacobus Berualdus. Contents the same as in the edition of Wittenberg, 1538. Barber, "Thomas Linacre," 318; Hamel 2659; Zinner 1830. London, Library of the Royal College of Physicians; Greifswald, Universitätsbibliothek.

(micro.) 1544 *(P)*, Parisiis (Paris): Petrus Gromorsus. BNF.

1547, Basileae (Basel): Henricus Petri. Gr.-Lat. Contents the same as in the editions of Basel, 1523 and 1534, with the addition of Cleomedes. Adams P-2131; Graesse 5.453; Hamel 2660; VD P-4968;

Zinner 1910, 1916; CTC 3.25 and 7.8; NUC. BL; BNF; Cambridge, Trinity College; (CtY; DLC; ICU; OkU; WU).

1547 *(P),* Parisiis (Paris): Jacobus Bogardus. Gr.-Lat. With the notes of Jacques Toussain (Jacobus Tusanus) (II.e below) identified and slightly revised (see edition of Paris [Bogardus], 1543). Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle* 5.231–32, nos. 264–265; Barber, "Thomas Linacre," 319. Oxford, Bodleian Library; Manchester, John Rylands University Library (Christie Collection).

(photo.) 1547 *(P),* Parisiis (Paris): Christianus Wechelus. Contents the same as in the edition of Paris, 1534. Graesse 5.454 erroneously reports that the commentary of Johann Stöffler (Johannes Stoeflerus) (II.b below) was reprinted in this edition. Maittaire 5:2.183; Fabricius-Harles 9.413; Hoffmann 3.293. Universität Bonn, Astronomisches Institut.

1549, Basileae (Basel): Johannes Hervagius. Gr.-Lat. Adams H-1252; Barber, "Thomas Linacre," 321; Hamel 1510; VD P-4969; Zinner 1958; NUC (under Hyginus). BL; BNF; Berlin, Staatsbibliothek zu Berlin-Preussischer Kulturbesitz; (CtY; DFo; InU; MH; NN; NNC; OCU).

1553, Antwerpiae (Antwerp): Johannes Loeius. Gr.-Lat. Contents the same as in the edition of Basel, 1547. *Belgia typographica* 4058; Adams P-2132; Barber, "Thomas Linacre," 323; Hamel 2661; CTC 3.25 and 7.8; NUC. BL; Cambridge, Clare College; Dresden, Sächsische Landesbibliothek; (FU; IaU).

1553 *(P),* Parisiis (Paris): Martinus Iuvenis. Contents the same as in the edition of Paris, 1547 (Bogardus), except that the Greek text is omitted. Barber, "Thomas Linacre," 323. BL; BNF; Manchester, John Rylands University Library; Paris, Bibliothèque Sainte-Geneviève.

1556 *(P),* Parisiis (Paris): Martinus Iuvenis. Gr.-Lat. Contents the same as in the edition of Paris, 1547 (Bogardus). Barber, "Thomas Linacre," 323. Manchester, John Rylands University Library; BNF (without the Greek text).

1560 *(P),* Lutetiae (Paris): Gulielmus Cavellat. Contents the same as in the edition of Paris, 1553. Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle,* fascicule Cavellat (Paris, 1986), 144, no. 163; Barber, "Thomas Linacre," 324; Bibliotheca Osleriana 3741; NUC. BNF; Paris, Bibliothèque Mazarine; (CU; IU).

1561, Basileae (Basel): Henricus Petri. Gr.-Lat. Contents the same as in the edition of Basel, 1547, except that the notes of Erasmus Schreckenfuchs (Erasmus Schreckenfuchsius) (II.g below) have been added. Adams P-2134; Barber, "Thomas Linacre," 325; Hamel 2664; VD P-4970; Zinner 2267, 2275; CTC 3.25 and 7.8; NUC. BL; BNF; Nuremberg, Stadtbibliothek; (DFo; DLC; MiU-C; MoSW; NN; NNH; RPJCB).

1562 *(P),* Lutetiae (Paris): Gulielmus Cavellat. Contents the same as in the edition of Paris, 1560. Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle,* fascicule Cavellat, 155, no. 179bis; Barber, "Thomas Linacre," 325. Paris, Bibliothèque de la Sorbonne (Collection Victor Cousin).

(micro.) 1565, Patavii (Padua): Laurentius Pasquatus. It.-Lat. Pietro Catena's Italian translation of the Greek text accompanied on each page by the facing Latin translation of Linacre. See R. B. Todd, "Pietro Catena's Vernacular Translation of the Pseudo-Proclan *Sphaera* in Context," *Physis* 32 (1995) 105–107. Houzeau-Lancaster 430; NUC. Padua, Biblioteca Universitaria; Rome, Biblioteca Nazionale Centrale; (ICJ).

1570, Basileae (Basel): ex officina Hervagiana. Gr.-Lat. Adams H-1253; Barber, "Thomas Linacre," 325; Hamel 1511; VD P-4971; NUC (under Hyginus). BL; Oxford, Bodleian Library; Dresden, Sächsische Landesbibliothek; (DLC; IEN; MiEM; NNC; PPL; TU).

1578, Parisiis (Paris): Gulielmus Julianus. Gr.-Lat. Adams H-1254; Hamel 1512; NUC (under Hyginus). BNF; Cambridge, Trinity College; Leipzig, Universitätsbibliothek; (DLC; ICN; IU; MH; MiU; NcD; ViLxW).

1578, Parisiis (Paris): Johannes Parant. Gr.-Lat. Adams H-1255; Barber, "Thomas Linacre," 326; NUC (under Hyginus). BL; Oxford, Bodleian Library; (DLC; ICN).

(micro.) 1579, Vratislaviae (Wrocław): Johannes Scharffenbergius. Gr.-Lat. Barber, "Thomas Linacre," 326; Zinner 2898. Göttingen, Niedersächsische Staats- und Universitätsbibliothek.

(micro.) 1584, Lipsiae (Leipzig): Johannes Beyer. Hamel 2665. Görlitz, Oberlausitzische Bibliothek der Wissenschaften.

1585, Basileae (Basel): Sebastianus Henricpetri. Gr.-Lat. Contents the same as in the edition of Basel, 1561. Adams P-2135; Barber, "Thomas Linacre," 326; Hamel 2666; Zinner 3197; CTC 3.25 and

7.8; VD P-4973; NUC. BL; Oxford, Bodleian Library; Munich, Bayerische Staatsbibliothek; (CtY; DLC; NcD; NN; NNH; ScU).

1589, [Heidelberg]: in officina Sanctandrea. Gr.-Lat. Pp. 1–35 of a composite volume entitled *Astronomica veterum scripta isagogica graeca et latina.* With brief philological notes on the text by Hermann Witekind (1522–1603; ADB 43.554–56). M. C. P. Schmidt, "Philologische Beiträge zu den griechischen Mathematikern," *Philologus* 45 (1886) 316, erroneously gives Geneva as the place of publication. Fabricius-Harles 4.102–103 (under Aratus); Adams A-2076; Barber, "Thomas Linacre," 326–27; Hamel 257; Zinner 3356; NUC (under *Astronomica veterum*). BL; Oxford, Bodleian Library; Florence, Biblioteca Nazionale Centrale; (CtY; DFo; MH; MiU; NNC; OkU; PPULC).

(micro.) 1591, Vitebergae (Wittenberg): Zacharias Lehmann. Gr.-Lat. Graesse 5.454; Zinner 3459; Hamel 2667. Dresden, Sächsische Landesbibliothek; Poznań, Miejska Biblioteka Publiczna; Wrocław, Biblioteka Uniwersytecka.

(micro.) 1600, Lipsiae (Leipzig): Abrahamus Lambergus. Hamel 2669. Halle, Universitäts- und Landesbibliothek; Jena, Universitätsbibliothek.

1608, Lugduni (Lyons): Johannes Degabiano. Gr.-Lat. Barber, "Thomas Linacre," 327; Hamel 1514; NUC (under Hyginus). BL; Oxford, Bodleian Library; Erlangen-Nuremberg, Universitätsbibliothek; (PPL; PPPM).

1608, Genevae (Geneva): Stephanus Camonetus. Gr.-Lat. BNF.

1861, Cantabrigiae (Cambridge): e Prelo academico. B. Botfield, *Praefationes et epistolae editionibus principibus auctorum veterum praepositae,* 239–42 (dedicatory letters of Aldus and Linacre; letter of Grocyn to Aldus).

Doubtful or spurious editions:

1499, Ulmae (Ulm). Reported by de la Lande 25 and Houzeau-Lancaster 429, although Fabricius-Harles 9.413 had already doubted its existence. It is unlikely that the Aldine edition of October 1499 was immediately reproduced in Germany.

1517, Coloniae (Cologne). H. Harthausen, "Der Kölner Buchdrucker Heinrich von Neuss," *Annalen des historischen Vereins für den Niederrhein* 171 (1969) 144, no. 54, reports this edition from L. von Bullingen, *Annales typographici colonienses,* preserved in Cologne, Universitäts- und Stadtbibliothek, ms. 5.P.160, s. XIX, vol. 2, fol. 115v. It is not recorded elsewhere. Harthausen suggests that the alleged edition of 1517 may have been a reprint of the edition of Cologne, 1515 (see above).

1538, Parisiis (Paris): Christianus Wechelus. Maittaire 2.432 reports this edition, but the only editions by Wechel presently located are those of Paris, 1534 and 1542 (see above).

(photo.) 1542, Parisiis (Paris): Christianus Wechelus. Fabricius-Harles 9.413 note p reports that this edition contains the Greek text and Linacre's Latin translation. The single copy located (Universität Bonn, Astronomisches Institut) has only the Greek text.

(photo.) 1543, Coloniae (Cologne): Johannes Gymnicus. Houzeau-Lancaster 129 and Zinner 1820 report erroneously that this edition contains Linacre's translation; in fact, it has only the Greek texts of Dionysius Periegetes' *Orbis descriptio,* Aratus, and the *Sphaera,* with Jacobus Ceporinus' scholia on Dionysius (to be added to CTC 3.40) and Aratus, as in other editions of this anthology (see the edition of Basel, 1523 above). Fabricius-Harles 4.101; Hamel 904; VD P-4962. Jena, Universitätsbibliothek; Leipzig, Universitätsbibliothek; Zeitz, Kollegiatstift, Archiv und Bibliothek.

1547, Antwerpiae (Antwerp). According to Houzeau-Lancaster 429, this is another edition of the anthology (first published at Basel in 1523) containing Dionysius Periegetes, Aratus, and the *Sphaera.* The alleged 1547 edition as well as the other editions (Antwerp, 1550; Paris, 1560) reported by Houzeau-Lancaster 429 to contain the anthology have not been located.

1549, Marpurgae (Marburg). Reported only by Houzeau-Lancaster 129 and Zinner 1966. The edition has not been located.

