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Copernicus in the Carpathian Basin

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The traditional approach of the reception of Copernicus' ideas in Hungary was to trace the appearance of the heliocentric theory in various publications. The publishing of several book lists recently – inventories or wills for example – makes a different approach possible, one that is a continuation of Owen Gingerich's monumental *An Annotated Census of Copernicus' "De revolutionibus"*. We collected from the published book lists all possible Copernicus copies and investigated their histories. Four of them were already known, here we add 14 more examples, ten of them missing. Two of the remaining four that are still in existence can be found in Transylvania, Romania, while two others are in Hungary.

Der traditionelle Weg, die Rezeption des copernicanischen Gedankenguts in Ungarn zu erforschen, bestand darin, das Erscheinen der heliozentrischen Theorie in verschiedenen Schriften nachzuweisen. Die kürzliche Veröffentlichung von Bücherlisten – beispielsweise in Inventaren oder Testamenten – ermöglicht eine andere Herangehensweise, die eine Fortsetzung von Owen Gingerichs monumentalem Werk *An Annotated Census of Copernicus' "De revolutionibus"* darstellt. Wir sammelten aus den veröffentlichten Bücherlisten alle möglichen De-Revolutionibus-Exemplare und untersuchten ihre Überlieferungen. Vier davon waren bereits bekannt, 14 weitere konnten nachgewiesen werden, von denen 10 allerdings vermisst werden. Zwei der noch vorhandenen vier befinden sich in Siebenbürgen (Rumänien), die beiden anderen in Ungarn.

1 Introduction

One of the most important themes in the history of astronomy in Hungary has been traditionally the study of the acceptance of the heliocentric theory of Copernicus. Jolán M. Zemplén investigated the question in several of her publications.[1] She considered it basically the only important theme

[1] Jolán M. Zemplén, *A magyarországi fizika története 1711-ig.* Budapest, 1961; Jolán M. Zemplén, "The Reception of Copernicanism in Hungary", in Jerzy Dobrzycki (ed.), *Études sur l'audience de la théorie héliocentrique.* Wrocław-Warszawa-Kraków-Gdańsk, 1972, pp. 311–356.

in astronomy which was worthy of a place in her history of physics in Hungary. Indeed, the first volume of her impressive study, the history of physics in Hungary till 1711 dealt with astronomy, though mainly in relation with Copernicus. The second volume, on the physics in the 18th century, hardly mentioned astronomy at all.

This was not the last word on the question of Copernicanism in Hungary, recently László Székely studied the circumstances of its acceptance in Hungary.[2] In both cases, however, the method of investigation was the search for works whose authors appeared to accept the heliocentric theory.

There is another possible approach. Owen Gingerich has traced all the still existing copies of the first two editions of the *De revolutionibus* of Copernicus.[3] He also looked for glosses by possessors, and found that several contemporary astronomers did indeed read and understand the book, contrary to expectations based on the book of Arthur Koestler, namely, that "the Book of the Revolutions of the Heavenly Spheres was and is an all-time worst seller ... It is a remarkable negative record, and quite unique among books which made history ... The main reason for this neglect is the book's supreme unreadability."[4]

Since the publication of this important volume further copies of both editions of Copernicus have been found.[5] Our aim in this paper is to present evidence for further, so far missed copies of the book, either still existing or with a (partially) known history of the lost ones. As Gingerich mentioned only two copies from present day Hungary and one other from the territory of the historical kingdom of Hungary, the data on fifteen others presented (or have information on) here will make a substantial addition to the census.

2 The database

New studies in the history of book culture started more than twenty years ago in Hungary, with the town of Szeged as its centre.[6] The purpose of

[2] László Székely, "A kopernikuszi fordulat és a kopernikuszi fordulat nyomán kialakuló új fizikai világkép Magyarországon", in G. Palló (ed.), *A honi Kopernikusz-recepciótól a magyar Nobel-díjakig.* Budapest, 2004, pp. 23–58.

[3] Owen Gingerich, *An Annotated Census of Copernicus' De revolutionibus (Nuremberg, 1543 and Basel, 1566).* Leiden, 2002.

[4] Arthur Koestler, *The Sleepwalkers.* London, 1988, pp. 194–198.

[5] Stanislav Južnić, "Copernicus in Ljubljana", *Journal for the History of Astronomy* 36 (2006), 231–232; Owen Gingerich, "Supplement to the Copernican Census", *Journal for the History of Astronomy* 37 (2006), 232.

[6] István Monok, "Deux siècles de culture de la lecture dans le bassin des Carpathes", *Revue française d'histoire du livre* 117–121 (2003), 297–316.

this extensive program was to investigate such apparently easy questions: what was read and by whom in Early Modern Hungary? One result of this work was an impressive collection of lists of books: books listed in wills, inventories, etc.[7] Though in some cases the compact description made identification of some books impossible, it was usually possible to identify them. In some cases even the edition could be determined.

These lists offered several interesting lines of study. It was possible to group the possessors according to their education, or religion, or state in society. It was possible to have a rough idea, what were the reading materials (if any) of a given part of society. Moreover, it was also possible to get a picture of the appearance of various types of books in Hungary.[8] In such fortunate cases, when the books were still in existence, their individual history could also be derived with some precision.

3 Copies of *De revolutionibus* in the Carpathian Basin

As we have already mentioned, we have information (however scanty it might be) about the existence in the Carpathian Basin of at least fifteen copies of *De revolutionibus*, eight of which are still extant. Gingerich knew about three of them, namely the two in the University Library, Budapest (a Nuremberg and a Basel edition) and the one in Debrecen (another Nuremberg copy). We summarize the case histories of the books in the following.

