The Fate of Kepler's Handwritten Heritage

Irina Tunkina
Translation by Ludmila Mironova

Abstract. This paper examines the problematic fate of Kepler's handwritten archives, which changed hands on several occasions until they appeared in Russia in 1774. Under a directive from the Empress Catherine the Great, part of Kepler's archive was bought for the Saint Petersburg Academy of Sciences. From 1937, J. Kepler's personal manuscripts were kept in the Archive of the Academy of Sciences, USSR (now the Saint Petersburg branch of the Archive of the Russian Academy of Sciences).

The story of Johannes Kepler's handwritten heritage is a dramatic one. Kepler (1571–1630) was an astronomer, mathematician and star of the first magnitude in the scientific world of his time. At his death he left an enormous archive which contains valuable documents relating to the astronomical observations made by his senior colleague, the court mathematician and astronomer for the Holy Roman Emperor Rudolph II, Tycho Brahe (1546–1601), whose position and archive Kepler had succeeded and inherited. The mass of scientific information contained in the archives reveals what made the discovery of the three laws of planetary motion possible. Kepler and Brahe's archives have survived only in fragments, and the greater part of Kepler's is held at the Saint Petersburg branch of the Archive of the Russian Academy of Sciences.

After Kepler's death in 1630, his son-in-law, Jakob Bartsch (1600–1633), a medical doctor and the junior scientific assistant of mathematics at Strasburg University, became the first owner of his archive. Bartsch was executor of Kepler's will, having married his daughter, Susanna, in 1630.[1] At the time of his death from the plague in Lauban, Bartsch was preparing for the publication of manuscripts which had previously been sent to the

[1] E. Zinner, 'Bartsch, Jakob', *Neue Deutsche Biographie* 1, 1953, p.612, https://www.deutsche-biographie.de/pnd117767689.html#ndbcontent [accessed 8 August 2021].

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printer by Kepler himself. However, Bartsch's widow Susanna, burdened as she was with children, was obliged to sell part of her father's library but kept the manuscripts. Emissaries from the Holy Roman Emperor Ferdinand II were very interested in them, as were Jesuit scholars who hoped to take the manuscripts from the family and lock them in a closed archive, in order to prevent the proliferation of Copernican ideas. Susanna refused to pass on her father's and Brahe's manuscripts without financial compensation, which she considered to be a deposit against the Emperor's debt to the family: the Viennese treasury owed Kepler's unpaid salary as court mathematician, astronomer and astrologer, which amounted to 12,694 gulden.[2]

Susanna asked her brother, Ludwig (1606–1663), Kepler's son from his first marriage in 1587 to the miller's daughter, Barbara Müller von Mülek (1573–1611), then a medical student and later a doctor in Königsberg, to continue Bartsch's work (Figures 1 and 2).[3] In 1634 Ludwig made a start by publishing Kepler's 1608 satirical fantasy work, *Somnium seu opus posthumum de astronomia lunari*. Written in the form of an allegory, the book discussed the Moon's geography and was based on the heliocentric system; it described the journey of a boy and his mother-witch to the Moon. The text reflected events in the life of Kepler's mother, Katharina (1547–1622), who was accused of witchcraft in 1615: she was arrested and imprisoned in 1620 but defended by Kepler who secured her release in 1621. Katharina did not survive the shock and died six months later.[4] Ludwig continued to put his father's manuscripts in order and attempted to publish further unpublished works, along with Brahe's observations. However, he was forced to move his father's archive from

[2] YU.A. Belyi, *Iogann Kepler 1571-1630* [Johannes Kepler 1571–1630] (Moscow: Nauka, 1971), pp.249–51 [hereafter, Belyi, *Iogann Kepler*].

[3] A. Hirsch, 'Kepler, Ludwig', *Allgemeine Deutsche Biographie* 15 (1882): p.624, https://www.deutsche-biographie.de/pnd124559662.html#adbcontent [accessed 8 August 2021] [hereafter, Hirsch, 'Kepler, Ludwig'].

[4] M. List, 'Kepler, Johannes', *Neue Deutsche Biographie* 11 (1977): pp.494–508, https://www.deutsche-biographie.de/pnd118561448.html#ndbcontent [accessed 8 August 2021]; N.S. Prokhorenko, 'Iogann Kepler: kistorii sud'by i nauchnogo naslediya', *Millerovskie chteniya: K 285-letiyu Arkhiva Rossiiskoi akademii nauk. Sbornik nauchnykh statei po materialam Mezhdunarodnoi nauchnoi konferentsii 23-25 aprelya 2013 g*. ['Johannes Kepler: to the History of Fate and Scientific Heritage', *Miller Readings: To the 285th anniversary of the Archive of the Russian Academy of Sciences. Collection of scientific articles on the materials of the International Scientific Conference on April 23-25, 2013]* (Saint Petersburg, 2013), pp.236–37, pp.232–33 [hereafter, Prokhorenko, 'Iogann Kepler'].

Fig. 1: Johannes Kepler wedding portrait. Oil on oval copper plate (4.7 x 6.1 cm) glued to cardboard, 1597, Graz © SPB ARAN, Coll. 285, inventory 2, archiving 1.

Fig. 2: Johanne Kepler's first wife's (Barbara) wedding portrait (born Müller von Mülek). Oil on oval copper plate (5.2 x 7.0 cm) glued to cardboard. Fixed in wooden gilded frame (11.3 x 14.5 cm). 1597. Graz © SPB ARAN, Coll. 285, inventory 2, archiving 2.

Lauban to Sagan. Ferdinand II demanded that Ludwig hand over Kepler's astrological prognoses for members of the imperial house along with

Brahe's observations. There was also an attempt to obtain the manuscripts from the family by force while Susanna Bartsch was still alive. However, Ludwig had not left anything to chance, having divided the manuscript into sections and hidden them, and the attempt to steal them was unsuccessful.[5]

Ludwig also rejected a proposal from the German Copernican astronomer Peter Krüger (1580–1639), who was Kepler and Brahe's disciple and correspondent, to sell the manuscripts to a Danzig magistrate. Assuming he would never receive payment of the debt owed by the Viennese court, Ludwig himself sold a considerable part of Brahe's manuscripts to Frederick III, King of Denmark and Norway, for the small sum of 600 taller, but he kept his father's own manuscripts.[6]

Eventually, Kepler's grandchildren sold their grandfather's archive to the Danzig astronomer Johannes Hevelius (1611–1687), a student of Krüger.[7] In 1639 Krüger had obtained a list of Kepler's manuscripts from Ludwig and informed Hevelius about this. Hevelius bought the archive in 1670 and, as a member of the English Royal Society, he informed his English colleagues about the archive's contents, referring to twenty-nine notebooks ('sheaf of papers').[8] By a miracle, the archive survived the fire that took place in Hevelius' house on the night of 26/27 September 1679, even though the observatory and a large number of astronomical instruments were lost, as well as personal property and documents belonging to Hevelius.[9] Hevelius was unable to publish Kepler's

[5] Belyi, *Iogann Kepler*, pp.251–52.

