

PAPPUS ALEXANDRINUS

by MARJORIE NICE BOYER
(York College of the City University of New York)

<i>Fortuna</i>	205
Bibliography	206
Lost works	207
Doubtful Works	207
I. <i>Collectio</i>	207
Translations	
1. Federicus Commandinus	
2. Franciscus Barocius	
3. Sebastianus Miegius (?)	
4. Antonius Maria Pazzius (doubtful)	
Commentaries	
a. Federicus Commandinus	
b. Franciscus Barocius	
c. Johannes Baptista Raimundus	
II. <i>Commentary on Book X of Euclid's Elements</i>	211
Translation	
1. Gerardus Cremonensis (?)	
III. <i>Commentary on Ptolemy's Almagest Book V</i>	212
Translations	
1. Johannes Baptista Theophilus	
2. David San-Clarus	

FORTUNA

Pappus of Alexandria, the last significant Greek geometer, lived at the end of the third century A. D. and the beginning of the fourth. The Suda Lexicon makes him a contemporary of Theon of Alexandria and reports that he lived under Theodosius I (379-395); but the Suda article is generally unsatisfactory, for it does not cite his greatest work, the *Synagoge* or *Mathematical Collection*. In a marginal note in a Leyden manuscript of chronological tables by Theon of Alexandria there is a scholium opposite the name of Diocletian which says, 'In his time Pappus wrote.' (See Heath, II, 356). Canon Rome pointed out that an eclipse of

320 is used in Pappus' *Commentary on the Almagest*; and inasmuch as the *Collectio* or *Mathematical Collection* was composed shortly after this *Commentary*, a date not much later than 320 is generally accepted for this, the chief work of Pappus. The *Collectio* appears originally to have been in eight books, but the whole of the first book and the greater part of the second have been lost. A fragment of book II was first published by John Wallis in 1688.

Pappus wrote the *Mathematical Collection* in an effort to revive classical geometry, and it was intended as a handbook to be read in conjunction with the extant treatises. While not pretending to great originality, the *Collectio* nevertheless included alter-

native explanations, improved proofs, and supplementary information. It is particularly significant for broad generalizations, such as the Pappus theorems (sometimes ascribed to Guldin) in the calculus, the generalization of the three-and-four-line-locus problem to include any number of lines (the 'problem of Pappus'), a generalization of the Pythagorean theorem for the case of oblique triangles, an analogue of the Archimedean spiral on the surface of a sphere, and a theory of involution of points anticipating a portion of projective geometry. In view of the subsequent disappearance of many of the mathematical classics mentioned by Pappus, the *Collectio* is of special significance for the information it provides concerning these books and the history of Greek geometry. In particular, a section of Book VII gives an account of the works making up what was called the *Treasury of Analysis*, including such lost works as Aristaeus' *Conics*, and the *Porisms* and the *Surface Loci* of Euclid, and several works by Apollonius which are no longer extant. Book VII includes also collections of lemmas provided by Pappus to assist in the study of books he refers to. Some of these lemmas later accompanied published versions of Apollonius' *Conics* and Aristarchus' *De magnitudinibus et distantis solis et lunae liber*.

Pappus' *Collectio* was known to the Arabs of the tenth century. His Commentary on Book X of Euclid's *Elements* survives in Arabic, and the extant Latin fragment of the latter is a twelfth century translation from that language. Pappus' *Collectio* and the Commentary on the fifth book of Ptolemy's *Almagest* were first translated from Greek into Latin in the sixteenth century. For the *Collectio* the only textual source is cod. Vaticanus Gr. 218, tenth century, if not late ninth, from which stem all other Greek manuscripts. The minuscule hand suggests Constantinople as the place of origin, and apparently the MS had reached the Vatican by 1533. The translation which held the field until the nineteenth century was made by Federicus Commandinus and published in 1588. Antonmaria Pazzi of Reggio Emilia, professor of Mathematics at the University of Rome

from 1567 to 1576, wrote to Gherardo Spini, author of *Libri degli ornamenti architetonici*, on April 10, 1568 a letter in the course of which he mentions that he has translated Hero and Pappus, 'i quali trattano tanto maravigliosamente delle macchine e strumenti spiritali, di che l'Architettura si serve.' (Ms. Marc. ital. IV 38 (5543), f. 8-12; Tiraboschi, *Biblioteca Modenese*, IV, 77.) No trace of the MS or of any influence of this translation has been found. It may well have been into Italian, rather than Latin, and it may have been only of Book VIII, since Pazzi speaks of Pappus' writing on machines. In the sixteenth century Book VIII excited particular interest.

