

**Zeitschrift:** Museum Helveticum : schweizerische Zeitschrift für klassische Altertumswissenschaft = Revue suisse pour l'étude de l'antiquité classique = Rivista svizzera di filologia classica

**Herausgeber:** Schweizerische Vereinigung für Altertumswissenschaft

**Band:** 50 (1993)

**Heft:** 3

**Artikel:** Antonios Eparchos and a Codex of Archimedes in the Bodmer Library

**Autor:** Sosower, Mark L.

**DOI:** <https://doi.org/10.5169/seals-39204>

### **Nutzungsbedingungen**

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

### **Conditions d'utilisation**

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

### **Terms of use**

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

**Download PDF:** 10.12.2025

**ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>**

## Antonios Eparchos and a Codex of Archimedes in the Bodmer Library

By Mark L. Sosower, Raleigh

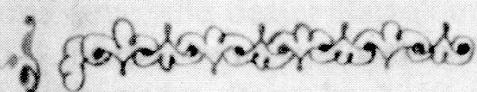

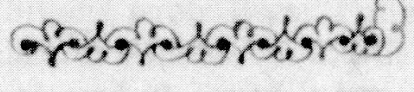
Located on the trade route between Europe and Byzantium, with numerous Greek scribes and magnificent libraries, and governed by rulers who encouraged commerce, Venice was the center of the trade in Greek manuscripts during the sixteenth century. Active workshops produced hundreds of manuscripts for distinguished foreign visitors, who came to Venice in order to acquire classical and Byzantine Greek texts that had not yet come into print. In addition, there was a great interest in Archimedes in the five years preceding the publication of the *editio princeps* in 1544<sup>1</sup>. The demand for Greek texts of

\* In addition to the standard abbreviations, I employ the following:

- *Archimedes in the Middle Ages* = Marshall Clagett, *Archimedes in the Middle Ages. Volume Three. The Fate of the Medieval Archimedes 1300 to 1565. Part Three: The Medieval Archimedes in the Renaissance, 1450–1565* (Philadelphia 1978).
- *Les copistes* = Annaclara Cataldi Palau, *Les copistes de Guillaume Pellicier, évêque de Montpellier (1490–1567)*, *Scrittura e civiltà* 10 (1986) 199–237.
- *Jorge de Constantinopla* = Antonio Bravo García, *Manuscritos griegos de El Escorial copiados por Jorge de Constantinopla*, *Revista de la Universidad Complutense de Madrid* (1981) 374–376.
- *Repertorium*, 1A = E. Gamillscheg/D. Harlfinger, *Repertorium der griechischen Kopisten, 800–1600, 1. Teil, Handschriften aus Bibliotheken Grossbritanniens. A. Verzeichnis der Kopisten*, Österreichische Akademie der Wissenschaften, Veröffentlichungen der Kommission für Byzantinistik, III/1A (Vienna 1981).
- *Repertorium*, 2A = E. Gamillscheg/D. Harlfinger, *Repertorium der griechischen Kopisten, 800–1600, 2. Teil, Handschriften aus Bibliotheken Frankreichs. A. Verzeichnis der Kopisten*, Österreichische Akademie der Wissenschaften, Veröffentlichung der Kommission für Byzantinistik, III/2A (Vienna 1989).

I want to thank Dr. Hans E. Braun, Director of the Bibliotheca Bodmeriana, for his cooperation during the course of this investigation. I gratefully acknowledge the financial assistance that I have received from the National Endowment for the Humanities, the American Philosophical Society, and the North Carolina Humanities Foundation.

<sup>1</sup> In 1543, N. Tartaglia reprinted in Venice two works of Archimedes (*De dimensione circuli* and *Quadratura parabolae*) that had been translated into Latin by the Flemish Dominican William of Moerbeke in the thirteenth century. These texts had first been printed by L. Gaurico in 1503. Tartaglia's book also contained the first printed text of Moerbeke's Latin translations of Archimedes' *De planorum aequilibriis* and Book 1 of *De corporibus fluitantibus*. See Marshall Clagett, *Archimedes in the Late Middle Ages*, in: *Perspectives in the History of Science and Technology*, ed. Duane H. D. Roller (Norman, Oklahoma 1971) 252–253. Thomas Ghechauff (Venetianus) printed the *editio princeps* of the Greek text in Basle. The Greek exemplar he used was Nuremberg, Stadt. Cent. V. app. 12, a copy of Codex A. (Codex A [saec. IX], the archetype of all the manuscripts of Archimedes, Eutocius and Hero, was lost during the second half of the seventeenth century.) See *Archimedis opera omnia cum commentariis*

ἀρχιμάσδου περὶ ὠδῶν πέντων ἰσορροπῶν· ἡ κέντρυ Βάρων  
 ὅτι πέντων·

**Π**οιμεθα τὰ ἱσάρια ἀπὸ ἴσων μακρόων ἰσορροπῶν ταῦδε  
 ἴσα Βάρια ἀπὸ τῶν ὠδῶν μακρόων μὴ ἰσορροπῶν ἀλλὰ ῥέ-  
 πων ἐπὶ τὸ Βάρος τοῦ ἀπὸ τοῦ μείζονος μακροῦ· εἴη Βαρέων  
 ἰσορροπεύτων ἀπὸ τῶν μακρόων ποτὶ τὸ ἕτερον τῶν μαρ-  
 ποτι περὶ μὴ ἰσορροπῶν· ἀλλὰ ῥέπειν ὅτι τὸ Βάρος ἐκείνῳ  
 ὡς προσέτι· ὁμοίως δὲ καὶ εἴη ἀπὸ τοῦ ἑτέρου τῶν μαρ-  
 ποτι περὶ μὴ ἰσορροπῶν· ἀλλὰ ῥέπειν ὅτι τὸ Βάρος ἐκείνῳ  
 οὐκ ἐπὶ τῶν ἴσων καὶ ὁμοίων σχηματῶν ὅτι πέντων ἐφάρ-  
 μοζομένων ὅτι ἀλλήλα· καὶ τὰ κέντρυ τῶν Βαρέων ἐφάρμο-  
 ζει ἐπὶ ἀλλήλα· τῶν δὲ ὠδῶν ὁμοίων δὲ τὰ κέντρυ τῶν μαρ-  
 ποτι περὶ μὴ ἰσορροπῶν· ὁμοίως δὲ λείπονται ἀπὸ τῶν  
 ποτι περὶ ὁμοίων σχήματα· ἀπὸ τῶν ἴσων τῶν γωνίας ἀπὸ τῶν  
 ἐπὶ τῶν ποτι περὶ γωνίας ἴσων ποτι περὶ ὁμοίων σχήματα· εἴη  
 μακρόων ἀπὸ τῶν μακρόων ἰσορροπῶν καὶ τὰ ἴσα αὐτῶν  
 ἀπὸ τῶν αὐτῶν μακρόων ἰσορροπῶν· ἡ δὲ τῶν σχήματῶν οὐκ  
 ἀπὸ τῶν αὐτῶν καὶ τὰ καὶ ἡ τὸ κέντρυ τῶν Βαρέων ἐν-  
 τὸς ὅτι τῶν σχήματῶν· ποτι περὶ μὴ ἰσορροπῶν, τὰ ἀπὸ ἴσων  
 μακρόων ἰσορροπῶν Βάρια, ἴσα ἐντὶ· εἴη περὶ ἀπὸ τῶν  
 ποτι περὶ ἀπὸ τῶν ἀπὸ τῶν μείζονος τῶν ὑπεροχῶν, τὰ  
 λείπονται οὐκ ἰσορροπῶν· ὅτι δὲ ἰσορροπῶν ἀπὸ τῶν  
 ἑτέρου ἀπὸ τῶν· ὡς τε τὰ ἀπὸ τῶν ἴσων μακρόων Βάρια ἰ-  
 σορροπῶν, ἴσα ἐντὶ τὰ ἀπὸ τῶν ἴσων μακρόων ἀπὸ τῶν Βαρέων  
 οὐκ ἰσορροπῶν· ἀλλὰ ῥέπειν ὅτι τὸ μείζον· ἀπὸ τῶν  
 γωνίας ὑπεροχῶν, ἰσορροπῶν· ὅτι δὲ τὰ ἴσα ἀπὸ τῶν  
 ἴσων μακρόων ἰσορροπῶν· ἡ δὲ τῶν οὐκ ἰσορροπῶν ἀπὸ τῶν