[6] E.V. Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', *Arhiv Akademii nauk SSSR. Obozrenie arhivnyh materialov*, pod red. G.A. Knjazeva i L.B. Modzalevskogo. ['Handwritten Heritage of Johannes Kepler', G.A. Knjazeva and L.B. Modzalevsky, eds, *Archive of the USSR Academy of Sciences, A Survey of the Archive materials* (Moscow-Leningrad, 1946), Vol. II, pp.297–312, p.297, [hereafter, Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera']; Belyi, *Iogann Kepler*, p.253.

[7] F. Schmeidler, 'Hevelius, Johannes', *Neue Deutsche Biographie* 9 (1972): pp.59–61,https://www.deutsche-biographie.de/pnd119431416.html#ndbcontent [accessed 8 August 2021].

[8] Saint Petersburg Archive of the Russian Academy of Sciences, Coll. 285, inventory 1, archiving 34 [hereafter, SPB ARAN].

[9] Belyi, *Iogann Kepler*, p.254; N.M. Raskin, 'O fonde Ioganna Keplera v Arhive Akademii nauk SSSR', XIII Mezhdunarodnyj kongress po istorii nauki. Mezhdunarodnyj simpozium, posvjashhennyj 400-letiju so dnja rozhdenija Keplera ['About the Johannes Kepler Collection in the Archive of the USSR Academy of Sciences', *XIII International Congress on the History of Science. International symposium dedicated to the 400th anniversary of Kepler's birth.*]

manuscripts as large sums of money were needed to restore the observatory.

After Hevelius' death, Kepler's archive fell into the hands of his daughter, Catherine-Elizabeth. In 1696 she married Ernst Lange (1650–1727) a poet, religious leader, lawyer and senate member in Danzig.[10] The archive was kept in the Lange family until 1708 when it was bought for a symbolic 100 gulden by Michael Gottlieb Hansch (1683–1752), a graduate from Leipzig University and a doctor of theology, as well as a mathematician and philosopher.[11] We are obliged to Hansch for arranging the Kepler archive documents in the form that still exists today. He allocated the manuscripts to twenty-two folios and put them in white parchment jackets with golden stamping. On the front cover is a golden frame and the motto *Deo et publico* (Figures 3 and 4) with Hansch's initials (DMGH; Dominus Michaelis Gottlieb Hanschius) and the date of binding – 1712. The Roman numbers and the special letters were pressed on the backs of the folios; these letters form in line 'MANUSC. KEPPLERIANORUM', while 'MSS. KEPLERI' is pressed on two volumes *in quarto*.[12]

From the moment he obtained the archive, Hansch's principal life-task was to oversee the publication of Kepler's compete works, and he announced his intention in the press.[13] He also announced the forthcoming publication of Kepler's uncompleted book on *Hipparchus*, analysing the relative distances from the Earth and the Moon to the Sun, following Hipparchus. (Figure 5). However, Hansch was able to publish only a small part of Kepler's scientific and literary heritage. He received a grant of 4,000 gulden from the imperial house in Vienna and published the first volume of Kepler's material in Leipzig, accompanied by a detailed

USSR, Leningrad, 26-28 August 1971 (Moscow, 1971), pp 7–18, pp.8–9 [hereafter, Raskin, 'O fonde Ioganna Keplera'].

[10] *l. u.*, 'Lange, Ernst', *Allgemeine Deutsche Biographie* 17 (1883): pp.623–24, https://www.deutsche-biographie.de/pnd139612424.html#adbcontent [accessed 8 August 2021]; Raskin, 'O fonde Ioganna Keplera', p. 9.

[11] Th. Hirsch, 'Hansch, Michael Gottlieb', *Allgemeine Deutsche Biographie* 10 (1879): pp.527–28, https://www.deutsche-biographie.de/pnd116454911.html#adbcontent [accessed 8 August 2021] [hereafter, Hirsch, 'Hansch, Michael Gottlieb']; Belyi, *Iogann Kepler*, p.254.

[12] Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', pp.303, 306.

[13] Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.298.

biography of Kepler. He presented that volume to Emperor Charles VI, for which he was rewarded with a gold chain and a title.

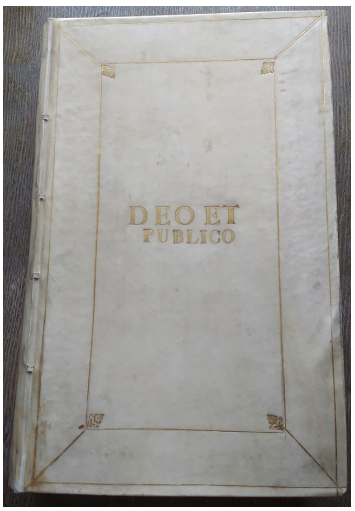

Fig. 3: White parchment paper for binding Johannes Kepler's script in folio with golden stamping «Deo et publico» ordered by M.G. Hansch in 1712. Photo by K.G. Schischkina. © SPB ARAN, Coll. 285, inventory 1, archiving 1.

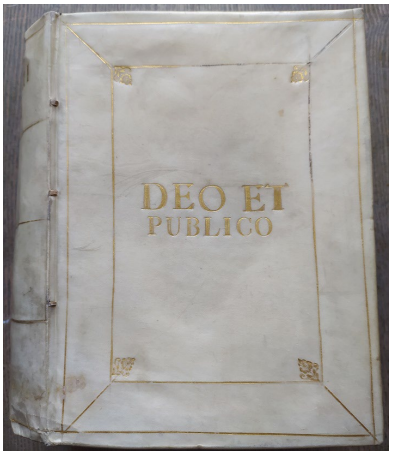

Fig. 4: White parchment paper for binding Johannes Kepler's script in quarto with golden stamping «Deo et publico» ordered by M.G. Hansch in 1712. Photo by K.G. Schischkina. © SPB ARAN, Coll. 285, inventory 1, archiving 17.

