
William of Moerbeke, the Papal Greek Manuscripts and the
Collection of Pappus of Alexandria in Vat. gr. 218

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**WILLIAM OF MOERBEKE, THE PAPAL GREEK MANUSCRIPTS,
AND THE *COLLECTION* OF PAPPUS OF ALEXANDRIA
IN VAT. GR. 218**

The *Collection* of Pappus of Alexandria (fl. A.D. 320) is an assemblage of independent mathematical writings, manifesting little original thought, but extremely valuable to the historian of the exact sciences. The text has an unusual history of transmission : for more than a millenium it was scarcely known at all, but in the sixteenth and seventeenth centuries Pappus came to be one of the most influential authorities on Greek geometry, — still a subject of living interest to the mathematicians of that time — following only Euclid, Archimedes, and Apollonius. In a valuable paper, A. P. Treweek has proved that the forty or so manuscripts of Pappus in Greek are all Renaissance descendants, sixteenth-century or later, of a much older, still extant, archetype, the tenth-century *Vaticanus gr. 218*. However, although Treweek's investigation cast much light on the eventual dissemination of Pappus in western Europe, he was unable to trace the history of the manuscript before its first appearance in Vatican catalogues in 1533 (1). In particular, there was need for an explanation of why no manuscript tradition of Pappus had developed in the Greek world, despite the considerable interest in mathematics and astronomy there during the fourteenth century, and how the manuscript came to Rome.

The answer seems to rest on the identification of Vat. gr. 218 with one of the entries in an inventory of the papal library made in 1311. The inventories of 1295 and 1311, since their publication towards the end of the last century by Ehrle, have become well known, because they include notices of about thirty Greek manuscripts, the only such collection in the West, or perhaps anywhere, at that time for which we have such detailed documentation (2). But although interesting things have been learned over the years about these manuscripts, the information has remained dispersed, and some errors have begun to be repeated. My intention here is first to review the progress made so far in the form of a commentary on the inventories, and secondly to establish more firmly the presence of Vat. gr. 218 in the collection, and its subsequent history.

(1) A. P. TREWEEK, « Pappus of Alexandria. The Manuscript Tradition of the *Collectio Mathematica* », *Scriptorium* 11 (1957) 195-233. See R. DEVREESSE, *Le fonds grec de la Bibliothèque Vaticane des origines à Paul V* (Vatican : 1965, Studi e testi 244) p. 309. The standard (and only) complete edition is by F. HULTSCH, Berlin : 1876-78.

(2) For the 1311 Perugia inventory, see F. EHRLE, *Historia Bibliothecae Romanorum Pontificum Tomus I* (Rome : 1890) p. 95-99. The 1295 inventory, representing the library of Pope Boniface VIII, is reprinted in A. PELZER, *Addenda et Emendanda ad Francisci Ehrle Historiae Bibliothecae Romanorum Pontificum* (Vatican : 1947) p. 23-24.

1. THE INVENTORIES

Both lists were compiled by cataloguers who knew no Greek, and they depended on the presence of Latin inscriptions in the manuscripts for their information. In several cases none was to be found. Where there was a title, the cataloguers proved themselves capable of the most monstrous distortions in reproducing them. But the ignorance of the 1311 cataloguer at least led him to reproduce an annotation « *and.* » that was written on many, though not all, of the books. The most common interpretation of this abbreviation is as an *ex libris*, short for 'Andegavensis', signifying that the volumes had once belonged to the Angevin kings of Sicily (3). How they changed hands is not certain, but it is likely that they were given or sold to the Pope after the battle of Benevento in 1266 (4).

Their coming into the Pope's possession seems to coincide with the appearance at the papal court of the great translator William of Moerbeke. An impressive correlation exists between the known contents of the manuscripts and William's translations of Greek texts, and many of his translations, according to subscriptions, date from 1266 to 1277, and were made at the papal court of Viterbo. Further, the general character of the manuscripts, almost all philosophical or mathematical, points to William, to the degree that it is hard to understand how such a specialized group of texts, all in Greek, would have been thought worth procuring, without his involvement (5). Between 1260, when he was at Thebes and Nicaea, and 1267, when he was

(3) PELZER, p. 92-94. This resolution has not been universally accepted, but I believe that it is correct. First, the abbreviation *and.* for *andegavensis* is attested (see for example A. CAPELLI, *Dizionario di abbreviature* (6th ed., Milan : 1929) p. 16). Secondly, the unusual emphasis in the papal library on scientific and philosophical literature corresponds to a well attested flourishing of these subjects in Sicily in the twelfth century (C. H. HASKINS, *Studies in the History of Medieval Science* [2nd ed., Cambridge, Mass. : 1927], especially p. 155-93 remains the best survey). Thirdly, the passage of such manuscripts to the papal court is historically plausible. See also addenda below. Besides Florence Laur. 28,18, to be mentioned below, two other manuscripts have been found with « *and.* » written on them that have no demonstrated connection with the papal collection : Vat. gr. 276 of Hippocratic writings, and Vat. gr. 1605 of Heron of Byzantium (see *Codices Vaticani graeci*, vol. 1, p. 365 and *Codices 1485-1683*, p. 262). Of course an Angevin *ex libris* would have been written on the books while they were still in Anjou hands, not later.

(4) Thus J. L. HEIBERG, « Les premiers manuscrits grecs de la bibliothèque papale », *Oversigt over det kgl. danske Vidensk. Selsk. Forh.* 1981, p. 316-17. A gift of treasure, though not specifically books, is documented.

(5) The *and.* abbreviation appears in none of the entries for Latin books in the inventories. Of studies of William of Moerbeke's career and work, L. MINIO-PALUELLO, « William of Moerbeke », *Dictionary of Scientific Biography*, vol. 9 (New York : 1974), p. 434-40 is most reliable ; see also M. GRABMANN, *Guglielmo di Moerbeke O.P. il traduttore delle opere di Aristotele* (Rome : 1946). To the biographical data must now be added William's return to Italy after his second sojourn in Greece (he participated in the lifting of a papal interdiction at Perugia in January 1284) ; see A. PARAVICINI BAGLIANI, « Nuovi documenti su Guglielmo da Moerbeke O.P. », *Archivum fratrum praedicatorum* 52 (1982), p. 135-43. Another important figure in medieval science, Campanus of Novara, was also at the papal court in the late thirteenth century, but he is not known to have worked with Greek texts.

at Viterbo, William's whereabouts are not known. But if he was in Italy in 1266 or earlier, he could have known of the presence of interesting manuscripts in the south, and shrewdly exploited an opportune political circumstance to have them brought to him. If so, then William was a very important figure indeed in the transmission of Greek science to the West.