Leere Seite  
Blank page  
Page vide



Archimedes resulted in the production of Scorial. X I 14 and Scorial. T I 5 for the Spanish ambassador to Venice, Don Diego Hurtado de Mendoza. At the same time, the dealer Bartolomeo Zanetti of Brescia wrote Berol. Phillipps 1541 for the French ambassador to Venice, Guillaume Pellicier<sup>2</sup>. A fourth text of Archimedes, Paris. gr. 2359, was also manufactured in Zanetti's Venetian workshop<sup>3</sup>.

Another manuscript of Archimedes written at this time is MS 8 in the Bibliotheca Bodmeriana in Geneva. It is worthwhile to study this manuscript, as it is unknown to editors, and absent from the master-lists of the manuscripts of its authors. Moreover, Bodmer 8 has historical and sentimental value, because this codex was written by the important scribe, George Basilicos. Further, Bodmer 8 is one of only four Greek manuscripts of Archimedes to enter Spain during the early Renaissance. We shall also see that the production of Bodmer 8 can be linked to Antonios Eparchos (1491–1571), the well-known dealer in Greek manuscripts. Born in Corfu, Eparchos emigrated to Italy, and lived in Venice between 1537–1552. There, he sold Greek manuscripts to prominent buyers. He also made more than one trip to Byzantium in order to procure Greek manuscripts. Numerous manuscripts in the Bibliotheca Apostolica Vaticana, the Real Biblioteca de El Escorial, the Bayerische Staatsbibliothek, and the Bibliothèque Nationale may be traced to Antonios Eparchos.

Since there is no published account of Bodmer 8, I shall begin with a physical description of the manuscript, and then discuss its provenance. The manuscript is paper, II + 243 + II folios, 330 mm × 224 mm (223 mm × 132 mm). The watermark on the flyleaves correspond to Harlfinger *Arbalète* 62<sup>4</sup> (see

*Eutocii*<sup>3</sup>, ed. J. L. Heiberg (Leipzig 1915) XL–XLI. LXVIII–LXXX. The Latin translations that accompanied the Greek text in the *editio princeps* came from Marc. f. a. 327. This Latin manuscript – also derived from Codex A – was written by Jacobus Cremonensis at the court of Pope Nicholas V at Rome ca. 1450. Nicholas V loaned Cremonensis' manuscript to Cardinal Bessarion, who in turn gave it to one of his circle of translators, Jacobus Regiomontanus. Regiomontanus made corrections to Cremonensis' translation, when he wrote Nuremberg, Stadtbibl. Cent. V. app. 15, which Venetorius used for the *editio princeps*; see *Archimedes in the Middle Ages* 322; 323 n. 9; 328. The *editio princeps* of Archimedes was one of numerous classical and original mathematic texts that were published in Nuremberg and Basle; see Paul Lawrence Rose, *The Italian Renaissance of Mathematics. Studies on Humanists and Mathematicians from Petrarch to Galileo*, Travaux d'humanisme et renaissance 145 (Geneva 1975) 109.

2 For Berol. Phillipps 1541, see Heiberg, op. cit. XXXVIII–XXXIX; *Les copistes* 217. 230–231. Also, Annaclara Cataldi Palau, *Les vicissitudes de la collection de manuscrits grecs de Guillaume Pellicier*, Scriptorium 40 (1986) 47.

3 The two scribes that wrote Paris. gr. 2359 were Nicholas Cocolos and Nicholas Murmuris, who probably worked for Bartolomeo Zanetti; see *Les copistes* 208–209. 212. They were identified as the scribes of Paris. gr. 2359 by Gamillscheg/Harlfinger; see *Repertorium* 2A nos. 429. 434.

4 Dieter und Johanna Harlfinger, *Wasserzeichen aus griechischen Handschriften*, vols. 1–2 (Berlin 1974–1980).

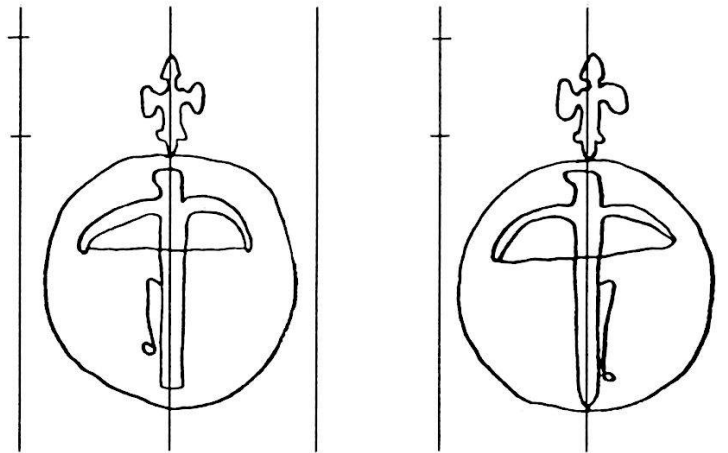


Figure 1. Scorial. X I 14 (134) fol. 195. 211

Figure 1). The watermark on the paper is a lion with countermark ME (see Figure 2). But, the paper of quire κη' (fol. 220–227) has an anchor watermark that is similar to Harlfinger *Ancre 66b* (see Figure 3). There are thirty-one quires, all quaternions, except ια' (fol. 81–85; the first leaf of this quire is missing). Except for ια', the quires are signed on the first leaf with the number written in the middle of the bottom margin. The leaves are blind-ruled, and single vertical bounding lines surround the column of text. There are 30 long lines. The manuscript is not signed, but the scribe can be identified as George Basilicos<sup>5</sup> (see Plate 1). Basilicos used black ink to write the body of the text. He used red ink to draw ornate headpieces on fol. 43r, 61r, 131r, 156r, 218r, as well as red ink for the initial letter of each text. Spaces were left blank for the diagrams that accompanied the text; many of these spaces have remained blank. The diagrams were written in brown ink, possibly by another scribe. The contemporary red binding is wooden and blind-pressed.

