

## HISTORY OF MEDICINE

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**Dutch cultural heritage of Fredrik Ruijsch  
and Herman Boerhaave in the Military Medical Academy  
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During historical research into the Russian physician Nikolay Ivanovich Pirogov (1810–1881) and his relation to Dutch scientists in shaping Russian medical science, access was allowed to the first author of this manuscript to the fundamental library of the Military Medical Academy named S. M. Kirov. The library is one of the oldest libraries in Russia and was founded by Pavel Zakharyevich Condoidi, a pupil of the Dutch scientist Herman Boerhaave. Condoidi succeeded the oldest nephew of Herman Boerhaave, Herman Kaau-Boerhaave after his death as director of the Russian Meditsinskaya Kantselyariya (Ministry of Healthcare). At this site, the extensive library and personal notes of Hermann Boerhaave and his nephews are kept. Later on, it appeared that the same Academy also had a collection of artefacts that are attributed to the famous anatomist Frederik Ruijsch. These artefacts were acquired during the first visit of Peter the Great to the Netherlands. To understand how these artefacts and archive of Boerhaave had become part of the Academy's collection, we delved into the common medical history of Russia and the Netherlands. In this manuscript, we will lift a tip of the veil regarding the archives of Herman Boerhaave and the "small" anatomical and zoological collections of Fredrik Ruijsch.

*Keywords:* history of medicine, Boerhaave, Ruijsch, anatomy, zoology, the Netherlands, Russia (pre-1917).

## Introduction

The medical worlds of Russia and the Netherlands initially seem pretty separate, but the opposite appears true. An in-depth investigation shows that from the 16<sup>th</sup>–17<sup>th</sup> centuries onwards, Dutch and, in particular, doctors with a doctorate from Leiden university had a strong influence on the development of the medical curriculum and the organisation of Medicine in Russia. This influence lasted until the first quarter of the eighteenth century [1–4].

### *Peter the Great visited the Netherlands and Leiden University*

In 1862, Peter the Great became the Tsar of Russia at the very young age of ten. Still a child, he had many friends in the Sloboda, the foreigner's area, in Moscow. Peter had an above-average interest in surgery and the management of trauma. In part, he was taught by his private physician, Johann (Ivan) Termont a skilled barber-surgeon and the court physician Zacharias van der Hulst, a doctor of medicine [5–7]. They both were of Dutch origin and Peter's first teachers on theoretical and practical medicine [2; 5; 8].

With his great interest in medicine and science, Tsar Peter was well aware of the need to train a medical corps for the navy and land force [2]. If he wanted to take his country out of isolation and transfer it into modern civilisation, he knew he had to travel to Europe to develop his visions and ideas. In 1697 Peter made his first visit to Europe with the Grand Embassy (a diplomatic mission to strengthen Russia's alliance with several European countries). The Netherlands, especially Leiden University, was an important medical centre in Europe in the 17<sup>th</sup> and 18<sup>th</sup> century. Eager to learn as much as possible, he travelled two times in 1697–98 and a third time in 1717 to Leiden University and took with him the blueprints of the Leiden University's establishment [5–7; 9] (Fig. 1).

Tsar Peter needed a new court physician and invited Nicolaas Lambertus Bidloo (1673–1735), who graduated from Leiden University. Bidloo accepted the offer and started his work in Russia in 1702 [2; 10; 11]. His father, Lambert Bidloo, was a pharmacist in Amsterdam. His uncle was Govert Bidloo, Rector Magnificus of Leiden University. Together with Nicolaas Bidloo, Peter founded the first medical hospital school with an anatomical theatre and a botanical garden in Moscow. The “Bidloo school” in Moscow officially opened its doors in 1707. The first higher education institute prepared students for a possible follow-up study, mostly at Leiden University. The Bidloo school became the breeding school for Russian Doctor Medicinæ (comparable with a PhD-degree) [11; 12].

Nicolaas Bidloo, director of the medical hospital school with an anatomical theatre and botanical garden, had no textbooks. Bidloo taught his students, using his handwritten books in Latin, such as “*Speculum anatomiae*” [*Mirror of Anatomy*]; “*Praelectoris thesaurus medico-practicus*” [*Treasury of medical and practical lectures*]; “*Instructio de chirurgia in theatro anatomico studiosis proposita*” [*Surgical training in the anatomical theatre for students*]. Only in 1967 the latter was for the first time translated into Russian and published [13]. For teaching anatomy, Bidloo used the book of his uncle Govert Bidloo “*Anatomia humani corporis, 1687*” [*Anatomy of the human body*], which was translated specifically for Peter the Great, and also the atlas “*Outleding des menschliken Lichaams, Amsterdam, 1690*” [*Dissection of the human body*].