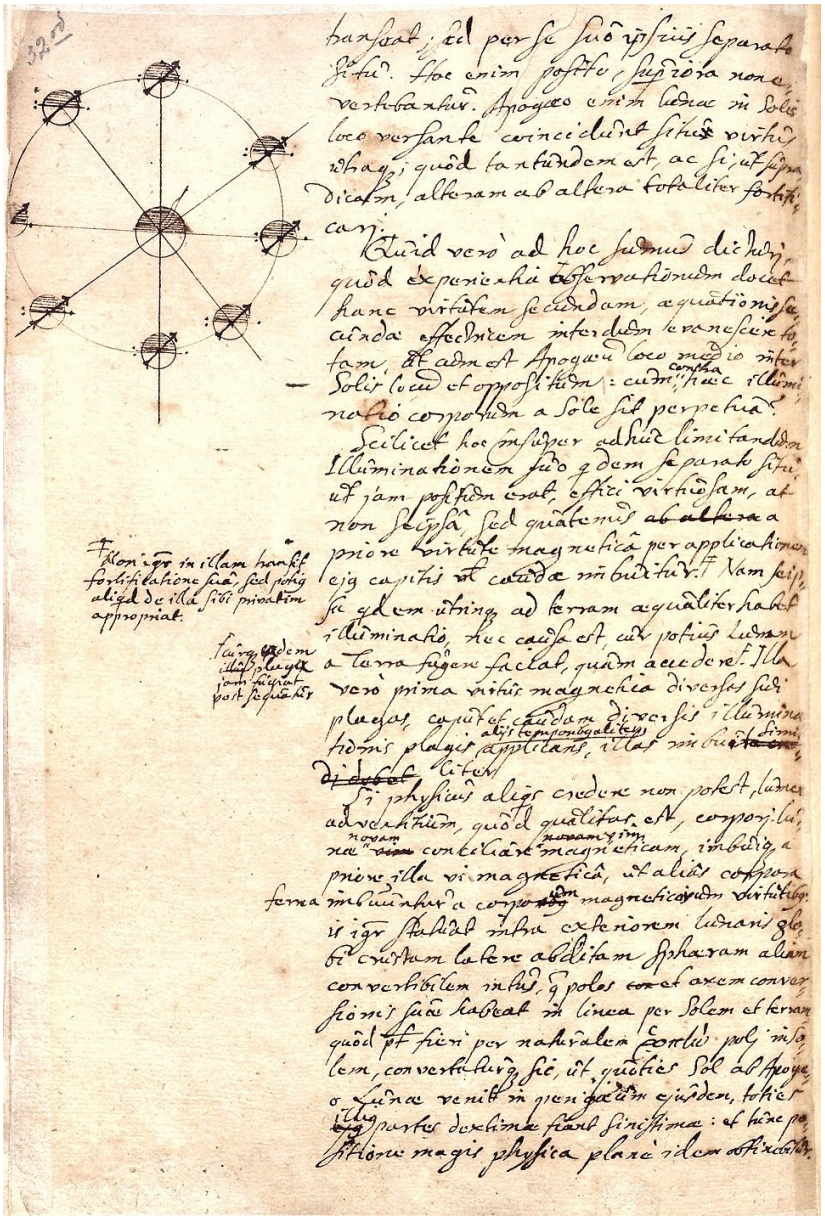

Fig. 5: J. Kepler (“Hipparchus…”. Caput III. “De genuine eccentricitate Lunae in syzygies”). [1608 г.]. Final page. © SPB ARAN, Coll. 285, inventory 1, archiving 1, p.32 verso.

In 1721 Hansch had agreed to purchase eighteen of Kepler's manuscripts in Frankfurt-am-Main in exchange for 828 German florins, but he was unable to pay until the end of his life.[14] In 1726 he found a publisher in Regensburg for Kepler's work on the Gregorian calendar. In 1733 he began negotiations with the Royal Society, but could not obtain the necessary financial resources. When he died he left four volumes of manuscripts which he was still working on. These particular folios were moved to the Vienna Imperial Library (now the Austria National Library in the Hofburg palace in Vienna). All traces of this part of the archive were lost after Hansch died 'in great poverty' in Vienna.[15]

In the 1750s and 1760s Christoph Gottlieb von Murr (1733–1811), a nobleman, historian, archivist, bibliographer, and expert in manuscripts, learned about Kepler's archive. During his numerous journeys across Europe, von Murr made acquaintance with many outstanding scientists, painters and politicians, and he became a member at a number of scientific societies in a variety of countries.[16] Von Murr learned that Kepler's papers were in the hands of a certain Herr Trümmer, a monetary adviser, who had inherited them from one of Kepler's relatives, whose name we do not know. After Trümmer's death his widow in Frankfurt-am Main inherited the manuscripts and valued them at 1,000 thalers. From 1761, von Murr sought a university or scientific society that could buy the archive. In 1768 he published information about his documents in the European periodic press, calling for their rescue.[17] Due to the resulting publicity, Trümmer

[14] Hirsch, 'Hansch, Michael Gottlieb'; Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.298; J. Kh. Kopelevich, 'Leonard Jejler i pokupka Rossiej rukopisej Keplera', *Iogann Kepler. Sbornik № 1: Raboty o Keplere v Rossii, Germanii i Avstrii* ['Leonard Euler and the purchase by Russia of Kepler manuscripts', N.I. Nevskaya and F. Bialas, eds, *Johannes Kepler. Collection No. 1: Works on Kepler in Russia, Germany and Austria*], part 1 (Saint Petersburg, 1994), pp.36–42 [hereafter, Kopelevich, 'Leonard Jejler'].

[15] J. Kh. Kopelevich, 'Kistorii priobretenija Rossiej rukopisej Keplera', *Istoriko-astronomicheskie issledovanija* ['To the history of Russia's acquisition of Kepler manuscripts', *Historical and astronomical studies* 11 (1972): pp.131–45, pp.131–32 [hereafter, Kopelevich, 'Kistorii priobretenija'].

[16] E. Mummenhoff, 'Murr, Christoph Gottlieb von', *Allgemeine Deutsche Biographie* 23 (1886), pp. 76–80, https://www.deutsche-biographie.de/pnd11906362X.html#adbcontent [accessed 8 August 2021].

[17] SPB ARAN, Collection 1, inventory 3, archiving 59, pp.275–81; Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', pp.298–99.

doubled the price to 2,000 thalers.[18] Von Murr lost the will to find a purchaser in Germany, the Netherlands or England on account of the sheer difficulty of obtaining finds and organising publication.