3.1 Nagyszombat, Nos. 1–2

Cardinal Péter Pázmány (1570–1637) founded the Jesuit University in Nagyszombat in 1635. Astronomy has been taught there since its founding, as attested by the theses published by Márton Palkovics (1606–1662) in 1638.[9] The Jesuits have been collecting books for the use of the library

[7] The title of the series, which started in 1964, is *Materialien zur Geschichte der Geistesströmungen des 16.–18. Jahrhunderts in Ungarn*, under the general editorship of Bálint Keserű and István Monok. The publishing of book-lists started at a later date.

[8] See for example István Monok, "The Distribution of Works by Erasmus in the Carpathian Basin during the Sixteenth and Seventeenth Centuries", in Marcell Sebők (ed.), *Republic of letters, humanism, humanities*. Budapest, 2006, pp. 35–43.

[9] Márton Palkovics, *Exercitatio philosophica*. Pozsony, 1638. Palkovics was the president, the respondent was Miklós Majlád of Székhely. On the astronomical theses in Nagyszombat see E. Zsoldos, "Nagyszombat és a csillagok", in K. Petrovay (ed.), *A Csillagászati Tanszék negyed évezrede*. Budapest, 2006, pp. 39–55. On Palkovich see József Szinnyei, *Magyar írók élete és munkái*, Vol. 10. Budapest, 1905, cols. 195–196.

of the University since 1561. We find in their first inventory two copies of the first edition of *De revolutionibus* mentioned.[10] One of them was already in the possession of the library in 1632 (No. 1), the other one was bought in 1638 (No. 2).[11] The first of these was bound in black, the latter in white, and both seem to be destroyed or lost in the 17th century.

3.2 Nagyszombat, Nos. 3–4

There are two copies listed in the inventory of 1690.[12] These two books seem to be different from the earlier two. First, one of them is indicated as being aquired in 1667 (No. 4), decades later than the time of compilation of the first inventory. The date of the second is identical (1638; No. 3), but we are given different colours: it was said to be bound in white in the first catalogue and black in the second. It is, naturally, possible that we have a scribal error here, or the book was rebound, but we have no way to prove it either way.

Since the library bought another copy of *De revolutionibus* in 1667, we have to assume that the book bound in black leather from the first catalogue (No. 1) has disappeared sometime between 1632 and 1667. The replacement is the well-known copy of János Zsámboky (Sambucus, 1531–1584), the noted Hungarian humanist.[13] The book changed hands several times during its existence. It has annotations derived from Jofrancus Offusius (fl. 1550–1557), a German astronomer in Paris.[14] After Zsámboky's death his books were incorporated into the Imperial Library, Vienna. The book was bought by the Nagyszombat Jesuits – as we mentioned earlier – in 1667, to replace a former 1543 copy which had been lost. More than 100 years later, between 1780 and 1787, the underfunded University Library

[10]Gábor F. Farkas, *Magyarországi jezsuita könyvtárak 1711-ig. II. Nagyszombat 1632–1690*. Szeged, 1997, p. 60: "207. Copernicus de Reuolutionibus Orbium Caelestium in folio corio nigro Norimbergae 1543." and p. 66: "955. Nicolai Copernici de reuolutionibus orbis caelestium in folio Norimbergae 1543. membrana alba."

[11]Though the published list does not make it evident, it was clear from the original copy of the inventory.

[12]Farkas, *op. cit.* (ref. 10), p. 197: "Copernici Nicolai De reuolutionibus Orbium Coelestium, folio, Norimbergae 1543., Membrana alba, 1667. Eiusdem Idem, folio, Norimbergae 1543., corio nigro cum tabulis, 1638."

[13]A recent paper on Zsámboky is Gábor Almási, "Két magyarországi humanista a császári udvar szolgálatában: Dudith András (1533–1589) és Zsámboky János (1531–1584)", *Századok*, 139 (2005), pp. 889–922, 1131–67. This is copy I. 96 in Gingerich, *op. cit.* (Ref. 3), p. 101.

[14]Gingerich, *op. cit.* (ref. 3), pp. 101–102. Owen Gingerich and Jerzy Dobrzycki, "The Master of the 1550 Radices: Jofrancus Offusius", *Journal for the History of Astronomy* 24 (1993), 235–253.

sold it to the Calvinist College in Debrecen where the book can be found now.[15]

3.3 Nagyszombat, No. 5

The book obtained by the library in 1638 (No. 3) has disappeared, too (if the 1638 items referred to two books, then both have disappeared). The university moved to Buda (and later to Pest) in 1784, and the new librarian, György Pray (1723–1801)[16], published a catalogue of its rare books in 1780. It lists two 1543 copies again,[17] but neither of them is identical with the 1638 copy (or copies). One of them is Zsámboky's book described above (No. 4). The other one is also a noteworthy copy (No. 5), it belonged to Zakariás Mossóczi (1542–1587),[18] bishop in Nyitra, dean in Trencsén. It is not known where he did buy it. The book has a few notes by Mossóczi, so he must have read at least parts of it. The book changed hands several times before becoming part of the Jesuits' (though in Kassa, not Nagyszombat) library. It was presented by Mossóczi to Nicasius Ellebodius (1535–1577),[19] the Flemish philologist, but after his death, the book returned to its original owner. On Mossóczi's death, his brother-in-law, András Kecskés[20], inherited his library. He, in turn, left his books to János Kecskés (died in 1639), and the Jesuit library in Pozsony inherited the books from him. After the dissolution of the Jesuit order the book was taken first to Buda, later to Pest, and became part of the library of the

[15] András Tóth and Miklós Vértesy, *Az Egyetemi Könyvtár története*. Budapest, 1982, pp. 73–74.

[16] Jesuit historian, see Charles Sommervogel (ed.), *Bibliothèque de la Compagnie de Jésus*, Vol. 6. Bruxelles–Paris, 1895, cols. 1182–1192.