The manuscript contains: (fol. 1r) a table of contents, which lists the titles to the works of Archimedes and Eutocius, but not the title to the work of Hero Alexandrinus; (fol. 3r) Archimedes, *De sphaera et cylindro*; (fol. 58v) *De dimensione circuli* (without title); (fol. 61r) *De conoidibus et sphaeroidibus*; (fol. 131r) *De lineis spiralibus*; (fol. 130r) *Scholion in theorema decima*; (fol. 131r) *De planorum aequilibriis*; (fol. 147r) *Arenarius*; (fol. 156r) *Quadratura parabolae*; (fol. 167r) Eutocius, *Commentarii in libros Archimedis de sphaera et cylindro*, *Commentarii in dimensionem circuli*, *Commentarii in planorum aequilibriis*; (fol. 236r) Hero Alexandrinus, *De mensuris*.

Collation of the textual variants in Bodmer 8 shows that this codex is derived from Marc. gr. 305, whose distinctive readings were set forth by J. L.

<sup>5</sup> For this scribe, see *Jorge de Constantinopla* 374–376; also *Repertorium* 1A no. 56, and *Repertorium* 2A no. 75. Another manuscript written by George Basilicos is Beinecke 713; see Mark L. Sosower, *A New Manuscript of Theodoret in the Beinecke Library*, *The Yale University Library Gazette* 66 (1992) 126–135.

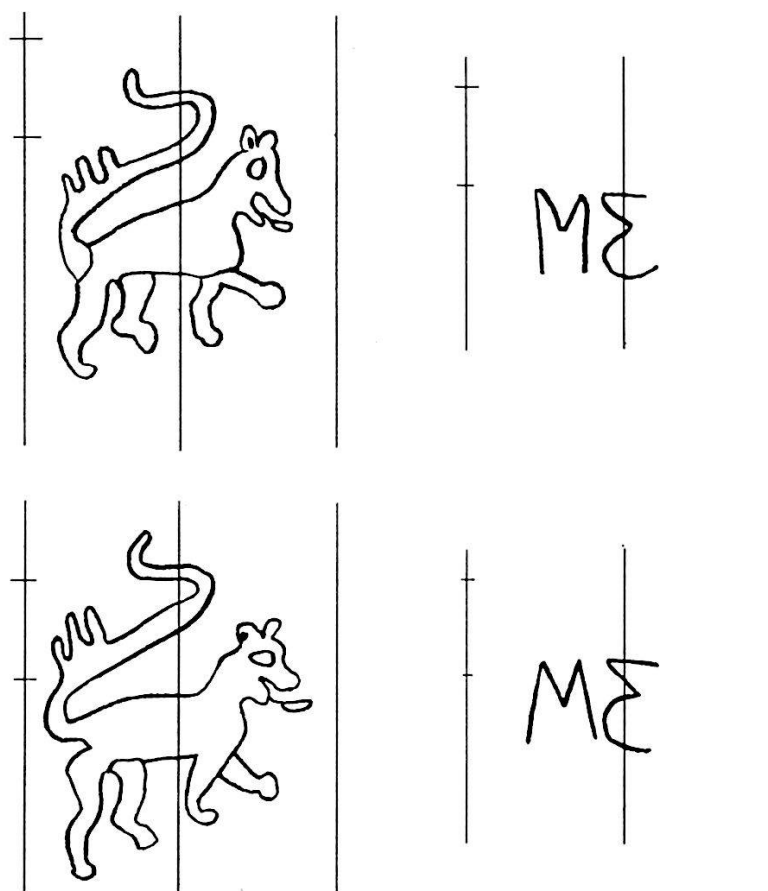


Figure 2. Scorial. X I 7 (349). Top: fol. 282. 287; Bottom: fol. 284. 291

Heiberg<sup>6</sup>. That Bodmer 8 is a direct apograph of Marc. gr. 305 is shown by the duplication of the error that had been made on fol. 81r of Marc. gr. 305. There, the scribe had mistakenly joined the end of Archimedes' *De lineis spiralibus* with the beginning of the anonymous scholion, without leaving room for the title. When the scribe returned to the beginning of the scholion in order to add the title, the lack of space forced him to write the title (σχόλιον εἰς τὸ ἰδεώρημα) in the margin. The recurrence of this unique error on fol. 130r in Bodmer 8 indicates that George Basilicos used Marc. gr. 305 as his exemplar.

6 For the collation, I used *Archimedis opera omnia cum commentariis Eutocii*, vol. 1, ed. J. L. Heiberg (Leipzig 1910). For Marc. gr. 305, see Elpidio Mioni, *Bibliothecae Divi Marci Venetiarum. Codices graeci manuscripti. Volumen II. Thesaurus antiquus, codices 300–625*, Indici e cataloghi, n.s. 6 (Rome 1985) 13–14; this manuscript was copied directly from Codex A by George Tribizias, one of the scribes who worked for Cardinal Bessarion; see Heiberg, op. cit. (supra n. 1) IX–X. XIV–XVII. Clagett has proposed that Marc. gr. 305 was written between 1454–1462; see *Archimedes in the Middle Ages* 325, n. 15. For the mathematical manuscripts in Bessarion's library, see Rose, op. cit. (supra n. 1) 44–46. For the treatment of the manuscripts during the 1540's, see Lotte Labowsky, *Bessarion's Library and the Biblioteca Marciana. Six Early Inventories*, *Sussidi eruditi* 31 (Rome 1979) 74–75. The identification of George Tribizias as the scribe of Marc. gr. 305 was made by Elpidio Mioni, *Bessarione scriba e alcuni suoi collaboratori*, in: *Miscellanea Marciana di studi Bessarionei, Medioevo e umane-*