The inventory entries are given below in the order of the 1311 inventory with Ehrle's sequential numbering (but saving no. 604 for last). The descriptions of the bindings, often lovingly detailed in this inventory, are omitted here. Where an entry from the 1295 inventory (**Bo** for Boniface VIII) corresponds, it is also quoted.

(597) primo scripsimus comentum Procli Permenidem Platonis, .And., et est in papiro... (**Bo 437**) expositio Procli super Parmenidem.

A translation by William of Proclus's commentary on Plato's *Parmenides* exists, but the Greek manuscript on which it was based has not survived, and in fact the Latin version has text at the end that the Greek tradition has lost ⁽⁶⁾. The well known report of his friend Henry Bate of Malines, that William had promised to send him a translation of Plato's *Parmenides*, but died before doing so, does not tell us anything certain about the date of the translation of Proclus's commentary ⁽⁷⁾.

(598) item comentum Procli successoris Ethimeon Platonis, .And., scriptum de lictera greca in cartis pecudinis grossis... (**Bo 432**) cometum Procli super Timoeum Philonis.

Passages from Proclus's commentary on the *Timaeus* were translated by William ⁽⁸⁾. His text was independent of the Greek manuscripts we now have.

(599) item librum Dyonisii super celesticam gerarciam, scriptum de lictera greca in cartis pecudinis, et habet aliquas glosas in marginibus... (**Bo 420**) Dyonisius super celesticam Ierarchicam in greco.

Perhaps this is the present Vat. gr. 370 ⁽⁹⁾. The Vatican manuscript has some Latin remarks at the beginning, as well as interlinear partial translations on the first few pages, but a title exactly matching that given by the cataloguers is lacking. This could have been cut off, for example at the bottom of f. III.

(600) item unum librum scriptum de lictera greca, cuius nomen ignoramus...

(601) item alium librum scriptum de lictera greca in papiro, qui uocatur Commentum Simplicii super totum librum de celo et mundo Aristotilis, .And. ... (**Bo 428**) commentum Simplicii super librum de celo et mundo.

(6) *Corpus Platonicum Medii Aevi: Plato Latinus. III: Parmenides... necnon Procli commentarium in Parmenidem*, ed. R. KLIBANSKY and L. LABOWSKY (London: 1953), p. xxv-xxvii.

(7) Grabmann, p. 61; Klibansky-Labowsky, p. xxiv-xxv.

(8) G. VERBEKE, « Guillaume de Moerbeke traducteur de Proclus », *Revue philosophique de Louvain* 51 (1953), p. 349-73.

(9) See P. THÉRY, « Le manuscrit Vat. grec 370 et saint Thomas d'Aquin », *Archives d'histoire doctrinale et littéraire du Moyen âge* 6 (1931), p. 5-24, who argues also that the manuscript may have belonged to Thomas Aquinas.

William's translation of Simplicius's commentary on Aristotle's *De Caelo*, according to his subscription completed at Viterbo in 1271, was probably made from the papal manuscript. This exemplar is now lost, and was independent of the extant manuscripts⁽¹⁰⁾.

(602) item unum librum, qui uocatur Polomius Mathematicae, et est liber Almagesti, .And., scriptum de lictera greca in cartis pecudinis... (Bo 430) liber Almagesti.

Heiberg demonstrated that a translation of Ptolemy's *Almagest* made in Sicily in the twelfth century was based on the present Marc. gr. 313; according to the anonymous translator's preface, the gift of an *Almagest* manuscript by the Byzantine Emperor Manuel II Comnenus to the Norman court in Palermo incited the endeavor, and this presumably was, though probably at one remove, the exemplar for the translation. That this was also the manuscript in the papal library follows naturally⁽¹¹⁾.

(603) item alium librum uocatum Simplicium super fisicam Aristotilis scriptum de lictera greca in cartis pecudinis... (Bo 421) Simplicius super phisicam Aristotilis.

See also no. 622 below. These manuscripts have not been identified.

(605) item unum librum in magno uolumine, in quo est prima pars ethimologie, .And. ... et est scriptus de lictera greca in cartis pecudinis. (Bo 436) prima pars etimologie.

(606) item XXVI magnos quaternos dissolutos scriptos de lictera greca in cartis pecudinis, in quibus continetur ethimologia uerborum gramatice in secunda parte, .And. ... (Bo 441) prima et secunda pars etimologie.

(607) item unum librum de papiro, scriptum de lictera greca, in quo continentur expositiones uocabulorum difficilium, .And., et uidetur deficere principium... (Bo 431) expositiones uocabulorum difficilium.

These *Etymologiae* have not been identified.

(608) item undecim quaternos mediocris forme, scriptos de lictera greca in cartis pecudinis, in quibus est liber Tholomei de resumptione, perspectiua ipsius, perspectiua Euclidis, et quedam figure Arcimenidis; et est cum eis unus alius quaternus maioris forme, in quo sunt scripta quedam priuilegia in greco et latino, et est cum eis quoddam priuilegium de lictera greca scriptum in carta, de quo fuit ammota bulla, et etiam sunt cum eis quidam cartapelli scripti in latino et greco in cartis de corio et papiro in rotulo plicati, et est totum ligatum cum cordula. (Bo 435) liber Tholomei de resumptione.

This was the manuscript, lost since the fourteenth century, from which William of Moerbeke translated Ptolemy's *Analemma*, the pseudepigraphic *Perspectiva* of Ptolemy

(10) Evident from the apparatus of Heiberg's edition, in *Commentaria in Aristotelem Graeca* VII (Berlin: 1894).

(11) J. L. HEIBERG, « Eine mittelalterliche Uebersetzung der Syntaxis des Ptolemaios », *Hermes* 45 (1910), p. 60-66, and « Noch einmal die mittelalterliche Ptolemaios-Uebersetzung », *Hermes* 46 (1911), 213-15. According to N. G. WILSON, *Scholars of Byzantium* (London, 1983), p. 214, Marc. gr. 313 bears the *and.* abbreviation and a number corresponding to the inventory; but I fear this derives from a misinterpretation of P. Canart's summary (« Le livre grec en Italie méridionale sous les règnes Normand et Souabe: aspects matériels et sociaux », *Scrittura e Civiltà* 2 (1978), p. 149 note 113) of G. DERENZINI, « All'origine della tradizione di opere scientifiche classiche: vicende di testi e di codici tra Bisanzio e Palermo », *Physis* 18 (1976), 87-103. See addenda.

(attributed now to Heron, rather shakily), and a series of works by Archimedes, some unique to this manuscript, some found also in no. 612⁽¹²⁾. William's translations were all made at Viterbo during 1269.

(609) unum librum de papiro, scriptum in lictera greca, satis in grosso uolumine...

(610) item alium librum de lictera greca, in papiro, in quo continetur liber primus physice Aristotilis... (Bo 442) liber primus phisice Aristotelis.