[17] Georgius Pray, *Index rariorum librorum Bibliothecae Universitatis Budensis*. Pars I. Buda, 1780, p. 298: "Duplex exemplum possidemus . . . "

[18] József Szinnyei, *op. cit.* (Ref. 9), Vol. 9 (1903), cols. 347–348. Béla Iványi, "Mossóczi Zakariás könyvtára", in Béla Iványi, *A magyar könyvkultúra múltjából*. Szeged, 1983, pp. 437–484. The description of the book is rather short, p. 471: "554. Copernicii volumen." It is copy I. 95 in Gingerich, *op. cit.* (Ref. 3), p. 101.

[19] Émile Varenbergh, "Ellebaudt (Nicaise)", in *Biographie Nationale publiée par L'Académie Royale des Sciences, des Lettres et des Beaux-arts de Belgique* Vol. 6. Bruxelles, 1878, cols. 553–554; A. L. I. Sivirsky, "Ellebodius, (H)Elbau(l)t, Nicasius", in *Nationaal Biografisch Woordenboek* Vol. 7. Bruxelles, 1977, cols. 206–208; on the libraries of Mossóczi and Ellebodius see Klára Boross, "A pozsonyi humanista kör könyvei az Egyetemi Könyvtár antikva-gyűjteményében", in L. Szögi (ed.), *Az Egyetemi Könyvtár Évkönyvei*, Vol. 13. Budapest, 2007, pp. 157–185.

[20] Very little is known about both Kecskés. András studied law in Bologna and became the brother-in-law of Mossóczi. Endre Veress, *Matricula et Acta Hungarorum in Universitatibus Italiae Studentium 1221–1864*. Budapest, 1941, pp. 111–112. Mossóczi's will is republished in Iványi, *op. cit.* (Ref. 18), pp. 443–446.

university in Pest, the successor of the former Jesuit university in Nagyszombat, where Pray catalogized it.

3.4 Nagyszombat, No. 6

From the two books listed by Pray we can find only one in the university library today, though it still has two copies of *De revolutionibus*. As we mentioned earlier, Zsámboky's copy (No. 4) was bought by the Calvinist College in Debrecen in the late 18th century. The book owned by Mossóczi (No. 5) is still here in Budapest, and there is a 1566 Basel edition (No. 6), too. It belonged to a Collegium Generale in Nagyszombat and it was bought in 1647.[21] It is not known when it arrived in the university library, though probably sometime after the dissolution of the Jesuit Order. As it is the second edition, it was not mentioned by Pray, he did not think it a "rare book."

3.5 Buda, No. 7

There is another lost copy which has a somewhat tenuous connection to the university and its library. The university had an observatory in Nagyszombat since 1755. It moved to Buda with the university, and had a temporary place in the Royal Castle, Buda. In the 1810s a new building was built on nearby Gellért-hegy (Blocksberg, St. Gellért Hill),[22] with the Croatian-born János Pasquich (1753–1829) as its first director. Pasquich was succeeded by Pál Tittel (1784–1831) as director. Tittel studied astronomy first in Vienna; at a later date he became a student of Gauss.[23] He visited Paris and London thanks to the sponsorship of István Fischer (1754–1822), archbishop of Eger.[24] During his travels Tittel bought several books, among them a 1566 Basel edition of Copernicus (No. 7).[25]

[21] Copy II. 85 in Gingerich, *op. cit.* (Ref. 3), p. 101.

[22] August Heller, *Die St. Gerardsberger Sternwarte zu Ofen.* Budapest, 1878; Ottó B. Kelényi, *A Pázmány Péter Tudományegyetem csillagvizsgáló intézetei.* Budapest, 1929; K. Petrovay (ed.), *A Csillagászati Tanszék negyed évezrede.* Budapest, 2006. Several documents related to the history of this observatory were published by Magda Vargha and László Patkós, *St. Gellert's Hill Chronicle. The Correspondence of Johann Pasquich and of Paul Tittel.* Budapest, 1996.

[23] Martha Küssner, "Der Gaußschüler Peter Paul Tittel aus Ungarn (1784–1831), Direktor der Sternwarten Erlau und Ofen", *Mitteilungen der Gauss-Gesellschaft e.V. Göttingen* No. 18, 1981, pp. 7–29. Magda Vargha and Sándor Kanyó, *... Csillagkoronák éjféli barátja. Tittel Pál élete és működése.* Budapest, 1988.

[24] Szinnyei, *op. cit.* (Ref. 9), Vol. 3 (1894), cols. 523–525.

[25] It is listed in the inventory of his books after his death, Vargha and Kanyó, *op. cit.* (Ref. 23), p. 164: "De Revolutionibus Orbium coelestium. Basileae 1566."

According to his will, the book was given to the library of the observatory.[26] However, the book is not found today. Since the observatory had a hard time during and after the siege of Buda in 1849, it is quite possible that the book was destroyed.[27]

3.6 Kalocsa, No. 8

Kalocsa is an Episcopal see in Hungary. Its Archiepiscopal Library has a Basel edition (No. 8), which was bought by László Kollonics (1736–1817), archbishop of Kalocsa, sometime between 1780 and 1787.[28] Earlier the book belonged to the library of the Capuchin fraters in Cormons, in the Province of Gorizia, Italy.[29] The book has a few marginal notes indicating its being in use.

3.7 Eperjes, Nos. 9–10

The inventory of 1606 of the Catholic parish church in Eperjes (today Prešov in Slovakia) listed an unspecified volume (No. 9) of *De revolutionibus*.[30] This book is missing. There can be found a different copy in Eperjes today, the second Basel edition (No. 10),[31] which was presented to the Lutheran College of the city in 1853 by Ágost Frigyes (August Friedrich) Hazslinszky (1818–1896),[32] a well-known botanist in the 19th century. This book had apparently two other possessors before Hazslinszky. The first is a certain Johannes Koruni, the second is Johannes Primerius.[33] A Johannes

[26] Ottó B. Kelényi, "A gellérthegyi egyetemi csillagvizsgáló könyvtára", in Antal Tass and József Wodetzky (ed.) *Stella Almanach* Vol. 6. 1930, pp. 245–262. The observatory's inventory confirms it, *Catalogus Librorum in Bibliotheca R. Univ. Observatorii existentium* (1835), f. 3: "39. Copernici (Nic.) De revolutionibus orbium coelestium libri sex. Basilea." The catalogue is a manuscript in the library of Konkoly Observatory. The earlier catalogues do not list any copies of Copernicus.