On 30 January 1773 von Murr sent a letter to Leonard Euler (1707–1783), the mathematician, mechanical engineer, astronomer, physicist, and member of the Saint Petersburg Academy of Sciences. Von Murr told Euler about the publication of an inventory of Kepler's manuscripts, and his advice to the owner in Frankfurt-am-Main to sell them. He asked Euler to give this information to the Russian Academy, stressing that publication of these precious manuscripts would contribute towards the glory of Russia.[19] Euler's son, Johann Albrecht (the conference-secretary at the Saint Petersburg Academy of Sciences), responded to von Murr on 16 March 1773, expressing doubt that there was any benefit in publication of Kepler's manuscripts, and advised him to contact Catherine II's cabinet-secretary and close adviser, G.V. Kozitsky. Von Murr followed this advice and, on 8 April 1773, he sent Kozitsky a detailed description of every volume of the manuscripts.[20] At the same time, he informed Euler that according to the physicist A.G. Kestner from Gottingen University and the professor and astronomer J. Kiss from Tubingen University, neither of their universities could find the money to buy the archives. He also wrote an article in *Göttingische Anzeigen von gelehrten Sachen* about Kepler's manuscripts. German historians cherished the hope that Kepler's works would be bought and published in Russia, praying that the expenses for publication would be covered.[21] Von Murr's letters were read at the meetings of the Conference of the Saint Petersburg Academy of Sciences on 15 February and 26 April 1773, informing the participants about the upcoming sale of Kepler's manuscripts in Frankfurt-am Main to Trümmer for 2,000 thalers. The Vice-Director of the Academy, Chamberlain A.A. Rzhevsky, told the Conference about the situation.[22]

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[18] Kopelevich, 'Leonard Jejler', p.36.

[19] SPB ARAN, Coll. 1, inventory 1, archiving 24, pp 28–9; inventory 3, archiving 59, pp.235–36 verso; Kopelevich, 'Kistorii priobretenija', pp.133–34; Kopelevich, 'Leonard Jejler', pp.38–9.

[20] SPB ARAN, Coll. 285, inventory 1, archiving 35.

[21] SPB ARAN, Coll. 1, inventory 3, archiving 59, pp.273–83 verso. Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.299. Kopelevich, 'Kistorii priobretenija', pp.134–35, 137; Kopelevich, 'Leonard Jejler', pp.39–40.

[22] *Protokoly zasedanij Konferencii Imperatorskoj Akademii nauk s 1725 po 1803 god*. [*Protocols of meetings of the Conference of the Imperial Academy of Sciences from 1725 to 1803*] in 4 vols (Saint Petersburg, 1900), Vol. 3, 1771–1785, pp.81,

On 29 April 1773, Euler sent a letter in French to the Russian government setting out his vision for Kepler's manuscripts concerning the proposal to the Russian government to buy them for the Academy of Sciences Conference.[23] The initial number of manuscripts amounted to twenty-two volumes, as arranged by Hansch, four of which had been moved to the Vienna Imperial Library. Euler concluded that the remaining eighteen volumes 'may be considered the incomplete compendium'.[24] However, J. Kh. Kopelevich disagreed that the manuscripts should be bought by the Empress on Euler's recommendation. He recommended that the government should not spend the enormous sum of 2,000 roubles (five times larger than the security sum of 828 German florins) for Kepler's manuscripts and claimed that the German Academy 'would have a much better result if there were finished works for possible publication'.[25]

The Academicians decided to pass the text of Euler's letter to Rzhevsky, advocating a reduction in the Academy's expenses, and requested that a copy was retained in the Conference's archive.[26] Von Murr's letter to Euler of April 1773 was read on 12 August 1773. It contained a description of Kepler's unpublished letters, supported by eight prints of engraved tables.[27] Catherine II then ordered the purchase of Kepler's archive for the Academy of Sciences. The Academy was informed that the Empress was buying the pictures for the Hermitage, and that she had also passed on important scientific documents to the Academy of Sciences in perpetuity for the benefit of the nation. In 1767 she ordered that Kepler's documents should be deposited in the Academy of Sciences (Figures 3 and 4).[28] It was likely that V.G. Orlov, the Director of the St.

90, [hereafter, *Protocols*]; Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.300; Kopelevich, 'Leonard Jejler', p.38.

[23] SPB ARAN, Coll. 1, inventory 1, archiving 24, pp.28–9; inventory 3, archiving 59, pp.235–36; Coll. 136, inventory 1, archiving 149; *Protocols*, p.91.

[24] Kopelevich, 'Kistorii priobretenija', p.135; Kopelevich, 'Leonard Jejler', pp.37–8.

[25] Kopelevich, 'Leonard Jejler', pp.36–78.

[26] Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.300.

[27] SPB ARAN, Coll. 1, inventory 3, archiving 59, p.272; *Protocols*, p.98.

[28] I.V.Tunkina, *Hraniteli akademicheskoj pamjati (XVIII–pervaja tret' XX v.): Ocherki istorii Sankt-Peterburgskogo akademicheskogo arhiva.* Ad Fontes. Materialy i issledovanija po istorii nauki; vyp. 8, [*Keepers of academic memory (XVIII-first third of the XX century): Essays on the history of the Saint Petersburg Academic Archive,* Ad Fontes, Materials and research on the history of science; issue 8] (Saint Petersburg, 2016), pp.90–3 [hereafter, Tunkina, *Hraniteli akademicheskoj pamjati*]; I.V.Tunkina, 'Akademicheskie arhivy — hranilishha

Petersburg Academy and brother of Catherine's favourite, G.G. Orlov, passed through Frankfurt-am Main in 1773 and ordered a commissioner to buy Kepler's archive, paying 12 pounds for this service.[29] In early 1774, both Eulers (Leonard and Johanne Albrecht) left the Academic Commission because of the deteriorating relationship with its director.

In a letter of 15 June 1773, von Murr expressed his optimism that Kepler's works would make their way into mathematicians' hands, but on 7 February 1774 he was again concerned about their fate. In another letter of 18 June 1774 von Murr expressed regret that the purchase had been made by another commissioner but hoped that forthcoming publications of Kepler's works by the Saint Petersburg Academy would make clear his personal contribution.[30]

The Academy of Science's documents make it possible to restore the chronology. Count Orlov's note on the purchase of Kepler's manuscripts by the Russian government for the Academy is dated 15 November 1773.[31] The note was read at the conference and the attached detailed catalogue of Kepler's scripts was immediately moved to the conference archive.[32] On 28 April 1774. another letter dated 5 April 1774 from von Murr was announced, which expressed his delight regarding Catherine II's acquisition of Kepler's manuscripts for the Hansch Catalogue for the Academy of Sciences – the letter was handed to the Academy's librarian S.K. Kotelnikov.[33] On 13 June 1774 Kozitsky officially informed the Commission about the transfer of Kepler's manuscripts acquired by the Russian government as a donation to the Academy of Sciences.[34] The Commission in turn on 20 June and 7 July 1774 resolved to transfer 'the granted scripts' and Kepler's books to the library of the observatory at Pulkovo.[35]

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istoricheskoj pamjati Rossii', *Vestnik Rossijskoj akademii nauk*, ['Academic Archives - repositories of historical memory of Russia'] *Bulletin of the Russian Academy of Sciences* 89, no. 12 (2019): pp. 1214–221, p.1216; I.V.Tunkina, 'Academy Archives as Repositories of Russia's Historical Memory', *Herald of the Russian Academy of Sciences* 89, No. 6 (2019): pp.550–57, p.552, DOI: 10.1134/S1019331619060133.