Not identified.

(611) item quendam alium librum ualde antiquum, in paruo uolumine, scriptum de lictera greca in cartis pecudinis, cuius nomen alias ignoramus...

(612) item alium librum de lictera greca, scriptum in cartis pecudinis, in quo continetur liber Arcimenides de spera et scilindro, .And. ...

This manuscript, also used by William in 1269 for his Archimedes translations, survived long enough to be copied in the Renaissance, and thus became the archetype of all the Greek manuscripts of Archimedes except the Constantinople palimpsest⁽¹³⁾. Its last known owner, in the sixteenth century, was Rodolfo Pio di Carpi.

(613) item alium librum de lictera greca, scriptum in cartis pecudinis, in quo continentur expositiones Filoponi super methafisica, .And. ... (Bo 426) expositiones Filoconi super methafisicam.

A work entitled *ἐξήγησις τῶν μετὰ τὰ φυσικὰ Ἀριστοτέλους* is ascribed to Philoponus in the manuscript Vind. phil. gr. 189 (sixteenth century), f. 130r-213v⁽¹⁴⁾. F. Patricius printed a translation into Latin of this probably spurious text at Ferrara in 1583⁽¹⁵⁾.

(614) item alium librum de lictera greca, scriptum in papiro, in quo continetur comentum Iohannis Filoponi super libro posteriorum Aristotilis, .And. ... (Bo 440) commentum Iohannis Philoponi super librum poster. Aristotilis.

Not identified.

(615) item alium librum de lictera greca subtili, scriptum in papiro, in quo continetur liber Iohannis Filoponi super decem predicamentis et super sophisticis elencorum, .And. ...

Not identified. No commentary by Philoponus on the *Sophistici Elenchi* is mentioned in modern literature. Fabricius reports its existence in a manuscript belonging to Thomas Reinesius, which now would presumably be in the Stiftsbibliothek at Zeitz; but the only work by Philoponus preserved there is his commentary on Nicomachus⁽¹⁶⁾.

(616) item unum magnum quaternum, scriptum de lictera greca in cartis pecudinis.

(617) item unum librum in magno uolumine, scriptum de lictera greca in cartis pecudinis, in quo continetur comentum siue expositio Theonis super secundam partem Almagesti, .And. ... (Bo 438) expositio Theonis super secundam partem Almagesti.

(12) HEIBERG (1891), p. 314-16, and in Archimedes *Opera*, vol. 3 (Leipzig: 1915), p. LIII-LVIII; M. CLAGETT, *Archimedes in the Middle Ages*, vol. 2 (Philadelphia, 1976), p. 54-60.

(13) In addition to the references given for no. 608 above, HEIBERG, « Die Archimedeshandschrift Georg Vallas », *Philologus* 42 (1883), 421-37, and in Archimedes *Opera*, vol. 3, p. IX-XXIV, LXXIX-LXXXIII.

(14) *Katalog der griechischen Handschriften der österreichischen Nationalbibliothek* I, ed. H. HUNGER (Vienna, 1961), p. 298.

(15) I have not seen this book, which is very rare. See addenda.

(16) FABRICIUS, *Bibliotheca Graeca*, vol. 3 (Harles), p. 218.

The companion volume to no. 624, unlike it lost without a trace.

(618) item alium librum grossum in paruo uolumine, scriptum de lictera greca in cartis pecudinis, in quo continetur liber de anima Aristotilis et perafra. Themistii super eum, .And. ... (Bo 427) commentum Iohannis Filoponi super librum de anima.

The equation of these manuscripts is not certain, but it would be natural to group together in a manuscript texts relating to Aristotle's *De Anima*. William of Moerbeke translated Themistius's paraphrase at Viterbo in 1267, and passages from John Philoponus's commentary, partly at least in 1268. The exemplars are lost (17).

(619) item alium librum grossum in paruo uolumine, scriptum de lictera greca subtili in cartis pecudinis, in quo continetur tota loica uetus et noua, .And. ...

If this is Aristotle's *Organon*, then William's translations of the *Categories* (1266) and *De Interpretatione* (1268) were likely based on this manuscript (18). It has not been identified.

(620) item alium librum, scriptum de lictera greca in cartis pecudinis, in quo continetur liber Theodosii et Antolici de speris et de ortu et occasu, .And. ... (Bo 425) liber Theodosii de speris et Ancolii de ortu et occasu.

The only parchment manuscript containing Theodosius and Autolycus is the tenth-century Vat. gr. 204, and Mogenet's suggestion that this was no. 425 has been generally accepted. But Mogenet pointed out some objections that seem to disqualify the identification. First, there is no inscription on the manuscript matching the inventories, nor an *and* marking. Second, a fourteenth-century manuscript of oriental origin, Par. gr. 2342, is dependent on the Vatican manuscript; but since the derivation may be at second hand, this objection is not cogent. Worst, the Vatican manuscript has marginalia dating from the fourteenth century, which would be very hard to explain if the manuscript was (as we shall see) in a box at Assisi all that time (19).

Clagett has proposed Vat. gr. 203 as item 620. This theory is disqualified immediately by the requirement that the manuscript be parchment (20).

(621) item alium librum, scriptum de lictera greca in papiro, in quo continetur liber de musica et de hiis, que uidentur in celo... (Bo 423) phisica Aristotilis et de musica.

(17) *Themistius: Commentaire sur le traité de l'âme d'Aristote*, ed. G. VERBEKE (Louvain, 1957), p. LXVII-LXIX; *Jean Philopon: Commentaire sur le de Anima d'Aristote*, ed. VERBEKE (Louvain, 1966).

(18) We cannot prove that William was at the papal court before 1267.

(19) J. MOGENET, *Autolycus de Pitane* (Louvain, 1950), p. 71-72, 78-84. See DERENZINI (1976), p. 100-101, CANART (1978), p. 149 note 113.

(20) CLAGETT, *Archimedes in the Middle Ages*, vol. 2, p. 10, note 35, 27 note 21, and vol. 3, p. 75, note 19. Clagett prefers Vat. gr. 203 because of his belief that Witelo had access to a Greek text of Apollonius's *Conics*, which Vat. gr. 203 contains. (The relationship between William and Witelo will be explained below, in connection with item 604). Clagett's detailed and thorough review of the evidence (*Archimedes in the Middle Ages*, vol. 4 (Philadelphia, 1980), p. 63-98) is, in my opinion, persuasive that Witelo used the indirect sources at his disposal (translations from Greek and Arabic, all still extant) very efficiently to recover what he could of Apollonius's work. On the other hand, if he had access to the authentic Apollonius, one is forced to conclude that he did not derive from it a single thing that the secondary sources could not tell him.

Not identified.