To my husband, Dr. Carl Boyer, I express my appreciation for his assessment of Pappus as a mathematician and for his kind assistance in the preparation of this article.

BIBLIOGRAPHY

M. Cantor, *Vorlesungen über Geschichte der Mathematik*, I, 2nd ed. (Leipzig, 1894), pp. 412-427. Sir Thomas L. Heath, *A History of Greek Mathematics* (2 vols., Oxford, 1921), II, 355-439. Suidas, *Lexicon*, ed. Bekker, 1854. *Pappi Alexandrini collectiones quae supersunt*, ed. Friedrich Hultsch. 3 vols. (Berolini, apud Weidmannos, 1876-1878). Paul Ver Eecke, *Pappus d'Alexandrie. La Collection mathématique*, Œuvre traduite pour la première fois du grec en français (2 vols., Paris and Bruges, 1933). See the introduction for a discussion of what is known on Pappus and the fortuna of his works. Konrat Ziegler, 'Pappos von Alexandria,' in Pauly-Wissowa, *Real-Encyclopädie der classischen Altertumswissenschaften und Künste*. Neue Bearbeitung, XXXVI (1949), col. 1084-1106. Athanasius Pryor Treweek (ed.), *A Critical Edition of the Text of the Collection of Pappus of Alexandria (Books II to V)*. University of London. Thesis. Ph. D. 1950. Treweek, 'Pappus of Alexandria, the Manuscript Tradition of the *Collectio Mathematica*,' *Scriptorium* XI (1957) 195-233.

On the possible Pazzi translation, see Girolamo Tiraboschi, *Biblioteca Modenese*

IV (Modena 1786) 70-78. C. Frati and A. Segarizzi, *Catalogo dei Codici Marciani Italiani* II (Modena 1911) 26-27. Joseph Carafa, *De gymnasio Romano et de eius professoribus* (Rome 1751) II 383. J. Morelli, *I codici manoscritti volgari della Libreria Naniana* (Venice 1776) pp. 6-11.

LOST WORKS

1. Commentary on *Analemma* of Diodorus.
2. Commentary on Ptolemy's *Planisphere*. Translated into Arabic by Thabit according to the Fihrist, an Arab catalogue of 987.
3. Chorographia or Universal Description of the World. It was used as a source by Moses Chorenensis, whose work is extant in Armenian.
4. Interpretation of Dreams.
5. Rivers of Libya.

DOUBTFUL WORKS

1. Commentary on Euclid's *Data*, according to Marinus; but it is likely that Marinus was referring to the beginning of Book VII of the *Collectio*, where Pappus discusses the *Data*. Pappus' name appears in the title of the following book: *Euclidis. . . elementorum libros XIII. cum expositione Theonis. . . liber Datorum cum expositione Pappi. . .*, Venetiis: In edibus J. Tacuini, 1505. BM; Yale. Euclid's *Data* appears in the book but without Pappus' comments. Hermann Weissenborn, *Die Übersetzungen des Euklid durch Campano und Zamberti* (Halle, 1882) pp. 14, 16-17, 20, 27.

2. Commentary on Ptolemy's *Harmonica*. Lucas Holstenius at the end of chapter VII of his edition of the life of Pythagoras by Porphyry (Rome, 1630) attributes to Pappus the last few chapters of Porphyry's commentary on the *Harmonica* of Ptolemy. However, John Wallis rendered this attribution doubtful. J. Wallis, *Opera mathematica* (Oxoniae 1695-1699) I II, 187. Ver Eecke I, CXVI, n. 1.

