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Competition for the Chair for Pharmacology at the University of Dorpat in 1882 between Hans Horst Meyer and Gustav von Bunge

Abstract

The study focuses on the first position held by pharmacologist Hans Horst Meyer (1853–1939)¹ as a professor of pharmacology, dietetics, and the history of medicine at the University of Dorpat (today, Tartu University, Estonia) from 1882 to 1884. Meyer is known as the founder of pharmacology as an independent academic discipline in Vienna (Austria).² He competed with the well-known physiologist Gustav Piers Alexander von Bunge (1844–1920) for the position of the chairman of the department in 1881. Meyer was given the position of a professor in Dorpat instead of Gustav von Bunge (1844–1929). The outcome of the competition raises several research questions: why Meyer was allocated the chair in 1881; which arguments spoke in favour of Meyer and what was against him, what spoke against von Bunge; which historical events influenced university life in Dorpat; under which political and ideological currents the decision for the new professor was made.

¹ Wolfgang Schütz, “Etablierung der Pharmakologie als eigene Disziplin unter Hans Horst Meyer” in *Strukturen und Netzwerke – Medizin und Wissenschaft in Wien*, ed. Daniela Angetter et al. (Göttingen: V&R Unipress, 2018), 725–727; Cay Rüdiger Prüll, Andreas-Holger Maehle, Robert Francis Halliwell, “Hans Horst Meyer and Charles Ernest Overton” in *A short story of the Drug Receptor Concept* (New York: Palgrave Macmillan, 2009), 79.

² Konzett, “Maier, Hans Horst” in *Oesterreichisches Biographisches Lexikon 1815–1950* (Wien: Verlag der Österreichischen Akademien der Wissenschaften, 1972), 5, 426–427.

Events such as the Russification of the university and the assassination of Alexander II (1818–1881) significantly impacted teaching at the University of Dorpat from 1875 to 1885. During that period, both professors formed the basis of their outstanding academic careers. The article provides biographical analysis of Hans Horst Meyer based on Meyer's files from the University's of Tartu archive. Since Meyer competed with Gustav von Bunge for his first position as a chairholder, the biography of Gustav von Bunge has also been studied, contextualising it with the significant changes in the organisation of the University of Dorpat. Individual academic achievements of both scholars have been identified and listed using such platforms as Web of Science, Neurotree, the pharmacological journal "Naunyn-Schmiedeberg's Archives of Pharmacology", The Online Books Page, and WorldCat. Afterward, the conclusions about the individual scientific portfolios of the two applicants for the chairman of the department have been made. Finally, contributing factor to why Hans Horst Meyer was successful with his application has been identified.

Keywords: Hans Horst Meyer, Gustav von Bunge, Oswald Schmiedeberg, pharmacology, University of Dorpat.

Biography of Hans Horst Meyer

Pharmacologist Hans Horst Meyer was born in 1853 in Insterburg, East Prussia, which today is Chernyachovsk, Russia. He is considered one of the founders of pharmacology and is particularly well respected in Austria. Through the establishment of pharmacology, Hans Horst Meyer significantly shaped the Viennese school of medicine and, consequently, the entire Austrian medicine in the 20th century.³ Meyer is remembered for the worldwide spread of pharmacology and is referred to as the "leader in experimental pharmacology".⁴ Furthermore, Meyer is known for his outstanding performance as a teacher. He taught many eminent scientists in his career who later held important scientific positions. These included

³ Leopold Arzt, Richard Übelhör, "In memoriam Hans Horst Meyer, Professor der experimentellen Pharmakologie in Wien (1904–1924)", *Wiener Klinische Wochenschrift* 35/36 (1949): 545.

⁴ Ernst Peter Pick, "Hans Horst Meyer – Zum 80. Geburtstag", *Deutsche Medizinische Wochenschrift* 59, No. 11 (1930): 422–423. doi:10.1055/s-0028-1131550.

full-time professors such as Ernst Peter Pick (1872–1960) and Henry Gray Barbour (1886–1943). Among his students, there are several Nobel Prize winners (Table 1).⁵

In 1871, Meyer began studying natural sciences with a focus on chemistry at the Albertus University in Königsberg. He then began studying medicine in Leipzig, Berlin, and later in Königsberg. In Leipzig, physiologist and anatomist Carl Ludwig (1816–1895) had a strong formative influence on Meyer.⁶ In the state examination under the pharmacologist Max Jaffé (1841–1911), Meyer failed the examination subject of drug theory. After failing the exam, the examiner, Max Jaffé, offered him a doctoral position in his laboratory. Jaffé’s offer was thought to be a consolation for failing the exam.⁷ Meyer did his doctorate on the behavior of urea in the chicken body. This dissertation caused Meyer to decide to become a pharmacologist.⁸

Table 1. Hans Horst Meyer’s pupils – his students and Nobel Prize winners

Name	Nobel Prize
Hans Cäsar Amsler (1881–1965)	
Henry Gray Barbour (1886–1943)	
Carl Ferdinand Cori (1896–1984)	1947 in physiology or medicine
Alfred Fröhlich (1871–1953)	
Hermann Georg Fühner (1871–1944)	
Corneille Heymans (1882–1968)	1938 in physiology or medicine
Erich Knaffl-Lenz (1880–1962)	
Otto Loewi (1873–1961)	1936 in physiology or medicine
Hans Molitor (1895–1970)	
Ernst Peter Pick (1872–1960)	
Wilhelm Friedrich Wiechowski (1873–1928)	
George Hoyt Whipple (1878–1976)	1934 in physiology or medicine

⁵ Wolfgang Schütz, “Etablierung der Pharmakologie als eigene Disziplin unter Hans Horst Meyer” in *Strukturen und Netzwerke*, 726.

⁶ Adolph Jarisch, “Hans Horst Meyer,” 1.