(622) item alium librum de lictera greca, scriptum in cartis pecudinis, in quo continetur commentum Simplicii super phisicam, .And. ... (Bo 422) commentum Simplicii super phisicam.

See no. 603.

(623) item alium librum magnum, scriptum de lictera greca subtili in cartis pecudinis, cuius nomen ignoramus, et uidetur deficere principium et finis...

(624) item unum magnum librum, scriptum de lictera greca in cartis pecudinis, in quo continetur expositio Theonis super primam partem Almagesti, .And. ... (Bo 429) expositio Theonis super primam partem Almagesti.

On its last page, the ninth-century manuscript Laur. 28,18 (containing part of Theon's and Pappus's commentaries on the *Almagest*) has the inscription « expo theonis super primam partem a... » (the edge of the page is cut off), and at the bottom of the page, « and ». Thus this manuscript is certainly item 624 ⁽²¹⁾. It is unique in preserving Theon's commentary on Book 3 ; perhaps its lost second half (no. 617) had more than the scanty text that we now have. In the late fifteenth century the manuscript belonged to Poliziano ⁽²²⁾, later passing into the Medici private library.

(625) item alium librum, scriptum de lictera greca in cartis pecudinis, in quo continentur alique questiones arismethice, .And. ...

Derenzini's suggestion that this is the tenth-century Göttingen manuscript of Nicomachus (Gott. phil. gr. 66) is mistaken ; that manuscript was bought in the Orient by d'Ansse de Villoison in the eighteenth century ⁽²³⁾.

(626) item alium librum in papiro de lictera greca, .And., in quo continetur commentum Simplicii super metheoris Aristotilis...

This commentary by Simplicius is otherwise unknown ; there may have been an error in labelling the manuscript, or in the cataloguer's transcribing it.

(627) item alium librum, scriptum in papiro de lictera greca subtili, cuius nomen alias ignoramus...

(628) item alium librum, scriptum de lictera greca in cartis pecudinis, in quo continentur dubitationes et solutiones loice secundum Alexandrum, .And. ... (Bo 433) liber Alexandri problemacum.

The ninth-century manuscript Marc. gr. 258, which is the archetype of the Greek manuscript tradition of some minor works (*De Anima*, *De fato ad imperatores*, *Quaestiones*) of Alexander of Aphrodisias, has William of Moerbeke's *ex libris*. There is also

(21) A. ROME, « Un manuscrit de la bibliothèque de Boniface VIII à la Médicéenne de Florence », *l'Antiquité Classique* 7 (1948), 261-68 ; Pelzer (1938).

(22) A. BANDINI, *Catalogus codicum manuscriptorum Bibliothecae Mediceae Laurentianae varia continens opera Graecorum Patrum* (Florence, 1764-1770), vol. 2, col. 37, from an autograph *ex libris* in the binding, now lost.

(23) DERENZINI (1976), p. 101. See R. HOCHÉ, *Ἰωάννου γραμματικοῦ ἀλεξάνδρου (τοῦ φιλοπόνου) εἰς τὸ πρῶτον τῆς Νικομάχου ἀριθμητικῆς εἰσαγωγῆς* (Leipzig, 1864), p. 1, note 1.

a translation of *De fato* that, on stylistic grounds, is credited to William. That the Marcianus corresponds to entry no. 628 is therefore a reasonable inference ⁽²⁴⁾.

Disturbingly, there are severe difficulties with this hypothesis. The Marcianus lacks the kind of Latin inscription that we know the cataloguers needed (there were evidently at least two separate titles, to account for the diverging descriptions in the two inventories), and apparently has no *and* markings. The 1311 version's stipulation of 'logical' problems is as likely as not a cataloguer's garbling ⁽²⁵⁾. But, and this is very odd, William's translation of *De fato* proves to be based on a text that is neither the Marcianus nor dependent on it, and some bits of Greek that the translator left in his version seem to point to an uncial exemplar ⁽²⁶⁾. This admits two possibilities. The copy in the papal library could have been this uncial manuscript; then William made his translation during his years at the papal court. He would have acquired his own manuscript before becoming Bishop of Corinth, for the subscription is « liber fratris guillelmi de morbeka ordinis predicatorum penitentiarii domini pape », and hence on this hypothesis most likely during his earlier sojourn in Greece around 1260, but presumably preferred the authority of an older manuscript. Or, more plausibly, the Marcianus was the manuscript in the inventory, having since lost the page bearing the titles. Then William would probably have translated the *De fato* in the Orient ⁽²⁷⁾.

(629) item unum librum, scriptum de lictera greca in papiro, cuius nomen alias ignoramus...

There remain three entries in the 1295 inventory that are not accounted for :

(Bo 424) rethorica Aristotilis.

(Bo 434) Cirili supra Osee et alios prophetas.

(Bo 439) comenta super Porfirium et super pericinias [periermenias] et super librum priorum.

Item 439 could be the commentaries of Ammonius on Porphyry's *Isagoge* and Aristotle's *De Interpretatione* and *Prior Analytics*. William of Moerbeke translated the second of these in 1268, from a text resembling that of Par. gr. 1942, a thirteenth- or fourteenth-century bombycine manuscript containing all three works; but the exemplar itself is apparently lost ⁽²⁸⁾.

The 1295 cataloguer found four manuscripts in which there was no Latin inscription. Evidently several manuscripts were missed that year for some reason, for nos. 604 (as we shall see presently) and 612 must have been in the collection already by 1278,

(24) L. LABOWSKY, « William of Moerbeke's Manuscript of Alexander of Aphrodisias », *Mediaeval and Renaissance Studies* 5 (1961), 155-62. On the identification of the translator, see *Alexander d'Aphrodise De Fato ad Imperatores*, ed. P. THILLET (Paris, 1963), p. 19-27.

(25) LABOWSKY, p. 160.

(26) THILLET, p. 14-19.

(27) THILLET, p. 62, objects, doubting whether a manuscript originally belonging to the Pope (since it is one of the *and*. Mss) could have become William's, or afterwards have reverted to the papal library. I do not see why either of these transfers should be considered impossible.

(28) *Ammonius: Commentaire sur le Perihermeneias d'Aristote*, ed. G. VERBEKE (Louvain, 1961), p. LXXV.

when William left the papal court. There also were a few other texts that William translated during his years in Italy : Simplicius's commentary on Aristotle's *Categories* (1266 ; William's presence in Italy is not proved that year)⁽²⁹⁾, Proclus's *Elementatio Theologica* (Viterbo 1268), and Galen *De Alimentis* (Viterbo 1277). The exemplars for these were also perhaps in the papal library, without Latin labels.

2. VAT. GR. 218 AND ITS HISTORY

I have reserved item 604 for the end because its interpretation requires more argument.