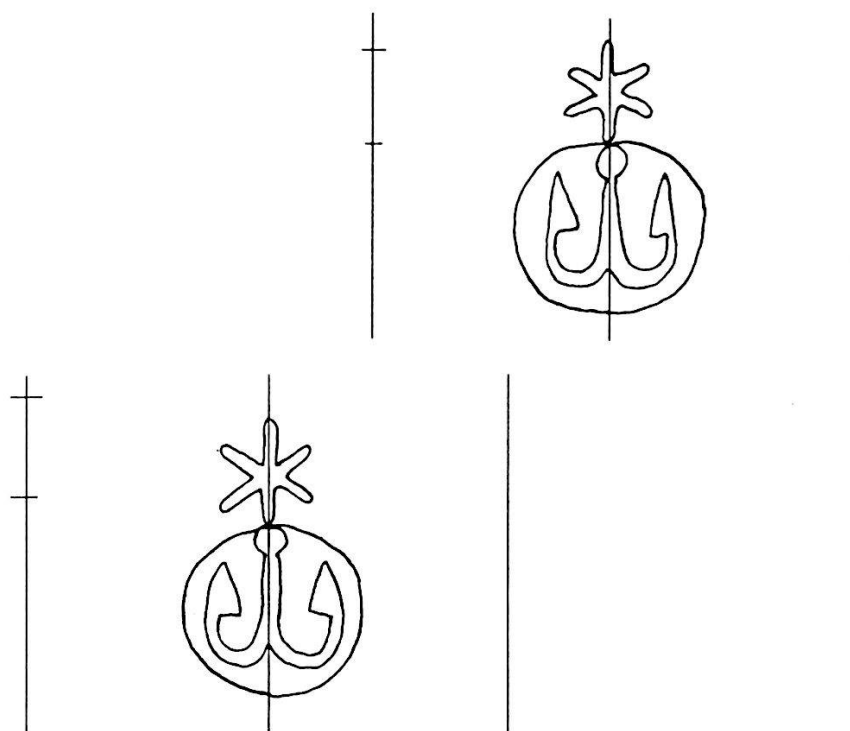


Figure 3. Top: Scorial.  $\Phi$  I 11 (186) fol. 241; Bottom: Scorial. T I 5 (125) fol. 5

Since George Basilicos did not date the manuscript, we must determine the circumstances surrounding its production by considering the paleographical evidence together with historical and documentary sources. Common characteristics of its construction link Bodmer 8 with eleven Greek manuscripts and one Latin manuscript; they were written around 1541, most probably under the direction of the manuscript-dealer, Antonios Eparchos. All the Greek manuscripts were written by George Basilicos and a few collaborators. Moreover, they were prepared similarly, and all have virtually the same dimensions. The watermarks show that all the manuscripts were produced from the same batches of paper. The texts deal mostly with mathematical, philosophical, or scientific topics. In addition, most of the manuscripts were written for Don Diego Hurtado de Mendoza (d. 1575). While he served King Charles V of Spain as ambassador to Venice in 1538–1547, Mendoza built a magnificent library of Greek manuscripts<sup>7</sup> (Mendoza's library passed to the Royal Library at El Escorial). These manuscripts include:

simo 24 (Padua 1976) 310. If Marc. gr. 305 was written ca. 1454 – as Clagett has suggested – this would be one of the earliest manuscripts that Tribizias wrote for Cardinal Bessarion. See Carlo Gallavotti, *Intorno ai mss. di Giorgio Trivisia e di Giorgio Alessandro*, *Annali dell'Istituto Universitario Orientale di Napoli* 2 (1980/81) 1–24. For Tribizias, see also A. Bravo García, *Varia palaeographica graeca III*, in: Athlon. *Satura grammatica in honorem Francisci R. Adrados*<sup>2</sup> (Madrid 1987) 110–111.

<sup>7</sup> For Mendoza, see B. Blanco Gonzalez, *D. Hurtado de Mendoza. Guerra de Granada, Edición, Introducción y Notas* (Madrid 1970) 7–69. For his library, see Charles Graux, *Los orígenes del*

- (1) Scorial. T I 5 (gr. 125), 335 mm×235 mm, with mathematical works by Serenus, Hero Alexandrinus, and Archimedes, consists of three manuscripts<sup>8</sup>. The third manuscript (fol. 162–246), which contains Archimedes' *De sphaera et cylindro*, was written by George Basilicos (fol. 244 line 2–246v) and Librarius Bruxellensis (fol. 162v–244 line 2). The single watermark in this manuscript is the same as the anchor shown in Figure 3. Owned by Mendoza.
- (2) Scorial. T I 11 (gr. 131), 325 mm×220 mm, with mathematical works by Diophantus, Anthemius, Pappus, Nicomachus Gerasenus, and Eustathius Macrembolita, consists of two manuscripts<sup>9</sup>. The folios of the third manuscript (fol. 201–223) were numbered separately, and together with fol. 15–18, 29–32, once constituted a separate manuscript. This manuscript contains anonymous mathematical prolegomena as well as works of Nicomachus Gerasenus, and Eustathius. It was written by George Basilicos (fol. 201r–210r) and Scribe N (fol. 211v–222v). The watermarks in this manuscript are the crossbow and lion that are illustrated in Figures 1–2. Owned by Mendoza.

*fondo griego del Escorial*, ed. and trans. Gregorio de Andrés (Madrid 1982) 185–283; also A. Bravo García, *Pedro Carnabacas y el fondo Hurtado de Mendoza de El Escorial: nuevas atribuciones y correcciones*, La Ciudad de Dios 195 (1982) 489–494; Bravo García, op. cit. (supra n. 6) 104–107.

- 8 For this codex, see P. A. Revilla, *Catálogo de los códices griegos de la Biblioteca de El Escorial* (Madrid 1936) 404–410. Revilla identified Nicolas Turrianos as the scribe of the first manuscript (fol. 1–67). The hand of George Basilicos was recognized by Bravo, *Jorge de Constantinopla* 375. The two scribes who wrote the second manuscript (fol. 64a–160) were Camillus Venetus (fol. 64v–90v. 116r–160r) and his father, Bartolomeo Zanetti (fol. 90v–114r); see José María Fernández Pomar, *Copistas en los códices griegos Escorialenses complemento al catálogo de Revilla-Andrés* (Madrid 1986) nos. 54–55. These manuscripts were surely bound together to form the present codex after they entered Mendoza's library.
- 9 For this codex, see Revilla, op. cit. (supra n. 8) 427–430. The constituent manuscripts were bound together after they entered Mendoza's library, probably late in 1545 or in 1546; see Anthony Hobson, *Two Venetian Bindings for Diego Hurtado de Mendoza*, *The Book Collector* 24 (1975) 35. Palau found that the manuscript of Eustathius was one of a group copied from a lost archetype in Venice ca. 1541–1543; see Annaclara Cataldi Palau, *La tradition manuscrite d'Eustathe Makrembolitès*, *RHT* 10 (1980) 76. 98–99. Since this group of manuscripts were written in Venice, we may identify the lost archetype with MS 227 in the library that Cardinal Domenico Grimani (d. 1523) had bequeathed to the convent of Sant'Antonio in Venice, and was unknown to Palau (see pp. 83–84). This manuscript was mentioned in the index to Grimani's library in Vat. lat. 3960 (fol. 8r): 227. Isocratis orationes quaedam – Lysiae oratio funebris – Xenophontis oratio admonitoria. Aristoteles de Virtute – Eustathii amatoria in libris undecim. Codex Grimani 227 probably perished in the catastrophic fire that destroyed the convent in 1687. The first manuscript (fol. 1–200) of Scorial. T I 11 was written between 1545–1547 by Valeriano Albini. The second manuscript (fol. 163–200) was part of a multi-volume set of Pappus with Scorial. y I 7 (300); see A. P. Treweek, *Pappus of Alexandria. The Manuscript Tradition of the Collectio Mathematica*, *Scriptorium* 11 (1957) 200. In addition, Arnold Arlenius, Mendoza's librarian, wrote marginalia on fol. 2r. 5r–139r, doubtlessly after the manuscript entered Mendoza's library; see Pomar, op. cit. (supra n. 8) no. 6.