1570, Venetiis (Venice). Reported only by de la Lande 94 and Houzeau-Lancaster 429. The edition has not been located.

1600, Basileae (Basel). Zinner 3862 records, without naming a printer, this edition as a reprint of the edition of [Heidelberg,] 1589. The edition has not been located.

1661, Helmstadii (Helmstedt). The references to this edition by Houzeau-Lancaster 129 and Schmidt, "Philologische Beiträge zu den griechischen Mathematikern," 317 undoubtedly concern a spurious edition. The copy of the Basel, 1561 edition formerly owned by the Universitätsbibliothek, Helmstedt was transferred in 1810 to the

Herzog August Bibliothek, Wolfenbüttel. The date '1561' may have been mistranscribed and the edition mistakenly associated with Helmstedt. (Information supplied by Dr. R. Wolkmann, Director, Ehemalige Universitätsbibliothek, Helmstedt.)

Biography:

CTC 1.100 and 4.156–57. Add to the *Bibliography:* "Linacre, Thomas," DSB 7.360–61 (C. D. O'Malley); "Thomas Linacre," *Contemporaries of Erasmus* 2.331–32 (C. B. Schmitt); R. B. Todd, "The Manuscripts of the Pseudo-Proclan *Sphaera*," *Revue d'histoire des textes* 23 (1993) 57–70.

3. Bilibaldus Pirckheimerus

Bilibaldus Pirckheimerus (Willibald Pirckheimer) prepared a translation of part of the *Sphaera* (Nuremberg, Stadtbibliothek, ms. PP. 88) in connection with a revised edition of Ptolemy's *Geography;* see N. Holzberg, *Willibald Pirckheimer: griechischer Humanismus in Deutschland* (Munich, 1981), 335–37. The exact date of this partial translation of the *Sphaera* is not known, but it contains a reference to lectures at Nuremberg by Johannes Schöner (1477–1547) who began teaching there in 1526 (Holzberg 334). This suggests at least a revision of the translation between 1526 and 1530, when Pirckheimer died.

Although the translation is not in Pirckheimer's hand, there are autograph corrections and revisions to the text. The translation was based on the 1499 Aldine edition of the translation by Thomas Linacre (II.2 above) and is essentially a revision of Linacre's version (Holzberg 335–36). Pirckheimer's own copy of the Aldine edition is now preserved among the incunabula in the Library of the Royal Society, London. In the Greek text κύκλου (p. 64.18 Manitius) is deleted and replaced by κόσμου which corresponds with Linacre's translation; it is uncertain whether this correction is in Pirckheimer's hand. The volume does not contain any notes in Latin added by Pirckheimer.

Procli Diadochi Sphaera, Bilibaldo Pirckheimero interprete. (Nuremberg, Stadtbibliothek, PP. 88). [*Inc.*]: (fol. 1r; p. 42.10–15 Manitius) De axi et polis. Mundi diameter axis vocatur circa quam volvitur. Axis vero termini mundi nuncupantur poli. Ex quibus hic quidem borealis, ille vero australis vocatur . . . / . . . [*Expl.*] (fol. 4r; p. 38.3–6 Manitius) Stella vero quae in summa Virginis manu sinistra collocata est, fulgens sidus Spica nuncupatur. At ea stellula quae iuxta dexteram Virginis alam sita est. . . .

Manuscript:

(photo.) Nuremberg, Stadtbibliothek, PP. 88, fols. 1r–4r (Kristeller, *Iter* 3.670a).

Biography:

CTC 2.70–71; 6.20–21; 7.146. Add to the *Bibliography:* "Willibald Pirckheimer," *Contemporaries of Erasmus* 3.90–94 (B. Könneker).

4. Elias Vinetus

Elias Vinetus (Elie Vinet) translated the ps.-Proclan *Sphaera* twice. He used the Greek text of the Paris edition of 1531, as is clear from his note on the last sentence of the *Sphaera* where he contrasts ἀφανής (Aldine edition of Venice, 1499; see II.2 above) with ἀναφανής (1531 Paris edition) instead of the correct form ἀναφανείς found in subsequent Parisian editions (see II.2 above).

Vinet's first version *(a)* was published anonymously in 1543 with a commentary (II.f below). The second *(b)* appeared in 1553 and was a revision of *a* both in style and terminology (see the *incipit* and *explicit* below where the changes in *b* are italicized). A typical example is ch. 6 (*De ordine quinque parallelorum circulorum* = Geminus p. 56.14–25 Manitius) whose text is identical in both *a* (fol. 8r) and *b* (fol. 69r), except for the addition of *aliquando* in *b* to render the word ποτε (p. 56.20 Manitius) left untranslated in *a* and for the following rephrasing of the opening clause (p. 56.14–15 Manitius): "Hinc fit ut nec ordo quinque parallelorum idem fit apud omnes" *(a);* "Unde nec ordo quinque parallelorum idem esse ubique terrarum poterit" *(b).*

i. Version a

Although this may have been written in 1542–43, the first year of an absence (1542–47) from the Collège de Guyenne at Bordeaux (L. Desgraves, *Elie Vinet, humaniste de Bordeaux (1509–1587): vie, bibliographie, correspondance, bibliothèque,* Travaux d'humanisme et Renaissance 156 [Geneva, 1977], 5–6), it could have originated during his early years (1539–1542) of teaching at that institution. Vinet's authorship is clear from the similarities with the later translation that carries his name and from the following considerations:

(1) the commentary accompanying *a* is reprinted in two editions of *b* (see below);

(2) in the commentary (fol. 17v) Ausonius, the

fourth-century poet who, like Vinet, was from Bordeaux, is described as "noster", and Vinet himself edited Ausonius in a frequently reproduced edition (Desgraves 58–64, nos. 28–47);

(3) in 1543 the printer of *a*, Jean de Loys de Thielt, also produced Vinet's edition of Theognis (Desgraves 91, no. 184), and the preface to that work shows (Desgraves 100–101) that Vinet was on close terms with him;

(4) in 1544 Vinet's French translation of the *Sphaera* appeared at Poitiers (Desgraves 87, no. 162 [no copies have been located]), and a revised edition was published at Paris in 1573 (Desgraves 87, no. 164 and Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle*, fascicule Cavellat, 250–251, no. 305); the French and Latin translations were undoubtedly part of a single project.

Procli Sphaera (ed. of Paris, 1543). [*Inc.*]: (fol. 2r; p. 42.10–15 Manitius) De axe et polis. Axis mundi vocatur mundi diameter circum quam convertitur mundus. Axis autem extremae duae partes poli mundi appellantur, quorum alter arcticus, alter antarcticus nominatur . . . / . . . [*Expl.*]: (fol. 14r; p. 42.4–8 Manitius) Ceterum stella haec [*sc.* Canopus] in Rhodo vix conspici potest, nisi forte ex editis locis; Alexandriae vero est prorsus conspicua. Nam quartam propemodum unius signi partem supra horizontem eminere intuentibus videtur. Finis Procli Sphaerae.

Editions:

(micro.) 1543, Parisiis (Paris): Johannes Lodoicus Tiletanus. For the accompanying commentary see II.f below. Fabricius-Harles 9.413 note p; Graesse 5.453; Brunet 4.896; Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle*, fascicule Jean Loys (Paris, 1995), 192, no. 245 (and ibid., no. 244 for the evidence for a Greek text published at the same time by this printer, of which no copies have yet been located); NUC. BNF; (ICU).

1553, Parisiis (Paris): Thomas Richardus. Contents the same as in the preceding entry, with the addition of a Greek text which is presumably the same text as that reported to have been published by Johannes Lodoicus at Paris in 1543; Richardus, in fact, married Lodoicus' widow and inherited his press (Renouard, *Répertoire des imprimeurs parisiens* [Paris, 1965], 286). NUC. Paris, Bibliothèque de la Sorbonne (Collection Victor Cousin); Aberdeen, University Library; Göttingen, Niedersächsische Staats- und Universitätsbibliothek; (MiU).

ii. Version b

This revision, which was probably made after Vinet's return to the Collège de Guyenne in 1547, may have been prompted by his use of version *a* in teaching. In most editions *b* was substituted for the section on astronomy in Vinet's translation of Michael Psellus' *Quadrivium*. Vinet explains that this change was owing to the inferior edition by Arsenius of Monemvasia (Aristoboulos Apostolides [1465–1535]) of the Greek text of the *Quadrivium*, first published at Venice in 1532 (not Rome, as Vinet claims) and reprinted at Paris in 1545 (Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle* 5.203, no. 217) in an edition that Vinet probably used. The title *Mathematicum breviarium* given to Psellus' work is also used in Vinet's *Schola aquitanica* (Bordeaux, 1583; ed. L. Massebieau [Paris, 1886], 26), the published curriculum of the Collège de Guyenne.

Prefatory letter (ed. of Bordeaux, [1553]). Elias Vinetus mathematum studiosis s. p. d. [*Inc.*]: (p. 3) Michaelem Psellum, insignem philosophum Byzantii, quae nunc Constantinopolis dicitur, ad annum a Christo nato 1060 floruisse legimus. . . . Mathematicum autem hoc Breviarium Arsenii peloponesiaci archiepiscopi studio et benignitati debemus, qui Romae id imprimendum nobis primus curavit. In qua editione scripsit incertum esse Pselline an Euthumii cuiusdam opus esset, plerisque tamen Pselli videri. Emisit vero ille interim tam mendosum, ut interpretem vix invenire potuerit. Ego enim diu expectavi ut illorum aliquis qui nostra aetate nullum non graecum auctorem latinum faciunt, eam operam et huic quoque navaret. Quod dum alius, quod equidem audierim, nemo aggreditur, me in eo siquid possem, ut periculum facerem, mei impulerunt, quibus commode instituendis nihil dum inveni hoc libello pulchrius . . . / . . . [*Expl.*]: (p. 4) Postremam autem partem [*sc.* Pselli], quae est De astronomia, cur non addiderimus duae sunt causae. Una, quod ipsa antiquis illis eget Graecorum tabulis, quarum rationes nostris temporibus non satis congruunt. Altera, quod ita sit mendosa praeter alias, ut ex ea me hauddum ex sententia explicare potuerim. Alio nobis est opus exemplari, si usquam invenire possumus emendatius; quod dum quaeratur, pro Pselli Astronomia Proculi Sphaeram dare visum est. Valete. Burdegalae, Idibus Ianuar(iis) 1553.

Text. Proculi Sphaera, Elia Vineto Santone interprete (ed. of Bordeaux, [1553]). [*Inc.*]: (revi-

sions italicized) (p. 67; p. 42.11–15 Manitius) Axis mundi vocatur mundi *diametros* circum quam convertitur mundus. Axis autem *extrema* poli mundi appellantur, quorum alter arcticus, alter antarcticus nominatur . . . / . . . [*Expl.*]: (p. 76; p. 42.4–8 Manitius) Canopus vocatur *quae* in Rhodo *quidem* vix conspici potest, nisi forte ex editis locis; Alexandriae vero est prorsus conspicua. Nam *illic septem prope partibus cum semisse egredi super terram cernitur.* Finis.

