

Robert Heinrich Johannes Sobotta (1869-1945): The Great Author of the Most Widely Used Anatomy Atlas in Medical Education

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ABSTRACT

In 1904 Sobotta's Atlas of Descriptive Human Anatomy was published for the first time. At that time still divided into three volumes and published by Verlag Lehmann in Munich, the atlas was completely revised in 1982 and restructured into two volumes. Although the atlas has been revised several times since it was first published almost a hundred years ago. After starting out in Berlin, Sobotta worked for twenty-one years at the Anatomical Institute in Würzburg. Here he spent most of his scientific work and created his most important works. A brief three-year stint as director of the Anatomical Institute at the University of Königsberg followed before Sobotta became director of the Anatomical Institute in Bonn in 1919, where he taught until his retirement. The study paper is intended to provide a more detailed insight into the life and work of the scientist, whose name is known to almost every physician and healthcare professional.

Keywords: Robert Heinrich Johannes Sobotta, medical education, anatomy, atlas, Sobotta

The Professional life of Robert Heinrich Johannes Sobotta

Robert Heinrich Johannes Sobotta (Figure 1) was born in Berlin on January 31, 1869. His father, Carl August Rudolph Sobotta, and mother, Luise Ottilie Seydel, were from a farming family in Upper Silesia.

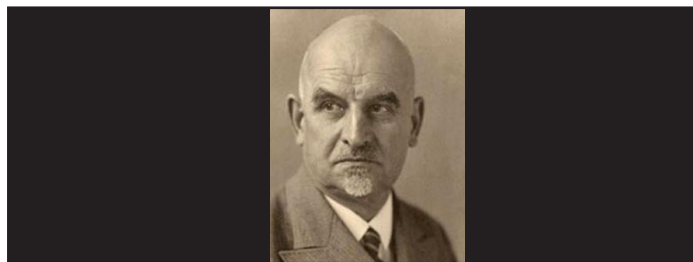


Figure 1. Robert Heinrich Johannes Sobotta (1869-1945), available on https://en.wikipedia.org/wiki/Johannes_Sobotta#/media/File:Johannes_Sobotta.jpg.

From April 1875 to October 1887, Johannes Sobotta attended Berlin's Königliche Wilhelms-Gymnasium. He began his medical studies at the "Royal Medical-Surgical Academy for the Military" after finishing high school. During the summer semester of 1888, he also served in the "Company Kaiser Alexander Garde Grenadier Regiment No. 1" as part of his six-month compulsory military service. Sobotta attended lectures at the Royal Friedrich Wilhelm University in Berlin while at the Academy and passed the preliminary medical examination there on July 13, 1889. Sobotta passed the rigorosum examination on July 17, 1891, and was awarded his doctorate on July 25, 1891 as Doctor medicinae et chirurgica. He left the Medical and Surgical Academy in the autumn of 1891 to work as a trainee assistant at the Friedrich Wilhelm University's First Anatomical Institute in Berlin [1]. He was promoted to third assistant in October 1892 after passing the state medical examination, and

second assistant in October 1893 after passing the state medical examination.

He worked as an assistant at the First Anatomical Institute of Friedrich Wilhelm University in Berlin for one winter semester as a dissection technician for the lectures, one winter semester as a demonstrator in the dissection room, and two summer semesters as a demonstrator in the microscopy course. He also spent two semesters at the Institute of Pathology studying pathological anatomy and histology. Sobotta left the medical and surgical academy in the autumn of 1891 and entered the medical school on January 1st, even before passing the state examination. Following that, he joined the First Anatomical Institute, which was led by Wilhelm von Waldeyer [2]. During his time as a volunteer assistant, he took over the management of a dissecting room on his own. Sobotta had already been offered a position as a histological assistant at the Physiological Institute in Breslau, which he had turned down due to “external reasons” during his studies. Sobotta spent the last months of his work in Berlin conducting research at the Naples Zoological Station [3]. In October 1895, Sobotta followed Koelliker’s call as a prosector at the Institute for Comparative Anatomy, Embryology and Histology at the Julius Maximilian University of Würzburg [4-7]. There he was appointed private lecturer on July 29, 1896. Sobotta wrote his habilitation thesis “On the formation of the corpus luteum in the mouse”, afterwards for the act of habilitation [8], Sobotta had a booklet printed with the following theses:

1. Histological courses, given exclusively on the basis of ready-made preparations, fail in their purpose as practical exercises and are scarcely more valuable than a simple demonstration. The preparation of the microscopic preparations should therefore also be carried out by the students themselves, just like the macroscopic ones.
2. A real understanding of the structure of the human body is impossible without knowledge of its development. It is therefore imperative that embryology be introduced as a necessary subject of study.
3. The fertilized egg of mammals - and probably that of man as well - is conveyed through most of the fallopian tube into the uterus, not by fibrillation, but by peristalsis [5].
4. When assessing the first developmental processes, especially the gastrulation process in mammals, one must start from the development of reptiles.
5. The primordial mouth of all vertebrates is characterized

not only by the formation of entoderm, but also by the almost simultaneously occurring mesoderm (peristomal mesoderm).