- (3) Scorial. T I 14 (gr. 134), 330 mm×220 mm, containing philosophical and astrological works by Damascius, Porphyrius, Paulus Alexandrinus, and anonymous authors, was written by Andronicos Nuccios in Venice in 1541 for Cardinal Mendoza<sup>10</sup>. One of the watermarks in the manuscript is the lion in Figure 2. The other watermark resembles Harlfinger *Flèche* 18 (see Figure 4). Owned by Mendoza.
- (4) Scorial. Φ I 11 (gr. 189), 333 mm×228 mm, containing opuscula on alchemy by Michael Psellus, was written by George Basilicos (fol. 184–266v) and Librarius Bruxellensis (fol. 1–183v)<sup>11</sup>. The watermarks include (fol. 184–266) a lion that matches Figure 2, and (fol. 1–183) an anchor that matches Figure 3. Owned by Mendoza.
- (5) Scorial. Y I 15 (gr. 254), 326 mm×220 mm, with Olympiodorus' Commentary on Plato's Gorgias and Damascius' Commentary of Plato's Philebus, was written by George Basilicos<sup>12</sup>. The watermarks are the crossbow and lion that match Figures 1–2. Westerink found the exemplar was Marc. gr. 197 in the Biblioteca Marciana in Venice. Owned by Mendoza.
- (6) Scorial. y I 4 (gr. 297), 333 mm×227 mm, containing *Historia Romanarum* by Cassius Dio, was written by Scribe R<sup>13</sup>. The paper has the lion watermark shown in Figure 2. Owned by Mendoza.
- (7) Scorial. y I 10 (gr. 303), 335 mm×225 mm, containing philosophical opuscula by Porphyrius, was written by George Basilicos (fol. 1r–69v) and Andronicos Nuccios (fol. 73r–161r)<sup>14</sup>. The watermarks on fol. 1–72 is the lion shown in Figure 2 without a countermark. In addition, the watermark in the paper of the flyleaves matches the crossbow shown in Figure 1. Owned by Mendoza.

10 For this manuscript, see Revilla, *op. cit.* (supra n. 8) 432–437. Nuccios wrote a subscription on fol. 527v, Ἀνδρόνικος νούτντζιος (sic) κερκυραῖος, μετὰ τὴν τῆς ἑαυτοῦ πατρίδος ὑπὸ τῶν ἀσεβῶν ἐπιδρομὴν, ἐνετῆσι διατρίβων καὶ πεντὰ συζῶν καὶ ταύτην τὴν βίβλον ἐξέγραψε· οὐκ ἄνευ μέντοι γε μισθοῦ· ἀφμα' δεκεμβρίου θή· – (“Andronicos Nuccios of Corcyra, after the raid against his country by the infidels, lingering in Venice and living in poverty, wrote this book; not without payment. 9 December 1541.”) Andronicos Nuccios will be discussed below.

11 For this manuscript, see Gregorio de Andrés, *Catálogo de los códices griegos de la Real Biblioteca de El Escorial*<sup>2</sup> (Madrid 1965) 18. For Librarius Bruxellensis, see Ole L. Smith, *On Some Manuscripts of Heron, Pneumatica*, Scriptorium 27 (1973) 96–98; Antonio Bravo García, *Dos copistas griegos de Asulanus y de Hurtado de Mendoza*, Faventia 3 (1981) 233–239.

12 For this manuscript, see de Andrés, *op. cit.* (supra n. 11) 98–99. George was identified as the scribe by Bravo García, *Jorge de Constantinopla* 375. Arnold Arlenius also wrote marginal notes on fol. 43. 44r–368v; see Pomar, *op. cit.* (supra n. 8) no. 6. In addition, Westerink dated this codex to the years 1539–1543; see *Olympiodori in Platonis Gorgiam commentaria*, ed. L. G. Westerink (Leipzig 1970) VI–VII.

13 For this manuscript, see de Andrés, *op. cit.* (supra n. 11) 181–182. George was identified as the scribe by Bravo García, *Jorge de Constantinopla* 375.

14 For this manuscript, see de Andrés, *op. cit.* (supra n. 11) 187–188. Scribe R was identified by Bravo García, *Jorge de Constantinopla* 375. Arnold Arlenius wrote the marginal notes on fol. 6. 13v–60r; see Pomer, *op. cit.* (supra n. 8) no. 6.

- (8) Scorial. X I 7 (gr. 349), 333 mm×232 mm, with mathematical opuscula by Apollonius Pergaeus, Serenus, and Theodosius, was written by George Basilicos (fol. 281r–332r), Andronicos Nuccios (fol. 41r–280v), and Scribe R (1r–40v)<sup>15</sup>. The only watermark in the paper of this manuscript is the lion watermark shown in Figure 2. Owned by Mendoza.
- (9) Scorial. X I 14 (gr. 356), 333 mm×230 mm, with the same contents as Bodmer 8, was written by Andronicos Nuccios<sup>16</sup>. The watermark on fol. 162–250 is the crossbow shown in Figure 1. The watermark on fol. 251–293 matches Figure 4. This manuscript is probably an independent copy of Marc. gr. 305, which Andronicos Nuccios wrote for Mendoza at the same time as George Basilicos was writing Bodmer 8. Codex Scorial. X I 14 has the same mutilated incipit of Archimedes and explicit of Hero which are the same as Marc. gr. 305, and the text has the separative readings of Marc. gr. 305. However, unlike the error we saw in Marc. gr. 305 and Bodmer 8, Archimedes' *De lineis spiralibus* was separated from the scholion that followed, the title to the scholion was written in the appropriate position at the head of the text (on fol. 159v). Owned by Mendoza.
- (10) Monac. 374, 331 mm×229 mm, containing Appian's *Historia Romana*, was written by George Basilicos (fol. 1v–311v), Scribe A (fol. 312r–343v line 12), George Cocolos (fol. 343v line 13–382v), and Antonios Eparchos (fol. 1r)<sup>17</sup>. One of the watermarks matches the lion in Figure 2. This codex belonged to Antonios Eparchos<sup>18</sup>.
- (11) Basil. F. II. 1b (51), 334 mm×225 mm, containing Olympiodorus, Damascius, Iamblichus, and Plutarch, was written by Andronicos Nuccios<sup>19</sup>. The watermarks on fol. 37–44, 67–78, 81–198, 207–604 match Figure 2.

15 For this manuscript, see de Andrés, op. cit. (supra n. 11) 247–248. The scribes were identified by Bravo García, *Jorge de Constantinopla* 375; cf. Pomar, op. cit. (supra n. 8) no. 19.

16 For this manuscript, see de Andrés, op. cit. (supra n. 11) 258–259. Pomar, op. cit. (supra n. 8) no. 19, identified Nuccios as the scribe who wrote the whole codex.