(604) item unum librum, qui dicitur Commentum Papie super difficilibus Euclidis et super residuo geometrie, et librum de ingeniis, scriptum de lictera greca in cartis pecudinis, et est in dicto libro unus quaternus maioris forme scriptus de lictera greca...

« Papie » has to be a distortion of « Papi », and Ehrle's identification of this author as Pappus is certain. No other name associated with Greek mathematics comes at all close. The next step, reading the « book on difficult things in Euclid and on the rest of geometry » as the *Collection*, Heiberg made in conjecture⁽³⁰⁾. It became more than a guess with the recent discovery that Pappus's *Collection* was the source of several geometrical propositions in the *Perspectiva* of Witelo, written in the 1270's⁽³¹⁾. The borrowed theorems come all from one section of Book 6, chapters 80-103. In the margin of Vat. gr. 218 at the beginning of this passage, the main copyist has written a title « ΕΙΣ Τ(Α) ΟΠΤΙΚΑ ΕΥΚΛΕΙΔΟΥ », « For Euclid's Optics », and the propositions that follow are indeed an expansion of two theorems from the *Optics* (propositions 44 and 45) relative to the projection of a circle through a point in space. Not all this material is admitted in Witelo's work, but the proportion that he did adapt is impressive : in all, nine theorems in the first book of the *Perspectiva* are only slightly varied and re-phrased adaptations of Pappus's mathematical arguments.

A connection between Witelo and the papal manuscripts is easy to establish. Witelo's work is dedicated to William of Moerbeke, and the preface states that William commissioned the work to supersede the available corrupt Greek and verbose Arabic treatises on optics. Moreover, the *Perspectiva* draws extensively on many of the translations of Archimedes and other mathematicians that William had made in 1269 from manuscripts 608 and 612 of the papal collection. There is every reason to believe therefore that Pappus's *Collection* too was available to William, and that he passed on the few pages in it that he saw were pertinent to Witelo's work.

(29) *Simplicius : Commentaire sur les catégories d'Aristote*, ed. A. PATTIN and W. STUYVEN (Louvain, 1971). The exemplar has not survived.

(30) HEIBERG (1891), p. 314.

(31) First shown by S. UNGURU, « Pappus in the Thirteenth Century in the Latin West », *Archive for History of Exact Sciences* 13 (1974), 307-24, especially p. 310-19, but suggested already by Risner, the editor of the 1572 edition of Witelo, in his references in propositions 22, 38, and 39 of Book 1. Pappus is also among the list of putative sources for Witelo in Risner's preface (F. RISNER, *Opticae thesaurus...* (Basle, 1572), p. xxviii). Unguru adds no more propositions to these three.

In order to establish the final point, that the Pope's copy was the present Vat. gr. 218, we must consider that manuscript more closely ⁽³²⁾. The whole first, half of the second, and the end of the eighth book of Pappus are now lost, but when it was made in the early tenth century, Vat. gr. 218 contained almost certainly the whole of the *Collection*, in eight books or possibly more. The Pappus is written all in one hand. A second hand soon after compared the text with the exemplar, and supplied some passages missed by the first copyist. This same second hand added, surely at the end on unused leaves, a copy of an unrelated Byzantine opusculum on mirrors, the *Περὶ Παραδόξων Μηχανημάτων* of Anthemius of Tralles (sixth century). As in Pappus's case, Vat. gr. 218 is the archetype for the Greek tradition of Anthemius ⁽³³⁾. Both texts seem to have been extremely rare in Byzantium. There is a reference to Pappus in a scholion dating between the sixth and ninth centuries in the Ptolemy manuscript Vat. gr. 1594, and two vague and inaccurate allusions, probably at second hand, to theorems of his in a fourteenth (?) century hand in the margins of a manuscript of metrological works, Istanbul Old Serai gr. 1. Otherwise the only known reader of Pappus, or Anthemius, seems to have been John Tzetzes in the twelfth century; and significantly, his mentions of the two authors are often linked ⁽³⁴⁾.

It is in fact the more or less accidental presence of Anthemius in Vat. gr. 218 that establishes its presence in the papal collection, for Witelo knew Anthemius too. The passage in question, Book 6 chapter 65, cites Anthemius by name, and summarizes part of his discussion of burning mirrors constructed out of hexagonal plane mirrors. A remark of Witelo's, not found in Anthemius, on the fact that hexagons fill a planar area without gaps, perhaps betrays knowledge also of the introduction to Pappus's

(32) The identification has been suggested, on the circumstantial evidence that Vat. gr. 218 is the only old manuscript of Pappus, by E. GRANT, « Henricus Aristippus, William of Moerbeke and Two Alleged Mediaeval Translations of Hero's *Pneumatica* », *Speculum* 46 (1971), 656-69, p. 668; and CLAGETT, *Archimedes in the Middle Ages*, vol. 3, p. 406, note 56. Also DERENZINI (1976), p. 101. My remarks on Vat. gr. 218 come from an investigation of the textual history of Pappus, which I intend to document fully elsewhere.

(33) Of the Anthemius, only one sheet, containing the first four pages (and so originally the middle of a quire), survives. It is now bound at the beginning of the manuscript. An (unpublished) Arabic translation of the whole work shows that less than a page of the Greek is lost.

(34) Reference by name: scholion to Aristophanes's *Clouds* 1024, *Scholia in Aristophanem* ed. W. J. W. KOSTER. Part 4, Fasc. 2, ed. D. Holwerda [Groningen, 1960], p. 621-22; *Allegories of the Iliad* Book 5, lines 10-19 (ed. J. F. Boissonade [Paris, 1851], p. 105). *Chiliades* Book 2, lines 106-159 (*Ioannis Tzetzae Historiae*, ed. P. A. M. Leone [Naples, 1968], p. 48-49) paraphrases Anthemius's speculations on Archimedes's burning mirrors, irrelevantly introducing details from elsewhere in the same work (noted first by L. DUPUY, « Fragment d'un ouvrage grec d'Antémios sur des paradoxes de mécanique », *Mémoires de l'Académie des Inscriptions et Belles Lettres* 52 (1786), p. 429-35). Tzetzes here names Anthemius and Pappus, among others, as his sources of archimedean. In Book 12, lines 964-74 (Leone (1968), p. 511) he mentions the report that Archimedes wrote only one book on mechanics, which is found only in Pappus Book 8, chapter 3. Book 11, lines 586-641 (Leone (1968), p. 452-53) magnifies the contributions of geometry to mechanics, drawing much from Pappus Book 8, chapters 1 and 52-61.

Book 5⁽³⁵⁾. In this light it is also manifest that the catalogue entry's « liber de ingeniis » refers to the Anthemius, « ingenium » being the normal translation for the « μηχανήματα » of the Greek title⁽³⁶⁾.