Editions:

[1553], Burdegalae (Bordeaux): Franciscus Morpanius. Michael Psellus, *Arithmetica, Musica, Geometria* followed by the *Sphaera.* No date is given, but 1553 is the date of the preface. Desgraves, *Elie Vinet,* 88, no. 167 gives 1554 as the date of the edition. Paris, Bibliothèque Mazarine; Bordeaux, Bibliothèque Municipale; BNF (Département de Musique).

[after 1552], Pictavis (Poitiers): Enguilbertus Marnefius. Contains only the translation of the *Sphaera.* Like the identical translation listed next, it is undated. Desgraves, *Elie Vinet,* 87, no. 163 dates both "vers 1567", but he does not note that they also contain the commentary (II.f below) published earlier with version *a.* The commentary was probably joined with version *b* some time after 1553, the date of the the first edition of *b.* The printers of the identical, and probably simultaneously published, edition listed next are not known to have been active until 1552 (A. de La Bouralière, *L'imprimerie et la librairie à Poitiers pendant le XVI^e siècle* [Poitiers, 1900], 34–54). Oxford, All Souls College, Codrington Library; Paris, Bibliothèque Mazarine.

[after 1553], Pictavis (Poitiers): Bocheti Fratres. Contents the same as in the preceding entry. Desgraves, *Elie Vinet,* 87, no. 163; *Bibliothèque Victor Cousin: Catalogue des ouvrages du XVI^e siècle,* vol. 1 (Paris, 1978), 169. Paris, Bibliothèque de la Sorbonne (Collection Victor Cousin).

1557, Parisiis (Paris): Gulielmus Cavellat. Contents the same as in the edition of Bordeaux, [1553]. Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle,* fascicule Cavellat, 118–19, no. 130; Desgraves, *Elie Vinet,* 88, no. 168; Adams P-2205; NUC (under Psellus). BL; BNF; Oxford, Bodleian Library; (NIC; NN; NNC; OkU; WU).

1592, Turnoni (Tournon): Claudius Michael. A separately paginated and titled edition of the translation of the *Sphaera* (Desgraves 87, no. 165) published at the same time as an edition of the translation of Michael Psellus, *Arithmetica, Musica, Geometria* (Desgraves, *Elie Vinet,* 88, nos. 169–170), the title page of which also includes the *Sphaera.* Adams P-2206; NUC. BNF; Oxford, Bodleian Library; Cambridge, Christ's College; (MiU).

1593, Lugduni Batavorum (Leiden): ex officina Plantiniana (Franciscus Raphelengius). Gr.-Lat. Adams P-2136; Desgraves, *Elie Vinet,* 87, no. 166; Hamel 2668; Houzeau-Lancaster 430 (where the date of publication is given as 1595). BL; Oxford, Bodleian Library; Cambridge, Trinity College.

1597, Witebergae (Wittenberg): Zacharias Lehman. Gr.-Lat. A slightly revised edition of Vinet's translation with no indication of authorship. It is not recorded in any bibliography. The title is identical with that of the edition of Thomas Linacre's translation published by the same printer at Wittenberg in 1591 (II.2 above). Wrocław, Biblioteka Uniwersytecka.

Edition containing the Prefatory letter only:

1977, Geneva: Droz. L. Desgraves, *Elie Vinet, humaniste de Bordeaux (1509–1587): vie, bibliographie, correspondance, bibliothèque,* 110.

Biography:

CTC 3.295–96 and 4.211.

5. Martinus Rakocius Turociensis

The only extant verse translation of the *Sphaera* was completed at Wittenberg by November 1555 by a Hungarian poet, Martinus Rakocius Turociensis (Martinus Thuroczi of Rákóc), and published there in 1556. Thuroczi was probably a student at the time, and so his translation into hexameters is possibly a versification of one of the astronomical textbooks used at the University of Wittenberg. Both Kaspar Peucer (1525–1602) and Thuroczi contributed poems in elegiac couplets dedicated to the Lutheran pastor Valentine Wagner (on whom see Horányí 3.482–83). This suggests a link between Peucer and Thuroczi, and, given the difference in their ages, Peucer may have been Thuroczi's teacher in astronomy.

Dedicatory poem (ed. of Wittenberg, 1556). Ad clarissimum virum D. Valentinum Vagnerum, pastorem ecclesiae coronensis, magistrum artium. Elegia nuncupatoria Martini Rakocii Turociensis. [*Inc.*]: (fol. aiii^r)

Accipe deductum romana in carmina Proclum,
o Vagnere chori praeses apollinei . . . / . . .

[*Expl.*]: (fol. aiv^{v})

Sic peragas aevum dulci cum coniuge felix,
sic similes possis progenerare tui.

Vitembergae mense Novemb. anno 1555.

Sphaera Procli Diadochi ex graeco facta latina carmine heroico a Martino Rakocio Turociensi (ed. of Wittenberg, 1556).

Preface. [*Inc.*]: (fol. biv)

Caelorum varias partes et climata mundi,
nominibus iunctis, species viresque locumque
. . . / . . .

[*Expl.*]:

Ipsa mone, quaeso, sine te mihi carmen inane
obstrepet, oranti tua tu mihi carmina dicta.

Translation (ed. of Wittenberg, 1556). [*Inc.*]: (fol. biv; p. 42.10–13 Manitius) De Axe.

Dimetiens totum penetrat quae linea mundum,
quamque agitur circum sphaeralis machina
mundi . . . /

. . . [*Expl.*]: (fol. d2v; p. 42.3–8 Manitius)

Ast Argo in summa radiantis stella Canopi est,
haec fugit in Rhodio speculantum lumina tractu,
aut aliqua certe tantum de rupe videtur.
Verum in Alexandria clara sic cernitur urbe
Ut super emineat, signi sub sole quadrante.

Edition:

1556, Wittebergae (Wittenberg): Johannes Crato. Hamel 2663 (name of translator omitted). Dresden, Sächsische Landesbibliothek.

Biography:

This can be based only on the evidence of Martinus Thuroczi's published works. The earliest of these is the translation of the *Sphaera* described above, while the latest is dated to 1577. If Thuroczi was a student at Wittenberg around 1556, he was probably born no later than 1535. His place of birth, which became his Latinized surname, was Rákóc, the modern Rakovec nad Oudavou. An ordained Lutheran pastor, he was undoubtedly drawn to Wittenberg by the presence there of Philipp Melanchthon. Thuroczi died no earlier than 1597 since in that year he wrote poems against Istvan Beythe (see Zoulai).

Works:

Elegiae et epigrammata (Prague, 1556) (copy at Vienna, Österreichische Nationalbibliothek); *Descriptio urbis Lunae Boiemicae facta elegiaco carmine* . . . (1558) (copy at Erlangen, Universitätsbibliothek); *Ad serenissimum principem et dominum Maximilianum . . . regem Bohemiae* (Vienna, 1560); *Poemata* (Prague, 1569); *De magistratu* (Leipzig, 1574) (copies at Budapest, Országos Széchényi Könyvtár [National Széchényi Library]). He also wrote Latin hymns (see Bucsay, cited below).

Bibliography:

A. Horányi, *Memoria Hungarorum et provincialium scriptis editis notorum,* vol. 3 (Vienna, 1777), 138–39; J. Szinnyei, *Magyar írók élete és munkái,* vol. 11 (Budapest, 1906), 493–94; K. Szabó, *Régi magyar könyvtár,* vol. 3 (Budapest, 1896), 494; M. Bucsay, "Rákóci Márton latin hymnusai a straszburgi Szent Tamás Levéltárban," *Egyháztörténet* 1 (1943) 110–13; J. Zoluai, *A magyarorszápi protestantizmus hora 1565– töl 1600–ig* (Budapest, 1977), 263. (Bibliographical information for this entry was provided by Prof. Marianna D. Birnbaum [University of California, Los Angeles] and Dr. Ágnes Wojtilla-Salgó [Budapest, Országos Széchényi Könyvtár]).

6. Georgius Henischius

The translation by Georgius Henischius (Georg Henisch) of the *Sphaera* was first published at Augsburg in 1575 just before his appointment as professor of logic and mathematics at that city's Gymnasium St. Anna. In the revised version with a commentary, published in 1609, he mentions his lectures on the treatise (II.j below). By then Edo Hilderich's 1591 edition of Geminus (I.4 above) had appeared, and Henisch uses it *inter alia* to revise the *explicit* (see below) and the commentary of 1609 at p. 195.

Dedicatory letter (ed. of Augsburg, 1575). Nobilibus et magnificis viris, virtute, sapientia et auctoritate praestantibus, Hainrico Rechlingero, Christophoro Peutingero, duumviris et consulibus ac senatui inclitae Augustanae Reipublicae, dominis ac patronis summa observantia colendis, felicitatem perpetuam precatur. [*Inc.*]: (fol. a2r) Mirabimini procul dubio, amplissimi duumviri, prudentissimi consules ac senatores, quibus adductus impulsusque causis haec astronomicarum institutionum schemata vobis offerre

augustoque vestro dedicare nomini cogitaverim, cum et exigua angustaque sint et aliis fortassis dedicanda offerendaque videantur . . . / . . . [*Expl.*]: (fol. a4v) Dabo certe quidem operam ut et me non indignum vestro patrocinio et (si fieri possit) non ingratum fore experiamini. Bene feliciterque valete. Perscripsit Augustae Vindelicorum mense Iunio anno MDLXXV. V. A. deditissimus Georgius Henischius Bartfeldensis Publicus Professor Mathematum.

Procli Sphaera in latinam linguam conversa (ed. of Augsburg, 1575). [*Inc.*]: (fol. g3r; p. 42.10–15 Manitius) Cap. 1. De axi et polis. Axis mundi appellatur dimetiens eiusdem circa quam convertitur. Porro polorum seu verticum alter appellatur arcticus sive boreus, alter austrinus . . . / . . . [*Expl.*]: (fol. i3r; p. 42.4–8 Manitius) Hic [*sc.* Canopus] in Rhodo aegre conspicitur aut omnino ab editis locis potest videri; in Alexandria vero prorsus non cernitur (*in Alexandria vero vere cernitur* [ed. of Augsburg, 1609, p. 21]). Nam vix quarta pars signi ab horizonte elevata apparet.

Editions:

1575, Augustae Vindelicorum (Augsburg): Michael Mangerus. Gr.-Lat. Preceded by *Tabulae institutionum astronomicarum,* i.e., lists of terminology used in astronomy, geometry, and geography later translated into English by Frances Cooke (London, 1591); see STC 13070. Adams H-224; Hamel 1405; H. Stevenson, Jr., *Inventario dei libri stampati palatino-vaticani,* vol. 1.1 (Rome, 1886), no. 614; Zinner 2705; VD P-4972; NUC. BL; Oxford, Bodleian Library; Paris, Bibliothèque de l'Arsenal; Paris, Bibliothèque Mazarine; (MB; NN).