⁷ *Ibid.*

⁸ *Ibid.*

After completing his doctorate, Meyer moved to Oswald Schmiedeberg's laboratory in Strasbourg at the suggestion of Jaffé. Jaffé offered Meyer a position as his assistant, but only after Meyer would complete his pharmacological training under Schmiedeberg's supervision.⁹ At Jaffé's laboratory in Strasbourg, Meyer was trained primarily in the technique, and literature of experimental physiology.¹⁰ There Meyer dealt with the topics of glucuronic acid¹¹, the effect of iron in the blood¹², and the alkali reserve¹³. Although he performed the research on iron in Schmiedeberg's laboratory in Strasbourg, Meyer published it when he was already working at the University of Dorpat.¹⁴ In addition, in 1880, Meyer published a study on pilocarpine¹⁵, which belongs to the group of direct parasympathomimetic agents. The muscarine, which also belongs to this group, had been described by Schmiedeberg in the years before. Meyer completed his habilitation in 1881 on the effects of phosphorus on animal organisms.¹⁶

Similarly to pharmacologists Rudolf Buchheim (1820–1879), Oswald Schmiedeberg, and Rudolf Boehm (1844–1926), Hans Horst Meyer accepted the call to the University of Dorpat in October 1881 and left Strasbourg in May 1882.¹⁷ Here he took over the chair for pharmacology, dietetics, and

⁹ Ernst Peter, "Hans Horst Meyer 1853–1939", *Journal of Pharmacology and Experimental Therapeutics* 71, No. 4 (1941): 301–304.

¹⁰ James Gunn, "Obituaries—Prof. H. H. Meyer", *Nature* 144 (1939): doi:10.1038/144968a0.

¹¹ Oswald Schmiedeberg, Hans Horst, "Ueber Stoffwechselprodukte nach Campherfütterung", *Zeitschrift für Physiologische Chemie* 3 (1879): 422, <https://doi.org/10.1515/bchml.1879.3.6.422>.

¹² Hans Horst Meyer, Francis Williams, "Ueber acute Eisenwirkung", *Archiv für Experimentelle Pathologie und Pharmakologie* 13 (1880): 70–85, <https://doi.org/10.1007/bf01833270>.

¹³ Hans Horst Meyer "Studien über die Alkalescenz des Blutes", *Ibid.*, 17 (1883): 304–328, <https://doi.org/10.1007/BF01831578>.

¹⁴ Adolph Jarisch, "Hans Horst Meyer". The list of Meyer's publications (1880–1940) see: Michael Wiling, *The research work of the pharmacologist Hans Horst Meyer (1853-1939) with focus on his time at Dorpat University. Research paper* (Riga Stradiņš University), 12–14.

¹⁵ Erich Harnack, Hans Horst Meyer, "Untersuchungen über die Wirkungen der Jaborandi-Alkaloide nebst Bemerkungen über die Gruppe des Nicotins", *Archiv für Experimentelle Pathologie und Pharmakologie* 12 (1880): 366–400, <https://doi.org/10.1007/BF01833930>.

¹⁶ Hans Horst Meyer, "Ueber die Wirkung des Phosphors auf den thierischen Organismus", *Archiv für Experimentelle Pathologie und Pharmakologie* 14 (1881): 313–344, <https://doi.org/10.1007/BF01831052>.

¹⁷ Archive of University of Tartu, Estonia. EAA.402.3.1097, p. 3.

history of medicine at the age of 31, in April 1882.¹⁸ Before that, Meyer had to compete for this position with Dr. Gustav von Bunge (1844–1920). Meyer was elected in a vote by the incumbent professors at the University of Dorpat with 27 positive and 14 negative votes. Dr. von Bunge received 13 positive and 28 negative votes.¹⁹ Although Meyer only had a few publications, the number was considered substantial.²⁰ His excellent pharmacological training has been also highlighted in the archival documents that discuss him and his achievements.²¹

In Dorpat, Meyer worked as an adjunct professor²² with research on bismuth²³ together with Wladimir Steinfeld, which led to the discovery of the therapy for syphilis.²⁴ During his time in Dorpat, he also took special leave to travel to Berlin, Leipzig, and a congress in Copenhagen with his family from May 13 to October 8, 1884, to learn the latest methods of physiology.²⁵ Mayer traveled together with his family.²⁶ Unfortunately, in the archive documents, no information regarding the funding for the period of his absence is available. Most likely, the trip was self-financed.

After his return on October 8, 1884, Meyer asked in writing to be released from his position at the University of Dorpat.²⁷ This request was granted, and Meyer worked for the University of Dorpat until November 15, 1884.²⁸ He took over the chair for pharmacology in Marburg from the same predecessor as in Dorpat, Rudolf Boehm. In Marburg, Meyer researched a relative of adrenaline, the adrenalone²⁹, together with his student and the future Nobel Prize winner Otto Loewi (1873–1961). Another research

¹⁸ Archive of University of Tartu, Estonia. EAA.402.3.1096, p. 59.

¹⁹ *Ibid.*, p. 9.

²⁰ *Ibid.*, p. 5.

²¹ *Ibid.*

²² Archive of University of Tartu, Estonia. EAA.402.3.1096, p. 4.

²³ Wladimir Steinfeld, “Untersuchungen über die toxischen und therapeutischen Wirkungen des Wismuths”, *Archiv für Experimentelle Pathologie und Pharmakologie* 20 (1885): 40–84, <https://doi.org/10.1007/BF01917297>.

²⁴ Adolph Jarisch, “Hans Horst Meyer”.

²⁵ *Ibid.*, p. 39.

²⁶ *Ibid.*, p. 41.

²⁷ *Ibid.*, p. 50.

²⁸ *Ibid.*

²⁹ Otto Loewi, Hans Horst Meyer, “Ueber die Wirkung synthetischer, dem Adrenalin verwandter Stoffe”, *Archiv für Experimentelle Pathologie und Pharmakologie* 53 (1905): 213–226, <https://doi.org/10.1007/BF0187698>.

work of Meyer in Marburg is the research about the tetanus toxin³⁰ together with the physiologist Emil von Behring (1854–1917) and Behring's assistant Fred Ransom (1850–1937).