17 For this manuscript, see Mervin R. Dilts, *The Manuscripts of Appian's Historia Romana*, RHT 1 (1971) 66–67. He recognized two scribes: A<sup>1</sup> (fols. 1r–311v. 343v13–382r) and A<sup>2</sup> (fol. 312r–343v12). However, examination of the manuscript on microfilm shows that Antonios Eparchos wrote fol. 1 and marginal notes, and that George Cocolos wrote fol. 343v12–382r. For Antonios Eparchos, see E. Giotopoulou-Sisilianou, 'Αντώνιος Ἐπαρχος, ἕνας Κερκυραῖος οὐμανιστὴς τοῦ 15 αἰῶνα (Athens 1978); see also *Repertorium* 1A no. 23; Graux, op. cit. (supra n. 7) 128–135. For George Cocolos, see *Repertorium* 1A no. 65; the scribe of 312r–343v12 can be identified as Scribe A on the basis of his handwriting. (For this scribe, see *Les copistes* 233 and pl. 6.) Dilts found that this manuscript was written in Venice between 1540–1542. He also determined that Monac. 374 was copied directly from Vat. gr. 1612, which George Cocolos completed in Venice on 26 March 1540. Moreover, the watermarks that Dilts observed in Monac. 374 – a cross-bow enclosed in a circle and surmounted by a lilly, and an anchor enclosed by a circle and surmounted by a star – would appear to be Figures 1–2.

18 Eparchos was identified as the owner of this manuscript by Giotopoulou-Sisilianou, p. 296 (no. 59).

19 For this manuscript, see Martin Sicherl, *Die Handschriften, Ausgaben und Übersetzungen von*

Table 1. Bodmer 8 and Related Greek Manuscripts

Manuscript	Watermark(s)	Scribe(s)
Scorial. T I 5	Figures 1, 2	George Basilicos, Librarius Bruxellensis
Scorial. T I 11	Figures 1, 2	George Basilicos, Scribe N
Scorial. T I 14	Figure 4	Andronicos Nuccios
Scorial. Φ I 11	Figures 2, 3	George Basilicos, Librarius Bruxellensis
Scorial. Y I 15	Figure 1	George Basilicos
Scorial. y I 4	Figure 2	Scribe R
Scorial. y I 10	Figures 1, 2	George Basilicos, Andronicos Nuccios
Scorial. X I 7	Figure 2	George Basilicos, Andronicos Nuccios, Scribe R
Scorial. X I 14	Figures 1, 4	Andronicos Nuccios
Monac. 374	Figure 2	George Basilicos, Antonios Eparchos
Basil. F. II. 1b	Figure 2	Andronicos Nuccios
Bodmer 8	Figures 1, 2, 3	George Basilicos

(12) Another manuscript that can be included in this group is Scorial. f III 9, containing a Latin translation of Archimedes for Mendoza. This manuscript is a direct apograph of Marc. f. a. 327, the manuscript mentioned above (n. 1), which was written by Jacobus Cremonensis for Pope Nicholas V and then passed to Cardinal Bessarion's library. The description of the manuscript by Clagett indicates that one watermark in this manuscript matches Figure 1<sup>20</sup>.

The similarities are listed in Table 1. All of the manuscripts were written by George Basilicos or by scribes who collaborated with him to write at least one manuscript. The other scribe whose work appears most often in the group is Andronicos Nuccios. Nuccios collaborated with George Basilicos to write two manuscripts, and he wrote three manuscripts by himself. The most common watermarks are Figures 1 and 2, which are present in eleven of the manuscripts. The collaboration of the scribes, and the common paper indicate that all of these manuscripts were written at the same time, probably in 1541–1542.

*Iamblichos De Mysteriis. Eine historisch-kritische Studie*, Texte und Untersuchungen zur Geschichte der Altchristlichen Literatur 62 (Berlin 1957) 57–62, and pl. IV. Arnold Arlenius wrote notes in the margin; see *Repertorium* 1A no. 28.

20 See *Archimedes in the Middle Ages* 329–330. Clagett dated the manuscript to the years 1539–1545. Clagett reported that the paper of fol. 1–92 has the watermark that resembles Briquet 6299. The same watermark has been identified in fol. 1–207 of Scorial. Ψ I 13 (433), a manuscript written by Andronicos Nuccios; see de Andrés, *Catálogo de los códices griegos de la Real Biblioteca de El Escorial*<sup>3</sup> (Madrid 1967) 19. Sicherl saw the same watermark on the flyleaves of Basil. F. II. 1b (51). Palau identified the same watermark in Leid. B. P. G. 67G, which was written by Scribe N and owned by Guillaume Pellicier (see *Les copistes* 234). A third watermark identified in Scorial. f III 9 is Briquet 493; de Andrés saw the same watermark in Scorial. X I 5 (347), which belonged to Mendoza and was written by Nuccios. See de Andrés, *op. cit.* (supra n. 11) 246.

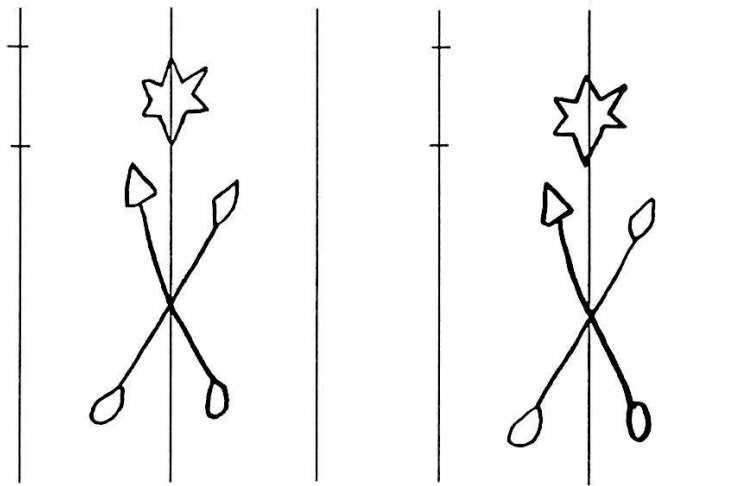


Figure 4. Scorial. T I 14 (134) fol. 295. 298

We have seen that most of the manuscripts were written for Don Diego Hurtado de Mendoza. Mendoza surely acquired his manuscripts from Venetian manuscript-dealers during his tenure as ambassador<sup>21</sup>. It is difficult to believe that he had sufficient time to recruit the scribes, acquire the paper, obtain suitable exemplars, and supervise the work on the massive scale that had been required to produce the enormous number of manuscripts that were purchased.

It is well known that Antonios Eparchos sold Greek manuscripts to the French ambassador, Guillaume Pellicier<sup>22</sup>. Moreover, Palau's research on the origination of Pellicier's library has shown that Bartolomeo Zanetti employed George Basilicos to write six manuscripts for the French ambassador. All of these manuscripts were constructed from the same paper that was used by other scribes – including *Librarius Bruxellensis* and Scribe N – who worked at Zanetti's Venetian workshop between 1539–1542<sup>23</sup>.

