

Leipzig, Universitätsbibliothek 1442, membr., s. XIII, fols. 159-161v. The manuscript, which was reported as destroyed, has been recovered. (*Aristoteles Latinus, Codices I*, 711-12).

23 sentences, with prologue, first and second commentary. Title: Trimegistus.

vol. I, p. 154a, line 3. Add:

Warsaw, Bibliotheca Universitatis 10, membr., s. XV, fols. 161-4.

23 sentences with prologue, first and second commentary. No title.

vol. I, p. 152a, line 25 and 154b, lines 6-7, read: Sentence II.

PAPPUS ALEXANDRINUS, ADDENDA ET CORRIGENDA.

by MARJORIE NICE BOYER

(York College of the City University of New York)

The Addenda are arranged in the order of the original article, under the following headings:

Fortuna. Additional material.

I. *Collectio*.

Translations.

1. Federicus Commandinus. Additional material.
5. Anonymus. A new translation.
6. Bernardinus Baldus. A new translation.

vol. II, p. 206b, line 16. Add:

The first known Latin translation of Pappus' *Collectio* was made by Federicus Commandinus and published in 1588. However, Sabetai Unguru in his article, "Pappus in the Thirteenth Century in the Latin West," *Archive for History of Exact Sciences*, XIII (1974) 307-34 shows that certain propositions of Witelo's *Perspectiva* of ca. 1270 (Book I, propositions 22, 38, and 39) are essentially taken from propositions VI, 43, VI, 42, and VI, 44 of Pappus' *Mathematical Collection*. Dr. Unguru also argues that Vaticanus graecus 218 could have been in that library already as early as the thirteenth century and that William of Moerbeke, Witelo's friend, might have translated it. In that case, at least parts of the *Collectio* could have been available to Witelo in Latin.

p. 207a, line 16. Add:

Lost Works

3. Chorographia or Universal Description of the World. Robert H. Hewson, "The Geography of Pappus of Alexandria: A

Translation of the Armenian Fragments," *Isis*, Vol. 62, Part 2, #212 (1971), pp. 186-207. Hewson states that it is an error to attribute the Geography to Moses Chorenensis, as the earliest surviving manuscripts are anonymous. "Despite his continual references to Ptolemy, the Armenian redactor must be taken at face value when he states that his work is based on Pappus and that references to Ptolemy must have been included in Pappus' text to begin with or derived at second hand from some other source." (pp. 186-187).

I. *Collectio*

TRANSLATIONS

1. FEDERICUS COMMANDINUS

p. 207b, line 44. Add:

Commandinus' translation of Pappus continued to hold the field for many years. It is therefore of some importance to note the reasons for the delay in its publication. When Commandinus died in 1575, he left

his translation of the *Collectio* virtually complete. His heirs, two daughters, quarreled over what should be done with the manuscript. According to the 1588 dedicatory epistle of Valerius Spaciolus, son-in-law of Commandinus, it was only the intervention of Francesco Maria II, duke of Urbino, that secured its publication. Bernardino Baldi (in his "Vita di Federico Commandino," *Giornale de' letterati d'Italia*, 19 (1714), 179) gives some details on the duke's efforts to see that Commandinus' translation saw the light of day. Baldi attributes the delay to the heirs' dislike of entrusting the manuscript to the hands of others (p. 178), while Valerius Spaciolus laid it to the cupidity of one of the heirs. Duke Francesco Maria persuaded the heirs to have the work sent to Venice to Franciscus Barocius, who had offered to see it through the press. Barocius, using a Greek manuscript different from those employed by Commandinus, by March 31, 1588 had produced a revised Latin version with woodcuts pasted in it, evidently ready for publication. (*Catalogus*, II, 209). However, the heirs were dissatisfied, apparently feeling that Barocius was appropriating Commandinus' work. Baldi says Barocius was suspected of negligence. The manuscript was retrieved and published later the same year, at Pesaro (1588). Baldi reports that it was entrusted to Guid' Ubaldo del Monte, who saw it through the press, but Valerius Spaciolus merely states that the book was printed just as Commandinus had left it, without corrections. Spaciolus fulsomely praises the duke for achieving the publication: without Francesco Maria's initiative and his willingness to finance publication, Commandinus' translation of Pappus' *Collectio* would not have seen the light of day.

p. 208a, line 13-22. Delete and substitute:
Edition of 1588, republished at Venice 1589.