[27] The vicissitudes of the observatory were described in detail by Ferenc Albert, who saved most of the books and instruments. See Antal Réthly, "A gellérthegyi csillagda 1849. évi pusztulása. Eredeti okiratok alapján", *Csillagok Világa* 1 (1948), 145–150. See also Heller, *op. cit.* (Ref. 22).

[28] "Ex libris Ladisl. com. a Kollonitz Epis. M-Varad." Kollonics bought the book while he was bishop of Nagyvárad (today Oradea in Romania) between 1780 and 1787. On Kollonics see Szinnyei, *op. cit.* (Ref. 9), Vol. 6 (1899), cols. 772–773.

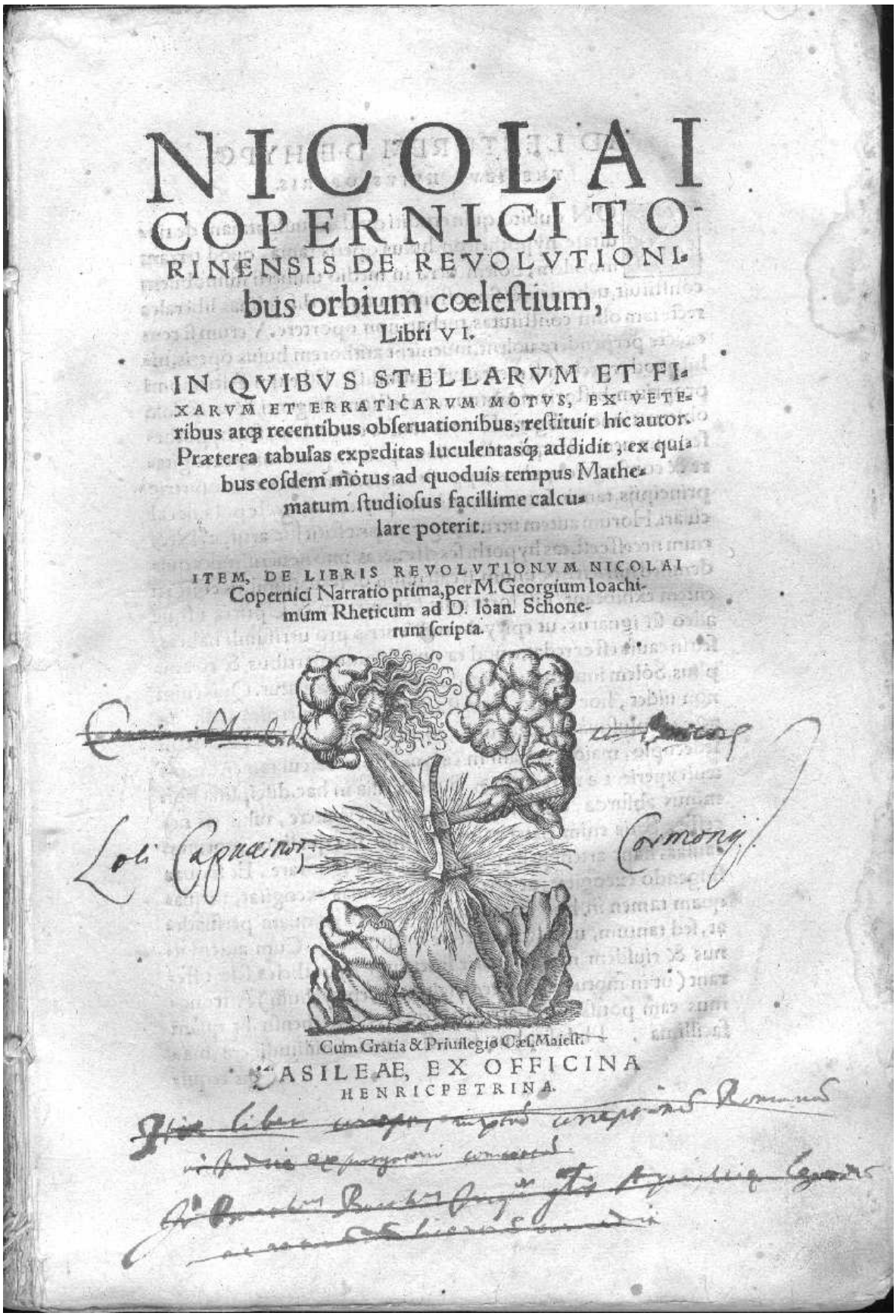
[29] On the title page: "Loci Capucinor. Cormonij."

[30] Béla Iványi, "Az eperjesi egyház könyvtára 1606-ban", in Iványi, *op. cit.* (Ref. 9), pp. 375–379. On p. 376: "61. Nicolaus Copernicus de revolutione orbium coelestium".

[31] This is copy II. 188 in Gingerich, *op. cit.* (Ref. 3), p. 199.

[32] Szinnyei, *op. cit.* (Ref. 9), Vol. 4 (1896), cols. 559–563.

[33] "Ex Bibliotheca Johann: Primerii."


NICOLAI
COPERNICI TO-
RINENSIS DE REVOLVTIONI-
bus orbium cœleſtium,
Libri VI.

IN QVIBVS STELLARVM ET FI-
XARVM ET ERRATICARVM MOTVS, EX VETE-
ribus atq; recentibus obſeruationibus, reſtituit hic autor.
Præterea tabulas expeditas luculentasq; addidit, ex quí-
bus eoſdem motus ad quoduis tempus Mathe-
matum ſtudioſus facillime calcu-
lare poterit.