Figure 1. Theatrum anatomicum of the Leiden Academy, 1609, Bartholomeus Willemsz. Dolendo, naar Jan Cornelisz. Van 't Woudt, 1609. This colour engraving is located in the Military Medical Academy named after S. M. Kirov. Image by R. I. Tamchenko. Published with permission of the Military Medical Academy named after S. M. Kirov and the Leiden University Medical Center

In 1757, the Medical Hospital School (of origin civilian) was renamed the “First Landforce Hospital in Moscow” (now the Main Military Clinical Hospital named after N. N. Burdenko) [14]. In 1786, both military medical hospital schools (in Moscow and St Petersburg, the medico-surgical schools) were separated from the hospitals and converted into independent medical schools. In 1798, 12 years later, the Medico-surgical Schools were renamed Medico-surgical Academies. The Moscow Medico-surgical Academy existed until 1804. After that, the 45 students, all medical instruments, anatomical preparations and the library were transferred to the Medico-surgical Academy (now the Military Medical Academy named after S. M. Kirov) in St Petersburg.

The Prikaz, founded in 1620 in Moscow, developed from a court institution to a state institution [14]. It can be regarded as the Ministry of healthcare. In 1707 Peter renamed the Aptekarskiy Prikaz to Aptekarskaya Kantselyariya (Pharmaceutical Chancellery) [1; 2; 14] (Table). In 1712 a large part of the Aptekarskaya Kantselyariya was also moved to the new capital Saint Petersburg. In 1716 Tsar Peter appointed a doctor medicinae, instead of an apothecary, head of the Kantselyariya. In 1725 the Aptekarskaya Kantselyariya underwent a name change again and was named Meditsinskaya Kantselyariya (Medical Chancellery). Another renaming took place in 1763, and it was called Meditsinskaya Kollegiya (Medical Collegium) with a board of three directors.

The Prikaz, the later named Kollegiya, inherited the private “small” anatomical and zoological Ruijsch collection of Ruijsch and a library from Peter the Great. This library

contained, among others, the anatomical book “*Epitome, Amsterdam, 1642*” by Andreas Vesalius. It was translated in 1658 by the monk Epiphany Slavinetsky and was named “*Vrachevskaya Anatomy*” [14].

Table. Overview of the development of the Russian “Ministry of Health”

| Name                          | Founder or renamer  | Founding or renaming year | In charge   |
|-------------------------------|---------------------|---------------------------|---|
| Aptekarskiy Prikaz            | Mikhail Fyodorovich | 1620                      | Apothecary  |
| Aptekarskaya Kantselaryariya  | Peter the Great     | 1707                      | Doctor medicinae (Arkhiyater)                                   |
| Meditsinskaya Kantselaryariya | Peter the Great     | 1725                      | Doctor medicinae (Arkhiyater)                                   |
| Meditsinskaya Kollegiya       | Catherine the Great | 1763                      | board of three directors (Collegium) inclusive doctor medicinae |
| Meditsinskaya Kollegiya       | Aleksandre I        | 1802                      | Ministry of Internal Affairs with a Medical Department          |
|                               |                     |                           | Ministry of Education with department Medical education         |

In 1802 Tsar Aleksandre I institutionalised education and reformed healthcare. Alexandre closed the Meditsinskaya Kollegiya. The medical department was placed under the Ministry of Internal Affairs and medical education under the Ministry of Education. The library’s contents ended up in the Medico-surgical Academy (now the Military Medical Academy named after S. M. Kirov) in St Petersburg.

## Two different Fredrik Ruijsch collections

### *The first “small” Fredrik Ruijsch collection was a gift in 1697–1698*

During his first Grand Embassy to the Netherlands, Peter the Great lived most of his time in Amsterdam. Here he visited more than once the anatomist Frederik Ruysch, a former student of the Leiden University, who became his third teacher in medicine. Ruijsch taught Peter how to carry out a phlebotomy, surgical incisions, suture wounds, extract teeth and perform autopsies post-mortal examinations [3; 4].