In 1899, Meyer published the lipid theory of anesthesia³¹ by using preliminary work by Schmiedeberg as inspiration.³² However, the basic idea of the theory can be traced back to the dissertations of Meyer's students Daniel Diehl, Friedrich Buchholz, and Walter Duzel from 1894 to 1896.³³ Meyer was very much appreciated by his students; his student Loewi stated that Meyer's analytical talent and his imaginative mind, in particular, were of inestimable value to him.³⁴ In addition, Meyer also appears to have been very understanding of his employees as the boss. For example, Loewi described how he stayed away from the laboratory for six weeks due to his first publication, and Meyer met him with understanding and said he should allow himself this time.³⁵

Meyer was delighted to learn about the research results of Ernest Overton (1865–1933) immediately after the publication of his narcosis theory.³⁶ Overton was working as an assistant under the physiologist Maximilian von Frey (1852–1932) and, after several years of work, had come to the same results³⁷ as Meyer. The theories of both scientists were summarised under the name of Meyer-Overton Correlation. The Meyer-Overton correlation states that by increasing the chain length of substances used in general anesthesia (e.g., n-alcohols or alkanes), the lipid solubility increases as well; accordingly, the anesthetic effect should increase in potency. Consequently,

³⁰ Hans Horst Meyer, Fred Ransom, "Untersuchungen über den Tetanus", *Archiv für Experimentelle Pathologie und Pharmakologie* 49 (1903): 369–416, <https://doi.org/10.1007/BF01824935>.

³¹ Hans Horst Meyer, "Zur Theorie der Alkoholnarkose", *Archiv für Experimentelle Pathologie und Pharmakologie* 42 (1899): 109–118, <https://doi.org/10.1007/BF01834479>.

³² Adolph Jarisch, "Hans Horst Meyer".

³³ Robert Lifnik, "Hans Horst Meyer and the lipid theory of narcosis", *Trends in Pharmacological Sciences* 10, No. 7 (1989): 265–266, [https://doi.org/10.1016/0165-6147\(89\)90025-4](https://doi.org/10.1016/0165-6147(89)90025-4).

³⁴ Josef Donnerer, Fred Lembeck, "Autobiographic Sketch – Otto Loewi" in *The Chemical Languages of the Nervous System* (Basel: Karger, 2006), 15, <https://doi.org/10.1159/000092202>.

³⁵ *Ibid.*

³⁶ Adolph Jarisch, "Hans Horst Meyer", 4.

³⁷ Ernst Overton, *Studien über die Narkose zugleich ein Beitrag zur allgemeinen Pharmakologie* (Jena: Gustav Fischer, 1901).

Meyer and Overton's names are recognised when anesthetic mechanisms are discussed.³⁸ However, there has never been any discussion between the two gentlemen as to who was the first to propose the theory.³⁹

In 1912, Meyer and Overton were also jointly nominated for the Nobel Prize by the pharmacologist Hermann von Tappeiner (1847–1927) for their achievements in the field of anesthesia (Nobel Prize Nomination Database, 1912). Only in 2006, more than 100 years later, was the theory refuted.⁴⁰ However, despite the refutation of the theory, it is still relevant today. It is essential to clarify whether anesthetics interact with specific ion channels and whether these are important for anesthesia.⁴¹ Even nowadays, any discourse on anesthetic mechanisms cannot avoid mentioning the Meyer-Overton correlation.⁴²

Meyer stayed in Marburg until 1904 and then moved to Vienna, Austria. He became internationally known through the training of international students. He went to New York in 1905, where he opened the series of Harvey lectures with a lecture on the theory of anesthesia.⁴³

In 1908, Meyer turned down an offer from the University of Berlin and stayed in Vienna. Meyer's appointment as an honorary citizen of the City of Vienna resulted from his refusal to leave Austria.⁴⁴

Meyer is known for having grappled with scientific problems for decades. He began dissertations in Marburg, for instance, with Waclaw Sobieranski (1860–1902), and then continued those in Vienna with Rudolf Fleckseder (1877–1838), among others.⁴⁵ In 1910, Meyer and the Viennese pharmacologist Rudolf Gottlieb (1864–1924) first published the book “Die experimentelle Pharmakologie als Grundlage der Arzneibehandlung”

³⁸ Misha Perouansky, “The Overton in Meyer–Overton: a biographical sketch commemorating the 150th anniversary of Charles Ernest Overton's birth”, *British Journal of Anaesthesia* 114, No. 4 (2016): 540, <https://doi.org/10.1093/bja/aev069>.

³⁹ *Ibid.*

⁴⁰ Wolfgang Schütz, “Etablierung der Pharmakologie als eigene Disziplin unter Hans Horst Meyer”, in *Strukturen und Netzwerke*, 725–727.

⁴¹ Peter Tonner, Lutz Hein, *Pharmakotherapie in der Anästhesie und Intensivmedizin: Grundlagen und klinische Konzepte* (Berlin Heidelberg: Springer-Verlag, 2011), 23.

⁴² Misha Perouansky, “The Overton in Meyer–Overton”.

⁴³ Graham Lusk, “The Harvey Society”, *Science* 71 (1851): 1930, [doi:10.1126/science.71.1851.627](https://doi.org/10.1126/science.71.1851.627).

⁴⁴ Adolph Jarisch, “Hans Horst Meyer”.

⁴⁵ *Ibid.*

(Eng. “Experimental pharmacology as the basis of drug treatment”)⁴⁶, which appeared in several editions in the following years. Consequently, this book became indispensable in the clinic and laboratory allowing doctors and researchers to create their therapeutic concepts in a planned manner.⁴⁷

During the First World War, Meyer ran a clinic for the wounded in Vienna. This service was a deep connection to Meyer’s second home, Austria.⁴⁸ Meyer retired in 1924, and his long-time colleague Ernst Peter Pick succeeded him at the Pharmacological Institute of the University of Vienna. During his retirement, Meyer initially dealt with biological and later also with philosophical questions. Meyer also used the time after retirement to write another edition of his book.⁴⁹ The publication of a series of articles also followed, among other things, on his main research areas and newly gained knowledge. On May 22, 1937, the Vienna Medical Faculty awarded Meyer an honorary doctorate. On this occasion, he clearly expressed his deep ties to Austria in his speech. In this speech, Meyer, who was born in East Prussia, describes himself as “ein getreuer und zutiefst dankbarer Bürger Österreichs” (Eng. “a loyal and deeply grateful citizen of Austria”).⁵⁰ He has also been awarded honorary degrees from the University of Marburg, Königsberg, St. Andrews, and Edinburgh.⁵¹ Meyer’s other honors include honorary membership in the British Physiological Society, and he was also named the first honorary member of the British Pharmacological Society along with John Jacob Abel (1857–1938).⁵²

Meyer and the Austrian pharmacology suffered quite hard from the Hitler regime. Meyer was a Lutheran Protestant but had a Jewish background.⁵³

⁴⁶ Hans Horst Meyer, Rudolf Gottlieb, *Die experimentelle Pharmakologie als Grundlage der Arzneibehandlung: ein Lehrbuch für Studierende und Ärzte* (Wien: Urban & Schwarzenberg, 1910), 10.