Book III. Pappi Alexandrini Mathematicarum Collectionum Liber Tertius cum commentariis Federici Commandini Urbinatis. [*Inc.*]: Quicumque ea, quae in Geometria investigantur, diligentius expendere

volunt, o Cratiste, omne problema appellari existimant. . ./. . . [*Expl.*]: et praetera eundem circulum comprehendere triangulum icosaedri, et pentagonum dodecaedri in eadem sphaera descriptorum.

Pappi Alexandrini Mathematicarum Collectionum Liber Quartus cum commentariis Federici Commandini Urbinatis. [*Inc.*]: Theorema I Propositio I. Si sit triangulum ABC, et ab ipsis ABBC describantur quaevis parallelogramma ABED, BCFG, et rectae lineae DEFG producantur. . ./. . . [*Expl.*]: Atque est datum punctum F. punctum igitur D positione contingit parabolam, quae per AFB transit, cuius axis est EF.

Pappi Alexandrini Mathematicarum Collectionum Liber Quintus cum commentariis Federici Commandini. [*Inc.*]: Sapientiae et disciplinarum cognitionem optimam quidem et perfectissimam Deus hominibus impartivit. Animalium vero rationis expertium nonnullis particulam assignavit. . ./. . . [*Expl.*]: quare neque aliud polyedrum inueniri potest, praeter quinque iam dicta quod aequalibus et similibus aequaliteris polygonis contineatur.

Pappi Alexandrini Mathematicarum Collectionum Liber Sextus cum commentariis Federici Commandini Urbinatis. [*Inc.*]: Multi eorum, qui astronomicum locum pertractant, cum propositiones negligenter intelligant, alia quidem. . ./. . . [*Expl.*]: se non ignorare arbitros. singula autem horum ex libris a Ptolemaeo de hac re conscriptis abunde facileque cognoscere licebit.

Pappi Alexandrini Mathematicarum Collectionum Liber Septimus cum commentariis Federici Commandini Urbinatis. [*Inc.*]: Locus, qui vocatur *'αναλόμενος*, hoc est resolutus, o Hermodore fili, ut summam dicam, propria quedam est materia. . ./. . . [*Expl.*]: id circo linea CD ad DE eandem proportionem habebit, quam ML ad LK. linea igitur DH locum efficiat necesse est.

Pappi Alexandrini Mathematicarum Collectionum Liber Octavus cum commentariis Federici Commandini Urbinatis. [*Inc.*]: Cum mechanica contemplatio, fili Hermodore, multis et magnis vitae nostrae rationibus conducat, iure optimo a philosophis maxima laude digna existimata est. . ./. . . [*Expl.*]: attrahentes ad alteram aedifi-

cii partem tandem adducunt, simul remittentes funes, et rursus religantes utuntur, sicuti ante dictum est.

p. 208a, line 24. Add :

(micro) British Museum, Sloane 2119, cart. s. XVII, 172 fols. Ex Pappo Alexandrino collectiones. Listed by E. J. L. Scott, *Index to the Sloane MSS in the British Museum* (London, 1904), as "Pappus of Alexandria, Collections from, by Lord Dorchester. 17th cent." Manuscript reported by P. O. Kristeller, microfilm supplied by British Museum. P. O. Kristeller reported that the excerpts were attributed by Scott to Harry Pierrepont, Marquess of Dorchester, but that his name did not appear in the MS. There are excerpts from Commandinus' translation of Pappus' *Collectio*, Books III, IV, V, VI, and VII. The MS begins with Book III, Theorem III, Proposition III. [*Inc.*]: Habeat A ad B minorem proportionem quam C ad D. Dico permutando A ad C minorem proportionem habere quam B ad D. The final excerpt is from Book VII. [*Expl.*]: sed rectangulum igitur ex AC, DF rectanguli ex AB, DE quadruplum esse.

p. 208b, lines 1-6. Delete and substitute :

(micro.) Urbino. Biblioteca Universitaria, Fondo del Comune, Busta 120, cart. s. XVI, 541 fols. Cf. Mazzatinti, vol. 80 (1954), p. 170, no. 28. Confused. Several fascicules and hands, of which the first may be that of Federicus Commandinus' secretary and the second that of Commandinus himself. Information supplied by P. L. Rose, MS described by P. O. Kristeller, and photocopies supplied by Prof. L. Moranti. f. 343^r-375^v. Parts of Books V, VII, and VIII with commentary. Occasional slight differences between the published version and this MS.

p. 208b, line 40. Add :

1a. FEDERICUS COMMANDINUS, with a variant translation of Book VIII.