1609, Augustae Vindelicorum (Augsburg): David Francus. Gr.-Lat. Graesse 5.454 and Zinner 4312 erroneously report that Henisch's commentary in this edition (II.j below) was also published at Rostock in 1611 along with a translation by Johannes Laurenberg; see p. 14 n. 47 above. Hamel 1406; NUC. BL; Oxford, Bodleian Library; Paris, Observatoire de Paris; (MB; MH; MiU; NcD; WU).

Biography:

Georg Henisch was born in Bartfeld (then in Hungary) in 1549 and died at Augsburg in 1618. His early education was at Linz and then at the Universities of Wittenberg (1566–70), Leipzig, Paris, and finally Basel, where he obtained a medical doctorate in 1576. In the same year Hieronymus Wolf (1516–80; CTC 2.90) arranged his appointment as professor of logic and mathematics at the Gymnasium St. Anna at Augsburg, where he remained until his death. Henisch taught the classical languages, Hebrew, mathematics, and astronomy, and he also maintained a medical practice. From 1580 to 1593 he served as joint rector.

Works:

Henisch was a prolific author in a number of fields. His major work in medicine was *Enchiridion medicinae* (Basel, 1573); in mathematics *De numeratione multiplici* (Augsburg, 1605) and *De asse* (Augsburg, 1606); in geography *Epitome geographiae* (Augsburg, 1577). His treatise on the comet of 1577 (Zinner 2827) had the distinction of being dismissed by Tycho Brahe. Between 1583 and 1618 he published numerous astrological calendars (see Zinner). A pioneer in German lexicography, he oversaw the appearance of the first volume of a German dictionary (1616), and he led the way in another area by preparing a catalogue of the public library at Augsburg.

Bibliography:

Jöcher 2.1489–90; *Biographie universelle* 19.111; *Nouvelle biographie générale* 23.931–32; NDB 8.524–25; *Die Matrikel der Universität Basel,* vol. 2 (Basel, 1956), 223; L. Thorndike, *A History of Magic and Experimental Science,* vol. 6 (New York, 1941), 142–43; L. Lenk, *Augsburger Burgertum im Späthumanismus und Frühbarok (1580–1700)* (Augsburg, 1968), 175–82; S. Corradino, "La formalizzazione operativa nel *De numeratione multiplici* di G. Henisch," *Rinascimento,* 2d Ser., 1 (1971) 223–43.

7. Anonymus Monacensis

This translation is extant, as far as can be determined, in a single printed copy (A.lat.b.2137f/4) at the Bayerische Staatsbibliothek, Munich, with no indication of authorship, printer, or date and place of publication. The pagination suggests that such information was intentionally omitted, and hence the volume may be a private publication. The translation was probably not completed before the mid-1520s since the *Sphaera* is presented in fifteen chapters (an innovation introduced early in that decade and noted in II.2 above under *Editions,* "1523, Basileae") rather than the sixteen chapters found in the ear-

liest editions. Moreover, the *explicit* reflects the illogical reading ἀφανής (p. 42.7 Manitius and II.2 above) found in editions of the Greek text before 1531. But it is impossible at present to assign a date with certainty, and so this translation is added here as an appendix to the chronological listing. The entry in VD proposes a date "um 1540".

Procli Sphaera (Munich copy, undated and without location). [*Inc.*]: (fol. a2r; p. 42.10–15 Manitius) De axe et eius extremis punctis quae polos vocamus. I. Quem axem mundi vocamus est dimetiens ipsius universi, circa quem id convertitur. Termini vero axis dicuntur poli mundi. Polorum autem alter septentrionalis est, alter meridionalis . . . / . . . [*Expl.*]: (fol. b6v; p. 43.3–8 Manitius) In extrema gubernaculi Argus parte admodum insignis stella Canopus appellatur. Haec in Rhodo vix omnino conspicitur aut certe, si conspicitur, ex editissimo loco id fieri necesse est. In Alexandria prorsus cernendi sensum fugit, quod istic vix quarta signi pars supra horizontem elevata sit. Finis.

Edition:

(micro.) Undated; no printer or location. VD P-4978. Munich, Bayerische Staatsbibliothek (A.lat.b.2137f/4).

COMMENTARIES

a. Georgius Collimitius

In 1511 Georgius Collimitius (Georg Tanstetter von Thannau, ca. 1482–1535; CTC 4.379–80) prepared an edition of Thomas Linacre's translation of the ps.-Proclan *Sphaera* for students at the University of Vienna, where he had taught since 1503. He added a brief appendix "De ortu et occasu siderum ut est apud poetas" (fols. b2v–b3v) and, in a dedicatory letter to Joachim Vadianus (Joachim von Watt; CTC 5.271–72), Tanstetter referred in the following passage to a longer treatment of the *Sphaera* in preparation: "Commentariolum in Sphaeram, quod iam sub incude malleolis nostris effigiatur, propediem absolute fabrefactum in multorum manus legendum emittemus" (ed. of Vienna, 1511; fol. a2r). No edition of this commentary has been located. Tanstetter's notes on another elementary astronomical work, book 2 of Pliny's *Naturalis historia,* were edited by Vadianus some years after their composition and published with Jakob Ziegler's commentary in 1531 (see CTC 4.378–79). His notes on the ps.-Proclan *Sphaera* that were in manuscript form around 1511 do not seem to have been published, and the codex itself has not been located.

b. Johannes Stoeflerus

The major commentary of Johannes Stoeflerus (Johann Stöffler) was based on Linacre's translation and published in 1534, three years after Stöffler's death, by Ludwig Schradin, an official at the University of Tübingen. Based on Stöffler's two decades of teaching at Tübingen, it offers detailed exegesis and remarkably extensive lists of parallels from ancient, medieval, and contemporary sources. Stöffler does not seem to have known Greek, but he shows philological erudition, for example (fol. 57v), in a comparison of Giorgio Valla's partial translation of the *Sphaera* (II.1 above) with Linacre's version (II.2 above) for the purpose of divining their manuscript sources. He also tries to salvage the *explicit* of Linacre's translation. Although designed for students of astronomy, the commentary displays humanist features in its citations from ancient poets and philosophers and in the opening apologia for astronomy based on Aristotelian texts (fols. 1v–2r).

Stöffler's work was widely known. Robert Recorde (*The Castle of Knowledge* [London, 1556], 98) recommends it, and Elie Vinet cites it in his own commentary (II.f below). Stöffler's commentary appears in inventories of books by English scholars in the sixteenth century; see A. B. Emden, *A Biographical Register of the University of Oxford* (Oxford, 1974), 714 and E. S. Leedham-Green, *Books in Cambridge Inventories,* vol. 2 (Cambridge, 1986), 643.

The dedicatee, Duke Ulrich of Württemberg (1487–1550), had regained his territory in 1534 (the date of the commentary's publication), fifteen years after his expulsion by the Swabian League.

Dedication (ed. of Tübingen, 1534). Illustrissimo Principi et Domino D. Hildricho, Duci Wirtembergensi et Tekkensi, Comiti Montisbelgardorum etc., studiorum maecenati ac domino pientissimo suo, Luitovicus Schradinus deditissimus s. p. d. [*Inc.*]: (fol. 2r) Spectata sane a maioribus ratione receptum videmus, princeps illustrissime, ut ii qui seu studiorum suorum specimen seu facinus egregium aliquod edituri sunt, vigilanti animo semper optimum quemque regem aut principem optimatemve selectum habent, cuius auctoritate arbitratuque id, quicquid fuerit operis, vel in lucem proferunt vel alio-

qui animosiores in harenam descendunt. Haud ita dissimili studio, utinam et pari (quod et spero) successu, gravissimos M. Iohannis Stoefleri Iustingensis in Procli Sphaeram commentarios clarissimo tuo nomini ab auctore ipso revera iam tum dicatos, nuper e typis quam emendatissime excudendos, diligentissimorum quorundam commilitonum opera adiutus, curavi . . . / . . . [*Expl.*] (fol. 3r) Proinde illustrissime princeps, tuae humanitatis fuerit hunc librum varia eruditione refertissimum non solum contra invidos auctoritate gravitateque, qua prae ceteris plurimum vales, tueri, verum etiam insignem academiam tubingensem tuam (apud quam laudatissimus ille patruus tuus princeps duxque Eberhartus Wirtembergensis etc. mire animum oblectavit suum tuque indies praeterea eandem adaugere cogitas) ob venerandam senis huius memoriam, magnifice, ut assoles, fovere. Hinc fiet ut et eruditorum copiam virorum in patria tibi pares patriamque terram tum pia, tum prudenti administratione pacatam perpetuo conserves. Vale, cumque Christofero filio tuo expectationis maximae ac indolis optimae principeque dignissimo (-ssima *ed.*), duce illustrissimo nostro, Christo annuente, feliciter vive. Stuggartiae, pridie Calend. Septembres anno redempti orbis MDXXXIIII.

Preface (ed. of Tübingen, 1534). In Procli Diadochi Sphaeram Ioannis Stoefleri Iustingensis commentarius absolutissimus incipit. [*Inc.*]: (fol. 1r) Contextus sphaerae huius inscriptio *Procli Diadochi Sphaera.* Proclos plures legimus, auctoribus Suida et Philostrato. Quorum primus Proclus Naucratita. . . . (fol. 1v) Non sit obsecro, candidi auditores, libellus nostri Procli, quem interpretari polliciti sumus, vobis contemptui et levis existimationis ob id quod parvulus est. . . . Sane parvulus est, sed nobilis et pretiosus admodum. In eo enim (ut unico me verbo expediam) sunt radices, principia et fundamenta, quibus posthabitis, periclitabuntur omnes ingenuae artes et praecipue astronomia . . . / . . . [*Expl.*]: (fol. 2r) Modo autem procedendi utitur mathematico: ut est, videte in Almagesto Ptolemaei. Et ideo certissima est praedicanda.

Commentary (ed. of Tübingen, 1534). [*Inc.*]: (fol. 2v) De Axi et Polis. *Axis mundi* etc. (p. 42.10–12 Manitius). Principio contuendum (auctore Cleomede primo de meteoris [= Cleom., *Caelestia* 1.1.3 Todd] *mundus* dicitur multis modis. Primo mundus est ex caelo terraque necnon naturis . . . / . . . [*Expl.*]: (fol. 133r) *In Alexandria vero prorsus non cernitur, utpote vix quarta signi portione supra horizontem extante* (p. 42.6–8 Manitius). Hic *prorsus* adverbium haud pro "omnino" accipitur propter contra<di>ctionem vitandam, sed pro "non certe" aut "non vere". Ita *prorsus* non pro "vere" sumitur, ac si diceret *In Alexandria vero vere cernitur, utpote vix* etc. . . . (fol. 133v) Patrocinatur vastitas caeli immensa discreta altitudine in duo atque septuaginta signa. Dedit Deus optimus maximus his quoque finem.