⁴⁷ Adolph Jarisch, “Hans Horst Meyer”.

⁴⁸ Leopold Arzt, Richard Übelhör, “In memoriam Hans Horst Meyer”, 546.

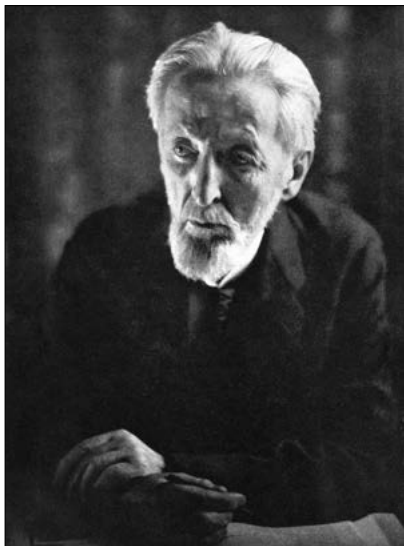
⁴⁹ Hans Horst Meyer, Rudolf Gottlieb, *Die experimentelle Pharmakologie als Grundlage der Arzneibehandlung*.

⁵⁰ Leopold Arzt, Richard Übelhör, “In memoriam Hans Horst Meyer”, 546.

⁵¹ George Baehr, *In Memoriam, Hans Horst Meyer* (New York: Bulletin of the New York, 1940), 260.

⁵² James Gunn, “Obituaries – Prof. H. H. Meyer,” *Nature* 144 (1939): 968, <https://doi.org/10.1038/144968a0>.

⁵³ Wolfgang Schütz, Linda Erker, Oliver Rathkolb, et al., *Anschluss 1938: Aftermath on Medicine and Society*, *Wiener Klinische Wochenschrift* 130 (2018): 327, <https://doi.org/10.1007/s00508-018-1366-4>.



Hans Horst Meyer (1853–1939)



Gustav von Bunge (1844–1920)

Therefore, Meyer was forced to move from his 19th District villa into barracks at the age of 85. In addition, Meyer resigned from all memberships in the academic organisation to anticipate expulsion.⁵⁴ Also, Meyer's son, the surgeon Arthur Woldemar Meyer (1885–1933), shot his wife and himself after the Nazis came to power. After Austria was annexed to the German Reich, 14 pharmacologists were dismissed or fled and continued their work at American or British institutes.⁵⁵ Hans Horst Meyer died on October 6, 1939, at the age of 87.

In his career, Meyer dealt with the research of the mode of action and the place of action and chemical structure, as well as primary research on the function of hormones, vitamins, and drugs that affect the autonomic nervous system.⁵⁶ Meyer's pupil and successor in Vienna, Ernst Peter Pick (1872–1960), begins a review of Meyer's work by mentioning one of Meyer's last publications from 1936. Here Meyer clearly expresses that experimental pharmacology is the basis of drug treatment. In this publication, Meyer also emphasised the limits of physiological research, which

⁵⁴ Wolfgang Schütz, Linda Erker, Oliver Rathkolb, et al., Anschluss 1938.

⁵⁵ Wolfgang Schütz, "Etablierung der Pharmakologie als eigene Disziplin unter Hans Horst Meyer" in *Strukturen und Netzwerke*, 730–731.

⁵⁶ Leopold Arzt, Richard Übelhör, "In memoriam Hans Horst Meyer".

cannot trace physiological or pharmacological processes back to their energetic basis. He also notes that the effect of a drug is different in sick and healthy organs.⁵⁷ Thus, Meyer's life's work also served physiology to a large extent, and many results from pharmacological studies are beneficial for therapy.⁵⁸ Other sources see Meyer's legacy in the fact that he had related pharmacology to biology.⁵⁹

Biography of Gustav von Bunge

Gustav Piers Alexander von Bunge (further Gustav von Bunge) was born in Dorpat (Estonia) in 1844 into a German Baltic aristocratic family with Swedish roots. He died in Basel, Switzerland, in 1920.

Gustav von Bunge can look back on an extensive family tree of academics. Many of his close relatives were professors at the University of Dorpat, such as his father, the botany professor Alexander von Bunge (1803–1890), or his uncle, the legal historian Friedrich Georg von Bunge (1802–1897). He began his academic career as a student of mathematics and chemistry at the University of Dorpat. During his studies, he was tutored by Rudolf Buchheim and Oswald Schmiedeberg. Buchheim and Schmiedeberg were both engaged in research on potassium iodide electrolytes and other potassium salts. Afterward, von Bunge also focused on electrolytes after getting his degree in chemistry, but with emphasis on sodium chloride and its metabolism.⁶⁰ The result was an outstanding publication⁶¹ in 1874 on sodium and potassium chloride to get a doctorate in chemistry. He then studied medicine in Strasbourg and Leipzig, receiving his doctorate in 1882. He could do this because he was already considered a talented physiologist supported by several scholarships.⁶²

⁵⁷ Ernst Peter Pick, "Originalabhandlungen – Neue Erkenntnisse über Bedingungen der Arzneiwirkung", *Wiener Klinische Wochenzeitschrift* 35/26 (1993): 546.

⁵⁸ Adolph Jarisch, "Hans Horst Meyer", 3.

⁵⁹ George Baehr, *In Memoriam, Hans Horst Meyer*, 260.

⁶⁰ Clive McCay, "Gustav B. von Bunge", *The Journal of Nutrition* 49, No. 1 (1953): 6, <https://doi.org/10.1093/infdis/49.1.1>.