(micro.) Urbino. Biblioteca Universitaria, Fondo del Comune, Busta 121, cart. s. XVI, 405 fols. Cf. Mazzatinti, vol. 80 (1954), pp. 170-171, no. 29. Confused. Several fascicules and hands, one of them evidently Commandinus', with corrections. Information supplied by P. L. Rose, MS described by P. O. Kristel-

ler, and photocopies supplied by Prof. L. Moranti.

f. 190^r-399^v. Parts of Books III, V, VII, VIII of Commandinus' translation. Although the published incipit of Book VIII appears on f. 376^r, earlier in the MS there occur in another hand a different incipit and explicit of Book VIII: (347^r) Pappi Alexandrini collectionis liber octavus qui continet problemata mechanica mista florida. [*Inc.*]: Mechanica speculatio Hermodore filii ad multa et magna quae in vita accidunt utilis iure optimo a philosophis maxime comprobata fuit...[*Expl.*] (368^v) sive rursus membro suppositum lignum instrumentis attrahentes manu circumducunt in alteram aedificii partem simul remittentes funes et rursus alligantes utuntur ut ante dictum est.

Curiously, the same incipit and explicit of Book VIII occur also in Paris, Bibliothèque nationale, lat. 10245 in conjunction with Commandinus' translation of Pappus, Books IV, V, and VI. One may surmise either that Commandinus made and later discarded the variant translation of Book VIII or that it was done by someone so closely associated with Commandinus that it passed under his name.

(micro.) Paris, Bibliothèque nationale, lat. 10245, cart. s. XVII. Listed in L. Delisle, "Inventaire des manuscrits conservés à la Bibliothèque impériale sous les nos 8822-11503 du fonds latin," *Bibl. Ecole Chartres*, XXIII (1862) 503 as "Pappi Alexandrini mathematicae collectiones. xvii^e siècle." MS reported by P. L. Rose, description supplied by Mlle Elisabeth Pellegrin, Microfilm supplied by Bibliothèque nationale. 191 fols. (f. 52-54^v and 191-204 blank). A copy of Commandinus' translation of and commentary on Pappus' *Collectiones* Books IV, V, and VI, but Books III and VII are missing, and the translation of Book VIII is the variant version to be found in Urbino, Busta 121, rather than the published version.

5. ANONYMUS

(micro.) Florence, Biblioteca Nazionale Centrale, cod. Pal. 1028, fol. 62^r-114^v. Cf.

I manoscritti Palatini, vol. III, fasc. 1, ed. P. L. Rambaldi and A. Saitta Revignas (Rome, 1950) (*Indici e Cataloghi IV*), p. 35. cart. s. XVI-XVII. MS reported and described by P. O. Kristeller. Microfilm supplied by the Biblioteca Nazionale Centrale.

Translation of the first twenty-five propositions of Pappus' Book V (f. 62^r-90^v) with commentary on them. Scholia out of order, which should be f. 105^r-114^v, continued 93^r-104^r.

f. 62^r. After the heading "Pappi Alexandrini Collectionis liber quintus, continet autem planarum figurarum aequalem habentium ambitum comparationes inter se et ad circulum et solidarum figurarum aequalem superficiem habentium comparationes inter se et ad sphaeram," the translator omits Pappus' introduction and proceeds directly to Theorem I Proposition I: omnium planarum figurarum aequalem ambitum habentium aequilaterarum et aequiangularum semper maior est quae plures habet angulos, omnium autem maxima est circulus cum aequalem cum ipsis habet ambitum.

f. 90^v. explicit of translation: circulus igitur cuius ea quae ex centro est ab aequalis est superficiebus quae fiunt ab ipsis cd, de, ef, fg, gh. 26 (chapter heading only). Scholia on Pappus Book V.

f. 105^r. [*Inc.*]: Vocat ordinata polygona quae aequilatera quidem sunt et aequiangula et non similia, ea scilicet quae ad numerorum seriem sese consequuntur.

f. 104^r. [*Expl.*]: tota igitur superficies a rectis ed, de, ef, fg, gh per revolutionem facta aequalis est circulo cuius ea quae ex centro est ab.

6. BERNARDINUS BALDUS

Paris. Bibliothèque nationale lat. 10280. Listed by L. Delisle, "Inventaire des manuscrits conservés à la Bibliothèque impériale sous les n° 8822-11503 du fonds latin," *Bibl. École Chartes*, XXIII (1862), 505: "Heronis Ctesibii belopoeica, id est telefactiva, Bernardino Baldo Guastallae abbate illustratore et interprete — Autres opuscules scientifiques de Bernardin — xvii^e siècle."