[29] Kopelevich, 'Kistorii priobretenija', pp.136, 138, 139.

[30] SPB ARAN, Coll. 1, inventory 3, archiving 309-310, pp.424-25 verso, 466-467.

[31] SPB ARAN Coll.1, inventory 2, 1773, November, p.3.

[32] *Protocols,* p.106.

[33] SPB ARAN, Coll. 1, inventory 3, archiving 61, pp.24–24 verso. *Protocols*, p.126 § 6.

[34] SPB ARAN, Coll. 285, Inventory 1, archiving 37.

[35] SPB ARAN, Coll. 285, inventory 1, archiving 38.

A letter of 18 June 1774 from von Murr. which related a number of details about the purchase of Kepler's papers. was announced at the Conference meeting of 30 June 1774. There is evident remorse because the remuneration was paid not by him, but by an unknown commissioner.[36] On 4 December 1774 another letter from von Murr was announced with its appeal 'to widely announce that this treasure in case part of Kepler's manuscripts thus came to light from obscurity and transferred to the ownership of the Academy grace to him, Ch.G. von Murr'.[37] German historians felt forgotten, although Johanne Albrecht Euler expressed sincere gratitude in his letters in the name of the Academy of Sciences for the patriotic drive in saving Kepler's manuscripts.[38]

Kepler's manuscripts were transported to Saint Petersburg and revised and collated, with the catalogue completed in Bonn on 14-15 October 1773 and signed by Johann Facius (1721–1800).[39] Facius had been in the Russian diplomatic service as the imperial commissar in Frankfurt-am Main since 1765 and was later in Biedingen and from 1767 in Bonn. Besides collecting political information, he recruited German colonists to move to the Volga region at Empress Catherine II's invitation. I.M. Simolin, the Russian Resident at the German Imperial Seim in Regensburg, wrote that Facius was 'Witty and sophisticated, of good behavior… we can totally trust his loyalty and honesty, especially concerning money matters'.[40] It was probably because Facius was a diplomat that he was involved in purchasing Kepler's archive from 'monetary advisor' Trümmer. It was known that payment (the final amount is unknown) was effected not in money, but in jewellery.[41]

The collation of the manuscripts with Facius' register was carried out by under-librarian I.G. Backmeister on 18 June 1774, who transferred Kepler's archive to the Academic Library in Kunstkamera 'for use in favour of the Scientific Council'.[42] After obtaining the archive, Catherine

[36] SPB ARAN, Coll. 1, inventory 3, archiving 59, pp.446–47. *Protocols,* p.138, § 4. Kopelevich, 'Kistorii priobretenija', pp.138–39.
[37] *Protocols,* p.216 § 2.
[38] Kopelevich, 'Kistorii priobretenija', p.144.
[39] SPB ARAN, Coll. 3, inventory 1, archiving 545, pp.180–84; Coll. 285, inventory 1, archiving 36; Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.300, ref. 2.
[40] Available at http://www.rusdiplomats.narod.ru/facius-i.html [accessed 27 April 2021].
[41] Belyi, *Iogann Kepler*, p.256.
[42] SPB ARAN Coll. 3, inventory 1, archiving 847, p.29; Bazilevskay 1946, p.300.

II demanded details of the Academicians' activities and ordered that they prepared the manuscripts for publication to cover the expense of the purchase. On 22 August 1774 the Conference announced a letter from Kozitsky to the academic commission, in which he expressed the Empress's desire to see Kepler's manuscripts published as the Academy of Sciences saw them as necessary, for benefit of the scientific community. A general meeting resolved to charge the physicist Wolfgang Ludwig Kraft (1743–1814) and astronomer Andreas Johann Lexell (1740–1784) with the task of analysing the manuscripts and sorting them for publication.[43]

On 12 October 1775, Conference-Secretary Johanne Albrecht Euler read a letter from the new Director of the Academy S.G. Domashnev dated 5 October which announced the Empress' desire for information about the content of Kepler's manuscripts purchased for the Academy of Sciences. Professors Kraft and Lexell were charged with composing reports that were read on 16 October, and copies were immediately sent to Director Domashnev for reporting to the Empress.[44] Kraft reviewed three volumes of correspondence (volumes IX–XI) and proposed to publish a compendium of the most important letters as an extension of the volume published by Hansch, saying this was 'very interesting for science history amateurs'.[45] Lexell (1740–1784) reviewed the remaining fifteen volumes and concluded that there were no folios ready for immediate publication. He proposed to publish a detailed description of these manuscripts and prepare for the most interesting parts for publication.[46] Besides a number of the published manuscripts, Kepler's manuscripts had a 'rich collection of fragments and preliminary materials, which one could not use for preparing separate publications; still. they could serve a valuable source of supplements and comments for Kepler's compete works' publication'.[47] Lexell was charged with the description and classification of the manuscripts, but he was not able to complete it in his lifetime.[48] Saint Petersburg's academicians were occupied with their own scientific projects; they had no aspiration to waste time on preparing the works of a great German astronomer.

[43] *Protocols*, pp.144–45, § 4.
[44] *Protocols*, p.150 § 5, § 2.
[45] Kopelevich, 'Kistorii priobretenija', p.141.
[46] SPB ARAN, Coll. 285, inventory 1, archiving 39; Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.301; Kopelevich, 'Kistorii priobretenija', pp.140–43.
[47] Kopelevich, 'Kistorii priobretenija', p.144.
[48] Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.301.