⁶¹ Gustav von Bunge G., "Kali-, Natron- und Chlorgehalt der Milch, verglichen mit dem Nahrungsmittel und des Gesamtorganismus der Säugetiere" (Dorpat: C. Mattiesen, 1874).

⁶² Robert Smail Jack, Fritz Scholz, Wilhelm Ostwald – *The autobiography* (Cham: Springer International Biographies, 2017), 77.

Before obtaining a doctorate in chemistry, Bunge taught at the University of Dorpat at the Department of Physiology and dealt with the composition of the inorganic constituents of blood and plasma.⁶³ His student and doctoral candidate Emil Abderhalden continued the topic of Bunge's dissertation in chemistry and obtained his doctorate with the newly acquired results in 1881.⁶⁴ The same year, Bunge received a job offer from the Riga Polytechnical Institute, as the previous chemistry professor Franz Weber (1834–1881) had died.⁶⁵ Von Bunge declined, however, because there was no room for physiological chemistry, and he wanted to remain a physiologist.⁶⁶ As a result, the choice of the new professor for chemistry at the Polytechnical Institute in Riga fell on the later Nobel Prize winner Wilhelm Ostwald (1853–1932).⁶⁷ In 1882, von Bunge competed with the pharmacologist Hans Horst Meyer for the chair for Pharmacology, Dietetics, and the History of Medicine at the University of Dorpat.⁶⁸ The competition remained of particular interest since he had turned down the previous job offer with the arguments of a physiological chemist and later applied for a pharmacology chair. Prior to that, Bunge had already dealt with another topic, the inability of women to breastfeed. At that time, von Bunge was still working in the maternity ward in Leipzig. However, gynecologists and paediatricians accused him of interfering with healed people who did not fall within his jurisdiction.⁶⁹

In 1885, Bunge took up a position as an adjunct professor in Switzerland at Basel University. In his inaugural address, he spoke publicly for the first time on the subject of alcohol abstinence, which later had a significant influence on the Baltic Provinces and internationally. Bunge's work laid the foundation for sobriety movements that emanated from Estonia and spread across the Russian Empire, including St. Petersburg and

⁶³ Clive McCay, "Gustav B. von Bunge", 7.

⁶⁴ Nikolai Iwanowitsch Lunin, "Ueber die Bedeutung der anorganischen Salze für die Ernährung des Thieres", *Zeitschrift für Physiologische Chemie*, 5 (1881): 31–39; Clive McCay, "Gustav B. von Bunge".

⁶⁵ Lockenmann, "Eine Selbstbiographie von Wilhelm Ostwald", *Angewandte Chemie* 40, No. 42 (1927), <https://doi.org/10.1002/ange.19270404218>.

⁶⁶ Roderich von Engelhardt, "Die Deutsche Universität Dorpat in ihrer geistesgeschichtlichen Bedeutung" (München: Ernst Reinhardt, 1933), 382.

⁶⁷ Lockenmann, "Eine Selbstbiographie von Wilhelm Ostwald".

⁶⁸ Archive of University of Tartu, Estonia. EAA.402.3.1096, p. 9.

⁶⁹ Marie-Louise Portmann, "Neue Aspekte zur Biographoe des Baseler Biochemikers Gustav von Bunge (1844–1920) aus seinem handschriftlichen Nachlaß", *Swiss Journal of the History of Medicine and Sciences* 31 (1974): 41.

Riga.⁷⁰ As a result, he had a significant influence not on the Baltic Provinces but also internationally. His inaugural address in Basel, “Die Alkoholfrage” (Eng. “The alcohol question”), has been reproduced more than a million times and translated into twenty languages.⁷¹



A fountain in honor of von Bunge at the University Hospital Basel

⁷⁰ Ken Kalling, Erki Tammiksaar, “The Politicization of the Temperance Movement in Pre-independence Estonia”, *Explorations in Baltic Medical History, 1850–2015*, ed. Nils Hansson, Jonatan Wistrand (Boydell & Brewer, 2019), 120–123.

⁷¹ Paul Weindling, “Health, Race and German Politics between National Unification and Nazism, 1870–1945” (Cambridge: Cambridge University Press, 1989), 71–72.

This speech formed the basis for a far-reaching abstinence movement and, simultaneously, formed the basis for an anti-alcohol health policy.

One year after taking office at the University of Basel, von Bunge was appointed the professor of physiological chemistry. He held this position from 1886 until he died in 1920. During this time, von Bunge dealt with anemia in mice caused by the diet of milk and rice (1892) and the sodium chloride content in bones (1899). In addition, in 1900, he published a 32-page book dealing with the increasing inability of women to breastfeed. It was published in four editions and translated into French. The last edition of the book was published in 1908. Furthermore, von Bunge published a thesis entitled “Die Quellen der Degeneration” (Eng. “The sources of degeneration”) in 1910 and research on “Die Ausrottung der Geschlechtskrankheiten” (Eng. “The extinction of venereal diseases”) in 1911.

Gustav von Bunge is still remembered for his research achievements in various areas.⁷² His textbook on physiological and pathological chemistry, his research on healthy infant nutrition, and the founding of the abstinence movement are among his most succinct works. Today von Bunge is also considered a pioneer in mineral metabolism and vitamin research.⁷³ In addition, his experiments with milk paved the way for further research into vitamins.⁷⁴

One of von Bunge’s awards is the longstanding membership in the German Academy of Natural Scientists Leopoldina since 1988. Furthermore, in honor of von Bunge, a fountain was erected at the University Hospital Basel on his 70th birthday. Moreover, von Bunge was granted honorary citizenship of Basel.

University of Dorpat: 1875 to 1885

The following section gives an overview of the history of the University of Dorpat. The focus is on the period from 1875 to 1885 and the different influences the university administrative apparatus exposed in 1882 when

⁷² The list of Bunge’s publications (1873–1911) see: Michael Wiling, *The research work of the pharmacologist Hans Horst Meyer (1853-1939) with focus on his time at Dorpat University*, 19-20.