ITEM, DE LIBRIS REVOLVTIONVM NICOLAI
Copernici Narratio prima, per M. Georgium Ioachi-
mum Rheticum ad D. Ioan. Schone-
rum ſcripta.

Cum Gratia & Priuilegio Cæſ. Maieſt.

BASILEAE, EX OFFICINA
HENRICPETRINA.

Fig. 1. The title page of the Kalocsa copy of Copernicus. With permission of the Archiepiscopal Library, Kalocsa.

Primerius is known from Besztercebánya (Neusohl, today Banská Bystrica in Slovakia), he was a citizen there in 1643.[34]

3.8 Besztercebánya, No. 11

Hans Dernschwam (1494–c. 1568),[35] an agent of the Fuggers in Hungary, possessed a very imposing library. He had a first edition Copernicus in his library in Besztercebánya,[36] where it could have been used by his friends and interested neighbours. His books were inherited by the Imperial Library in Vienna, which, however, does not possess the book today.[37] This must be a lost or hidden copy.

3.9 Bártfa, No. 12

Another lost copy was once found in the Saint Giles (Egyed) Church library in Bártfa (Bartfeld, today Bardejov in Slovakia). The inventories of 1705[38] and 1725[39] list it without giving any details about the edition. It is, however, missing from the one made in 1832, together with almost a hundred other books. It is thought that these books were moved to the personal library of Ferenc Barkóczy (1710–1765), the then bishop of Eger.[40] They are not found there today.

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[34]See National Széchényi Library, Oct. Lat. 133, *Album Amicorum et fautorum Matthaei Fridelii Lithomericiensis Bohemii* (1643–1659), f. 40r (modern pagination). The possessor of the Album, Matthaeus Fridelius, born in Bohemia (Litoměřice), was minister and citizen of Besztercebánya. A booklist of Fridelius from 1667 is published by Viliam Čičaj, Katalin Keveházi, István Monok and Noémi Viskolcz, *A bányavárosok olvasmányai (Besztecebánya, Körmöcbánya, Selmecbánya) 1533–1750.* Budapest-Szeged, 2003, pp. 68–76.

[35]See Kurt Oberdorffer, "Dernschwam v. Hradiczin, Hans", in *Neue Deutsche Biographie.* Band 3 (Berlin, 1957), p. 609.

[36]Jenő Berlász, *A Dernschwam-könyvtár.* Szeged, 1984, p. 47: "Nicolai Copernici Torinensis De Reuolutionibus orbium celestium Libri Sex. Impressum Norimberge, Anno 1543. in folio".

[37]The Copernicus copies found today in Austria are listed in Gingerich, *op. cit.* (Ref. 3), pp. 3–5.

[38]Edina Zvara, *Katolikus intézményi könyvtárak Magyarországon 1526–1726.* Szeged, 2001, p. 196: "14. Copernici revolutiones in folio tomus unus id est 1".

[39]Zvara, *op. cit.* (Ref. 38), p. 201: "10. Opus Nicolai Copernici de revolutionibus orbium caelestium in folio".

[40]Jenő Ábel, *A bártfai Szent Egyed temploma könyvtárának története.* Budapest, 1885, p. 140.

3.10 Esztergom, No. 13

There was an unspecified copy (No. 13) of the book in Esztergom, in the bishop's library, listed in its 1674 inventory.[41] Since the medieval library was destroyed by the Turks, high priests were ordered to will their books to the library to replace this loss. The Copernicus volume therefore might have originated at some such personal library. Since the book is lost, we do not know which bishop bought the book originally.

3.11 Budapest, No. 14

There is a copy of the 1566 Basel edition (No. 14) in the Library of the Hungarian Academy of Sciences. This seems to come from the library of the Batthyány family. It is uncertain who donated the book, there are several members of the family who are likely candidates. Gusztáv Batthány (1803–1183) presented 30,000 books to the Academy Library in 1838, while his brother, Kázmér (1807–1854), gave 3,000 volumes. The present copy might have come from either of them. Gusztáv inherited the books of his great-grandfather, Lajos (1696–1765), and those of his grandfather, Tódor (1729–1812). The latter had a noteworthy technical library.[42] The Copernicus might have belonged to any of these men.

3.12 Brassó, Nos. 15–17

Several copies of Copernicus are connected to Brassó (Kronstadt, today Braşov in Romania). The first (No. 15) belonged to Michael Weiss (1569–1612),[43] the Saxon magistrate of the city, who had an excellent library. It was possibly inherited by the Gymnasium of the city, since their inventory lists a copy, unfortunately without noting which edition.[44] This book does not exist anymore, it perished in the fire of 1689.

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[41] Zvara, op. cit. (Ref. 38), p. 66: "Nicolaus Copernicus de revolutionibus orbium coelestium".

[42] Walter Endrei, "Batthyány Tódor műszaki könyvtára", *Magyar Könyvszemle* 107 (1991), 141–145.

[43] Joseph Trausch, *Schriftsteller-Lexikon oder Biographisch-literärische Denk-Blätter der Siebenbürger Deutschen*, Band III. Kronstadt, 1871, pp. 484–490. István Monok, Péter Ötvös and Attila Verók, *Lesestoffe der siebenbürger Sachsen 1575–1750. Bistritz, Hermannstadt, Kronstadt.* Budapest, 2004, p. 562: "Nicolaus Copernicus".

[44] Monok et al., *op. cit.* (Ref. 43), p. 572: "Nicolaus Copernicus de Revolutionibus Orbium Coelestium. Folio".

The second copy (No. 16) of Copernicus belonged to the mathematician Michael Eckhardt (d. 1720). A former student of Wittenberg and Kiel, he must have read the book since a list from 1698 in his own handwriting of books to be read survives ("Tagebuchnotiz über die zu lesenden Bücher von Michael Eckhardt"), listing among others, Copernicus.[45] This book seems to be lost.

