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978-1-108-06364-7 - Claudii Ptolemaei Opera Quae Exstant Omnia: Volume 1:

Syntaxis Mathematica: Part 1: Libri I–VI

Edited by Johan Ludvig Heiberg

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### **Claudii Ptolemaei opera quae exstant omnia**

Best known for his 1906 discovery of lost texts in the Archimedes Palimpsest, Danish scholar Johan Ludvig Heiberg (1854–1928), professor of classical philology at Copenhagen, published numerous editions of ancient mathematicians, including Archimedes and Apollonius of Perga (also reissued in this series). Between 1898 and 1907, he published in three parts the extant astronomical works of Ptolemy, active in second-century Alexandria. The Ptolemaic system, his geocentric model of the universe, prevailed in the Islamic world and in medieval Europe until the time of Copernicus. This first part of Volume 1, published in 1898, contains a brief Latin preface and the Greek text of Books 1–6 of Ptolemy's major astronomical treatise, known as the *Almagest*. It demonstrates how to use astronomical observations to construct cosmological models and includes tables that make it possible for celestial phenomena to be calculated for arbitrary dates.

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# Claudii Ptolemaei opera quae exstant omnia

VOLUME 1:  
SYNTAXIS MATHEMATICA  
PART 1: LIBRI I–VI

EDITED BY  
JOHAN LUDVIG HEIBERG



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Frontmatter  
[More information](#)

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Frontmatter

[More information](#)

CLAUDII PTOLEMAEI  
OPERA QUAE EXSTANT OMNIA  
VOLUMEN I.

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SYNTAXIS MATHEMATICA

EDIDIT

**J. L. HEIBERG,**  
PROFESSOR HAUNIENSIS.

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PARS I  
LIBROS I–VI CONTINENS.



LIPSIAE  
IN AEDIBUS B. G. TEUBNERI.  
MDCCLXXXVIII.

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[More information](#)

## PRAEFATIO.

Ad Ptolemaeum edendum adessi a Bibliopola honestissimo rogatus, nec inuitus obsecutus sum, cum id maxime opus esse uiderem, quod praestare me posse putabam, ut codicibus denuo collatis aestimatisque fundamentum quoddam recensionis iaceretur. nam editio princeps Syntaxis (Basileae 1538), ut mos erat illorum temporum, uno nec eo bono codice nititur, et Halma, abbas Parisinus, qui deinde solus Graecam editionem curauit (Parisiis 1813 sqq.) hodie rarissimam, ut optimum codicem Parisinum adhibuit, ita neque negotii critici neque sermonis Graeci satis peritus fuit. mihi igitur incipiendum erat a codicibus conquirendis, inspiciendis, conferendis, ubi opus esse uisum erat. quem laborem ut per annos 1893 et 1894 profigare possem, effectum est ope et liberalitate summi Ministerii, quod cultui scholisque Daniae praeest, maximeque Instituti Carlsbergici, bonarum artium in rebus angustis adminiculi locupletissimi, cuius praesidibus hoc loco ex animi sententia maximas ago gratias.

Inspectis examinatisque codicibus, qui quidem innotuissent, omnibus, de quibus in Prolegomenis partis posterioris agam, hos elegi ut recensionem et utiles et sufficientes:

A — codex Parisinus Graecus 2389, membranaceus in folio, litteris uncialibus binis columnis scriptus s. IX (u. Omont, Inventaire II p. 251), caractere, ut Henrico Omont uidetur, Aegyptio. constat foliis 376, quorum primum ad extremum librum XIII pertinet et paene detritum est, foll. 207—210, 255—270, 374—375

a\*

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## IV

## PRAEFATIO.

suppleta sunt s. XV(a); post fol. 68 quattuor folia desunt (u. p. 200, 7 et p. 209, 21), ut ex quaternionum ratione colligitur. scriptus est codex omnium praestantissimus duabus manibus eiusdem temporis, quarum una (A siue A<sup>2</sup>) atramento rauo, altera (A<sup>1</sup>) badio utitur; A<sup>1</sup>, quae a fol. 175 (p. 487, 17) incipit, sed iam in priore parte nonnulla correxit, litteras inclinatiores habet, *ι* adscriptum interdum ab A<sup>2</sup> semper fere omittit, adcentus uero spiritusque plures adponit quam A<sup>2</sup>. specimen exstat apud Omont Facsimilés des plus anciens Manuscrits Grecs en onciale et en minuscule de la Bibliothèque Nationale tab. IX. correctiones paucae manibus recentiori (A<sup>3</sup>) et recentissimae (A<sup>4</sup>, s. XVI) debentur. — contuli ipse Parisiis 1893. spiritus adcentusque hic ut semper in adparatu neglexi.