⁷³ Bernhard Prijs, “Der erste Lehrstuhl für Physiologische Chemie in der Schweiz, Episoden aus der Basler Chemiegeschichte”, (Basel: S. Karger AG, 1983), 85, <https://doi.org/10.1159/000408989>.

⁷⁴ Emil Abderhalden, “Grundlagen unserer Ernährung und unseres Stoffwechsels” (Berlin Heidelberg: Springer Verlag, 1939).

Meyer succeeded as the chair for pharmacology, dietetics, and the history of medicine.

The university was founded in 1632 under King Gustavus Adolphus (1594–1632), the king of Sweden. From 1690 to 1710, the university was known under Academia Gustavo-Caroline, and the teaching language was initially Latin. In 1802, the university was renamed the Imperial University of Dorpat (Imperatorskii Derptskaa Universitet). The naming goes back to the Russian tsar. The university kept this name until 1893 when the city of Dorpat was renamed Tartu.⁷⁵

The teaching languages developed just as dynamically as the name changes. When founded in the 17th century, teaching was mainly in Latin.



The University of Dorpat around 1860

⁷⁵ From 1893 to 1918, at the time of Russification, the university was renamed the Imperial University Jurjev (Imperatorskii Jur'evskii Universitet). After independence from Russia in 1918, the university was called the “University of the Estonian Republic of Tartu” (Eesti Vabariigi Tartu Ülikool). In the years under Soviet rule 1940 to 1941 and from 1944 to 1989 the name changed to Tartu State University (Tartu Riiklik Ülikool). Since independence from the Soviet Union, the university has been called “The University of Tartu” (Tartu Ülikool).

Since the university mostly trained Baltic-German and Russian-German students from the middle class, German quickly established itself as the language of instruction. In 1893, Russian was also introduced as the language of instruction. Since 1918 the language of teaching has been mainly Estonian and partly Russian. Many courses are now also offered in English.

From a political point of view, the Baltic provinces began to orient themselves towards Germany at the time of German unification around 1870.⁷⁶ In 1875, the University of Dorpat was the eleventh largest of 30 German-speaking universities and the only German-speaking university in the Russian Empire.⁷⁷ Around 1880, however, the excellent relationship between Germany and Russia turned sour. Previously, the two powers supported each other in the fight against social and national revolts. From 1880, however, Russia saw Germany as a counter-power, especially in the Baltic Sea region. The reason for this was Germany's unique role in culture, economics, science, and universities, which is why Finnish scholars turned to German universities.⁷⁸

In 1881, the political situation between the Russian central authorities and Baltic Germans came to a head when Alexander III (1845–1894) became the Russian Emperor. Alexander III did not grant the knights in the Baltic provinces their previous privileges.⁷⁹ Alexander III justified his radical approach and the accompanying Russification through the murders of Alexander II by two students in an explosive attack on March 13, 1881. Alexander III, therefore, viewed universities as breeding grounds for tsar-killers.⁸⁰ As a result, the number of Russian teachers and students increased in the following years, and Russian was replaced as the previous German teaching language. Renaming the city of Dorpat and the university to the Imperial University of Jur'ev was a further consequence (see Table 2).

⁷⁶ Pieter Dhondt, "Ambiguous loyalty to the Russian Tsar: the universities of Dorpat and Helsinki as nation building institutions", *Historical Social Research* 33, No. 2 (2008): 121, <https://doi.org/10.12759/hsr.33.2008.2.99-126>.

⁷⁷ Dieter Lenoir, *Tullio Illomets*, *Nachrichten aus der Chemie* 57 (2009): 1100.

⁷⁸ Pieter Dhondt, "Ambiguous loyalty to the Russian Tsar".

⁷⁹ Erki Tammiksaar, "Political atmosphere in Dorpat in Emil Kraepelin's period", *Trames Journal of the Humanities and Social Sciences* 20 (2016): 405.

⁸⁰ Pieter Dhondt, "Ambiguous loyalty to the Russian Tsar", 120.

Table 2. Chairs for pharmacology, dietetics, and history of medicine in University of Dorpat until the year 1937

Name	Lifetime	Years at University of Dorpat	Coming from	Going to
Rudolf Buchheim	1820–1879	1846–1867	Leipzig, GER	Gießen, GER
Oswald Schmiedeberg	1838–1921	1867–1872	Was already in Dorpat	Strasbourg, GER
Rudolf Boehm	1844–1939	1872–1882	Wurzburg, GER	Marburg, GER
Hans Horst Meyer	1853–1939	1882–1884	Strasbourg, GER	Marburg, GER
Valerian Podwysotszky	1857–1892	1884–1885	Was already in Dorpat	Kasan, RUS
Rudolf Kobert	1854–1918	1886–1896	Strasbourg, GER	Rostock, GER
Stanislaw Czirwinsky	1852–1918	1886–1896	Strasbourg, GER	Moskau, RUS
David Lavrov	1865–1929	1902–1918	St. Petersburg, RUS	Vorohnezh, RUS Odessa, UA
Paul Trendelenburg	1884–1931	1918	Freiburg im Breisgau, GER	Rostock, GER
Siegfried Walter Loewe	1884–1963	1921–1928	Göttingen, GER	Mannheim, GER
Georg Barkan	1889–1945	1929–1937	Frankfurt a.M., GER	Boston, USA

Note. The table about the occupation of the chair for pharmacology, dietetics, and history of medicine in Dorpat provides information about some of Schmiedeberg's successors. *Abbreviations:* GER – Germany, RUS – Russia, UA – Ukraina, USA – United States of America.

Discussion

The appointment of a new chair for pharmacology, dietetics, and history of medicine in October 1882 fell at an eventful time in the Baltic Sea Region. Naturally, it impacted the selection of a new chair holder. In addition, however, the peculiarity of the epoch for medical specialisations, in general, must also be made ubiquitous.