3. *Tabulae quotidianae de iis astris quae res gubernant et administrant*. This astrological treatise has been attributed to Pappus on the strength of a conjecture of Bandini. (Angelo Maria Bandini, *Catalogus codicum*

manuscriptorum bibliothecae medicae laurentianae, Leipzig 1961, II, 555. Ver Eecke points out there has been no study made to settle this claim I, CXVI, n. 2).

4. *Opusculum de multiplicatione et divisione sexagesimalibus*. Attributed to Pappus or Diophantus. Edited by C. Henry (Halle 1881).

I. *Collectio*

TRANSLATIONS

1. FEDERICUS COMMANDINUS

Commandinus' translation has been praised by later students of Pappus, notably Hultsch, Ver Eecke and Treweek, and it has influenced not only later translations but also copyists of the Greek manuscripts, who in some instances translated Commandinus' Latin back into Greek to emend their manuscripts. Treweek has shown that the Greek mss. used by Commandinus were Edinburgh Adv. 18.1.3 for Books III-VI and VIII, and Chicago, Newberry Library, ms. 110 for Book VII. The ms. of Book III of Commandinus' translation with his corrections and with the printer's page marks, from which the 1588 edition was printed, is preserved (Paris, Bibliothèque Nationale, Nouv. acq. lat. 1144). Only fragments of this translation appeared during his lifetime as lemmas in his translations of Apollonius (1566) and Aristarchus (1572). The translation as a whole was published only in 1588 by one of his sons-in-law who gave it to the press just as Commandinus had left it at the time of his death (1575). As Treweek observes, 'certain propositions, such as the Book III supplement, the last proposition of Book IV, and a few others are missing, and in many places there is no commentary on the text. In certain other places, notably Book VII, there are gaps in the translation, where he has not fully worked out the meaning' (Treweek, 'The Manuscript Tradition,' p. 288).

Dedication. Serenissimo Francisco Mariae II Urbini Duci Valerius Spacciolus S.P.D.

[*Inc.*]: (ed. 1588) Ex plurimis operibus, quae nimia cum cura et diligentia conscrip-

serat Federicus Commandinus Urbinas socer meus. . ./. . .[*Expl.*]: Hoc ergo superest ut a Deo Opt. Max. tibi diutissimam et felicissimam vitam precemur. Vale.

Preface. Candido lectori.

[*Inc.*]: Habes, candide lector, Pappi Alexandrini mathematicas collectiones a Federico Commandino in latinam linguam translatas et commentariis illustratas. . ./. . .[*Expl.*]: et cum tibi authoris labores profuisse perspicias, gratias pro illo divinam misericordiam implorando referre non detrectabis. Vale.

Text. Liber tertius.

[*Inc.*]: Quicumque ea, quae in geometria investigantur, diligentius expendere volunt, o Crastite, omne problema appellari existimant. . ./. . .[*Expl.*]: vel rursus subiectum membro lignum funibus manu attrahentes ad alteram aedificii partem tandem adducunt, simul remittentes funes et rursus religantes utuntur, sicuti ante dictum est. Octavi libri finis.

Manuscripts:

(*) Milan, Ambrosiana, ms. A 230 inf., s. XVII. Lemmata of Pappus, with Commandinus' version of Apollonius Pergaeus' *Conica*. Kristeller, *Iter* I. 280. Microfilm supplied by Dr. Angelo Paredi.

(*) —, —, D 300 inf., s. XVII. Book VIII only. Kristeller, *Iter* I 285. Description and microfilm supplied by Dr. Angelo Paredi.

(*) Paris, Bibliothèque Nationale, Lat. 7222, s. XVI. Commandinus' version corrected by Franciscus Barocius. See below under 2. Catal. Bibl. Regiae 4, 328.

(*) —, —, Nouv. acq. lat. 1144, s. XVI. Delisle, *Bibliothèque de l'École des Chartes* 32 (1871) 54. Microfilm and description supplied by Mlle. Jacqueline Schlafer. Book III only, with autograph corrections. This ms. was used for the printed edition of 1588.