The third copy (No. 17) of Copernicus is still in Brassó. This is the 1543 first edition. It was probably bought in Vienna, in 1796.[46] It might have been bought from the Imperial Library.[47]

3.13 Kolozsvár, No. 18

The last Copernicus volume (No. 18) in our list is another 1543 edition, and it still can be found in Kolozsvár (Clausenburg, today Cluj-Napoca in Romania). The first possessor of the book was apparently Ferenc Krasznai, a former student in Kraków, in 1550.[48] He had other astronomical books of interest, for example Ptolemy.[49] A later possessor is Benedek Árkosi. There are, however, two persons with this name in the 17th century, both teachers in Kolozsvár. One, Benedek Gelei Árkosi, the teacher of the Unitarian College, studied in Padua in 1635–1645.[50] The other, Benedek Tegző Árkosi (c. 1630–1661), studied in Frankfurt/Oder and Leiden. His inventory includes the Copernicus volume.[51] Later the book belonged to the library of the Unitarian College in Kolozsvár.[52]

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[45] István Monok, Péter Ötvös and Attila Verók, *Lesestoffe der siebenbürger Sachsen 1575–1750. Schäßburg, Kleinere Orte*. Budapest, 2004, p. 857: "Nicol(aus) Copernicus Borussus, qui annos 36 scriptionem de revolutionibus orbum coelestium elucubravit".

[46] An inscription inside says: "Bibliotheca Coronensi Viennae 15. Septembri 1796". The title page has "Biblioth. Gymn. Cor. L. I. 2".

[47] Personal communication from Dr. Gernot Nussbächer, Braşov.

[48] One can see "F. C. 1550" on the binding. See Ádám Dankanits, *XVI. századi olvasmányok*. Bucharest, 1974, p. 78. Schrauf lists him in Cracow for 1558, Károly Schrauf, *Regestrum Bursae Hungarorum Cracoviensis 1493–1558*. Budapest, 1893, pp. 34–35.

[49] Dankanits, *op. cit.* (Ref. 48), p. 76.

[50] János Kénosi Tőzsér, *De typographiis et typographis unitariorum in Transylvania*. Szeged, 1991, p. 112: "Benedictus Árkosi in Academia Patavina publice in multorum frequentia dixit: Philosophiae et Medicinae Elogium. A. 1639. 2. Novembris in 4^o, et Orationem in laudem S. S. Theologiae A. 1640. in 4^o. Redux ex Academiis Lector Claud. Scholae Scripsit: Le Locis S. S. Literarum inter Trinitarios et Unitarios controversies".

[51] Gyöngyi Bíró, István Monok and Gábor Sipos, *Erdélyi könyvesházak*. Budapest (forthcoming).

[52] On the title page: "Ecclae. Unit. Claudiop."