6. The vertebrate embryo does not arise from the concrescence of two halves that are preformed at the edge of the germinal membrane or the primordial lips.”

In November 1899 he succeeded Heidenhain as prosector at the Anatomical Institute in Würzburg. After Sobotta had been nominated for the rank and title of associate professor for the first time in January 1901, he was finally appointed associate professor on April 26, 1903. Two years later, Sobotta declined the appointment as associate professor and first prosector of the University of Greifswald. In January 1909, Sobotta was appointed assistant with the status of a civil servant, which was followed on March 1, 1912 by appointment as a regular extraordinary professor [5,6].

Sobotta spent the majority of his academic career in Würzburg, where he wrote his most important works and created the first editions of his textbooks and atlases on histology and anatomy (Figure 2). In October 1916, the family left Würzburg, and Sobotta was appointed full professor and director of the Anatomical Institute at Albertus University in Königsberg [4]. Three years later, Sobotta was offered a position at the Rheinische Friedrich-Wilhelms University in Bonn, where he succeeded Bonnet in April 1919 as full professor and director of the Anatomical Institute. In the post-war period, Sobotta also had to struggle with money and staff shortages, but in the years that followed achieved a steady improvement in the teaching conditions for its students. His work as a researcher now receded into the background. He devoted most of his time in Bonn to educating his students, but he also continued to work on completing and improving his textbooks and atlases.

Sobotta retired in March 1935, but continued to give lectures and made a significant contribution to the continued operation of the university during the Second World War [4]. He published a large number of scientific works during his professional career. He studied the primitive development of mammals extensively, primarily on mice. Sobotta’s research focused on egg fertilization and cleavage, as well as gastrulation, directional spindles, and the formation of directional bodies. He also looked at the egg’s migration into the uterus, the egg’s development after cleavage, the development of the embryonic organs, and the location of the spermatozoa that had entered the uterus. His work on the corpus luteum was more extensive. He also dealt with the

development of double malformations and other histological topics such as the connection between muscle and tendon. He also wrote two papers in the field of paleontology. He discussed microphotographic techniques and reported on his workplaces

with the Zoological Station in Naples and the Anatomical Institute in Bonn [2]. He dedicated commemorative publications to teachers and some of his colleagues.

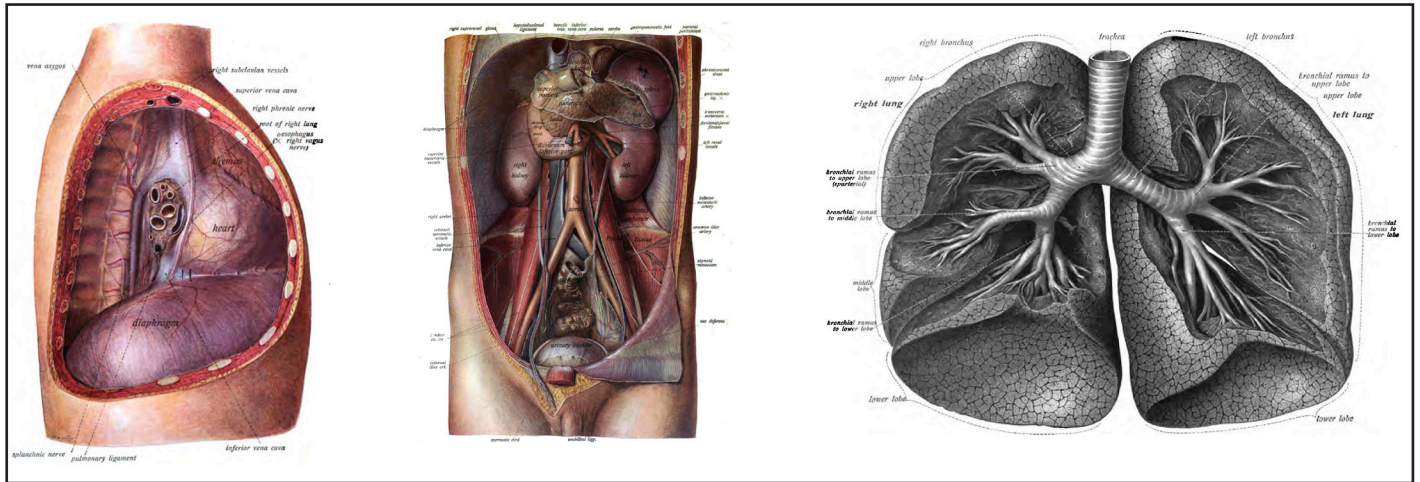


Figure 2. The remarkable illustrations of first ‘Sobotta atlas’ textbooks and atlases on anatomy. Sobotta, J. (1906). *Atlas and textbook of human anatomy v. 1, 1906* (Vol. 1). WB Saunders company.