In 1839, sixty-four years later, after the Pulkovo observatory had opened the unedited manuscripts, they were moved to its library at the request of its founder, astronomer and surveyor academician Vasilii

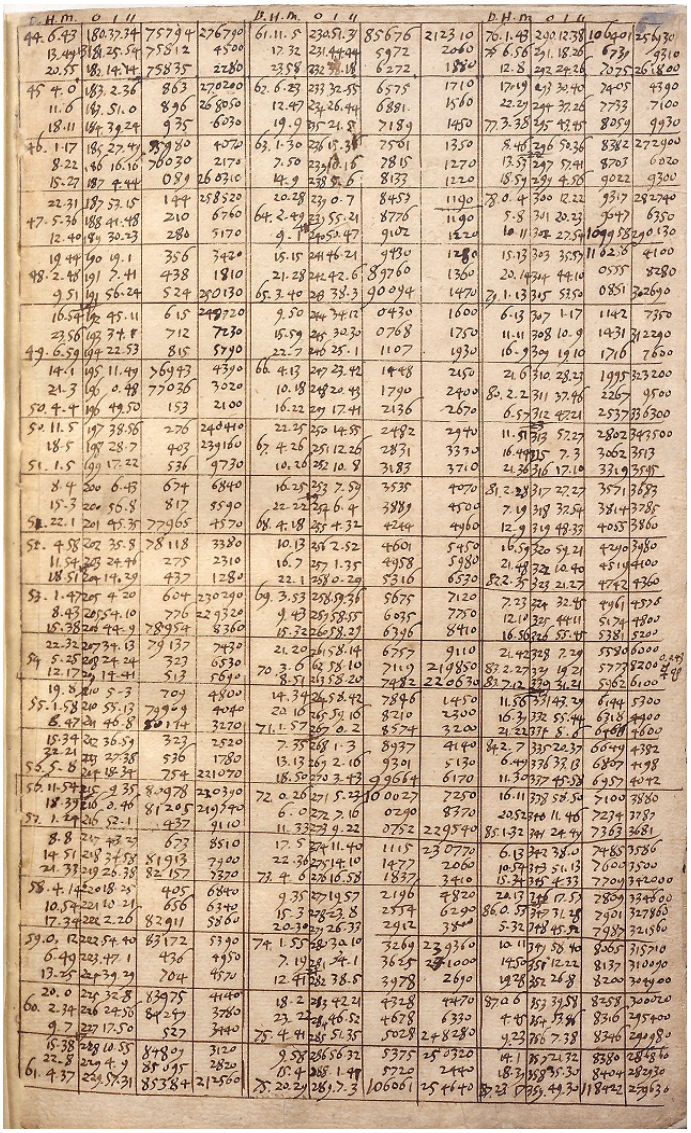

Fig. 6: J. Kepler 'Quando Mercurius in pristinum evadat'. Table with calculations. © SPB ARAN, Coll. 285, inventory 1, archiving 14, p. 6.

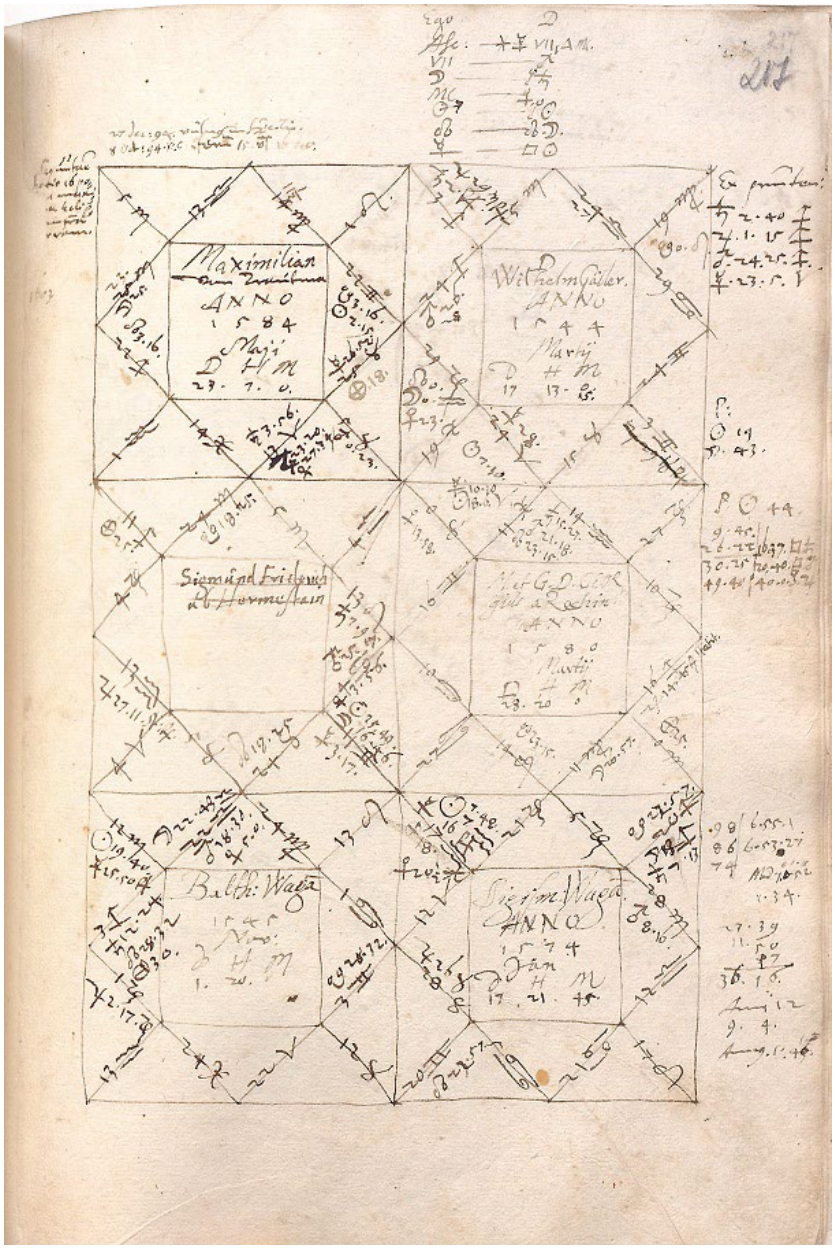

Fig. 7: Kepler. Sheet with the horoscopes of different personalities. © SPB ARAN, Coll. 285, inventory 1, archiving 14, p. 217.