Returning to Pappus, the inventory's title for the *Collection* implies that, when complete, it contained a prominent enough discussion of something in Euclid to merit special mention. This could most easily be accounted for if Book 1 was Pappus's commentary on Book 10 of Euclid's *Elements*, a work that is lost in Greek but survives separately in an Arabic translation⁽³⁷⁾. On the assumption (valid for similar texts) that the number of words in the translation was very roughly the same as the original, one can compute that, written in the hand and format of the Vaticanus, the Euclid commentary would consume about ten folia. We also know, from the proposition numbers in the text, that about half of Book 2, which would be five folia or so, is lost. The sum is impressively close to the two lost quires that can be inferred from the traces of original quire numbers in Vat. gr. 218⁽³⁸⁾. We have no way to know what the « larger quire » that was with the manuscript might have been.

Since it was apparently not part of the *and.* group, we can only speculate on how Vat. gr. 218 reached Italy. One possibility is that William himself acquired it while he was in the East.

The later history of the papal Greek manuscripts can be followed only imperfectly. When the Papacy migrated to Avignon, the Greek manuscripts were deposited at Assisi, where they appear in two inventories⁽³⁹⁾. In the inventory of 1327 :

Item in alio coffano fuerunt reperti libri scripti in lingua greca numero XIII. ...

Item in alio coffano fuerunt reperti XX libri scripti de lictera greca.

In 1339 the reports are yet more terse :

Item invenerunt in quodam alio cofino rubei coloris certos libros grecos et hebraicos. ...

Item invenerunt in quodam alio cofino simili precedenti quosdam alios libros grecos et hebraicos.

(35) I owe this observation to Prof. G. J. Toomer (Providence). Dupuy (1786) first discussed Witelo's dependence on Anthemius. The connection between Vat. gr. 218 and Witelo's knowing both Anthemius and Pappus was observed (very cautiously) by Clagett, *Archimedes in the Middle Ages*, vol. 3 (Philadelphia, 1978), p. 406, note 56.

(36) Previous explanations have been dubious : HEIBERG (1891), p. 314 as Philon's *Pneumatics* (not extant in Greek !); BIRKENMAJER, *Vermischte Untersuchungen* (Münster i. W. : 1922), p. 22 as Heron's *Pneumatics*; GRANT (1971), p. 662-69 as the eighth book of Pappus, which is on mechanics. Grant's theory assumes that the cataloguer was able to read the books, which is clearly false.

(37) P. L. ROSE, *The Italian Renaissance of Mathematics* (Geneva, 1975), p. 37, has remarked that the commentary on Book 10 seems to fit the description in item 604 ; but by itself this work would have been too short to fill a manuscript, nor would it deserve the continuation « super residuo geometrie ». Considering the blunders that the cataloguers make in copying the titles, one would not be surprised if « difficilibus » were a mistake for « decimum librum ». In general the *Collection* seems to have been assembled from separate writings of Pappus.

(38) TREWEEK, p. 206-208, confirmed by personal inspection. It is possible, but much less likely, that six quires were lost at the beginning.

(39) PELZER (1947), p. 34-35, items xlv and lvii ; p. 64, items lxii and lxiii.

What became of the Greek manuscripts after that is not clear. According to one report, about 1368 Pope Urban V had various treasures, including books, brought to Rome from Assisi, and distributed most of them among the various churches of the city (40). Such a dispensation would easily explain the calamitous number of these manuscripts that vanished at that time (almost certainly items 597, 598, 601, 608, 613, 617, 618, 620, and probably several others), and the way that the few that did survive reappeared independently in the fifteenth century, in the possession of the great humanist collectors of Greek manuscripts. Cardinal Bessarion somehow obtained the present Marc. gr. 313 (item 602) and 258 (item 628?) (41). Valla acquired the Archimedes manuscript (item 612), but it had already come to light in Rome about 1450, where it was used as the basis of Jacobus Cremonensis's translations of works of Archimedes (42). Laur. 28,18, the first half of Theon's *Almagest* commentaries (item 624), belonged towards the end of the 1490's to Poliziano. The Dionysius manuscript Vat. gr. 370 that is thought to be item 599 appears in Vatican catalogues definitely first about 1510, but possibly as early as about 1450 (43).

Can Vat. gr. 218's rediscovery be traced? A conjecture by Heiberg, repeated many times as established fact, placed it in the collection of Aurispa as early as the 1420's (44). It is based only on a most tenuous interpretation of Aurispa's statement in a letter to Ambrogio Traversari that he possessed an old 'mathematical' book whose author he did not know because the beginning was missing. In the context « mathematicus » seems to mean a mechanical, not what we would call mathematical text. As Heiberg observed, nothing resembling Vat. gr. 218 appears in the catalogue of Aurispa's books made after his death in 1549, but of course he could have sold it before then.

In the last half of the century Pappus finally does emerge, in Florence. We have seen that Angelo Poliziano owned the great Theon manuscript Laur. 28, 18 that had once been in the papal library along with Pappus. A marginal note in the manuscript (f. 13^v; the beginning of the note is cut off), in a late fifteenth-century hand, makes a specific reference to Pappus's *Collection*: (...) *ὁμοια τρίγωνα καὶ ἐπὶ τῶν αὐτῶν πάλιν*

(40) F. EHRLE, « Nachträge zur Geschichte der drei ältesten papstlichen Bibliotheken », *Römische Quartalschrift für christliche Altertumskunde und für Kirchengeschichte* Supplement 20 (*Kirchengeschichtliche Festgabe Anton de Waal*), 1913, p. 344-46: « Item, dum esset apud Urbem et audiuisset quod a tempore domini Bonifacii pape octavi, certi thesauri papales fuissent in ciuitate Assisii reseruati et adhuc reseruarentur, in quindecim uel uiginti saumatis, fecit coram se aportari, et reperiit quod ibi erant multe sanctorum reliquie, multi libri et alia ecclesiastica ornamenta. Tunc illa refutauit penes se retinere, sed ecclesiis Urbis predicta distribuit, donauit et realiter traddidit, excepto capite beati Blasii, martiris, et quibusdam aliis reliquiis ... ».

(41) L. LABOWSKY, *Bessarion's Library and the Biblioteca Marciana* (Rome, 1979), p. 8.

(42) CLAGETT, *Archimedes in the Middle Ages*, vol. 3, part 3, p. 333.

(43) DEVREESE (1965), p. 178 and 24.

(44) Originally, HEIBERG in *Archimedes, Opera*, vol. 3, p. LXXXII. Repeated by R. SABBADINI, *Carteggio di Giovanni Aurispa* (Rome, 1931), p. 13; ROSE (1975), p. 28; E. GARIN, *L'età nuova* (Naples, 1969), p. 495. Garin's assertion that Aurispa traded Vat. gr. 218 to Filelfo in 1431 originates in a misunderstanding of Sabbadini, p. 13, note 7, where the subject is Diogenes Laertius, not Pappus.