Since 1672 Ruysch had perfected the preparation technique of anatomical specimens and blood vessels by injecting dyes and resins. He invented an original way of embalming corpses. He brought together a unique collection of museum exhibits (congenital abnormalities and malformations) and created the first anatomical museum in Amsterdam. His museum possessed a rich collection of anatomical and zoological objects, dried plants, insects and birds. On his visits to the museum, the Tsar greatly admired the



Figure 2. A zoological and an anatomical specimen of the “small” Fredrik Ruijsch collection. Images by R. I. Tamchenko and M. G. Vilchuk. Published with permission of the Military Medical Academy named after S. M. Kirov and the Leiden University Medical Center

anatomical specimens of humans and animals. In 1698 he obtained his first collection of anatomical and zoological preparations. Peter thanked Ruijsch for the education he got and rewarded his teacher with fur. In return, the Tsar received a collection of anatomical and zoological specimens (Fig. 2). This collection is known as “the small collection” and was intended by Peter for education purposes [15–17]. This first collection of anatomical and zoological specimens became part of the Aptekarsky Prikaz in Moscow in 1698.

Nowadays, the zoological collection contains 5–10 specimens: a *Pipa pipa*, other amphibia, and reptiles. The anatomical collection consists of 26 dry and wet human specimens.

Because in 1802 Tsar Aleksandre I closed the Meditsinskaya Kollegiya, the later follow up of the Aptekarsky Prikaz, the “small” anatomical and zoological collection of Ruijsch was transferred to the Imperial Medico-Surgical Academy (now the Military Medical Academy named after S. M. Kirov) in St Petersburg [2; 8; 14].

In 2018, during the research on Nikolay Pirogov, a Memorandum of Understanding between the Military Medical Academy and the Leiden University Medical Center (LUMC) was signed. At that moment, Dutch specialists of the LUMC were asked to participate in the restoration and conservation of the “small” *anatomical* collection of Ruijsch. This procedure was carried out and finished in October 2019 with great satisfaction on both sides.

### ***The second “large” Ruijsch collection was a purchase in 1717***

Peter the Great wanted his own museum with curiosities and founded in 1714 the *Kunstkamera*, a museum of anthropology and ethnography. Meanwhile, Peter again travelled in 1716–1717 with his second Grand Embassy through Europe. When given a

chance, he bought the famous extensive Ruysch collection of anatomical preparations for his new Kunstkamera [18, 19]. In 1716, the Tsar also bought the natural history collection of the apothecary Albert Seba [18, 20]. It contained 340 jars with animals kept in the spirit of wine, a quantity of fish and other marine products, and without counting a collection of several artificial and curious pieces. The Kunstkamera opened for the public in 1719. In 1721 a complete medical library and a rich collection of other rare items such as minerals and shells that had belonged to Peter's physician Robert Areskine were also added to the Kunstkamera [2]. Peter the Great established the Imperial Academy of Science in 1724, and the Kunstkamera became a part of the Academy [21].

### **Followers and family of Boerhaave as the basis of medical expansion**

Following his visits to Europe, Peter the Great introduced several innovations, including appointing doctors *medicinae* as decision-makers in the healthcare system. His successors continued this. Peter the Great visited on 17 March 1717, again Leiden, where he stayed two days [5–7]. At the university, he was received by Rector Magnificus Herman Boerhaave and the collective of professors. For the second time, he received the university's statutes and the curriculum. In addition, he examined the library and all sorts of mathematical and mechanical machines and tools.

In 1701, Boerhaave was appointed as a lecturer and coverer to replace Govert Bidloo, professor of anatomy, medicine and practical medicine at Leiden University. Govert Bidloo was absent because he was also the personal court physician of the King-Stadtholder William III [22]. In 1709, Boerhaave was appointed professor of Medicine and Botany, and in 1718 he added the professorship of Chemistry [23]. Boerhaave emphasised the importance of observing the patient directly at the bed, combining a thorough physical examination with a physiological and anatomically rational diagnosis. These methods were previously introduced in Leiden by Johannes van Heurnius (1543–1672) and Franciscus de le Boe Sylvius (1614–1672) [24–26]. The lectures given by Boerhaave attracted students such as A. Haller, G. van Swieten and Russians. These Russians played after their study in Leiden a significant role in Russian health care. During the eighteenth century, about 46 native Russians and Russians with foreign roots studied in Leiden. Of this number, 25 % (12 students) studied during the professorship of Herman Boerhaave.