Jakovlevich Struve (Friedrich Georg Wilhelm Struve, 1793–1864).[49] From that time, Kepler's archive in Russia was named the *Pulkovo collection*. However, some of Kepler's manuscripts remained in the Academy of Science's library, including a manuscript of astrological tables by Brahe, with his autograph, which had belonged to Kepler.[50]

Under the guidance of professor Christian Frisch (1807–1882), in 1858–1871 Kepler's documents were published in eight volumes based on the Pulkovo collection – *Joannis Kepleri Astronomi opera omnia*. Frisch invited prominent European astronomers to participate, including the scientific editor, the Russian academic Friedrich Georg Wilhelm (Vasilii Jacovlevich) Struve, and his son Otto Wilhelm Struve (1819–1905). From 1847 Kepler's manuscripts were sent to the Russian resident at the court at Württemberg, and from there the manuscripts arrived in Frisch's hands, as well as into the hands of the German astronomer and philosopher, professor Ernst Friedrich Apelt (1812–1859), who published Kepler's correspondence with David Fabricius.[51] Otto Struve published a note about Kepler's attitude to Wallenstein using the Pulkovo manuscripts. However, Hansch's volumes' disagreed with the numbers of Hevelius' notebooks (*sheaf of papers*). Therefore, Struve could not verify the completeness of Kepler's documents that Hansch held.[52]

In 1876 the Pulkovo Observatory acquired the family treasures from the direct descendants of Kepler's first wife, Barbara Müller von Mülek

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[49] *Istoricheskij ocherk i obzor fondov Rukopisnogo otdela Biblioteki Akademii nauk,* otv. red. V.P. Adrianova-Peretc, vyp. I: XVIII vek [*Historical essay and overview of the collections of the Manuscript Department of the Library of the Academy of Sciences*], ed. V.P. Adrianova-Peretz, issue I: XVIII century (Moscow - Leningrad, 1956), p.233, ref. 10, [hereafter, Historical essay 1956]; Tunkina, *Hraniteli akademicheskoj pamjati*, pp.55,157–58, 236.

[50] Nauchno-issledovatel'skij otdel rukopisej Biblioteki Akademii nauk, Fond 97 [Research Department of Manuscripts of the Library of the Academy of Sciences, Collection 97]; *Istoricheskij ocherk i obzor fondov Rukopisnogo otdela Biblioteki Akademii nauk otv. red. V.P. Adrianova-Peretc, vyp. I: XVIII vek [Historical essay and overview of the collections of the Manuscript Department of the Library of the Academy of Sciences*], ed. V.P. Adrianova-Peretz. Issue II: XIX-XX centuries, (Moscow-Leningrad, 1958), p.238.

[51] SPB ARAN Coll. 2, inventory 1, 1847, archiving 2; Coll. 285, inventory 1, archiving 58.

[52] O. Struve, 'Beitrag zur Feststellung des Verhältnisses von Keppler zu Wallenstein', Gelesen am 8 April 1859, Mémoires de l'Académie Impériale des Sciences de Saint-Pétersbourg, VII Série, 1860, tome 2, № 4, pp.1–36, p.3, [hereafter, Struve, 'Beitrag zur Feststellung'].

(the sisters Emma, Ottilie and Augusta Schnieber) for 400 marks. These were added to the collection.[53] There was a pair of miniature oil portraits of Johannes and Barbara Kepler from 1597, made during their lifetime (Figures 1–2), a portrait of his brother-in-law Jacob Bartch from 1617 and items that had belonged to Barbara Kepler – a headband, a basket for thread, a gilded silver pin and a prayer-book (Figure 8), as well as a glazed pottery plate (1667) that had belonged to Kepler's great-granddaughter Anne-Rosine Fogel (born Günter) (Figure 9).[54]

Fig. 8: Prayer-book in German in green velveteen (6.8 x 9.0 cm) that belonged to J. Kepler's first wife Barbara. On the inside of the upper binding cover there is a coloured emblem damaged by vermin. XVI c. © SPB ARAN, Coll. 285, inventory 2, archiving 7, p. 1.

[53] SPB ARAN, Coll. 285, inventory 1, archiving 44–47; P.I. Jashnov, 'O rukopisjah i relikvijah I. Keplera, hranjashhihsja v Pulkovskoj observatorii', *Arhiv istorii nauki i tehniki* ['On manuscripts and relics of I. Kepler, stored at the Pulkovo Observatory', *Archive of the History of Science and Technology* 2 (1934): pp.199–216; Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', p.310.
[54] SPB ARAN, Coll. 285, inventory 2, archiving 1-8; Prokhorenko, 'Iogann Kepler', p.236.

The edition of Kepler's works prepared and edited by Karl Frisch suffered a number of defects. Therefore, a new publication was planned of Kepler's manuscripts before World War I. Volume after volume was sent to the Bavarian Academy of Sciences in Munich from the Pulkovo Observatory for copying. The process lasted for more than twenty years (with interruptions during World War I) and was completed in 1934.[55] Kepler's multivolume collection of works (*Gesammelte Werke*) was published by the German research society and Kepler's Commission at the Bavarian Academy of Sciences from 1937 and was completed in 2017.[56]

Fig. 9: Glazed pottery plate with a bird, branch in beak and date 1667 (diameter 9.7 cm), that belonged to Johannes Kepler's great-granddaughter – Anne-Rosine Fogel (born Günter). © SPB ARAN, Coll. 285, inventory 2, archiving 8.

Von Murr had insisted that volumes VI (C), VII (K), VIII (E) and XII (E) in Hansch's bindings were kept in Vienna's Imperial Library. But E.B. Bazilevskaya, guided by the documents of the Pulkovo collection and Walter von Dyck's 1913 research, wrote that there were not four, but three volumes (10702, 10703, 10704; Codice 10689's affiliation to Hansch's

[55] Belyi, *Iogann Kepler*, p.258.
[56] Available at https://kepler.badw.de/kepler-digital.html [accessed 8 August 2021].

collection was not confirmed at that time). Only one folio, on calendar reform, had Hansch's numeration – VI (C); the rest were bound by the same craftsman without a motto, but the imperial coat of arms was then used. It is likely that three volumes of Kepler's correspondence were reformed into two volumes (Codices 10702–10703).[57]

According to the Presidium Resolution of the Academy of Sciences on 11 June 1937, Kepler's personal collection, including family treasures, was moved from the Pulkovo Observatory to the Archive of Academy of Sciences of the USSR.[58] During World War II the manuscripts were evacuated from Leningrad together with the State Hermitage treasures and kept in Sverdlovsk (from 1991 Yekaterinburg) until their return in 1945.[59]

Now known as the *Pulkovo Collection* because of the hundred years it spent in the observatory, Kepler's archive is registered in the Archive of the Astronomical Society of the USSR Archive (now the Saint Petersburg branch of the RAS archive) and numbered 285; it has three inventories completed by E.V. Basilevskaya in 1938.[60] These inventories were composed on the register of Kepler's manuscripts from the eighteenth to the beginning of the twentieth century because the registers recorded the documents *de facto* absent. It is likely that not all the manuscripts kept by Trümmer's 'monetary adviser' arrived in Saint Petersburg.