ἔτι τρίγωνα ἀνόμοια ἑαυτοῖς καὶ τοῖς ὁμοίοις δείκνυσιν ὁ πάππος ἐν τῷ ε' τῶν συναγωγῶν ἐν ᾧ παρ[αλα]μβάνει γεωμετρικῶν θεωρημάτων. « ... similar triangles, and on the same (bases) furthermore triangles not similar to each other or to the similar ones, Pappus proves in the fifth (book) of the *Collection* in which he takes up geometrical theorems ». The annotator is noting the parallel between Theon's exposition of certain geometrical theorems and Pappus's in Book 5 of the *Collection*, particularly chapter 13. Poliziano himself adapted some of Pappus's general remarks on mechanics in a short work of 1490/91, the *Panepistemon* (45). Pappus is to be sought, then, among the manuscripts that were available to Poliziano and his circle. Now at that time there were two important collections in Florence: the *Medicea Publica*, housed in the monastery of San Marco, and the *Medicea Privata*, a more exclusive library kept by the Medici family. For the *Privata*, we have an inventory from 1495, prepared in conjunction with the transfer of the collection of Lorenzo il Magnifico to the monastery of San Marco (46). In the second part of this inventory, under the title « Inventarium librorum qui erant in domo Petri [de Medicis] ... », the very first entry is: « Gre. Arthemius [sic] Grecus de paradoxis machinationibus » (47). The manuscript also is listed, less ambiguously, as « Ἀνθέμιος καὶ Πάππος γεωμέτραι περὶ γαμῶν ». in Janus Lascaris's inventory of 1472 (48).

We can trace the manuscript some way farther back, thanks to a register of loans from the *Privata* from 1483 to 1491 (49). One entry there reads, « A. M. Bernardo Michelozzi si prestò a' dì XIII de decto [October 1486], de' libri del Philelpho: 1. Antemio, de machinamentis que sunt preter opinionem. ... » (Michelozzi was a friend of Poliziano and active in the Medici intellectual circle). Francesco Filelfo died in 1481. Vat. gr. 218 had long been bound out of order, and the earliest Renaissance copies of Pappus cannot precede the discovery of the correct order of quires. The 'Zacharias' who went through the manuscript writing directions on the correct reading order can be identified from his hand and signature as the Cretan copyist and printer Zacharias Calierges, and Zacharias's earliest known work dates from the late 1490s' (50). Also, the 1472 listing states that the manuscript was parchment, unlike all but one of the extant

(45) Noted by Rose (1975), p. 35.

(46) Printed by E. PICCOLOMINI, *Intorno alle condizioni ed alle vicende della Biblioteca medicea privata* (Florence, 1875; most of this appeared earlier in *Archivio storico italiano*, ser. 3, 19 (1874), p. 101-129, 254-81; 20 (1874), p. 51-94; 21 (1875), p. 102-112, 282-296). On the collection of the *Publica* see B. L. ULLMAN and P. A. STADTER, *The Public Library of Renaissance Florence* (Padua, 1972).

(47) PICCOLOMINI (1875), p. 97.

(48) K. K. MÜLLER, « Neue Mittheilungen über Janos Laskaris und die Mediceische Bibliothek », *Centralblatt für Bibliothekswesen* 1 (1884), p. 376.

(49) PICCOLOMINI (1875), p. 127.

(50) On the quires, TREWEEK (1957), p. 206-208. The disorder is as old as a series of roman-numeral quire numbers in the manuscript. This turn seems to date from the manuscript's stay in the papal collection, since the same style of numbering appears in Laur. 28,18. The identification of Zacharias is my own.

recentiores of Pappus, or for that matter most Renaissance manuscripts. Hence Filelfo must have found Vat. gr. 218, and it passed with the rest of his collection into Lorenzo's library.

The circumstances under which Filelfo obtained Vat. gr. 218 can only be guessed ; it could have come into his hands as early as the late 1420's or 1430's. Pappus and Anthemius are not mentioned in his correspondence, or, apparently, in his published writings. From several letters of 1440 and 1450 we learn that Filelfo had lent Vittorino da Feltre and Jacobus Cremonensis, the translator of Archimedes, a manuscript that he calls merely « mathematici » or « mathematicorum libri », and which could be the Vaticanus ⁽⁵¹⁾.

We are more equipped to say what happened to Vat. gr. 218 after 1495. Although after the collapse of Piero de' Medici's fortunes, the library that his father had built up was seized by the city and deposited in the Dominican monastery of San Marco, and later sold to that institution, after some further moving about the books were sold again to Giovanni Cardinal de' Medici in 1508, and followed him to Rome ⁽⁵²⁾. We have a record of the cardinal's library about this time. From about 1508 to 1512 Fabio Vigili compiled a series of catalogues, including the Vatican Library and a series of libraries of Bologna, Urbino, and elsewhere, and also that of Cardinal de' Medici ⁽⁵³⁾. Whether Vigili had a specific purpose at this time in collecting these catalogues is not clear, but they probably reflect an interest in knowing what texts were available for expanding the Vatican's collection. In any case, the inventory of the Medici Greek manuscripts (Barb. lat. 3185, f. 260-335 : « Medicee domus insignis bibliotheca quae nunc est apud Reverendissimum Cardinalem de Medicis Graeca bibliotheca ») confirms that Pappus had not strayed :

(f. 308^v) 241 Anthemii *περι παραδοξων μηχανηματων* .||. de admirabilibus machinis liber. Pappi Alexandrini *συναγωγων* sive *συναγωγης* liber. Pappi Alexandrini libri octo : libri hic duo primi desunt. Tertius igitur quae hic est primus continet problemata geometrica *επιπεδα τε και στερεα*, sextus astronomica theoremata, octavus et ultimus mechanica problemata.

Zacharias Callierges, who moved to Rome from Venice at some point between 1511 and 1515, likely unravelled Vat. gr. 218 after it had come to Rome, as he is not known to have worked in Florence. In addition to determining the manuscript's proper order, he

(51) In the 1502 Venice edition of Filelfo's letters, f. 26^v, 27^r, 29^r, 48^v. See Rose [1975], p. 28 and 59 note 24. But Filelfo also owned Apollonius's *Conics* ; and « mathematicus » could mean also a writer on mechanics. There is no mention of Pappus or Anthemius in A. CALDERINI, « Ricerche intorno alla Biblioteca e alla Cultura Greca di Francesco Filelfo », *Studi Italiani di filologia classica* 20 (1913), 204-404.

(52) BANDINI, vol. 1, p. XII-XIII.