Not Peter the Great, but Tsarina Anna Ivanovna (1730–1740) invited Herman Boerhaave to become Arkhiyater of the Meditsinskaya Kantselaryariya. In a letter to his former student, Laurentius Blumentrost dated 1730, Boerhaave officially thanked for the invitation but declined to take the position [27].

### ***The brothers Kaau-Boerhaave, nephews of Herman Boerhaave***

On the recommendation of the Portuguese António Nunes Ribeiro Sanchez, personal court physician of Tsarina Anna Ivanovna (1730–1740), Herman Kaau was invited to become the court physician of the Tsarina. Sanchez was a graduate of Leiden and a pupil of Herman Boerhaave [2; 14; 28; 29]. Herman Kaau, nephew of Herman Boerhaave, accepted the invitation and travelled to St Petersburg with his family at the end of 1741. He was one of the four general directors of the Meditsinskaya Kantselyaria. His parents were, Margriet

Boerhaave, sister of Herman Boerhaave and doctor Jacob Kaau. Herman became the heir of his uncle Herman Boerhaave, who had only a daughter, and he was allowed to attach the family name Boerhaave to his surname.

In 1744 Herman Kaau-Boerhaave was appointed to the state council. Tsarina Elizabeth the Great (1741–1761) established him on 7 December 1748 as a member of the Privy Council, as first personal court physician and as General Director of the Meditsinskaya Kantselyariya. Since then, he had earned by his erudition, humanity and modesty great admiration and confidence of his contemporaries, but especially Elizabeth's favour. When he was seriously ill in 1751, the Tsarina honoured him with a personal visit. He died in Moscow on 7 October 1753. On the express order of the Tsarina his body was interred in a vaulted crypt in the Old Dutch Church. His remains were moved to the Moscow cemetery on 20 May 1815 when the Old church was moved.

Pavel Zakharyevich Condoidi (1710–1760), as an honorary member of the Imperial Academy of Science, succeeded Herman Kaau-Boerhaave in 1753 as General Director of the Meditsinskaya Kantselyariya, a post he held until his death in 1760. As a Russian of Greek roots, he travelled from Russia to Leiden to study medicine, where he graduated as a doctor in 1733 [2; 11; 14]. On returning to Russia, he initially worked as a military doctor and a general staff physician. In 1756 he established the fundamental library of medicine at the Second Landforce Hospital, the later Military Medical Academy. Another achievement was the introduction of seven years of study and a new examination system. He also introduced into the curriculum of the medical schools teaching of physiology, obstetrics, women's and children's diseases.

Herman Kaau-Boerhaave, like his uncle, had no male heirs and his younger brother Abraham Kaau became his only heir. In 1740, Abraham was allowed to change his surname to Kaau-Boerhaave with the permission of the daughter of Herman Boerhaave, countess De Thoms-Boerhaave. In 1744 Abraham became a member of the Imperial Academy of Sciences in St Petersburg when he was still a practising physician in The Hague (The Netherlands). Abraham moved to St Petersburg in 1746, where he first received a position in the Admiralty Hospital. Since 1748 he worked as a professor of anatomy and physiology [2]. Abraham died in 1758 in Russia and left eight scientific manuscripts in Latin behind. With him the surname Boerhaave died out.

The brothers Kaau-Boerhaave together inherited the archives of Herman Boerhaave and took these archives with them to Russia. Under their uncle Herman Boerhaave, both studied medicine in Leiden and made successful careers in Russia instead of written in some other literature.

Another member of the Academy was the scientist Karl Friedrich Kruse, also a student of medicine at the Leiden University, who had married the daughter of Herman Kaau-Boerhaave. For a long time, he served as the chief physician of the Imperial Life-guards in St Petersburg. During the reign of Catherine the Great, he was appointed as the assistant of the personal physician of the Tsarina and the State Councillor (in 1770). Ernst Cohen and W. A. T. Cohen-De Meester wrote in their catalogue of the Boerhaave collection in St Petersburg [30] that Karl Cruse found the opportunity to purchase the Boerhaave's manuscripts, as he accompanied the Grand Duke Paul (later Tsar Paul I) on his travels (Fig. 3).