P. L. Rose reported that among the "other works" was a translation of Pappus' *Collectio*, Book VIII. Description supplied by P. O. Kristeller, microfilm supplied by Bibliothèque Nationale.

f. 183. Pappi Alexandrini collectionum Octavus, continet autem mechanica problemata immixta florida. [*Inc.*]: Cum ad multos et maximos vitae usus, Hermodore filii, mechanices contemplatio utilis existat, merito immortalibus laudibus a philosophis dignata est. . . . [*Expl.*]: (f. 202^v) etiam adducunt simul relaxantes funes extensas et rursus alligantes utuntur ut supra dictum est. Finis. Translatum est (deleted: in decimo die) spatio decem dierum a Bernardino Baldi Urbinate 1578 mense Aprilis die 7.

In the sixteenth and early seventeenth centuries the book of Pappus' *Collectio* which most appealed to contemporaries was Book VIII, perhaps because it seemed more relevant to science than the other and more mathematical books. Where a Latin manuscript contains only one book of the *Collectio* or where an author translated only one book, it was almost always Book VIII. (Cf. *Catalogus*, II, 208). The year 1578 for Baldi's translation of Pappus' Book VIII is important for dating the composition of Baldi's *In Mechanica Aristotelis problemata exercitationes*. F. Scarloncini's introduction to the published version (1621) states that Baldi wrote the work in 1582. However, it has been suggested that it could only have been composed in 1589, after the publication of Commandinus' translation of Pappus (1588), on which Baldi depended. (Stillman Drake, "Bernardino Baldi," *Dictionary of Scientific Biography*, I [1970], 419-420). We now know that Baldi was not obliged to wait for the publication of Commandinus' translation, for he had already made his own. Baldi translated Pappus' *Collectio*, Book VIII in 1578, despite the fact that his close friend Commandinus had already done so before his death in 1575. This fact implies that Commandinus' translation was unavailable to Baldi at the time, and this is confirmed by the latter's statement in his "Vita di Federico Commandino" that the heirs "lo tennero scpolto gran tempo" (*Giornale de' letterati d'Italia*, 19 [1714],

178). Baldi had acquired the Greek manuscript of Hero's *Belopoeica* at the University of Padua, whither he had gone in 1573. This manuscript on Hero's war machines must have been important to Baldi's composition of his *In Mechanica Aristotelis problemata exercitationes* in 1582, although Baldi only published his translation of the *Belopoeica* in 1616.

In the manuscript Bibliothèque nationale latin 10280 the translation of Hero occupies f. 5^r-30^v, that of Pappus Book VIII, f. 183^v-202^v. Yet the first translation in the manuscript was completed by Baldi on 23 March 1612 and the later one on 7 April 1578. Baldi stated in his colophon that he had completed his translation of Book VIII in 1578 in ten days, and there are marks of haste. The Book is not paragraphed, and the propositions are not numbered, as in Commandinus' version. The drawings are in some cases slightly different from those of Commandinus. Ireneo Affò saw in the Albani library in Rome the manuscript from which the *Belopoeica* was printed (1616) and the translation of Pappus' *Collectio*, Book VIII. Affò implies that Book VIII of Pappus with certain mathematical fragments comprised one volume. He lists it as an unpublished work: "LXXVIII. Pappi Alexandrini Collectionum Octavus. Continet autem Mechanica Problemata immixta florida. Accedunt alia fragmenta Mathematic. Orig. nella Bibl. Albani. Tutte le accennate cose sono legate in un volume solo." (Ireneo Affò, *Vita di Mons. Bernardino Baldi da Urbino primo abate di Guastalla*, Parma, 1783, pp. 187,222). These two works sound remarkably like different parts of Bibliothèque nationale lat. 10280, and P. O. Kristeller reports that the Paris manuscript seems to be comprised of a number of different fascicules. Presumably, the translations of Hero's *Belopoeica* and of Pappus' *Collectio*, Book VIII were sewn together at some time after Affò had seen them. From the point of view of subject matter it is fitting that the two works should be included in one volume, for Pappus' *Collectio*, Book VIII discusses Hero's war machines.