(53) Vat. lat. 7134-7136 and Barb. lat. 3185. The Medici library is divided between Vat. 7134 (Latin) and Barb. 3185 (Greek). See M. H. LAURENT, *Fabio Vigili et les bibliothèques de Bologne au début du XVI^e siècle d'après le ms. Barb. lat. 3185*. (Vatican, 1943, Studi e Testi 105), p. VII-XXV. See addenda.

attempted to restore some of the washed out writing on f. 54 and 55. It is conceivable that he made one of the two lost direct copies of the Vaticanus (54).

In 1513 Cardinal de Medici was elected Pope as Leo X. He kept his library separate from the Vatican Library, under the administration of Lucio Parmenio Genesi. Shortly after Pope Leo's death in 1521, his heir, Giulio Cardinal de' Medici, instructed that the Medici library should be taken back to Florence (to become part of the Biblioteca Laurenziana), but this move took place only at the end of May, 1527, after he had become Pope Clement VII (55). Nevertheless Pappus ended up, not in Florence, but in the Vatican Library. It must have entered the Vatican before 1533, for an inventory of that year lists « Anthemii Mechanica. Ex m. in gilbo ». It had not, of course, been in Fabio Vigili's Vatican inventory of about 1511, nor was it in the two inventories (one incomplete) of 1518 (56). The manuscript must have been transferred, then, between 1518 and 1533. During these years the most important event to effect the Vatican library was the sack of Rome on May 6, 1527. If the library did not suffer quite the enormous losses that were sometimes claimed afterward, certainly the damage was serious enough that Pope Clement authorized a vigorous effort to recover dispersed books, both in Rome and abroad (57). The papal decree further authorized the agents in Rome to select desirable books from the libraries of deceased collectors ; but this was not applicable to Vat. gr. 218, which belonged to the Pope himself, and would by that time have gone to Florence if it was still among the Medici manuscripts.

One further document may be pertinent to Vat. gr. 218's move, although it is not very illuminating. The Vatican Library possesses another collection of sixteenth-century catalogues bound together as Vat. lat. 3960, the contents being as follows :

- f. 1^a-13^a : Greek manuscripts of Card. Grimani
- f. 1-46 : (Another copy)
- f. 49-66 : (A third copy)
- f. 69 : Fragment of Vatican Library.
- f. 71-93 : Library of Patriarchs of Constantinople.
- f. 94-138 : Library of the Duke of Urbino.
- f. 140-187 : Medici Library
- f. 191-200 : Unidentified inventory.

(54) See TREWEEK (1957). The first copy of Vat. gr. 218 was made before 1527, when Andreas Coner died, leaving a library including a manuscript « *Mechanica Pappi Alexandrini greca scripta in papiro* ». See G. MERCATI, *Note per la storia di alcune biblioteche romane nei secoli XVI-XIX* (Vatican, 1952, Studi e Testi 164), p. 143.

(55) BANDINI, p. XIII. But many manuscripts belonging to the Medicea Privata passed to Leo X's nephew, Niccolo Cardinal Ridolfi, and are now in the Bibliothèque Nationale. There must have been other opportunities for a manuscript to become detached from Pope Leo's library.

(56) DEVRESSE (1965), p. 309, 152-184, 185-235, 235-263.

(57) DEVRESSE (1965), p. 264-66. Devresse computes from the 1533 and 1518 inventories that the number of Greek manuscripts declined by about thirty. This figure does not attempt to account for new manuscripts that entered during the interval ; and we do not know how successful the effort to recover the scattered books was.

Now, it is apparent both from the general appearance of the Medici inventory and from details of the text that this is a rough draft of the list that appears in neat final form in Vat. lat. 7134 and Barb. lat. 3185. It may not be the original of that draft, however; for it is written on the same kind of paper as the third version of the inventory of Domenico Cardinal Grimani's manuscripts, which cannot be older than 1520, the date of Cardinal Grimani's testament giving them to the church of San Antonio in Venice⁽⁵⁸⁾. These inventories are remarkable for the occasional marginal annotations, which show that someone read through all the catalogues looking for items of interest. The notes sometimes summarize the contents of certain manuscripts; in a few other cases they draw attention to the text by means of little schematic pointing hands in the margin. On f. 175, in the Medici section, the Vat. gr. 218 entry appears, more or less as it does in the Barberini copy. The annotator has drawn a pointing hand in the upper corner of the page, joined by a line to the inventory entry.

From 1533 on, Vat. gr. 218 remained almost continuously in the Vatican Library, the only recorded exception being the loan of it to the copyist Valeriano Albini in 1547⁽⁵⁹⁾. It was returned the following year⁽⁶⁰⁾.

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Addenda added in proof

(To notes 3 and 11) A. Paravicini Bagliani's masterful paper, « La provenienza 'Angioina' dei codici greci della biblioteca di Bonifacio VIII » (*Italia medioevale e umanistica* 26 (1983) 27-89) presents several arguments that the interpretation of *and.* as « andegavensis » is doubtful. However, some of these arguments presume that the *and.* inscriptions on Laur. 28,18 and the two other mss are contemporary with the papal cataloguers; I doubt whether a dating as early as the 1260's is palaeographically excluded. Finally, Paravicini Bagliani (p. 36-37) suggests that *Almagest* sent by Manuel II to Sicily could have been an apograph of Marc. gr. 313; but 14th century Latin notes in that manuscript testify to its early presence in the West (Heiberg in Ptolemy, *Opera* vol. 2 p. xxxi-xxxii).

(To note 15) See S. EBBESEN, *Commentators and Commentaries on Aristotle's Sophistici Elenchi* (Leiden, 1981) vol. 3 p. 86-87.

(To note 53) A. DILLER, « Notes on the history of some manuscripts of Aristotle » (*Texte und Untersuchungen* 124 (1977) 147-150) p. 149 n. 1, has also suggested identifying Vat. gr. 218 in Barb. lat. 3185.

(58) G. MERCATI, *Codici Latini Pico Grimani Pio* (Vatican, 1938, Studi e Testi 75), p. 26-30. If the Vatican copies are based on the one Martin Richter made in Venice (Vat. lat. 14011), they would be after 1528.

(59) M. BERTOLÀ, *I due primi registri di prestito della Biblioteca Apostolica Vaticana. Codici Vaticani Latini 3964, 3966* (Vatican, 1942, Codices e vaticanis selecti 27), p. 114. It is curious, but probably not significant, that this was the very last loan in the registers, the practice being suspended for some years because, apparently, of abuse (Devreese (1965), p. 381).

(60) I have to thank the Biblioteca Apostolica Vaticana for the use of its collections in preparing this paper. The research was conducted with the assistance of a fellowship from the Social Sciences and Humanities Research Council of Canada and support from Brown University.