(*) Praha, Universitní knihovna, ms. VII G 22, s. XVI. Excerpts copied from the edition of 1589. J. Truhlář, *Catalogus* I (1905), p. 517, no. 1372. Description and microfilm supplied by Dr. Karel Kozelek.

(*) Torino, Archivio di Stato, ms. J b VI 1, s. XVI-XVII. Lemmata of Pappus with Commandinus' version of Apollonius' *Conica*. Kristeller, *Iter* II, 177. Microfilm supplied.

(*) Urbino, Biblioteca Universitaria, Fondo Comunale, Busta 121, s. XVI, f. 190-399. Translation and commentary, fragmentary and confused, but with autograph corrections. Mazzatinti 80 (1954), p. 170-171, no. 29. Data supplied by P. O. Kristeller.

(*) Venezia, Biblioteca Marciana, Zan. lat. 330 (1987), s. XVI. Valentinelli IV, p. 217. Kristeller, *Iter* II 213. Book VIII only. Microfilm supplied by the library.

(*) —, —, Zan. lat. 331 (1761), s. XVI. Valentinelli IV, p. 216-217. Kristeller, *Iter* II 213. Book VIII only. Microfilm supplied by the library.

Editions:

1566, Bononiae: Alexander Benatius. BN; (NN; NNC). Fragments only, inserted as lemmata in the edition of Apollonius Pergaeus, *Conica*.

1572, Pisauri (Pesaro): C. Francischinus. BM; BN; (NIC; NNC). Fragments only, inserted as lemmata in Aristarchus, *De magnitudinibus et distantibus solis et lunae*. Cf. vol. I, p. 165.

1588, Pisauri (Pesaro): apud H. Concordiam. BM; BN; (Princeton, Institute for Advanced Study).

1589, Venice: apud Franciscum de Francis Senensem. BN; (NN; NNC).

1602, Pesaro: apud H. Concordiam. BM.

1660, Bononiae (Bologna): H.H. de Duciis. BM; BN; (NIC; NN; NNC). The preface of Valerius Spacciolus is here replaced by another preface of Carolus Manolessius to Leopold Wilhelm, Archduke of Austria, dated Bononiae Kalendis Maii 1659. [*Inc.*]: Diuturnis virorum sapientum votis et precibus e tumulo excitatus. [*Expl.*]: me vero fortunatissimum, cuius laboribus patrocinii sui radiis tam serenum sydus affulsit.

Biography:

See vol. I, p. 166.

2. FRANCISCUS BAROCIUS

Ms. Paris, Bibliothèque Nationale, Lat. 7222 contains Commandinus' translation and commentary as revised by Franciscus Barocius. The manuscript consists of two volumes (books III-VI and VII-VIII). Each volume carries the title: Pappi Alexandrini collectionum mathematicarum libri

cum commentariis et correctionibus Francisci Barocii. At the end of volume II (f. 232^v) we read: Lucubratiō hec corrigendi hosce octo libros collectionum Pappi Alexandrini completa est a me Francisco Barocio anno salutis nostre MDLXXXVIII. pridie cal. Aprilis Venetiis. Vol. I begins with a list of 'Imperfetioni. .di Pappo tradotto e commentato dal Commandino.' Barocius followed Commandinus' translation and commentary to a large extent, but revised it on many points and also added passages omitted by Commandinus. According to Treweek, Barocius used as his Greek text ms. Burney 105 of the British Museum, instead of the mss. used by Commandinus, and his translation has a good deal of merit (Treweek, p. 228-231). Apparently he intended it for publication, and perhaps expected his corrections to be incorporated into the published text of Commandinus.

Translation.

[*Inc.*]: (vol. 1, f. 14 bis) Qui ea quae in geometria quaeruntur volunt artificiosius discernere, o optime Pandrosion, problema illud quidem vocari censent. . [*Expl.*]: (vol. 2, f. 232^v) vel (suprascr. postea) rursus subiectum membro lignum funibus manu attrahentes ad alteram edificii partem tandem (in marg. : non legitur in codice greco) adducunt, simul remittentes funes (in marg. τὸς ἀποτόμους) et rursus religantes utuntur sicuti ante dictum est (in marg. : fortasse multa in fine huius octavi libri desiderantur ex iis que ex Herone se excerpisse et docturum esse promisit).