Moreover, recent palaeographical research indicates that Eparchos established a Venetian workshop that manufactured many manuscripts for the royal

21 See Jean Irigoin, *Les Ambassadeurs à Venise et le commerce des manuscrits grecs dans les années 1540–1550*, in: Venezia. Centro di mediazione tra oriente e occidente (secoli XV–XVI). Aspetti e problemi<sup>2</sup>, edds. Hans-Georg Beck et al. (Florence 1977) 402–406. While he described some of the practices of the Venetian scribes, Irigoin did not discuss the role of dealers in procuring manuscripts for the royal ambassadors. In addition, Smith (op. cit. [supra n. 11] 98) has supposed that *Librarius Bruxellensis* worked for a scriptorium that wrote manuscripts for Mendoza.

22 Graux, op. cit. (supra n. 7) 131; see also Léon Dorez, *Antoine Eparque. Recherches sur le commerce des mss. grecs en Italie au XVI<sup>e</sup> siècle*, Ecole Française de Rome. Mélanges d'archéologie et d'histoire 13 (1893) 282–283.

23 See *Les copistes* 199–217; also Sosower, op. cit. (supra n. 5) 128–132. Conclusive evidence of Zanetti's work as a manuscript-dealer is a letter cited by Annaclara Cataldi Palau, *Une collection de manuscrits grecs du XVI<sup>e</sup> siècle (ex-libris: 'non quae super terram')*, *Scriptorium* 53 (1989) 54–55.



ambassadors. His participation in writing the first folio and providing marginal notes in Monac. 374 shows that Antonios Eparchos was behind the production of this manuscript. In addition, Eparchos wrote similar marginal notes in Scorial. T II 4 (143), another manuscript of Appian, which Andronicos Nuccios wrote in 1542 for Hurtado de Mendoza<sup>24</sup>. The marginal notes in Scorial. T II 4 proves that Eparchos was involved with Nuccios in producing this manuscript for Mendoza. Further, Antonios Eparchos probably procured Scorial. Σ III 1 (100) and Scorial. Y III 10 (280) for Mendoza; these are manuscripts that Eparchos wrote in Venice in collaboration with other scribes<sup>25</sup>.

The textual transmission of Aelian's *Varia Historia* provides further evidence that Antonios Eparchos furnished the exemplars that were used by Andronicos Nuccios and other scribes. Antonios Eparchos owned Vat. gr. 998, the exemplar used by Andronicos Nuccios to write Escorial. Ω I 11 (512) for Mendoza in 1543<sup>26</sup>. In 1551, Antonios Eparchos sold Vat. gr. 998 to Cardinal Cervini. The exemplar of Vat. gr. 998 also belonged to Antonios Eparchos. It is Paris. gr. 1774, which was purchased by Guillaume Pellicier. In addition, Eparchos surely employed Scribe A to write another copy of Paris. gr. 1774 – Leid. B. P. G. 33F – which Eparchos also sold to Pellicier<sup>27</sup>.

The manuscript transmission of Eustathius also reflects the central role of Antonios Eparchos in furnishing the exemplars of some of the manuscripts that were written on commission, and in the delivery of the completed manuscripts to noble patrons<sup>28</sup>. We have seen that George Basilicos and Scribe N probably used Grimani 227 to write Scorial. T I 11 for Mendoza. Another codex of Eustathius that was copied directly from Grimani 227 is Neap. III AA 3. This manuscript was written by Andronicos Nuccios, and purchased by Cardinal Ranuccio Farnese most probably from Antonios Eparchos. Another

24 Dilts, op. cit. (supra n. 17) 57. 60–61. A colophon by Andronicos Nuccios in Scorial. T II 4 states that he copied this codex for Mendoza in Venice in 1542. Dilts determined that Monac. 374 was the exemplar for Scorial. T II 4 for Appian's *Illyrica*. The exemplar that supplied the remainder of the text was Marcianus VII. 10, then located in the monastery of Ss. Giovanni e Paolo in Venice. In addition, Andronicos Nuccios wrote Vat. gr. 159 for Antonios Eparchos in 1544, see Ch. G. Patrinelis, *Ἑλληνες κωδικογράφοι τῶν χρόνων τῆς ἀναγεννήσεως*, Epeteris tou Mesaionikou Archeiou 8–9 (1958–1959) 100. Not only did Antonios Eparchos and Andronicos Nuccios have a professional relationship, but they also had a close personal bond due to the marriage of their children. For Andronicos Nuccios, see also *Repertorium* 1A no. 20.

25 Pomar (op. cit. [supra n. 8] no. 19) identified Eparchos as the scribe of fol. 189–203 of Scorial. Σ III 1. This codex belonged to Mendoza, see Graux, op. cit. (supra n. 7) 494. Harlfinger identified Antonios Eparchos as the scribe of fol. 99–106 of Scorial. Y III 10; see Dieter Harlfinger, *Die Textgeschichte der pseudo-aristotelischen Schrift Περὶ ἀτόμων γραμμῶν. Ein kodikologisch-kulturgeschichtlicher Beitrag zur Klärung der Überlieferungsverhältnisse im Corpus Aristotelicum* (Amsterdam 1971) 411. Mendoza probably owned this codex; see de Andrés, op. cit. (supra n. 11) 157.

26 Mervin R. Dilts, *The Manuscript Tradition of Aelian's Varia Historia and Heraclides' Politiae*, TAPA 96 (1965) 62–63.

27 For the identification of Scribe A, see *Les copistes* 233.

28 See Palau, op. cit. (supra n. 9) 97–99. For the identification of Scribe N, see *Les copistes* 234.



direct copy of Grimani 227 that was also made from the same paper is Leid. B. P. G. 67G, which was written by Scribe N for Guillaume Pellicier. We may suppose that Eparchos arranged for Scribe N to copy this manuscript for Pellicier. In addition, Andronicos Nuccios used Grimani 227 as his exemplar when he wrote Monac. gr. 405, which was surely owned by Antonios Eparchos.

Other manuscripts in Mendoza's library that were written by Andronicos Nuccios are: Scorial. R II 4 (24); R II 6 (26); T I 8 (128); T I 16 (136); T II 4 (143); φ I 12 (190); y I 5 (298); X I 5 (347); X I 9 (351); Ψ I 13 (433)<sup>29</sup>. In addition, Andronicos Nuccios wrote marginal notes on fol. 157–158 of Scorial. T I 10 (130)<sup>30</sup>. It is likely that Nuccios wrote all of these manuscripts at Eparchos' workshop.

We may thus suppose that Bodmer 8 was written in Venice in 1541 for Antonios Eparchos. Most likely Eparchos borrowed the exemplar, Marc. gr. 305, which had come to Venice between 1468–1472 as part of the huge library of Greek manuscripts that Cardinal Bessarion bequeathed to the Republic of Venice. In 1541, the libri Nicaeni were located in a room on the upper floor of San Marco, where they were accessible to readers. The Marciana also loaned the Greek manuscripts. George Basilicos probably copied Bodmer 8 at the Biblioteca Marciana, or more likely, at Eparchos' workshop. Most probably, Eparchos employed George Basilicos to write Bodmer 8 in order to add it to his stock of manuscripts.