From the second half of the 18th century to the beginning of the 19th century, experimental pharmacology emerged as an independent medical discipline. The establishment of the first experimental pharmacology laboratory goes back to the pharmacologist Rudolf Buchheim (1820–1879). Buchheim, appointed to the University of Dorpat at the end of 1847, founded the laboratory in the basement of his private house in the same town. Later, in 1860, establishing the university's first laboratory for experimental pharmacology at the University of Dorpat followed. Buchheim's pupils in Dorpat included Ernst von Bergmann (1836–1907) and Oswald Schmiedeberg (1838–1921). Schmiedeberg succeeded Rudolf Buchheim as the chair for pharmacology, dietetics, and history of medicine in Dorpat when he accepted the call to the University of Gießen (Germany) in 1867. Schmiedeberg held the chair until 1872. When Schmiedeberg left the chair and went to Strasbourg, pharmacologist Rudolf Boehm (1844–1939) became his successor.

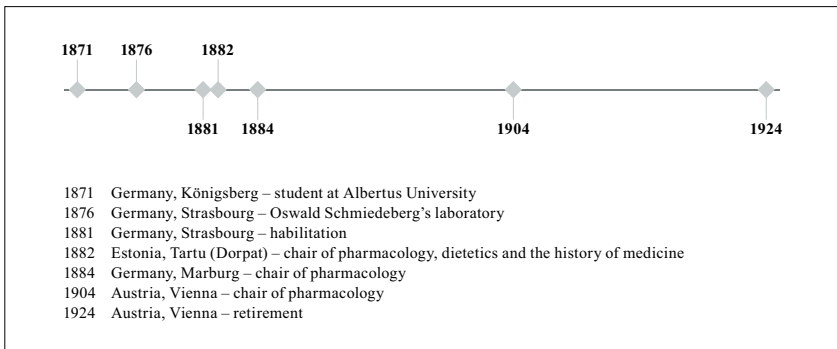
Schmiedeberg helped firmly establish pharmacology as an independent discipline therefore he is considered the “founder of modern pharmacology”⁸¹. His lifetime work – the establishment of pharmacology – can also be seen in the 18 nominations for the Nobel Prize in Physiology or Medicine.⁸² For decades, every pharmacology professor was his direct or indirect student. Schmiedeberg is also mentioned as a child of the town of Dorpat.⁸³ Since Schmiedeberg is so essential and groundbreaking for the history of pharmacology, training under his supervision was prestigious.

Hans Horst Meyer and Gustav von Bunge were taught by Schmiedeberg. Both have excellent reputation and curriculum vitae that justifies the application for the position of chair holder. However, there are significant differences in the individual educational backgrounds of both scientists. Meyer was trained in pharmacology already during his studies. He immediately received his doctorate in pharmacology and then got a position under Schmiedeberg in his laboratory in Strasbourg.

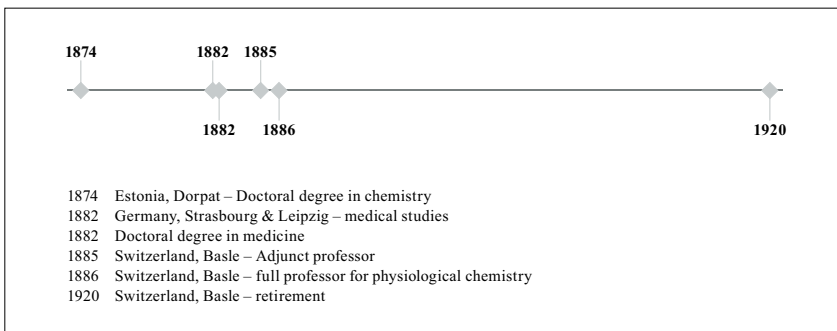
⁸¹ Jagdish Prasad, “Conceptual Pharmacology” (India: Universities Press Private Limited, 2010), 2.

⁸² Michael Pohar, Nils Hansson, “The “Nobel Population” in Pharmacology: Nobel Prize laureates, nominees and nominators 1901–1953 with a focus on B. Naunyn and O. Schmiedeberg”, *Naunyn-Schmiedeberg's Archives of Pharmacology* 393 (2020): 1173–1185.

⁸³ Roderich von Engelhardt, “Die Deutsche Universität Dorpat in ihrer geistesgeschichtlichen Bedeutung” (München: Ernst Reinhardt, 1933), 287.



Different stations in Meyer's academic life (1871–1924)



Different stations in von Bunge's academic life (1874–1920)

The habilitation in pharmacology under the supervision of Schmiedeberg followed in 1881. Then Meyer accepted the job at the University of Dorpat.

Schmiedeberg tutored Gustav von Bunge in Dorpat. Von Bunge received his doctorate in chemistry in 1874, in a similar field of research in which Schmiedeberg was also active. Then teaching at the department of physiology at the University of Dorpat followed. During these years, von Bunge worked on joint research with Schmiedeberg.⁸⁴ At the same time, he studied medicine with stays in Germany. He completed his studies in 1882 with a further doctorate in medicine. Consequently, von Bunge was habilitated as an adjunct professor in Basel in 1885. The historiography

⁸⁴ Gustav Von Bunge, Oswald Schmiedeberg, “Die Bildung der Hippursäure im Tierkörper”, *Archiv für experimentelle Pathologie und Pharmakologie* 6 (1876): 233.

describes von Bunge as “representing the biological direction that prevailed in Dorpat in the seventies and eighties”. Therefore, his focus is on physiological chemistry and physics or biology. His work “Textbook of Physiological Chemistry” and his lecture on “Vitalism and Mechanism” from 1883 are essential. However, the literature avoids addressing Bunge’s connection to pharmacology.⁸⁵ In contrast to von Bunge, Meyer is explicitly recognised for his pharmacological research.⁸⁶ So far, these differences indicate that Meyer was better suited for the professor position due to his education.

In the discussion, political aspects illustrate the framework conditions under which the executives of the University of Dorpat worked. The university’s management was under enormous pressure due to the Russification. The German professors were completely aware of the “hopeless” situation. So, the assumption is that the Germans wanted to fight for their supremacy and install a professor of German descent as chair. The university’s management, however, primarily judged the applicant’s qualifications. Still, the preference for a German candidate remained due to the nationalistic agenda of German academics. Therefore, Meyer’s German and von Bunge’s Baltic German nationality was of secondary consideration when deciding between these two scientists.