Manuscript:

(*) Paris, Bibliothèque Nationale, Lat. 7222, 2 vols., s. XVI. Catal. Bibl. Regiae 4, 38. Description and microfilm supplied by Mlle. Jacqueline Sclafer.

Biogr. :

Franciscus Barocius (Francesco Barozzi). Born in Candia Aug. 9, 1537, d. Venice Nov. 23, 1604. He studied Latin and Greek under Andrea Doni, mathematics and philosophy at Padua under Marcantonio Genova. He lectured at Padua in 1559 on the Sphere of Sacrobosco. He married twice and had several children. In 1587 he was tried by the Inquisition for sorcery and sentenced to pay 100 ducats to cover the cost of making

two silver crosses and to remain in prison at the pleasure of the Inquisition. His published works include orations, a description of Crete, mathematical writings, a *Cosmographia* in four books (1585) and translations of mathematical works of Proclus (1560) and Hero mechanicus (1572). His collection of manuscripts was acquired by the Bodleian library.

Bibl.: *Dizionario biografico degli Italiani* 6 (1964) 495-499 (citing the earlier literature); L. Thorndike, *A History of Magic* 6 (1941) 154-155.

B. Boncompagni, 'Intorno alla vita ed ai lavori di Francesco Barozzi,' *Bullettino di Bibliografia e di Storia delle Scienze Matematiche e Fisiche* 17 (1884) 795-848; Paul Ver Eecke (ed. and trans.), Proclus de Lycie, *Les commentaires sur le premier livre des Éléments d'Euclide* (Bruges 1948), p. XXI ff.; A. P. Treweek, 'Pappus of Alexandria, The Manuscript Tradition of the *Collectio Mathematica*,' *Scriptorium* XI (1957) 228-231.

3. SEBASTIANUS MIEGIUS (?)

An anonymous version of some portions of Pappus' *Collectio* appear in a manuscript in Uppsala. It begins with several fragments from Book II, which were not included in the translations of Commandinus or Barocius. The propositions are numbered in an unusual way, and those usually numbered XV and XIX are omitted; a few sentences and tables are added. There follow, perhaps in another hand, parts of books III, IV and VI, ending with Proposition IX of book VI. The first hand is the same that wrote a translation of Theon of Smyrna found at the beginning of the same manuscript (f. 60-70^v) that is called 'recens latinitate donata a Sebastiano Miegio nobili Argentoratense'. Hence we may tentatively attribute the Pappus version to the same Miegus. Miegus would have had at his disposal a Greek manuscript of Pappus that was in Strasbourg by the early seventeenth century and included book II. This manuscript was destroyed in 1870, but a copy of it survives (ms. Savile 9 of the Bodleian Library, see Treweek, 'Pappus of Alexandria,' *Scriptorium* XI (1957) 203, 205.

Pappi Alexandrini Collectaneorum libri secundi fragmentum. Prop. XVI. [*Inc.*]: (f. 1) Ita ut minores quidem sint centenario, mensuram tamen (?) habeant denarium inveniendusque sit numerus (?) ex ipsis progenitus solidus absque ipsorum inter sese facta multiplicatione. . . [*Expl.*]: (f. 10^v) 1105920000 per 5 fiunt 5529600000, per 7 fiunt (sic).

Pappi Alexandrini Collectaneorum tertius qui continet problemata geometrica plana et solida. [*Inc.*]: (f. 11) Qui de geometricis questionibus artificiosius paulo iudicare conantur, Pandrosion, problema quidem appellare solent.

[*Expl.*]: (f. 23) Conlect. VI Prop. IX. Iisdem positis ne aequalem quidem futuram aio. Hypothesis adversarii. Si enim fieri possit, esto aequalis. Delineatio.