The movements of Bodmer 8 immediately after it was written remains a mystery. However, in the second half of the sixteenth century, it was acquired by Bartolomé Llorente (1540–1614), the humanist and canon of the Cathedral of Santa Iglesia del Pilar in Zaragoza<sup>31</sup>. Llorente had studied with Pedro Juan

29 For Scorial. R II 4 (24), Scorial. R II 6 (26), Scorial. T I 8 (128), Scorial. T I 16 (136), Scorial. T II 1 (140), see Patrinelis, p. 100, and Graux, op.cit. (supra n. 7) 490–491, 496. For Scorial. Φ I 12 (190) and Scorial. X I 5 (347), see Graux, op. cit. (supra n. 7) 195, 455 n. 78. For Scorial. X I 9 (351), see Pomar, op. cit. (supra n. 8) no. 41, and Graux, op. cit. (supra n. 7) 479. For Scorial. y I 5 (298), see de Andrés, op. cit. (supra n. 11) 183. For Scorial. Ψ I 13 (433), see de Andrés, op. cit. (supra n. 20) 19. Andronicos Nuccios wrote formulaic subscriptions in Scorial. T II 4 (143) and Scorial. Ω I 11 (512), where he acknowledged that Hurtado de Mendoza commissioned the manuscripts. These subscriptions closely resemble the subscription in Vat. gr. 159, a codex that Nuccios wrote for Eparchos. These subscriptions do not preclude that Eparchos was behind the production of all three of these codices.

30 This manuscript was written in 1541 and belonged to Mendoza; for Scorial. T I 10 (310) see Pomar, op. cit. (supra n. 8) no. 41, and Revilla, op. cit. (supra n. 8) 423–424.

31 The old inventories of the Pilar Library have been lost. However, Professor Ángel Escobar Chico of the Universidad de Zaragoza, whose catalogue of the Greek manuscripts in the libraries at Zaragoza is forthcoming, has concluded that all of the Greek manuscripts in the library came from Bartolomé Llorente. For the humanistic activities of Llorente, see Mariano Burriel, *Un bibliotecario del siglo XVI, defensor de las preeminencias del Pilar: El Canónigo Llorente* (Zaragoza 1956) 10–43; his works are listed in Appendix 3, pp. 55–64. For Llorente's library, see P. Galindo Romeo, *La Biblioteca del Canónigo Bartolomé Llorente (1587–1592)*, *Revista Zurita* 1 (1933) 63–78.

Núñez, the famous teacher at the University of Valencia during the 1550's. He received a doctorate in Theology from the Universidad de Huesca in 1578. While the Pilar Library was established shortly after the reconquest of Zaragoza by King Alfonso I of Aragon in 1118, all of the Greek manuscripts probably entered the library as part of Bartolomé Llorente's bequest. His collection of forty-one codices constituted a large library of Greek manuscripts, and it certainly was the most important collection in the region. As a canon of the Cathedral of Santa Iglesia del Pilar, Llorente had a deep and abiding interest in the Pilar Library. Through his bequest of these manuscripts, Llorente no doubt intended to widen the scope of the library to include areas of humanistic interest such as mathematics, and to foster the institution as a resource for Spanish humanists.

Charles Graux surely saw Bodmer 8 (which then had the accession-number 932), when he visited the Pilar Library and described the codex<sup>32</sup>: "No. 932. In-folio. – En papier. – Du xvi<sup>e</sup> siècle. – 30 quaternions. Reliure en veau rouge brun, ouvragée à froid sur toute la surface, tranche peinte en rouge. L'écriture rappelle celle de Jean Mauromate. 1. Archimède: 1. Sphère et cylindre, 1 et 2; – 2. Mesure du cercle; – 3. Conoïdes et sphéroïdes; – 4. Hélices; – 5. Περὶ ἐπιπέδων ἰσορροπίων ἢ κεντραβαρῶν, 1 et 2; – 6. Ψαμμίτης; – 7. Quadrature de la parabole ... 2. Eutocius, commentaire sur les n<sup>os</sup> 1, 2 et 5 de l'ouvrage ci-dessus ... 3. Héron, Περὶ μέτρων."

This manuscript was also described in the recent brochure listing the contents of the Pilar Library<sup>33</sup>: "74. ARCHIMEDES – Opera de Sphaera et Scylindro et Circulis, et alia multa; et in fine. – b Comm. Eutocii Ascalonitae in lib. de Sphaera et Cylindro et in alia opera Archimedes. – (Con algunas figuras y hh. pava figs.). – Inics. r. – pap. fuerte – amplio margen – bien conservado – 33,5×22,5 – p, s/t."

The Greek manuscripts remained in Zaragoza until the 1950's, when Bodmer 8 – along with approximately 800 rare books, incunabulae and manuscripts – strayed from the Pilar Library and were sold to rare-book dealers<sup>34</sup>.

32 Charles Graux/Albert Martin, *Rapport sur une mission en Espagne et en Portugal. Notices sommaires des manuscrits grecs d'Espagne et de Portugal*, in: *Nouvelles Archives des Missions scientifiques et littéraires* 2 (1892) 214–215. The Pilar manuscript is included in the master list of manuscripts of Archimedes compiled by Robert E. Sinkewicz, *Manuscript Listings for the Authors of Classical and Late Antiquity*, Greek Index Project Series 3 (Toronto 1990) microfiche J-15.

33 *Manuscritos, incunables, raros (1501–1753)* (Zaragoza 1961) 14.

34 For the dispersal of the Greek manuscripts, see Marcel Richard, *Répertoire des bibliothèques et des catalogues de manuscrits grecs, Supplément 1 (1958–1963)*, Documents, études et répertoires publiés par l'Institut de Recherche et d'Histoire des Textes 9 (Paris 1964) 54–55; also J.-M. Olivier, *Les manuscrits grecs de l'Archivo-Biblioteca del Cabildo Metropolitano (La Seo) de Saragosse*, *Scriptorium* 30 (1976) 52–57. The circumstances surrounding the movement of Bodmer 8 to Geneva are explained in Laurence C. Witten II, *Vinland's Saga Recalled*, *The Yale University Library Gazette* 63 (1989) 13–14: "A page of my inventory journal from 1957

Our codex was taken from the library by Enzo Ferrajoli de Ry, who sold it to the rare-book dealer Laurence C. Witten in Geneva in the autumn of 1957. Subsequently, Witten sold the manuscript to Dr. Martin Bodmer.

lists my purchases ... Among these was a magnificent Florentine manuscript in Greek of Archimedes (ca. 1460) in original red morocco, sold to Dr. Martin Bodmer." His account is confirmed by the unpublished description of Bodmer 8 on file at the Bibliotheca Bodmeriana, where it is noted that this manuscript was offered by Witten in New Haven in October of 1957, and incorrectly dated to the fifteenth century. The Spanish demands for the return of the Pilar manuscripts were reported in *The New York Times*, 6 November 1964, 1, p. 12; 7 November 1964, pp. 1, 25; 8 November 1964, p. 87; 10 November 1964, p. 53. The manuscripts involved were Beinecke MSS 268. 269. 271. 272, 274. 301; Yale Medical Historical Library MSS 32. 35.