Edition:

1534, Tubingae (Tübingen): Hulderrichus Morhard. Stöffler's commentary on lemmata from Thomas Linacre's translation (II.2 above). Graesse 5.454; Adams S-1897; Hamel 3155; VD P-4977; H. Stevenson, Jr., *Inventario dei libri stampati palatino-vaticani,* vol. 1.2 (Rome, 1886), no. 2275; *L'humanisme allemand,* Colloque international de Tours 18 (Paris, 1979), 617 and no. 41; NUC (under Stöffler). BL; BNF; (DLC; ICN; MH; MnU; NIC; NN; NNC; NNH; RPJCB).

Spurious edition:

1547, Parisiis (Paris): Christianus Wechelus. Although Graesse 5.454 reports that Stöffler's commentary was reprinted in this edition, it contains only Thomas Linacre's translation; see II.2 above.

Biography:

Johannes Stoeflerus (Johann Stöffler) was born at Justingen in Swabia on 10 December 1452 and died at Tübingen in 1531. After his early education at Blaubeuren, he entered the University of Ingolstadt in 1472 and graduated *magister* in 1477. He served at Justingen as parish priest from 1477 to 1507. After four years of study at Tübingen (1507–11) he was appointed to a chair of mathematics there, which he held until his death. He served as rector of the University in 1522. His most celebrated pupils were Philipp Melanchthon (1497–1560), who was at Tübingen between 1512 and 1518, and the Hebraist Sebastian Münster (1489–1552).

Works:

Stöffler, a versatile and prolific writer on astronomy and astrology, was skilled in the construction of clocks. His most widely reproduced work was his *Elucidatio fabricae ususque astrolabii* (Oppenheim, 1513, 1524; Paris, 1553, 1585; Cologne,

1594), also translated into French (Paris, 1560). He wrote a major treatise on the calendar (Oppenheim, 1518, and 1522 in a German translation), an *Almanach* (Ulm, 1499), and *Tabulae astronomicae* (Tübingen, 1514). Some works are still unpublished (see Kristeller, *Iter* 3.574a, 644a), the most significant being lectures on Ptolemy's *Geography* (Kristeller, *Iter* 3.721a).

Bibliography:

Jöcher 4.852–53; ADB 36.317–18; *Biographie universelle* 40.268–69; *Nouvelle biographie générale* 44.513–15; Schottenloher, *Bibliographie* 2.305–306; F. Seck, G. Krause, and E. Stohr, eds., *Bibliographie zur Geschichte der Universität Tübingen* (Tübingen, 1980), 498–99; R. Roth, ed., *Urkunden zur Geschichte der Universität Tübingen aus den Jahren 1476 bis 1550* (Tübingen, 1877), 568, 625; *Die Matrikeln der Universität Tübingen,* vol. 1 (Stuttgart, 1906), 160; "Johann Stöffler," *Contemporaries of Erasmus* 3.288–89 (I. Guenther).

J. C. Moll, *Johann Stöffler von Justingen: ein Characterbild aus dem ersten Jahrhundert der Universität Tübingen,* Schriften des Vereins für Geschichte des Bodensees 8 (Lindau, 1877); J.-B.-J. Delambre, *Histoire de l'astronomie du moyen âge* (Paris, 1819; rpt. New York and London, 1965), 373–76; J. Haller, *Die Anfänge der Universität Tübingen 1477–1537,* 2 vols. (Stuttgart, 1927–29; rpt. Darmstadt, 1970), 1.263–76 and 2.100–107.

There is an unpublished life of Stöffler from the last decade of the sixteenth century by Bernardino Baldi of Urbino (1533–1617); see E. Narducci, "Vite inedite di matematici italiani scritte da Bernardino Baldi," *Bullettino di bibliografia e di storia delle scienze matematiche e fisiche* 19 (1886) 344.

c. Jacobus Zieglerus

Jacobus Zieglerus (Jakob Ziegler) must have composed his scholia on Thomas Linacre's translation between 1523 and 1527 since he uses the revision of both the Greek text and Latin translation first published at Basel in 1523 (see II.2 above) and dedicates his work to Paulus Bombasius who died in 1527 in the sack of Rome ("Bombace [Bombasius], Paolo," DBI 11.373–76 [E. Mioni]). Hence the scholia were written while Ziegler was in Italy; see K. Schottenloher, *Jakob Ziegler aus Landau an der Isar* (Münster i. W., 1910), 355–58 and 356 n. 10 where 1536 is shown to be the correct date of publication. Text, translation, and notes (pp. 22–60) are preceded by Ziegler's treatise *De solidae sphaerae constructione* (pp. 2–21) and followed by his *De canonica per sphaeram operatione* (pp. 61–84). They were conceived as a unit since the Dedication precedes the first of these items.

The fifty-six unnumbered notes focus on spherical geometry. In his commentary on book 2 of Pliny's *Naturalis historia* (Basel, 1531), Ziegler had criticized the inadequacies of humanists and philologists (see CTC 4.375–76). His scholia certainly contain very few references to ancient authorities (Ptolemy on pp. 44, 51, 53, 58; Strabo on pp. 27, 47) and none to modern works. The text is corrected on p. 44 (see Todd, "The Manuscripts," 66 n. 15) and p. 60 (see the *explicit* below). On p. 11, Linacre's translation of Geminus p. 46.26–27 Manitius is radically revised.

Dedication (ed. of Basel, 1536). Iacobus Zieglerus Landavus Bavarus Paulo Bombasio Bononiensi s. d. [*Inc.*]: (p. 1) Cum in Sapheam commentarer [see Schottenloher, *Jakob Ziegler,* 12–16, 388, 392–94], pollicitus sum me etiam scripturum in Sphaeram Archimedis, quam ego ei auctori tribuo, quoniam habeo persuasum mihi Archimedem primum vel constituisse hanc quam solidam dicimus, vel collocasse in eam stellas secundum canonicas radices. Eius ergo constructionem daturus praesenti opera, fueram additurus etiam isagogas caelitus apparentium rerum circum terrenam habitationem. Verum quia veteres cum alii tum Proclus, quorum studiis conferre me non audeo, versati in eodem proposito sunt, ad veteres eam ego partem remisi desumpsique Proclum qui hanc absolvat. Addidi tamen locis opportunis scholia adduxique sensa auctoris ad designatorum in sphaera circulorum exemplum manifestum. Qua demum indicatione absoluta, subiunxi quasi coronidem paucis capitibus quemadmodum canonica ratio caelestium motuum repraesentetur in proposita sphaera, in qua etiam ipsi operemur eosdem effectus concordi symbolo et quo eos operatur in caelo potestas naturae. Hanc lucubrationem tibi nuncupavi, Paule Bombasi, amico bene merenti. Neque veritus sum quod abiecturus fores opellam hanc, quamvis (p. 2) brevem et tua in me benevolentia longe inferiorem, immo ea vel auctore ipso placebit vel exemplo vel potius utroque. Auctore, quia hanc tractavit Proclus, atque is platonicus, quia Aratus, in quem commentari non est dedignatus mathematicus summus Theon Alexandri-

nus. Exemplo, quia Cicero et Germanicus, is imperator et familiae Augustae, ille orator consularis, Phaenomena latinitate donarunt; quia Linacrus traductionem hanc viro principi dedicavit Arcturo, adeo nulla magna ingenia existimarunt ista studiis suis indigna. Sed praestat omnibus candor tuus. Is in gradu retinebit opellam hanc et in numero aliquo habebit perficietque ut agentem hoc tuo nomine suscipias et ames quem amare hactenus vel nihil agentem potuisti.

Scholia (ed. of Basel, 1536). [*Inc.*]: (p. 23) *Axis* (p. 42.11 Manitius). Axis mundi est ut linea AB transmissa imaginarie per sphaeram. Huius axis summa signa sunt AB et quidem B polus borealis, A australis . . . / . . . [*Expl.*]: (p. 60) *Hic in Rhodio* (p. 42.4–5 Manitius). . . . Ex hac ostensione convincitur error loci praesentis: non enim "prorsus" [*sc.* Canopus] non cerni poterit Alexandriae qui Rhodi cernitur, quin illic magis cernetur quanto et maior est stellae altitudo. Quarta autem pars signi sunt gradus septem et semis. Haec lectio sicut est aliena a potestate sphaerae, sic istud fuerit alienissimum ut lapsum tam manifestum tribuamus auctori. Nos adiectum dicimus a lectore quopiam parum cauto. . . . At sidus quod in summo Argus gubernaculo fulget Canopus nominatur. Finis Sphaerae Procli.

Manuscript:

(micro.) Florence, Biblioteca Riccardiana, 742 (olim L III 49), s. XVI (Kristeller, *Iter* 1.179a). A transcription from the printed edition (Basel, 1536) of part of the contents of the *Sphaerae . . . ratio,* with the Dedication (fol. 1r–v) and Linacre's translation and Ziegler's scholia (fols. 6v–20v).

Manuscript containing the Dedication only:

(*) Bologna, Biblioteca Universitaria, 2948, s. XVIII, vol. 8, pp. 165–166, with a description of the edition (Kristeller, *Iter* 2.498a–b).

Edition:

1536, Basileae (Basel): [Johannes] Valderus. Gr.-Lat. Ziegler's scholia on Thomas Linacre's translation II.2). The complete title is *Sphaerae atque astrorum caelestium ratio,* and the volume also contains Aratus' *Phaenomena* with Theon's commentary. Adams S-1577; Hamel 3098; Fabricius-Harles 4.100; Panzer 6.315; Schottenloher, *Jakob Ziegler,* 386; Zinner 1653; VD P-4966 (= Z 440); NUC (under *Sphaerae . . . ratio*). BL; BNF; Manchester, John Rylands University Library; (CtY-M; ICU; MiU; NN; NNC; RPB; RPJCB).

Doubtful editions:

1531, Norimbergae (Nuremberg). Cited by Houzeau-Lancaster 129, 393 and Zinner 1458.

1531, Basileae (Basel). Cited by Houzeau-Lancaster 393 and de la Lande 48. A 1531 Basel edition containing Ziegler's commentary on book 2 of Pliny's *Naturalis historia* (see Schottenloher, *Jakob Ziegler,* 381–83 and CTC 4.320, 374–78) may have been confused with the 1536 edition.