- B — codex Uaticanus Graecus 1594, membranaceus in folio s. IX, quo nullum pulchriorem elegantioremq̃ unquam uidi. constat foliis 284, sed olim plura habuit; nam fol. 284<sup>v</sup> legitur: ἡ βιβλος αὕτη τῆς μεγάλης συντάξεως ἔχει φύλλα τιε καὶ δύο εἰς τὴν ἀρχὴν τοῦ βιβλίου ἀπόλυτα. post fol. 65 unum folium excidit, cui manus recens s. XV duo substituit (u. p. 224, 14 et p. 228, 20). continet codex: fol. 1—8 Prolegomena anonyma ad Ptolemaeum, fol. 9—263 Ptolemaei Syntaxin cum scholiis, fol. 264—272<sup>r</sup> Ptolemaeum de apparentiis, fol. 272<sup>v</sup>—276 Ptolemaeum *περὶ κριτηρίου*, fol. 277<sup>r</sup> tabulam categoriarum (fol. 277<sup>v</sup> uacat), fol. 278—283<sup>r</sup> Ptolemaei hypotheses, fol. 283<sup>v</sup>—284 notas uarias. inde a folio 271<sup>v</sup> extremo duabus columnis uti desinit. — inuestigauit ipse et, quoad potui, contuli Romae 1894. P. 232, 4 — p. 546, 20 mea causa contulit Ioannes Tschiedel.
- C — codex Marcianus Graecus 313, membranaceus in folio s. X, ab imperito librario pulcherrime scriptus non sine compendiis maxime uersus finem. correctus est duabus manibus recentioribus (C<sup>2</sup> s. XIV—XV) et una recentissima (C<sup>3</sup>, fortasse ipsius Halmae; nam fuit Parisiis initio huius saeculi). continet: fol. 1—30<sup>r</sup> Prolegomena



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## PRAEFATIO.

V

ad Ptolemaeum ab initio mutila, fol. 30<sup>v</sup>—370 Ptolemaei Syntaxin cum scholiis. ex archetypo codicis B descriptus est. — contuli ipse Uenetiis 1893.

- D — codex Vaticanus Graecus 180, membranaceus in quarto s. XII, compluribus manibus eiusdem temporis scriptus, saltim alio alibi calamo atramentoque, et duabus minimum manibus antiquis (D<sup>2</sup>D<sup>3</sup>), una recentiore (D<sup>4</sup>) correctus. continet: fol. 1—2 notas quasdam astronomicas a manu recenti, fol. 3—280<sup>r</sup> Ptolemaei Syntaxin cum scholiis, fol. 280<sup>v</sup> notas uarias manuum recentium, in imo mg. *ὁμοῦ φύλλα σ̄ ἐβδομήκοντα ἐπτά* (debut computari 278). deriuatus est ab exemplari optimo et uetustissimo, quod saepe cum codice A consentiebat contra BC, saepe etiam solum ueram scripturam seruabat, sed ab homine rerum perito audacter interpolatum erat siue ipsum siue aliquod eius apographum; nam imperitis librariis codicis D interpolationes illae adtribui minime possunt. quorum errores incredibiles, ex itacismo et ex compendiis male intellectis plerumque ortos, saepe omisi, sed numquam nisi monito lectore (u. ad p. 4, 3; 12, 20; 27, 2; 29, 23; cfr. p. 40, 20). compendiorum usum significauit, quia ad aetatem genusque archetypi definienda utilia sunt. — contuli ipse Romae 1893—94.

- E — codex Marcianus Graecus 310, chartaceus s. XV. continet: fol. 1—13<sup>r</sup> Prolegomena ad Ptolemaeum, fol. 13<sup>v</sup>—151 Ptolemaei Syntaxin cum scholiis (fol. 152 uacat), fol. 153—261 Theonis commentaria in Syntaxin (fol. 262—264 uacant), fol. 265—286 alia manu Cabasilae commentaria aliaque eius opera, fol. 287—288 Barlaami quaedam. adcedit ad BC. inspexi paucis locis Uenetiis 1893.

- F — codex Parisinus Graecus 2390, bombycinus s. XIII, de quo u. Omont Inventaire II p. 251. arte cohaeret cum BC. hic illic inspexi Parisiis 1893.

Horum codicum ope uerba Ptolemaei talia restitui posse confido, qualia a uiris doctis Alexandriae anno cir-

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[More information](#)

## VI

## PRAEFATIO.

citer 500 legerentur. interpretationibus commentariisque Arabum uti non potui, Latinis nolui. interpretationem meam siue Latinam siue linguae recentioris in tanta rerum difficultate addere ausus non sum; de ea re uideant astronomi, si interpretationem desiderauerint.

In adparatu ad p. 227, 10 et p. 481, 15 pro Halma reponendum ed. Basil. ad p. 522, 49 delendum  $\zeta'$   $\zeta' A^1$ ?; nam etiam in A est  $\zeta'$ , ut ab Henrico Omont postea certior factus sum. ad p. 539, 7 haec adnotatio addatur: 7.  $\acute{\epsilon}\nu\rho\acute{o}\varsigma$ ] scripsi,  $\acute{\epsilon}\nu\rho\acute{o}\varsigma A^1BCD$ .

In plagulis corrigendis opem peritam diligentemque beneuolenter mihi praestitit Henricus Menge amicus.

Scr. Hauniae mense Maio MDCCCLXXXVIII.

**J. L. Heiberg.**