Biography:

Bernardinus Baldus (Bernardino Baldi), born in Urbino June 5, 1553, studied Latin and Greek with the humanist Giannantonio Terronio, and mathematics with Federicus Commandinus. In 1573 he went to Padua to study medicine and also logic and philosophy, without, however, pursuing a course leading to a degree. While there he wrote poetry, including *L'Artigliera* and *Il Lauro*. Baldi himself says that in the third year of his studies because of the pest he left Padua for Urbino. Here he continued his mathematical pursuits, this time with Guid'Ubaldo del Monte, author of *Mechanicorum Liber* (1577). Baldi also at this period studied Arabic, Hebrew, Chaldean, Greek, German, and French. During his stay in Urbino Baldi translated Aratus' *Phaenomena* into Italian and composed a didactic poem, *L'Invenzione del bossolo da navigare* (1578). Two years later Baldi accepted an invitation to the court of Ferrante Gonzaga, prince of Guastalla, who wished to study mathematics. Baldi's *In Mechanica Aristotelis problemata exercitationes* was written in 1582 but not published until 1621. Upon the recommendation of Ferrante Gonzaga, Baldi was named abbot of Guastalla and took holy orders. He continued his studies in Chaldean and Hebrew and wrote on various biblical subjects, as, for example, a poem on the deluge. In 1601 he was commissioned by Francesco Maria II delle Rovere, duke of Urbino, to write the life of Federico di Montefeltro. Disheartened by controversy, litigation, and the poverty of library resources at Guastalla, Baldi in 1609 resigned his position as abbot and passed into the service of the duke of Urbino, where he died Oct. 10, 1617.

A man of wide interests and extensive learning, Baldi wrote both love sonnets and didactic poetry, including a sort of tourists' guide to Rome. He translated ancient authors, including Musaeus' *Hero and Leander* and Hero's *Belopoeica*, and he commented on Vitruvius, but the most influential of his works was probably his *In Mechanica Aristotelis problemata exercitationes* (published 1621). Baldi's ideas on dynamics

were used by Mersenne, adopted by Roberval, and criticized by Descartes. However, a number of his literary works, not printed during his lifetime, later excited enough interest to be published in the nineteenth century.

Bibl.: R. Amato, *Dizionario Biografico degli Italiani* V (1963), 461-64; Stillman Drake, *Dictionary of Scientific Biography*, I (1970), 419-420; S. Drake and I. E. Drabkin, *Mechanics in Sixteenth-Century Italy* (Madison, Wisconsin, 1968), pp. 11 ff.; Mazzuchelli, Vol. II I, 116.

E. Narducci (ed.), "Vite inedite di matematici italiani scritte da Bernardino Bal-

di e pubblicate da Enrico Narducci," *Bullettino di bibliografia e di storia delle scienze matematiche e fisiche* 19 (1886), 335-406, 437-489, 524-640. F. Scarloncini, "De vita et scriptis B. Baldi urbinatis," introduction to *In Mechanica Aristotelis problemata exercitationes* (Maguntiae, 1621). Ireneo Affò, *Vita di mons. Bernardino Baldi da Urbino, primo abate di Guastalla* (Parma, 1783). Guido Zaccagnini, *Bernardino Baldi nelle vita e nelle opera* (2nd ed. Pistoia, 1908). René Dugas, *A History of Mechanics* Foreword by Louis de Broglie, trans. J. R. Maddox. (Neuchâtel, Switzerland and New York, 1955), pp. 106-107.

STEPHANUS BYZANTIUS. ADDENDA ET CORRIGENDA.

by AUBREY DILLER

(Indiana University)

and PAUL OSKAR KRISTELLER

vol. II, p. 223a, line 2. Add:

4a. ANONYMUS B

A fragment of an anonymous translation made in the sixteenth century appears in Basel, Universitätsbibliothek, ms. O IV 6. It is presumably autograph, but the scribe and the translator must for the time being remain unidentified; possibly the translation is the same as that which was contained in a manuscript lost during World War II: Milan, Biblioteca Trivulziana, cod. 737, cart., s. XV (see CTC II, 221).

Fragmentum lexic (other hand: Steph.

Byz.). [*Inc.*]: (fol. 1) Anaea acuto tono in penultimam reiecto non ut Lilaea Istiaea Carthaea enuntiatur (p. 92 Meineke). Urbs est Cariae contra Samum cui id nominis impositum ab Anaea Amazone illic tumulata .../... [*Expl.*]: Acherdus populus Hippo- thoontidis tribus (p. 151 Meineke). Popularis Acherdusius. Localia patent, Ἀχέρδουτροθεν.

Manuscript:

Basel, Oeffentliche Bibliothek der Universität, ms. O IV 6, cart., s. XVI, fols. 1-12v. Microfilm supplied by the library.