After Cruse's death, his son-in-law, colonel Albrecht, inherited these manuscripts and a debt of 73,000 roubles [30]. Albrecht asked Tsar Paul I for a waiver of interest, but this

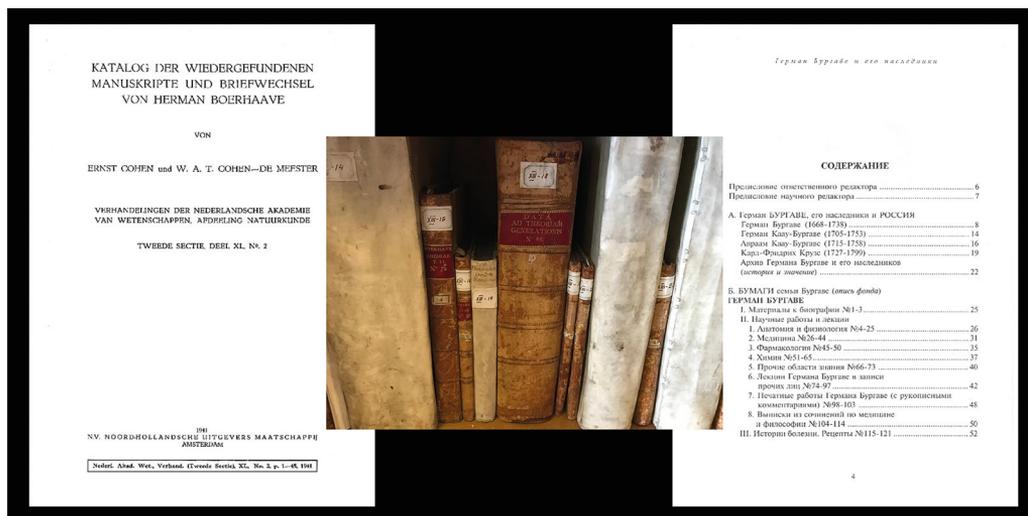


Figure 3. The front page of the catalogue on recovered manuscripts and correspondence of Herman Boerhaave, published by E. Cohen and W. A. T. Cohen-De Meester, in German, 1941. (In public domain).

Part of the collection manuscripts-letters of Herman Boerhaave in the library of Military Medical Academy named S. M. Kirov. Published with permission of the Military Medical Academy named S. M. Kirov and the Leiden University Medical Center.

Table of contents of the catalogue concerning the Boerhaave collection, published by the Military Medical Academy named after S. M. Kirov, 2003. Published with permission of the Military Medical Academy named after S. M. Kirov and the Leiden University Medical Center

was refused. A short time later, the tsar recalled that Cruse had Boerhaave's manuscripts and expressed his wish to buy them. In the memory of the many benefits that his father-in-law Cruse enjoyed from Emperor Paul, Albrecht found himself motivated to offer the manuscripts to the Tsar Paul as a gift. However, the emperor remembered Albrecht's earlier request for the waiver of interest. Therefore, the tsar decided not only to forgo the interest but also the capital owed. At the same time, he ordered the Medical College to repay the bank an amount of 73,000 roubles, receive the manuscripts, and hand them over to the Imperial Medico-Surgical Academy in Saint Petersburg (Fig. 4).

Cohen and Cohen-De Meester wrote that the number of manuscripts is not that large. We disagree, however, because the manuscripts consist 7 meters of documents inclusive that of the nephews Herman and Abraham Kaau-Boerhaave.

## Conclusion

The Military Medical Academy named S. M. Kirov inherited along the line of the "Ministry of Health" indirectly the private collection of Peter the Great consisting of the so-called not-known "small" anatomical and zoological collections of Fredrik Ruijsch. The same Academy also inherited unique antique books collected since the foundation of the Apterkarsky Prikaz, the Bidloo school and the library of Pavel Condoidi. Outside Russia, for a long time, a debate went on whether the manuscripts of the family Boerhaave still existed and where they were located. Due to Tsar Paul I's interference, the



Figure 4. The main building of the Imperial Medico-Surgical Academy around 1800, pen-and-ink drawing, artist Margarita V. Apraksina, St Petersburg, 2019. Private collection, with permission.

The fundamental library and a part of Herman Boerhaave's collection. Image by R. I. Tamchenko. Published with permission of the Military Medical Academy named after S. M. Kirov and the Leiden University Medical Center

archives of the last two generations of Boerhaave also ended up in the Military Medical Academy.

The Military Medical Academy named S. M. Kirov is a well-preserved and maintained treasure trove with many beautiful precious gems. Not only Dutch but also manuscripts and artefacts of other important world-known scientists, including the beautiful anatomical atlases and other manuscripts of Nikolay Ivanovich Pirogov can be found in this treasure trove. The Military Medical Academy with among others the fundamental library is for every scientist a true land of paradise.

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