Biography:

CTC 4.377–78. Add to the *Bibliography: Biographie universelle* 45.514–15; "Jakob Ziegler," *Contemporaries of Erasmus* 3.474–76 (I. Guenther and P. G. Bietenholz).

d. Georgius Rheticus

Between 1536 and 1538 Georgius Rheticus (Georg Joachim Rheticus) taught elementary mathematics and geometry at the University of Wittenberg, where the statutes prescribed the ps.-Proclan *Sphaera* (see above, p. 12 n. 31). Notes from his lectures on this work taken by Nikolaus Gugler, a student from Nuremberg, survive as brief summaries of each chapter (fols. 4or–46v), along with an appendix *De ortu et occasu stellarum* (fols. 46v–57r). There are no references to ancient or modern authorities and no diagrams or tables. A few phrases are in Greek. Rheticus' course, however, may not have been as perfunctory as this student's record of it.

The digest of Sacrobosco's *Sphaera* included in the same manuscript (fols. 1r–36v) is not attributed to Rheticus, although he used this more popular textbook while at Wittenberg (see Rosen, cited below).

Commentary (Paris, Bibliothèque Nationale de France, lat. 7395). (fol. 39r) Annotata in Sphaeram Procli a magistro Joachimo mathematicae professore. [*Inc.*]: (fol. 40r) *Quae sunt consideranda in singulis circulis coelestibus* (ad cap. 5, p. 42.24ff. Manitius). In consideratione cuiuslibet circuli caelestis diligenter perpendendum primo quando imaginatione describatur in caelo . . . / . . . [*Expl.*]: (fol. 46v) (ad cap. 3, pp. 40.21–42.3 Manitius) Stella in ore Maioris Canis est omnium aliarum stellarum fixarum maxima. Et cum sol ad illam stellam pervius *(corr.)* sit, est maximus aestus quia illa stella auget colorem, et dicuntur isti dies caniculares ab illa stella.

Manuscript:

Paris, Bibliothèque Nationale de France, lat. 7395, fols. 39r–46v (*Catalogus manuscriptorum Bibliothecae Regiae Parisiensis,* vol. 4 [Paris, 1744], 351; K. H. Burmeister, *Georg Joachim Rhetikus 1514–1574: eine Bio-Bibliographie,* vol. 2 [Wiesbaden, 1968], 18). Burmeister suggests that this manuscript originally belonged to Petrus Ramus.

Biography:

Georg Joachim Rheticus was born Iserin in Feldkirch, Austria in February 1514 and died at Cracow in 1574. His father's execution for sorcery in 1529 precipitated changes in his name. After studying briefly at Zurich, he matriculated at the University of Wittenberg in 1532 and took the degree of *magister* in 1536. After teaching there for two years he travelled widely. His visit to Copernicus led to the publication in 1539 of a report about the *De revolutionibus.* Rheticus returned to Wittenberg for the year 1541–42 and then moved to the University of Leipzig where he taught from 1542 to 1545 and again from 1548 to 1551. In between he suffered a breakdown in health and began medical studies at Zurich. After a precipitous second departure from Leipzig, Rheticus resumed his studies at the University of Prague and then practiced medicine at Cracow for the last two decades of his life.

Works:

Rheticus published some mathematical treatises during his lifetime, but his major work on trigonometric functions was eventually completed and published posthumously by L. Valentine Otho in 1596. For a complete inventory of his numerous and varied writings, see Burmeister (cited below).

Bibliography:

"Rheticus, George Joachim," DSB 11.395–98 (E. Rosen); K. H. Burmeister, *Georg Joachim Rhetikus 1514–1574: eine Bio-Bibliographie,* 3 vols. (Wiesbaden, 1967–68); E. Rosen, "Rheticus as Editor of Sacrobosco," in *For Dirk Struik. Scientific Historical, and Political Essays in Honor of Dirk J. Struik,* ed. R. S. Cohen, J. J. Stachel, and M. W. Wartofsky, Boston Studies in the Philosophy of Science 15 (Boston and Dordrecht, 1974), 245–48; R. S. Westman, "The Melanchthon Circle, Rheticus, and the Wittenberg Interpretation of the Copernican Theory," *Isis* 66 (1975) 165–93 at 181–90.

e. Jacobus Tusanus

The notes of Jacobus Tusanus (Jacques Toussain) on the ps.-Proclan *Sphaera* are based on his lectures as a *lecteur royal* of the so-called Collège Royal at Paris, a position which he held from 1530 until his death in 1547. Published anonymously in 1543, they appeared with attribution to Toussain in 1547 and were accompanied by Thomas Linacre's Latin translation, which was slightly revised on the basis of the Greek text published first at Paris in 1531 (see II.2 above). The lectures reflect Toussain's wider interest in ancient cosmology; he edited Guillaume Budé's translation of the ps.-Aristotelian *De mundo* (Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle* 2.227, no. 548) as well as the ps.-Philonian *De mundo* (Renouard 5.106–107, no. 88 and 125, no. 103) and Ocellus Lucanus' *De universi natura* (Renouard 5.104, no. 84 and 125, no. 103).

Toussain's commentary may be described as humanist since most of the thirty-eight parallel passages are drawn from ancient authors, notably Ovid, Virgil, and Hyginus' *De astronomia.* There are only two references to a contemporary textbook, namely, the *Cosmographia* of Peter Apian (1495–1552). As Grafton (see below) suggests, some notes may be derived from Johann Stöffler's commentary (II.b above) but most reflect Toussain's philological interests. There are variant Latin translations for Greek terms, etymologies, and definitions similar to those found in Toussain's *Lexicon graecolatinum* (first published Paris, 1552), which frequently refers to the *Sphaera.* Textual criticism is absent presumably because the published notes are only a selection from the original lectures.

Commentary (ed. of Paris, 1547). Adnotatiunculae in Sphaeram Procli ex praelectionibus Iacobi Tusani regii graecarum litterarum professoris exceptae. [*Inc.*] (fol. b2v) Definitio sphaerae ex cosmographico libro Petri Appiani mathematici. Σφαῖρα est solidum quiddam, una superficie contentum, in cuius medio punctum est, a quo omnes lineae ad circumferentiam ductae sunt aequales. . . . Cap. 1. Ἄξων καλεῖται (p. 42.11–12 Manitius). Ἄξων, -ονος axis. Item mundi linea dimetiens apud Aristotelem De mundo [391b25–26] et tabula in qua leges scribebantur, ut legitur apud Plutarchum in Numa [*cf.* Plut., *Vita Sol.* 25.1] . . . / . . . [*Expl.*] (ed. of Paris, 1543): (fol. civ) Latitudo vero loci est arcus meridiani inter zenith et aequatoris circulum contentus. Finis. / [*Expl.*]

(ed. of Paris, 1547): (fol. b6r) Κάνωβος (3.15; p. 42.4 Manitius). A Canobo Menelai gubernatore qui in Aegypto periit, a cuius nomine ibidem urbs Κάνωπος dicta, β in π mutata, unde Canopitae et Nili ostium canopicum. Finis.

Editions:

1543, Parisiis (Paris): Jacobus Bogardus. Gr.-Lat. Thomas Linacre's translation (II.2); Tusanus' authorship of the notes not indicated. Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle* 5.173–74, nos. 163–164; Adams P-2131 (notes of Tusanus not recorded); Graesse 5.453. Cambridge, Trinity College; Madrid, Biblioteca Nacional; Göttingen, Niedersächsische Staats- und Universitätsbibliothek.

1547, Parisiis (Paris): Jacobus Bogardus. Gr.-Lat. Contents the same as in the preceding entry, with Toussain's notes (which have been slightly revised and abbreviated) identified on the title pages of both the Greek text and Linacre's translation; see the *explicit* cited above. Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle* 5.231–32, nos. 264–265. Oxford, Bodleian Library; Manchester, John Rylands University Library (Christie Collection).

1553, Parisiis (Paris): Martinus Iuvenis. Contents the same as in the preceding entry, except that the Greek text is omitted. BL; BNF; Manchester, John Rylands University Library; Paris, Bibliothèque Sainte-Geneviève.

1556, Parisiis (Paris): Martinus Iuvenis. Gr.-Lat. Contents the same as in the edition of Paris, 1547. Manchester, John Rylands University Library; BNF (without the Greek text); Oxford, All Souls College, Codrington Library (Greek text only).

1560, Lutetiae (Paris): Gulielmus Cavellat. Contents the same as in the edition of Paris, 1553. Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle,* fascicule Cavellat (Paris, 1986), 144, no. 163; Bibliotheca Osleriana 3741; NUC. BNF; Paris, Bibliothèque Mazarine; (CU; IU).

1562, Lutetiae (Paris): Gulielmus Cavellat. Contents the same as in the preceding entry. Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle,* fascicule Cavellat, Marnef et Cavellat (Paris, 1986), 155, no. 179bis. Paris, Bibliothèque de la Sorbonne (Collection Victor Cousin).

Associated editions of the Greek text:

(The following editions have "ex praelectionibus Iacobi Tusani" on the title pages of Greek texts. No complementary publications of Linacre's translation or Toussain's commentary have been located).

1557, Parisiis (Paris): Martinus Iuvenis. Graesse 5.454; Brunet 4.896. BNF; Manchester, John Rylands University Library.

1560, Parisiis (Paris): Andreas Wechelus. Graesse 5.454 (the reference to a Greek edition of Paris, 1650 is, presumably, a slip for Paris, 1560). BNF; Oxford, Bodleian Library.

Biography:

Jacobus Tusanus (Jacques Toussain) was born at Troyes around 1490 and died at Paris in 1547. He was in Paris by 1513 and had completed the degree of *magister* by 1521. He learned Greek from Janus Lascaris (1445–1534) and later from Guillaume Budé (1467–1540). During the 1520s Toussain taught privately and assisted the printer Josse Bade (ca. 1461–1535) with editions of Greek authors. This early period is documented in his correspondence with Budé and Erasmus.

In 1530 Toussain became, along with Pierre Danès (ca. 1497–1577), a *lecteur royal* in Greek in the so-called Collège Royal. His pupils included Adrien Turnèbe (1512–65), who succeeded him on Toussain's death in 1547, Henri Estienne (ca. 1528–98), Fédéric Morel the elder (1523–83), and Petrus Ramus (1515–72). Toussain's influence also extended into literary circles when he tutored the poet Jean-Antoine de Baïf (1532–89).

Toussain's publications do not adequately represent his scholarly activity, particularly his cooperation with the printers Conrad Néobar (d. 1540) and Jacques Bogard (d. 1548), who were successively married to his niece Emonde. On this period and for manuscripts and annotated editions that reveal his scholarship, see Renouard, *Imprimeurs & libraires parisiens du XVI^e siècle,* vol. 5, passim.

Works:

Publications (all at Paris) during his lifetime included a translation of the letters of Angelo Poliziano (1519, 1523); notes on an edition of Guillaume Budé's letters (1526, 1531); notes on Budé's *De contemptu rerum fortuitarum* (1526, 1528); an edition of Budé's translations of the ps.-Aristotelian and ps.-Philonian *De mundo* (1526; rpt. 1540); an edition with Pierre Danès of Cicero's orations (1531); editions of Theodorus Gaza's Greek grammar (1534) and Janus Lascaris' epigrams (1544); and a translation of Hermo-

genes Rhetoricus (1545). Published posthumously were an edition of Epictetus (1552) and also his major work, the *Lexicon graecolatinum,* published in 1552 by Charlotte Guillard (ca. 1480–1557) with the help of Fédéric Morel the elder.