Manuscript:

(reported by P. O. Kristeller and micro.) Uppsala, Universitetsbiblioteket A 12, f. 1 (following 117)-23, s. XVI-XVII.

Biogr.:

Sebastianus Miegius (Sebastian Müg or Müge von Boofzheim) the younger, b. Strasbourg 4 May 1579, d. 1638. Member of a prominent family that received a title of nobility in 1582, he served as a magistrate in his home town. He was an accomplished scholar, collected a rich library and was the author of many writings, none of which have been printed. His *Monumenta in ecclesiis et claustris Argentinensibus* (2 vols.) and his chronicle of Strasbourg were destroyed in 1870. His library, including 72 mss., most of them written in his hand, was bought by Johann Paul Scheffer of Strasbourg in the 1640's and taken to Uppsala in 1648. The mss. were acquired from Scheffer's heirs by the University Library in Uppsala in 1719. The mss. are of varied content and include mathematical collections such as the volume containing the Pappus translation.

Bibl.: J. Rathgeber, 'Die Schicksale einer Strassburger Bibliothek,' *Jahrbuch fuer Geschichte, Sprache und Litteratur Elsass Lothringens* 4, 1888, 63-71.

4. ANTONIUS MARIA PAZZIUS (DOUBTFUL)

See above, *Fortuna* and Bibliography.

COMMENTARIES

a. FEDERICUS COMMANDINUS

The commentary is inserted *passim* into Commandinus' translation of the *Collectio*. The commentary, constituting roughly half of the volume, generally takes the form either of a comparison with the Greek codex to justify the translation or of additional steps to clarify a mathematical proof. That the commentator was more concerned with mathematical meaning than with textual purity is indicated by the fact that for long sections of the text which are largely descriptive (especially in Books VII and VIII) there is little or no commentary, whereas for a complicated proposition such as that in Book III on inscribing a regular icosahedron in a sphere (Problema XLIII, Proposition LXVII, folios 34^v-37^v) the commentary is considerably longer than the text itself. The substance of the commentary throughout shows that Commandinus was a capable mathematician who understood the material he was handling and who was familiar with the classical works of antiquity.

Commentarius. [*Inc.*]: (ed. f. 3) Et sit ut LM ad MΩ, ita ΩM ad Ma. Graecus codex mendose habebat]. . ./. . . [*Expl.*]: (f. 328) ita diameter tympani A ad tympani C diametrum.

Manuscripts and editions: See above under 1.

b. FRANCISCUS BAROCIUS

Barocius' revision of Commandinus covers his commentary as well as his translation. It is found in the same manuscript, Paris, Bibliothèque Nationale, Lat. 7222. [*Inc.*]: (vol. 1, f. 22) Dico ut AC ad CB (corresponding to the second section of Commandinus' commentary, f. 3^v in the ed. of 1588). . ./. . . [*Expl.*]: (vol. 2, f. 224^v) ita diameter tympani A ad Tympani C diametrum.

Manuscript and biography: See above under I, 2. Description and partial microfilm of the manuscript supplied by Mlle. Jacqueline Schlafer.

c. JOHANNES BAPTISTA RAIMUNDUS

Commentary on Book V only. This book contains 57 propositions, but the commen-

tary by Raimundus covers only about the first quarter of the book, especially the parts related to the proof that the circle is the largest of isoperimetric figures (Propositions 1-13). The *Commentary* is divided into sections numbered from 1 to 13, but the numbers 9 and 12 are missing entirely, and section 6 contains five words only. Within most sections there are numbered subsections, many of which consist of brief explanatory phrases or references. There are about a dozen figures, but these resemble only in a general way those of the *Collectio*. [*Inc.*]: (f. 1) *Ordinatio et inordinatio in figuris sunt affectiones quae insunt figuris et planis quidem propter laterum et angulorum equalitatem et inequalitatem, in solidis autem ob planorum equalitatem et similitudinem. . .* [*Expl.*]: (f. 31) *ut segmentum \widehat{abc} ad circum \widehat{abck} , sic segmentum \widehat{def} ad circum \widehat{defl} , qualis igitur pars est segmentum \widehat{abc} circuli \widehat{abck} , talis quoque pars est segmentum \widehat{def} circuli \widehat{def} (sic).*

Manuscript:

(*) Florence, Biblioteca Nazionale, Magl. XI 107, s. XVI-XVII. Autograph. Kristeller, *Iter* I 118. Microfilm supplied by the library.