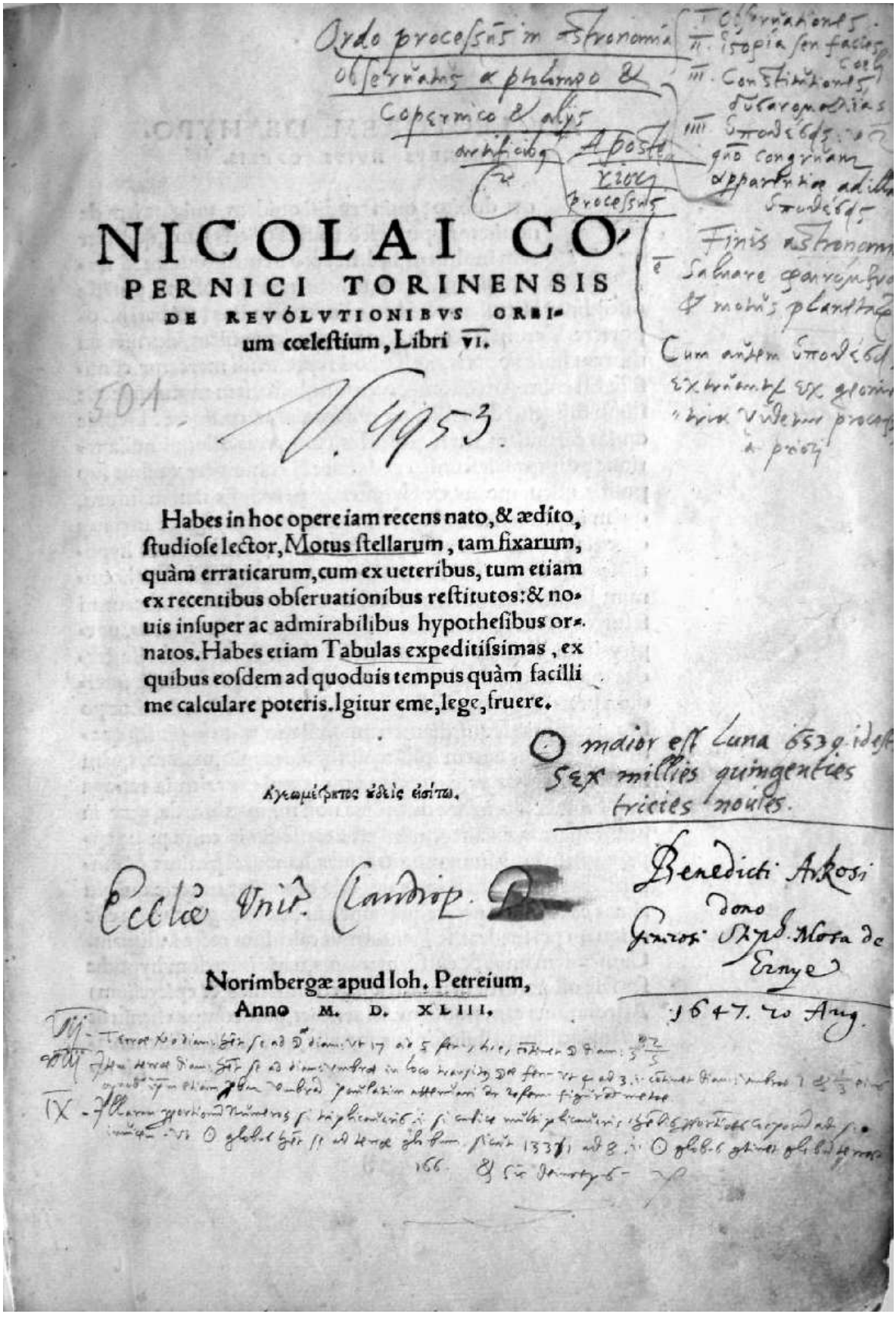

Fig. 2. The title page of the Kolozsvár copy of Copernicus. With permission of the Academy Library of Cluj-Napoca Branch.

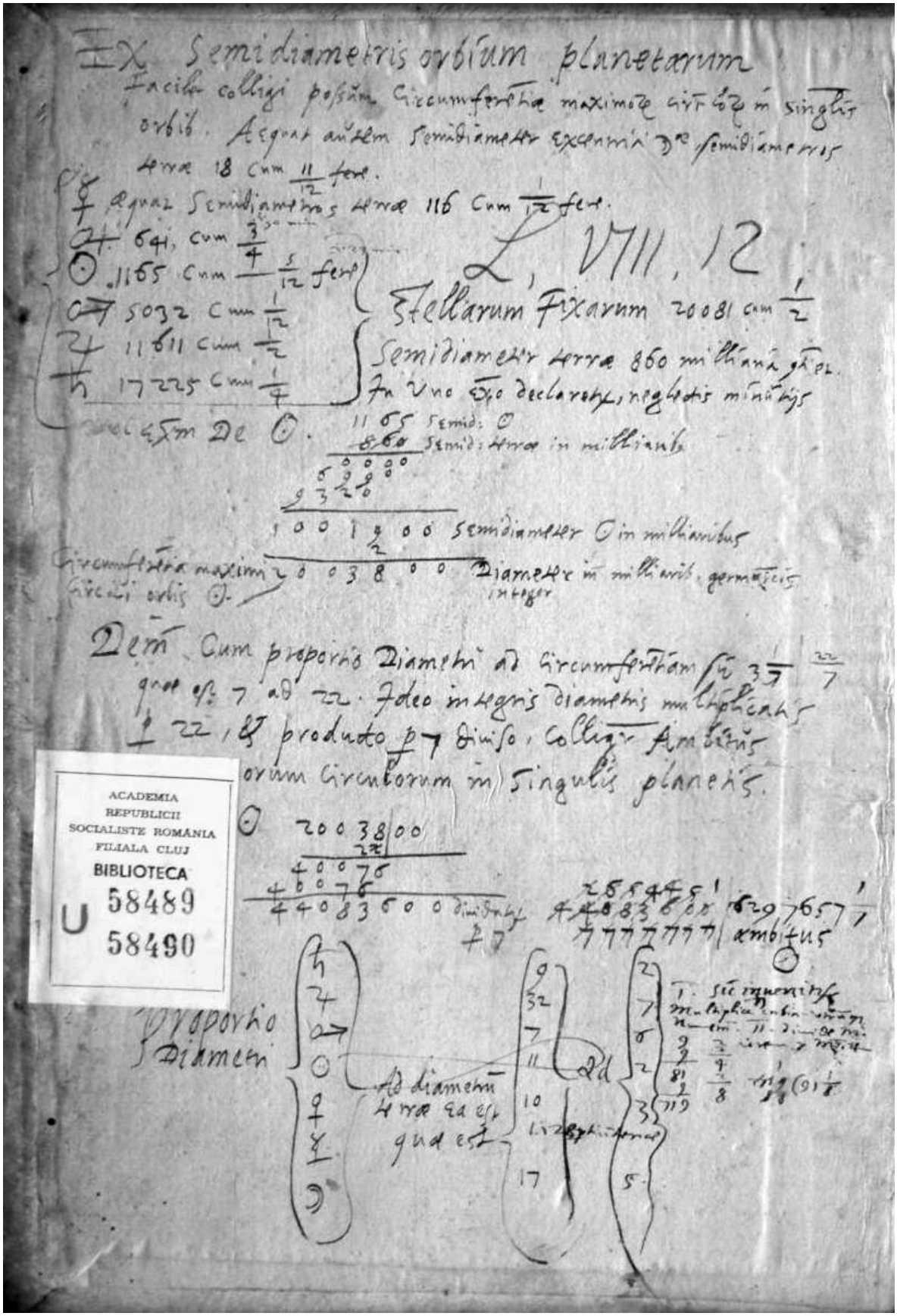

Fig. 3. Calculations from the Kolozsvár copy of Copernicus. With permission of the Academy Library of Cluj-Napoca Branch.

4 Other Copernicus volumes

The book lists and inventories includes other books containing the name of Copernicus. These can be written by other authors, for example Kepler's *Epitome Astronomiae Copernicanae* is listed in one place as a book by Copernicus.[53] There are, however, genuine Copernicus works other than *De Revolutionibus* in these lists.