Bibliography:

Biographie universelle 42.68–69; *Nouvelle biographie générale* 45.555–56; "Jacques Toussain," *Contemporaries of Erasmus* 3.336–37 (P. G. Bietenholz); Sandys 2.181.

M. Bardin, *Le convoy funèbre de feu maistre J. Tusanus* (Paris, 1547); Adrianus Turnebus, *Opera,* vol. 3 (Paris, 1600), 28–31; C.-P. Goujet, *Mémoire historique et littéraire sur le Collège Royal de France,* vol. 1 (Paris, 1758), 141–46; E. Socard, *Biographie des personnages remarquables de Troyes et du Département de l'Aube* (Troyes, 1882), 410–11; A. Lefranc, *Histoire du Collège de France* (Paris, 1893), 173–75 and passim; J. Dumoulin, *Vie et oeuvres de Fédéric Morel, imprimeur à Paris depuis 1557 jusqu'à 1583* (Paris, 1901), 7, 12, 16; H. Omont, "Le premier professeur de langue grecque au Collège de France: Jacques Toussaint (1529)," *Revue des études grecques* 16 (1903) 417–19; M. Augé-Chiquet, *La vie, les idées et l'oeuvre de Jean-Antoine de Baïf* (Paris, 1909), 20–30; L. Delaruelle, "L'étude du grec à Paris de 1514 à 1530," *Revue du seizième siècle* 9 (1922) 51–62 and 132–49 at 138–40; A. Lefranc, "Les commencements du Collège de France (1529–1544)," in *Mélanges d'histoire offerts à Henri Pirenne* (Brussels, 1926), 291–306 at 292–94; R. Bunker, *A Bibliographical Study of the Greek Works and Translations Published in France during the Renaissance: The Decade 1540–1550* (New York, 1939), 17–18, 123, 131, 145, 210; J. Hutton, *The Greek Anthology in France* (Ithaca, N. Y., 1946), 5–6, 100–101; D. O. McNeil, *Guillaume Budé and Humanism in the Reign of Francis I* (Geneva, 1975), 72–74; G. Lavoie and R. Galibois, *Guillaume Budé: Correspondance,* vol. 1: *Les lettres grecques* (Sherbrooke, 1977), 329–42; B. Beech, "Charlotte Guillard: A Sixteenth-Century Business Woman," *Renaissance Quarterly* 36 (1983) 345–67 at 348–49, 354; O. Reverdin, *Les premiers cours de grec au Collège de France* (Paris, 1984), 39–47; A. C. Dionisotti, "Polybius and the Royal Professor," in E. Gabba, ed., *Tria corda: scritti in onore di Arnaldo Momigliano* (Como, 1983), 180–99 at 180–82; A. Grafton, *Joseph Scaliger: A Study in the History of Classical Scholarship,* vol. 1: *Textual Criticism and Exegesis* (Oxford, 1983), 73; Renouard, *Imprimeurs & libraires parisiens du XVI^e^ siècle* 5.75–81, 88 and see Index.

f. Elias Vinetus

This commentary, which accompanied the translation of the *Sphaera* published in 1543 that we have attributed to Elias Vinetus (Elie Vinet), later appeared in two editions of Vinet's revised translation (II.4 above). The commentary was probably completed in 1542–43 at the start of Vinet's absence (1542–47) from the Collège de Guyenne at Bordeaux (see Desgraves [cited in II.4], 5–6) and may have been based on his teaching there between 1539 and 1542.

The commentary is humanist in character. Parallel passages are taken mostly from ancient authors; philological notes deal with etymologies and derivations of compounds; and there is some textual criticism. Although Vinet consulted earlier editions of Thomas Linacre's translation, he based his commentary on the edition published at Paris in 1531 (see II.2 above and the *explicit* below), which he himself emended (fols. 15v, 16r, 16v).

The ancient authors cited are non-technical expositors such as Aratus, Cicero, Cleomedes, Hyginus, Macrobius, Martianus Capella, and Pliny, and there are also references to astronomical passages from Virgil and Ovid. Johann Stöffler's commentary (II.b above) is cited (fol. 15v), as is Sacrobosco's *Sphaera,* on which Vinet wrote a popular humanist commentary (Desgraves, nos. 106–134).

Compared with Jacques Toussain's commentary, also published at Paris in 1543 (II.e above), Vinet's commentary is richer in the number of parallel passages cited and is more precise regarding astronomical matters, while its critical notes have no parallel in Toussain's work. Since Vinet studied in Paris between 1534 and 1539 (Desgraves 2–3), he may have been influenced by Toussain's lectures on the *Sphaera.*

Commentary (ed. of Paris, 1543). Annotationes in Procli Sphaeram. [*Inc.*]: (fol. 14v) In Cap. 1. *Axis mundi* (p. 42.11–12 Manitius). Mundus appellatur is qui constat ex sole et luna et terra et omnibus stellis . . . / . . . [*Expl.*]: (fol. 18v) *Rhodus* (p. 42.5 Manitius). Insula et urbs est in ipsa insula. . . . Verum emendata tandem est illa Linacri lectio intellectusque hic locus (*sc.* p. 42.7 Manitius), qui corruptus erat, simul atque quis pro ἀφανής (id est, *non apparens*) ἀναφανής (id est, *sublimis, sur-*

sum apparens) feliciter reposuit. Ceterum Plinium in loco quem diximus [*Naturalis historia* 2.178], ubi de Canopo (sic a Latinis Κάνωβος vertitur), depravatum puto quod pugnantia de eo sidere tradere videtur. Sed haec satis sint. Vale igitur, amice lector, et hoc quicquid est laboris, quod tua causa in lucem damus, boni consule. Finis.

Editions:

(See II.4 above for full details).

1543, Parisiis (Paris): Johannes Lodoicus Tiletanus.

1553, Parisiis (Paris): Thomas Richardus.

[1554], Pictavis (Poitiers): Engelbertius Marnefius.

[1554], Pictavis (Poitiers): Bocheti Fratres.

Biography:

See II.4 above.

g. Erasmus Schreckenfuchsius

The set of twenty notes by Erasmus Schreckenfuchsius (Erasmus Schreckenfuchs) on the ps.-Proclan *Sphaera* deals mainly with the geometrical aspects of spherical astronomy. They include references to Ptolemy and Hyginus, but none to contemporary manuals, and were probably composed during the 1550s for elementary instruction at Basel or Freiburg i. Br. (see below). The notes were added in 1561 to an edition of Thomas Linacre's translation previously published at Basel in 1523, 1534, and 1547 (see II.2 above). A letter in the edition of Basel, 1561 by Marcus Hopper (d. 1564), a professor at the University of Basel, shows that the printer Henricus Petri employed Schreckenfuchs as a private tutor to one of his sons.

Preface (ed. of Basel, 1561). Vita et opera Procli, Erasmo Osualdo Schreckenfuchsii (*sic*) auctore. [*Inc.*]: (p. 2) Ex Suida et Philostrato constat complures fuisse Proclos. . . . (p. 3) Quamvis iste libellus sit perexiguus, tamen sit discentibus eo carior commendatiorque, quod quidquid requiritur ad veram et principaliorem primi mobilis cognitionem, in eo oppido quam luculenter atque solide proponitur . . . / . . . [*Expl.*]: (p. 3) boni adolescentes, a quibus recta studia magnifiunt, hoc vehementius ament arripiantque compendiolum ad se, quod eius cognitio versetur circa corpus illud, ut dictum est, nobilissimum.

Commentary (ed. of Basel, 1561). Annotationes Erasmi Osualdi Schereckenfuchsii (*sic*). [*Inc.*]: (p. 5) *Axis mundi vocatur* (p. 42.11–12 Manitius). Mundus tam secundum theologos quam secundum philosophos triplex est. Supremus omnium ultramundanus qui theologis angelicus . . . / . . . [*Expl.*]: (p. 73) *Sed ex temperatis* (p. 162.10 Manitius). Graecorum cosmographorum consuetudo est. . . . Quae deinceps sequuntur de stellis fixis, ex globis stelliferis longe plenius cognoscere poteris quam multis verborum ambagibus. Et id propterea quod Procli stellarum fixarum descriptio (*sc.* Geminus ch. 3) apud Ptolemaeum et posteriores permultos, qui copiosius de hac re scripserunt, longe exactius reperiatur quam hic. Illi, inquam, consulendi sunt. Haec breviter addere visum est.

Editions:

1561, Basileae (Basel): Henricus Petri. Gr.-Lat. With Thomas Linacre's translation, as in the edition of Basel, 1547 (see II.2 above). Adams P-2134; Hamel 2664; Zinner 2267, 2275; VD P-4970; CTC 3.25 and 7.8; NUC. BL; BNF; Nuremberg, Stadtbibliothek; (DFo; DLC; MiU-C; MoSW; NN; NNH; RPJCB).

1585, Basileae (Basel): Sebastianus Henricpetri. Gr.-Lat. Contents the same as in the preceding entry. Adams P-2135; Hamel 2666; VD P-4973; Zinner 3197; CTC 3.25 and 7.8; NUC. BL; Oxford, Bodleian Library; Munich, Bayerische Staatsbibliothek; (CtY; DLC; NcD; NN; NNH; ScU).

Biography:

Erasmus Schreckenfuchs was born at Weidenstein, Austria in 1511 and died at Freiburg i. Br. in 1579. He studied at the Universities of Vienna, Ingolstadt, and Tübingen, receiving from Tübingen the degrees of B.A. (1550) and M.A. (1551). He also studied Hebrew at Venice, and he continued his study of this language at Basel with Sebastian Münster (1489–1552; see CTC 5.275–76 and 6.82), the astronomer and Hebraist. In the 1550s and 1560s Schreckenfuchs taught mathematics and Hebrew at Freiburg i. Br. and was also a private tutor at Basel. He obtained an M.D. at Basel in 1571 and was professor of rhetoric there from 1570 to 1576 before returning to Freiburg i. Br. He is mentioned respectfully by Petrus Ramus in his *Scholarum mathematicarum libri unus et triginta* (Basel, 1569), 66–67, and Francesco Barozzi in the preface to his *Cosmographia* (Venice, 1585).

Works:

These were all published at Basel. They include an edition (1546; Zinner 1891) with Sebastian Münster of two fourteenth-century Hebrew treatises on cosmology and arithmetic; an edition of Münster's *Opus grammaticum* (1549); an edition of books 1–3 of Ptolemy's *Almagest* (1551); Latin translations of the Cantica canticorum and Ecclesiastes (1553); commentaries on Peurbach's *Novae theoricae planetarum* (1556) and Sacrobosco's *Sphaera* (1569); and a work on the calendar (1576).