Biogr.:

Johannes Baptista Raimundus (Giambattista Raimondi), a mathematician and Orientalist, was born at Cremona about 1540 and died about 1610. Tiraboschi speaks of him as 'uomo di tanta letteratura e di tanta dottrina, di così esquisita notizia di scienze e di lingue.' (*Storia*, VII, 441). From 1576 to 1582 he was professor of mathematics at the University of Rome, but at least by 1586 he was living in the palace of Cardinal Ferdinando de' Medici, where he was in charge of books sent back to the Cardinal and to the pope from the Near East, and where he supervised the engraver Granjon in designing an Arabic alphabet and publishing two editions of the four Gospels (1591), the *Geography* of Edrisi (1592), and Euclid (1594), as well as other works. Toward the end of his life he gave up his efforts to complete a polyglot Bible (the support for such a project having dwindled) and devoted

himself to completing his popular Arabic grammar, published in 1610.

Bibl.: Michaud, XXXV, 103-104; Carafa, *op. cit.*, II, 383. Tiraboschi, *Storia della letteratura italiana* (1809), VII, 220, 441.

II. *Commentary on Book X of Euclid's Elements*

TRANSLATION

1. GERARDUS CREMONENSIS (?)

It has been conjectured that the translator may have been Gerard of Cremona (d. 1187). The translation includes about half of the first book (about one-sixth of the whole) of the commentary as now extant in Arabic in a manuscript edited by Woepcke in 1855. The source was similar to, but not the same as, the extant Arabic manuscript. The first portion of the commentary contains general philosophical ideas on number, magnitude, ratio, and commensurable and incommensurable quantities. The second and longer portion (missing in the Latin translation) is more mathematical and includes theorems on irrational lines. The original Greek work appears to have been used by scholiasts but has been lost.

[*Inc.*]: *Tractatus primus expositionis tractatus decimi libri Euclidis, editione ab Othmen Damasceni in intentione magnitudinum rationalium et surdarum, que dicte sunt in tractatu decimo libri Euclidis in elementis.*

Intentio in tractatu decimo libri Euclidis in radicibus est inquisitio de magnitudinibus communicantibus et seiunctis et rationalibus et surdis. . . [*Expl.*]: *quoniam iam ostensum est, quod est eis portio sicut numeri ad numerum. Hec est ergo summa quam diximus in dubietate Platonis.'*

Manuscript:

Paris, Bibliothèque Nationale, Lat. 7377a, s. XII, fols. 68-70.

Bibl.: C. Junge, 'Das Fragment der lateinischen Übersetzung des Pappus-Kommentars zum 10. Buche Euklids,' *Quellen und Studien zur Geschichte der Mathematik, Astronomie und Physik, Abteilung B, Studien III* (1934-1936), 1-17. Heinrich Suter, 'Über

einige noch nicht sicher gestellte Autorennamen in den Übersetzungen des Gerhard von Cremona', *Bibliotheca Mathematica*, Ser. III, vol. 4 (1903) 19-27. The Arabic translation of Pappus' Commentary on Book X of Euclid's *Elements* was done into English by William Thomson. See Gustav Junge and William Thomson, *The Commentary of Pappus on Book X of Euclid's Elements, Arabic Text and Translation* (Harvard Semitic Series 8, Cambridge, Mass. 1930).

Biogr.: See vol. I, 89 and 170.

III. *Commentary on Ptolemy's Almagest Book V*

It is not known whether or not Pappus commented on all thirteen books of the *Almagest*. His commentary on Book VI (written about 320) is extant in Greek but seems not to have been translated into Latin. Commentaries by him on Books I and IV are attested, but are lost; there is some evidence also that he may have commented at least on Book III and perhaps on other books. Of his commentary on Book V two translations exist in manuscript (there are no printed editions).