Inventory 1, 'The manuscripts of Kepler's works and the other persons, correspondence', included 79 cases for 1540–1977. These comprised eighteen folios in Hansch's bindings, a folder of materials bound in 1840s with the golden state Russian emblem on the back and the red leather label "KEPPLERIANA" (in gold) with the genuine Kepler's scripts, a list of his works, as well manuscripts by Brahe, Bartsch and Hansch. In addition, there was other Kepler material, including documents relating to his life and the fate of the archive; Kepler's family genealogical documents; personal documents belonging to his daughter Susanne; and

[57] SPB ARAN, Coll. 285, inventory 1, archiving 40, 61; Bazilevskaya, 'Rukopisnoe nasledie Ioganna Keplera', pp.304–06.
[58] SPB ARAN, Coll. 285, Coll. archiving, p. 42. Inventory 1, archiving 41; Coll. 703, inventory 1-1937, archiving 33, pp.11–13.
[59] I.V. Tunkina, 'Leningradskie uchenye v gody blokady', *Trudy Otdelenija istoriko-filologicheskih nauk RAN* ['Leningrad scientists during the blockade', *Proceedings of the Department of Historical and Philological Sciences of the Russian Academy of Sciences* 9 (2019). ed. V.A. Tishkov (Moscow, 2020), pp.107–30, p.109.
[60] Available at http://www.isaran.ru/?q=ru/fund&guid=346C5BFD-8BF9-76FC-526D-A5225488D3E1&ida=2&str=Кеплер [accessed 8 August 2021].

documents on the immortalisation of Kepler's memory and publications of his work. Here we can find typescripts with page-by-page descriptions of Kepler's manuscripts completed in 1977 and authorised by the translator G.A. Stratanovsky (1901–1986), a classical philologer assisted by the Academic archive employees and astronomers from Pulkovo Observatory.[61] Inventory 2, *Material attachments to the fund*, includes ten cases of sixteenth-century treasures from Kepler's family and his descendants. Inventory 3, *Photocopies of Kepler's scripts*, contains nineteen cases of photocopies made in 1941 of all the Hansch bound folios kept in the fund. It is necessary to stress that today the Saint Petersburg branch of the RAS Archive holds the principal part of Kepler's handwritten heritage. The remaining few manuscripts may be found in Austria, Germany, USA and other countries.

Fig. 10: Kepler's fund in Academy of Science Archive in Saint Petersburg. Photo by K.G. Schischkina. © SPB ARAN, Coll. 285, inventory 1-3.

On 5 March 1999 it was announced online that the astronomer Anthony Misch of California University in Santa-Cruz had found in an observatory archive a document in a small 'worthless' frame that was a horoscope completed by Kepler for the Austrian nobleman Hans Hannibal Hütter (born 1586) from the family of Wallenstein in Hütterhofen.[62] A document

[61] SPB ARAN, Coll. 285, inventory 1, archiving 68.
[62] Available at https://uncletaz.com/wc/wcthreads/steinkepstein.htm (a [accessed 27 April 2021].

carried the comment ‘Written by Kepler. From Pulkovo Kepler’s scripts collection’ and the signature ‘Wilhelm Struve. 1864’. This document had been noted by O.V. Struve in his research about Kepler’s relationship with Wallenstein.[63] Misch considers that the Pulkovo Observatory’s director presented Kepler’s horoscopes to high-ranking officials while Kepler’s autograph was bought by the University of California in Europe and sent to the USA in 1960, together with other publications on astronomy. As Kepler’s manuscript was not included in the register, nobody suspected its existence.

Hütter’s horoscope was included in Kepler’s inventory in the Saint Petersburg branch of the RAS Archive, completed by Bazilevskaya; that means she composed the files using the Pulkovo collection catalogues, referencing Hansch’s and von Murr’s catalogues. Research has revealed that the history of Hütter’s horoscope that appears in the University of California’s archive is different. There is a reference to it in an 1896 article by Edward Singleton Holden: ‘Recently Kepler’s script was displayed for sale in Germany’.[64] The manuscript was moved to the Lick Observatory near San José (at present part of the University of California in Santa Cruz, USA), as were documents of prominent European astronomers including Friedrich Bessel, Carl Friedrich Gauss, Peter Andreas Hansen, C.A.F. Peters, Heinrich Christian Schumacher, and Friedrich Georg Wilhelm von Struve. Hütter’s horoscope carries a certifying note by Struve in German: ‘Die Überschrift von fremder Hand, das übrige von Kepler's Hand. Aus der Sammlung der KEPLER'schen Manuscripte in Pulkowa. W. Struve. Pulkowa, den 25/13 Mai 1854’ (‘Titled by someone’s hand; the rest – by Kepler.’ From *Pulkovo collection* of Kepler’s scripts. V. Struve. Pulkovo Mat 25/13. 1854’.). This writing was on both sides of the rough and durable paper of 6 x 8 inches. Kepler’s autograph appears to have been made in a hurry. The ink is yellowed and faded but it remains readable.

In 2010 I contacted the former Director of the Pulkovo Observatory, V.K. Abalakin (1930–2018), who as part of his studies of the history of science and the Observatory had researched how a document from the archive had been moved to the University of California. His answer totally confused me. It turned out that father and son Struve purchased with their own money manuscripts from prominent antiquaries and second-hand booksellers in Europe on behalf of the Pulkovo Observatory. Financial constraints when it came to necessary purchases (for instance the

[63] Struve, ‘Beitrag zur Feststellung’.

[64] Edward Singleton. Holden, ‘Kepler’, *Publications of the Astronomical Society of the Pacific* 8, no. 53 (1 December 1896): pp.279–85 (p.283).

Observatory needed K. Kessler's watch, F. Hauth's clocks and other astronomical instruments) led to them exchanging manuscripts for instruments. This whole account demonstrates how the Academicians in the eighteenth and nineteenth centuries treated state property (namely Kepler's archive, purchased with government money by Catherine II for the Academy of Sciences) however they saw fit. This resulted in the loss of a number of documents that were later returned to the archive.[65] It is possible that the same happened to Hütter's horoscope. Neither Vasilii Struve (who died in 1864) nor Otto Struve had the right to command Kepler's archive as their property. But this is an opinion of a twenty-first century science historian and archivist. Remembering the words: 'do not judge, so you will not be judged', I leave this incident to be addressed by the consciences of the Struves, father and son, as an illustration of the difficulties evident when preserving historical archives.

[65] Tunkina, *Hraniteli akademicheskoj pamjati*, pp.236–37.