Bibliography:

Jöcher 4.348; ADB 32.467–68; F. Seck, G. Krause, and E. Stohr, eds., *Bibliographie zur Geschichte der Universität Tübingen* (Tübingen, 1980), 487.

Athenae Rauricae (Basel, 1778), 297–98; C. F. Schnurrer, *Biographische und litterarische Nachrichten von ehmaligen Lehrern der hebräischen Litteratur in Tübingen* (Ulm, 1792), 113–22; *Die Matrikeln der Universität Tübingen,* vol. 1 (Stuttgart, 1906), 346; *Die Matrikel der Universität Basel,* vol. 2 (Basel, 1956), 190; Thorndike, *A History of Magic and Experimental Science* 6.16–17.

h. Anonymus Hauniensis

These unpublished lectures, preserved in Copenhagen, Det kongelige Bibliotek, Ny. kgl. Samling 3012 4°, were delivered between February 1590 and May 1591, probably at a German university. There is a lecture schedule in the margins, and German terms are used throughout the text. A subsequent treatise, *De supputandis locorum distantiis* (fols. 121r–139v), also gives German locations as examples (fols. 125v, 126r–v)

The title for the *Sphaera* on fol. 17r (see below) is found in editions of the Greek text published at Paris (those marked *P* in II.2 above), and there is a reference to the accompanying translation of Thomas Linacre. But Linacre's translation is not cited; instead, the Greek text is quoted from a printed edition *(descripta typis)* and accompanied by the anonymous commentator's own translation.

Prolegomena on the role of astronomy in philosophical studies (fols. 6r–14v) are followed by a lengthy and discursive commentary that includes geometrical reconstructions and numerical tables (e.g., fols. 32v, 33r). On fol. 15r–v there are contrasting diagrams of the geocentric and Copernican planetary systems.

Commentary (Copenhagen, Det kongelige Bibliotek, Ny. kgl. Samling 3012 4°). Procli Sphaera diligenter descripta typis gratia studiosorum astrologia [*sic*]. (fol. 17r) [*Inc.*] Thoma Linacra [*sic*] fuit Anglus, vir doctissimus qui una cum aliis depulit barbariem superiore aetate. *Sphaera* (title of the ps.-Proclan work). Sphaera est figura solida (est vocabulum mathematicum et significat globum ——— ———u——— (oder rund Kugel) circularis sub una superficie contenta . . . / . . . [*Expl.*]: (fol. 120r)

Ille [*sc.* Scorpius] venenatae metuendus acumine caudae

Scorpius occiduas mane petebat aquas.

(an adaptation of Ovid, *Fasti* 4.163–164?)

Scorpius eois vespere fulsit aquis.

Manuscript:

Copenhagen, Det kongelige Bibliotek, Ny. kgl. Samling 3012 4°, s. XVI (a. 1590–91), fols. 6r–120r (Kristeller, *Iter* 3.186a).

i. Johannes Hagius

Johannes Hagius' lectures on the *Sphaera* can be dated to 1591 when they were delivered privately at Wittenberg. They survive in a student's manuscript notes (Vienna, Österreichische Nationalbibliothek, 11637). A marginal note on fol. 116r indicates that the notes were begun on 16 June 1591, while the title refers to 15 August of that year (see below). Prolegomena (fols. 107r–116r) precede a lengthy commentary (fols. 116r–155r) and two supplements: *De ortu et occasu stellarum* (fols. 155r–157v) and *De ortu et occasu astronomico* (fols. 157v–166v [= unnumbered fol. 167v]). Designed for mathematically equipped students, the commentary includes calculations of latitudes (fols. 123v–124r) and a digression on lunar theory (fols. 140v–143v).

Commentary (Vienna, Österreichische Nationalbibliothek, 11637). (fol. 106r) Annotata in Sphaeram Procli Witebergae intra privatos parietes proposita a magistro Johanne Hagio Aug. 15 (15)91. (Opus hoc incohatum 16 Iunii *in marg.*) [*Inc.*]: (fol. 116r) Cap. 1. De axe et polis mundi (*sc.* ch. 4, p. 42.10–22 Manitius). In hoc capite auctor tria proponit. Primo enim describit axem *(corr.)* mundi, secundo describit polos mundi . . . / . . . [*Expl.*]: (fol. 155r) *In iis,* id est signis meridionalibus iam enumeratis, *sunt quaedam stellae quae proprias obtinuere appellationes* (italicized words = ch. 3, p. 40.20–21 Manitius).

Manuscript:

Vienna, Österreichische Nationalbibliothek, 11637, s. XVI (a. 1590–91), fols. 106r–166v (*Tabulae codicum manu scriptorum ... in Bibliotheca Palatina Vindobonensi asservatorum,* vol. 7 [Vienna, 1875; rpt. Graz, 1965], 23–24).

Biography:

Johannes Hagius may be the Hagius of Innsbruck who matriculated at Basel in 1574, and obtained a B.A. there in 1578; see *Die Matrikel der Universität Basel,* vol. 2 (Basel, 1956), 221. Manuscripts show that he taught *privatim* at Wittenberg in the 1580s and 1590s.

Works:

Johannes Hagius' revision of the *De meteoris* of Marcus Fritsche (first published at Nuremberg in 1555; Hamel 1149) was published at Wittenberg in 1581, 1583, and 1598 (Hamel 1421–23). Versions of a *Calculus eclypsium* exist from 1587 (Kristeller, *Iter* 3.389b, 4.439a) and 1591 (fols. 169r–189v of the Vienna manuscript cited above), and there are notes on astrological computations from 1586 (Kristeller, *Iter* 4.439b). Hagius also contributed a preface to a new edition of Johannes Schöner's *Tabulae resolutae* (Wittenberg, 1587) (Zinner 3275); see also Thorndike, *A History of Magic and Experimental Science* 5.360 n. 129.

j. Georgius Henischius

Georgius Henischius (Georg Henisch) added a commentary to the revised edition of his translation of the ps.-Proclan *Sphaera* published at Augsburg in 1609 (see II.6 above). This commentary was based on his lectures at the Gymnasium St. Anna at Augsburg, where he had taught since 1575. Preceding the commentary (pp. 55–195) is a lengthy discussion of the title and its general subject matter, together with a list of definitions and hypotheses from geometry, physics, and astronomy (pp. 21–54). In one of these astronomical definitions (p. 52) Geminus (pp. 180.25–182.2 Manitius) is cited from Edo Hilderich's edition (I.4 above). The commentary has few references to ancient or modern authorities and almost no philological notes. Although Geminus is cited (pp. 143, 195), the *Sphaera* is not identified as an excerpt from his treatise.

Dedication (ed. of Augsburg, 1609). Nobilitate et prudentia praestantissimis viris Marco Velsero et Iohanni Iacobo Remboldo, duumviris senatuique secretioris consilii inclitae Reip. Aug. domi-

nis et patronis summe colendis, Georgius Henischius d. sal. d. [*Inc.*]: (fol. 2r) Nobilissimi et prudentissimi domini, artes esse fontes omnium bonorum, tum olim gravis auctor Xenophon dixit [cf. *Mem.* 3.9.14–15] ... / ... [*Expl.*] (fol. 2v) [Proclus] vixit enim ante annos circiter 1200 et Athenis in schola inventrice artium cum alias philosophiae partes, tum astronomiam magna cum laude docuit. Eius igitur librum quem de sphaera scripsit prae ceteris selegi, quem et publice iam multos annos in schola vestra praelegerem et commentariis necessariis illustrarem tandemque in lucem emitterem ut et auditorum meorum et aliorum quoque exterorum studiis prodessem. Multas autem novas observationes, demonstrationes, tabulas addidi, quibus usum huius doctrinae faciliorem et illustriorem reddidi, et sic, ne acta egisse videar, quod vetamur proverbio, effeci. Hunc meum laborem nulli alii quam illustri Vestrae Amplitudinis nomini dedicare et volui et debui. Proclum enim ante 33 annos vestrorum antecessorum nomini olim inscriptum a vestro successorum patrocinio avellere nolui, et Spartae quam multos annos administravi, a me ornatae et accessione non exigua auctae, publicum testimonium Vestri Amplitudini exhibere debui. Quae testatio ut Vestri Amplitudini non ingrata sit, submisse rogo. Deus optimus maximus Vestram Amplitudinem ad Reipublicae utilitatem diu tueatur sospitem et incolumem. Augustae Vindelicorum 14. Cal. Sept. A. C. 1608.

Commentary (ed. of Augsburg, 1609). (p. 21) *In Procli Sphaeram.* [*Inc.*]: (p. 55) In caput primum (*sc.* ch. 4, p. 42.10–22 Manitius). De axi ac polis. Partes sphaerae sunt axis cum polis et circulis. Omnis enim sphaera quae movetur habet primum axem ... / ... [*Expl.*]: (p. 195) Σχεδὸν γὰρ τέταρτον μέρος (p. 42.7 Manitius). Σχεδόν hic fere et non vix significat. ... Elevatio enim addita declinationi facit 83, quae subtracta a 90 relinquunt septem, et tot gradibus Canopus in meridiano alexandrino constitutus supra horizontem elevatur.

Edition:

1609, Augustae Vindelicorum (Augsburg). See II.6 above.

Biography:

See II.6 above.

k. Joachim Camerarius

Fabricius-Harles 9.414 reports that among the unfinished works of Joachim Camerarius there are "in sphaeram Procli accurati commentarii". The "imperfecta scripta" may refer to Camerarius' manuscript remains at the Bayerische Staatsbibliothek, Munich: see *Catalogus codicum manu scriptorum Bibliothecae Regiae Monacensis*, vols. 4.1 (Munich, 1874), 189–386 and 9.1 (Munich, 1970), 40–41. There is, however, no commentary by Camerarius on the ps.-Proclan *Sphaera* extant at Munich, nor has any been located elsewhere.

But Joachim Camerarius (1500–74; CTC 2.100–101 and 7.129) may well have written such a commentary. From 1521 to 1526 he was associated with Philipp Melanchthon at Wittenberg, where astronomy was actively pursued. Camerarius was at Nuremberg between 1526 and 1535 when Johannes Schöner (1477–1547) was also there and Willibald Pirckheimer was engaged with the *Sphaera* (see II.3 above). Some of Camerarius' astronomical and meteorological writings were published at Nuremberg in 1535 (Zinner 1588), and he later translated Ptolemy's *Tetrabiblion* into Latin (Zinner 2026, 2073). His treatise on comets (Leipzig, 1558) was frequently reprinted (Zinner 2186, 2214, 2250, 2811, 3030, 3842). A commentary, then, on the ps.-Proclan *Sphaera* would belong in this range of Camerarius' activity.