The Private Life of Sobotta

Sobotta married Maria Katharina Förtig in Würzburg on March 5, 1900. Rudolf and Walter, their two sons, were born in Würzburg on November 22, 1900 and November 24, 1903 [4]. Both sons from the first marriage remained childless. His wife Katharina, also known as Käte, died in Whit on Monday, 5 June 1922, at the age of only 42 [9,10].

About two years later Sobotta found his second partner, Jeanne (also called Hanne) in Bliemeister. Jeanne was born on March 23, 1903 in Breisbach, Baden, and belonged to the Protestant denomination [9]. She studied medicine but did not complete her education. The couple married in Wiesbaden on 12 August 1924, and Jeanne moved in with her husband at his home in Venusberg on 10 October 1924 [11,12].

In September 1927, Sobotta had to cope with another serious blow of fate. His youngest son, Walter, died in a car accident on September 14, 1927, at the age of 24. The news in Bonner General-Anzeiger said: “A car crashed into a tree on the Niederpleis-Handelar road last night. Walter, the youngest son of a professor from Bonn, died immediately, while a lady from Linz was seriously injured but her life was not in danger” [13]. And, his oldest son, Rudolf, died in Bonn on 6 July 1971, at the age of 71 [10].

Professor Johannes Sobotta became seriously ill in the last weeks of the Second World War and died of carcinoma in Bonn on 20 April 1945, at the age of 76. His body was buried in an old cemetery in Bonn-Poppelsdorf. His second wife, Jeanne, died in Bonn on February 18, 1982 [14].

On his birthday a year before his death, he received the Goethe Medal of Art and Science for his services to anatomy. Since November 2000, the Sobottaweg, next to the building of the University of Bonn Anatomical Institute in Poppelsdorf, commemorates him [4,5].

Sobotta Atlas of Anatomy

Sobotta’s three-volume Atlas of Anatomy, a standard medical work, often called the “Atlas of Anatomy” for short, has existed as a realistic and explanatory atlas since the beginning of the 20th century. The first edition was published in three parts by JF Lehmanns Verlag in Würzburg between 1904 and 1907, the next eleven editions continued to be published in three parts until 1944. After the Second World War, the publishing house Urban & Schwarzenberg acquired the rights to the anatomy atlas. Sobotta collaborated with artist such as Karl Hajek and Erich Lepier for the atlas. Sobotta continued to develop his work until the end of his life in 1945. After his death, in 1956 Hellmut Becher, an anatomist in Münster, took over the further development of the

anatomy atlas. Published 14th to 17th editions. The 18th edition of the Atlas was completely revised in 1982 and was divided into two volumes by the editors Helmut Ferner, an anatomist in Heidelberg and Vienna, and Jochen Staubesand, an anatomist at Freiburg im Breisgau. In 1993, Reinhard Putz, an anatomist at Ludwig Maximilians University in Munich, and Reinhard Pabst, an anatomist from the Hanover Medical School, took over the publication and further development of the atlas. The revised 23rd edition of the Sobotta Atlas of Anatomy, again structured in three volumes, was published in September 2010 by Friedrich Paulsen of the Institute of Anatomy of the University of Erlangen-Nuremberg and Jens Waschke, head of University Anatomy I-vegetative anatomy. From Munich, which in 2003 bought the publishing house Urban & Schwarzenberg from the Holtzbrinck Group, which merged with Urban & Fischer, currently located in the Dutch Wissenschaftsverlag Elsevier. In 2017, the same authors published the 24th edition, revised by Elsevier [2,7].

CONCLUSION

The Sobotta Atlas of Human Anatomy, authored by Johann Sobotta, was first published in 1904 and remains a foundational resource in the field of anatomy. This seminal work has been translated into 19 languages and continues to be a pivotal reference for medical practitioners globally. Throughout the Second World War, Sobotta's scholarly contributions, including his research, theses, and anatomical atlases, significantly advanced the scientific community's understanding of human anatomy. A comprehensive exploration of Sobotta's life underscores his unwavering dedication to science, particularly in the realm of anatomy. The scientific community, alongside physicians and healthcare professionals, profoundly acknowledges and appreciates Sobotta's invaluable contributions.

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