From the perspective of a “modern” point of view, the university should assign positions based on a scientist’s reputation. To this end, we must clarify how a reputation or excellence in science is formed at the outset. Currently, most academics will argue that scientometrics solves the problem. Scientometrics outputs numerical values such as the impact factor or the Hirsch index to make scientists comparable. For this purpose, citations are an influential factor. The research of excellence goes even further at this point and includes prizes such as the Nobel Prize and other honors. The latter is not reasonable because many prizes and benefits are awarded at the end of a scientific career or postmortem. The number of publications and corresponding citations also increases throughout one’s professional career. Therefore, in the current analysis, only publications before the application for the chair in 1882 are considered. No data is available for the citation study, so such analysis must be dispensed.

⁸⁵ Roderich von Engelhardt, “Die Deutsche Universität Dorpat in ihrer geistesgeschichtlichen Bedeutung”, 294–299.

⁸⁶ *Ibid.*, 321.

Before the application, Meyer had three publications, and von Bunge had four. Meyer received his doctorate with his work on urea metabolism in chicken in 1877. He then qualified as a professor in 1881 for his study on the effect of phosphorus on animal organisms. There are two other publications between these years. Gustav von Bunge received his doctorate in chemistry in 1874 with the publication of the work on potassium, sodium, and chlorine content of milk compared with that of other foods and the total organism of mammals. In 1882, von Bunge defended his doctorate in medicine at the University of Leipzig. The publications by Gustav von Bunge from 1876⁸⁷ show that he was not only trained by Schmiedeberg but also carried out research with him.

Meyer's habilitation in 1881 is of importance in connection with academic achievements. Before applying for the chair, von Bunge received a double doctorate and qualified as an associate professor in 1885 and a year later as a full professor in physiology. Looking back at previous professors, Schmiedeberg and Boehm, you can see that Schmiedeberg had not yet completed his habilitation when he took over the chair from Buchheim. Schmiedeberg held the position of professor in Dorpat during 1867–1872. Rudolf Boehm completed his habilitation in 1871 before taking over the chair in 1872. Schmiedeberg, Boehm, and Meyer did habilitation in pharmacology, while von Bunge had it in physiology.

Conclusion

Hans Horst Meyer (1853–1939) is one of the most important pharmacologists in history, who was instrumental in establishing the discipline of pharmacology. He is well known in Austria and Germany, and universities identify with his person and achievements. Current historical work on him focuses on when he was a full-time professor in the advanced stages of his career in research and teaching. This thesis focuses on Meyer's first position as a professor of pharmacology, dietetics, and history of medicine at the University of Dorpat in Estonia. With this position, he created the basis for his further career path. His competitor at the time for the chair was Gustav von Bunge (1844–1920). Von Bunge also began his academic career in Dorpat but had solid academic ties to the University of Basel in Switzerland.

⁸⁷ Von Bunge, Schmiedeberg, "Die Bildung der Hippursäure im Tierkörper", 233.

The committee of the University of Dorpat decided to hire one of the two professors under the specific political circumstances of Russification and the assassination of the Russian Tsar Alexander II (1818-1881). Nevertheless, biographical analysis reveals that both scientists were active in the field of pharmacology during their studies and shortly after that. Both studied under Oswald Schmiedeberg (1838–1921), the founder of experimental pharmacology. While Meyer focused exclusively on pharmacology, von Bunge also focused on physiological chemistry and biology research. Meyer successfully competed with von Bunge through his exclusive pharmacological orientation. His habilitation in pharmacology has also influenced the decision. At the time, von Bunge had not yet completed his habilitation.

Sāncensība starp Hansu Horstu Meijeru un Gustavu fon Bungi par Farmakoloģijas katedras vadītāja vietu Dorpatas Universitātē 1882. gadā

Kopsavilkums

Hanss Horsts Meijers (1853–1939) ir viens no ievērojamākajiem farmakologiem, kuram bija liela nozīme farmakoloģijas disciplīnas izveidē. Viņš bija labi pazīstams Austrijas un īpaši Vācijas akadēmiskajā vidē. Rakstā pēfīts Meijera karjeras sākums, kad viņš bija pilnas slodzes profesors Dorpatas Universitātē, kur vadīja Farmakoloģijas, dietoloģijas un medicīnas vēstures katedru. Šis amats bija Meijera turpmākās karjeras pamatā. Viņa konkurents uz katedras vadītāja vietu bija Gustavs fon Bunge (1844–1920), kurš akadēmisko karjeru bija sācis Dorpatas Universitātē, bet kuram vēsturiski savukārt bija ciešas saites ar Bāzeles Universitāti Šveicē. Biogrāfiskā analīze atklāj, ka abi zinātnieki studiju laikā un neilgi pēc tam aktīvi darbojās farmakoloģijas nozarē. Abi arī bija mācījušies pie eksperimentālās farmakoloģijas pamatlicēja Osvalda Šmīdeberga (1838–1921).

Rakstā ir analizēti šādi jautājumi: kāpēc Meijers tika ievēlēts; kādi argumenti bija par labu Meijeram un kādi – pret viņu; kādi argumenti bija pret fon Bungi; kādi vēsturiskie notikumi ietekmēja Tērbatas Universitātes dzīvi; kādu politisko un ideoloģisko strāvojumu apstākļos tika pieņemts lēmums par jaunā profesora ievēlšanu. Lai izvērtētu abu zinātnieku tā laika akadēmisko reputāciju, no mūsdienu skatpunkta tika analizētas abu

zinātnieku publikācijas. Rezultāti liecina, ka Meijers zinātnisko izpēti koncentrēja tikai uz farmakoloģiju, savukārt fon Bunges pētījumi iekļāva arī fizioloģisko ķīmiju un bioloģiju. Meijers konkurencē ar fon Bungi uzvarēja ar izteikto specializāciju farmakoloģijā, un lēmumu nenoliedzami ietekmēja arī viņa doktora grāds farmakoloģijā. Savukārt fon Bunge tobrīd vēl nebija pabeidzis doktora grāda iegūšanas procesu.

Atslēgvārdi: Hanss Horsts Meijers, Gustavs fon Bunge, Osvalds Šmīdebergs, farmakoloģija, Dorpatas Universitāte.

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