TRANSLATIONS

1. JOHANNES BAPTISTA THEOPHILUS

[*Inc.*]: Pappi Alexandrini Commentarius in quintum constructionis de fabrica astrolabi instrumenti. In quarto mathematicae institutionis libro, a qualibus summere deceat observationibus quae de luna perquirenda atque expendenda sunt exequutus est Ptolemaeus. . . [*Expl.*]: In eam quae fit in signifero illusionem, secundum longitudinem atque latitudinem ex canone angulorum atque rectorum in circulo. Finis quinti libri.'

Manuscript:

Paris, Bibliothèque Nationale, Lat. 7263, s. XVI, f. 231^v-278^v. *Catalogus codicum manuscriptorum bibliothecae regiae*, IV, p. 332. Rome states that the translation was made from a ms. since lost. The title page of the ms. indicates only that it contains Teofili's translation of Theon's Commen-

tary on Ptolemy's *Almagest*. However, the commentary on Book V is that of Pappus and carries his name. Microfilm supplied by M. Marcel Thomas.

Adolphe Rome, *Commentaires de Pappus et Théon d'Alexandrie sur l'Almageste*, 3 vols. (Vatican City, 1931-1943) I, vi.

Biogr.:

Johannes Baptista Theophilus (Giambattista Teofili), a physician of Urbino, was a pupil of Commandinus. Theophilus was sent by Guidubaldo II, Duke of Urbino, to act as his official representative at the inauguration of Pope Gregory XIII in 1572. According to Grossi, Theophilus was engaged at the time of his death in translating Theon's commentary on Ptolemy's *Almagest*.

Bibl.: Carlo Grossi, *Degli uomini illustri di Urbino* (Urbino, 1819) 70.

2. DAVID SAN-CLARUS

This translation was made during the sixteenth century from a Greek text published in 1538 with the Basel edition of the *Almagest* by Camerarius.

[*Inc.*]: Pappi Alexandrini commentarius in quintum librum Ptolemaei de constructione instrumenti astrolabii. Disserens Ptolemaeus lib. 4 mathematicorum, a quibus observationibus oporteat exquirere ea quae attinent ad lunam, et de periodicis ipsius temporibus, i. e. reuolutoriis motibus in annis Aegyptiacis $\tau\mu\epsilon$ et diebus $\pi\beta$. . . [*Expl.*]: ad eam ad zodiacum secundum longitudinem et latitudinem parallaxin, et per canonem angulorum, et rectorum in circulo. Explicit Pappi commentarius in quintum librum.

Manuscript:

(micro.) Paris, Bibliothèque Nationale, Lat. 7264, s. XVI, pp. 251-301. *Catalogus Codicum manuscriptorum bibliothecae regiae* IV, p. 332.

This is again Theon of Alexandria's commentary on Ptolemy's *Almagest* as well as Pappus' commentary on Book V. Microfilm and information supplied by M. Marcel Thomas.

Biogr.:

David San-Clarus (David de Sainclair), a Scotsman and a Catholic, removed to

PAPPUS ALEXANDRINUS

France for reasons of religion and died in Paris on 29 June, 1629. In 1599 he was appointed by Henry IV to the chair of mathematics at the Collège Royal. He read the Greek mathematicians in their own language and wrote Latin prose and verse. Among his works are *Direction cyclométrique ou Réfutation de la fausse Quadrature du Sieur Scotto* (Paris 1622), *Ducis Aurelianensis Genethliacon apotelesmaticon ad Margaritam Valesiam Reginam* (Paris,

1607), and *Nympha Rongiaca* (Paris, 1624). He also wrote a work in favor of Archimedes and Euclid, another in defense of Ptolemy, and Latin poems.

Bibl.: Claude Pierre Goujet, *Mémoire historique et littéraire sur le Collège royal de France* (Paris, 1758) II 126ff. Hilarion de Coste, *Vie du P. Mersenne* (Paris, 1649), 81. Abel Lefranc, *Histoire du Collège de France* (Paris 1893), 383.