There are two surviving copies of Copernicus' work on trigonometry.[54] One of them can be found in Debrecen, in the Library of the Calvinist Church.[55] The book belonged to Silesian priests,[56] one of whom, Valentin Hancke (d. 1627) arrived at Hungary after the outbreak of the Thirty Years' War. He became the Lutheran minister in Libetbánya (today L'ubietová in Slovakia) in 1620, and his book later found its way to the Library of the Calvinist Church. Another one is in Kolozsvár.[57] This latter belonged to Andreas Rempler (d. 1606)[58] from Beszterce (Bistritz, today Bistriţa in Romania), who studied in Frankfurt/Oder, and in 1587 he was decan for a year in the same university.[59] Rempler had several books related to astronomy: the *Almanach nova* of Johannes Stöffler, editions of Ptolemy, Peurbach's *Theoria nova*, Apian etc.[60]

5 Calculations in the Kolozsvár copy of Copernicus (No. 18)

This volume has marginal notes, the empty pages are filled with calculations. On the title page we find, for example: "The Sun is greater than the Moon by 6539, that is six thousand five hundred and thirty nine times".[61]

The inner front cover has a schoolroom type calculation, so we assume that it was possibly written by a student in the Unitarian College. The aim

[53] Farkas, *op. cit.* (Ref. 10), p. 130: "R. 149. Georgij Rethici de libris reuolutionum Nicolai Copernici Narratione Vide mysteri Kepleri."

[54] Nicolaus Copernicus, *De lateribus et angulis triangulorum.* Wittenberg, 1542.

[55] This copy is not known by Gingerich, *op. cit.* (Ref. 3).

[56] On the front cover: "Reuerendo et doctissimo Domino Valentino Hankio pastori Seiffersdorffi hunc librum Melchior Ludovic(us) pastor in Vogelseiffen (?) dono dedit in perpetua(m) sui memoria(m) Anno 1595. in 16. Febr(uarii)."

[57] It is given in Gingerich, *op. cit.* (Ref. 3), p. 381.

[58] Trausch, *op. cit.* (Ref. 43), pp. 107–108.

[59] Bauch, Gustav, *Das älteste Decanatsbuch der philosophischen Fakultät an der Universität zu Frankfurt/Oder, Zweiter Theil. Die artistisch-philosophischen Promotionen von 1540 bis 1596.* Breslau, 1901, pp. 23, 90, 97.

[60] Dankanits, *op. cit.* (Ref. 48), pp. 76–79.

[61] "Sol maior est Luna 6539 id est sex millies quingenties tricies nonies". Similar value results from the use of Ptolemy's or Al-Battāni's data, see Albert Van Helden, *Measuring the Universe. Cosmic Distances from Aristarchus to Halley.* Chicago–London, 1985, pp. 27 (Ptolemy), 32 (Al-Battāni).

is to calculate the circumference of a great circle in any planetary orb if the orb's semidiameter is known. The scribe considered it an easy job ("facile colligi possum"). The given semidiameters, however, indicate a Ptolemaic system, since we are given the Sun's distance between that of Venus and Mars.

Distance of [in e.r.]	No. 18	Al-Farghani[62]	Theodoricus[63]
Moon	18[64] 11/12	48 5/6	60
Mercury	116 1/12	115 1/2	111
Venus	641 3/4	643 1/2	618
Sun	1165 5/12	1170	1151
Mars	5032 1/2	5048	4599
Jupiter	11611 1/2	11640	11611
Saturn	17225 1/4	17258	17225
Fixed stars	20081 1/2	20110	20081

The source of these data are uncertain, they follow to a large extent the accepted values of this age, but not always.

Taking the Sun's distance as 1165 e.r. [earth radii] (he uses only integer values), the scribe converts it first into miles using the standard value of 860 miles for 1 e.r. He assumes π to be 3 1/7 ("proportio diametri ad circumferentiam sit 3 1/7" [22/7 on the margin]). Multiplying by 22 and dividing by 7 he gets the value of 6,297,657 1/7 for the circumference of the Sun's orb.

On the facing page the scribe gives some data of the planets (Sun still included among them). On another page the six different magnitude classes are described. Their sizes as compared to the Earth are given in the table on the following page.

The title page is also full of notes. The one regarding the ratio of the sizes of the Sun and Moon has already been mentioned. There are other interesting notes, like "The final cause of astronomy is to save the phenomena and planetary motions."[65]

At the top of the first text page, someone summarized the contents of Book I, that is, it is about the world's general description, based on observations, and using plane and spherical trigonometry. So it seems that in spite of the Ptolemaic calculations, at least someone read the book, too.

[62] Van Helden, *op. cit.* (Ref. 61), p. 30.

[63] Sebastianus Theodoricus Winshemius, *Novae Questiones Sphaerae.* Wittenberg, 1564, pp. 79–80.

[64] This should be 48.

[65] "Finis astronomiae est salvare $\phi\alpha\iota\nu o\mu\varepsilon\nu\alpha$ et motus planetarum."

Stars	No. 18	Al-Farghani[66]	Keckermann[67]
1st magnitude	107	107	107
2nd	87	90	86
3rd	72	72	72
4th	54	54	54
5th	33	36	31
6th	18	18	18

We accounted for the loss of ten copies of De revolutionibus (Nos. 1–3, 7, 9, 11–13, 15 and 16). Since our sources are obscure at times, we cannot be sure in all cases what edition they were. However, we added several more existing copies to the census of Gingerich (apart from the four he already knew about: Nos. 4–6 and 10). Two of them are 1543 editions, and they can be found today in Romania, namely in Kolozsvár (No. 18) and in Brassó (No. 17). The Kolozsvár copy seems to have been in use as proven by the numerous calculations found inside the book. There are two more surviving copies of the 1566 Basel edition, too, one is in Kalocsa in the Archiepiscopal Library (No. 8), and the other one is in the Library of the Hungarian Academy of Sciences (No. 14).

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[66] Van Helden, *op. cit.* (Ref. 61), p. 30.

[67] Bartholomaeus Keckermann, *Systema Astronomiae Compendiosum.* Hanoviae, 1611, pp. 102–104. The same values are given for example by Theodoricus Winshemius, *op. cit.* (Ref. 63), pp. 84–86, and Nicodemus Frischlin, *De Astronomicae Artis.* Frankfurt, 1601, pp. 119–120. Keckermann was a popular textbook author in Hungary, Zemplén, *op. cit.* (Ref. 1, 1961), pp. 56–57, so he is a likely source.