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## **Heinrich Obersteiner (1847-1922) and the Foundation of Neuroscience at 19th C. Vienna**

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## Introduction:

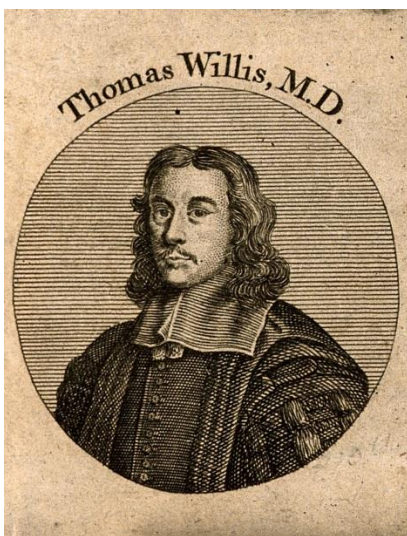
The history of Neuroscience has to be seen in the wider context of social, economic and cultural contexts. Concepts of health and sickness depend on cultural settings, on existing and practicable knowledge, which again depends for example on available technologies, on social aspects and last but not least on economic and financial frameworks.

The development of medical knowledge and therapies is also depending on the specific surrounding, in which research and medical treatments take place. It is therefore important, to pay attention to the specific settings of the region, the economic, social and cultural setting, as well as the availability of specific and necessary technology.

## Philosophy, Theology and Health Care

Philosophy and theology played a major role in the question of the relation of body, mind and soul. The search for the function and localisation of the soul and the role of the mind were always important questions that were discussed in philosophy, theology and of course also in medicine. This supported, but also inhibited the production, exchange and passing on of knowledge.

In the 18<sup>th</sup> Century the ideas of enlightenment permeated all fields of arts and science and had a strong impact on medicine. The question of the relations between body, mind and soul was a very ardent one and challenged philosophical as well as theological paradigms. In the case of Thomas Willis (1621 – 1675), who is well known for the description of the venous circle, theological demands to solve the question of the location of the soul were the impulse to investigate the anatomy and the function of the nervous system. The example of Julien Offray de La Mettrie (1709 – 1751) shows the attempt to solve the more or less same question based on the philosophy of materialism. <sup>1</sup>



Thomas Willis. Line engraving by W. Read after D. Loggan.  
(<http://catalogue.wellcomelibrary.org/record=b1173555>)

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<sup>1</sup> See Ann Thomson, Bodies of Thought. Science, Religion, and the Soul in Early Enlightenment. (2008)



Julien Offray de La Mettrie, Painting by Georg Friedrich Schmidt (ca. 1750), Portraitsammlung des Münchener Stadtmuseums, Inventranummer: GM 43/54

In the Habsburg inherited countries medical practice and research were strongly connected to the implementation of health care measures according to the political and economic ideas of the 18th C., known as enlightened absolutism. Neither philosophical nor theological arguments can be found in the usual textbooks or other publications. Prefaces or dedications of medical texts very often refer to the concerns of the mother of the country (Maria Theresia), the wise prudence of the first servant of the state (Joseph II) or simply to the wellbeing of the public.



Maria Theresia von Österreich and Franz Stephan von Lothringen with their children. Painting by Martin van Meytens (ca. 1754; Schönbrunn Castle).



Portrait of Joseph II ca. 1776, Painting by Joseph Hickel (public domain because of age)

Based on economic theories, the prosperity of the state was defined by a high number of healthy, productive and consuming inhabitants. Developing health care structures that would provide access to medical treatment for as many citizens as possible and various administrative measures in order to build up these structures and prevent the outbreak of epidemics was a main concern of Habsburg governance. Therefore it was necessary to find inexpensive ways of medical treatment, for example electrotherapy.

Medical research was strongly driven by the quest for practicability of new knowledge and the demands of health care policies.

## Some cultural background

Opening corpses was broadly accepted in the Habsburg countries, however depending on regional practices and acceptance. At Vienna anatomical dissections had a strong tradition going back to the early 15<sup>th</sup> C.<sup>2</sup>, but also opening corpses for forensic reasons and to investigate pathological alterations of organs and tissues were accepted and performed. This approach to post mortems, but also the understanding that certain pathological findings would result from diseases and could be studied in the dead body, was one of the characteristics of medicine at Vienna, more or less since the foundation of the medical

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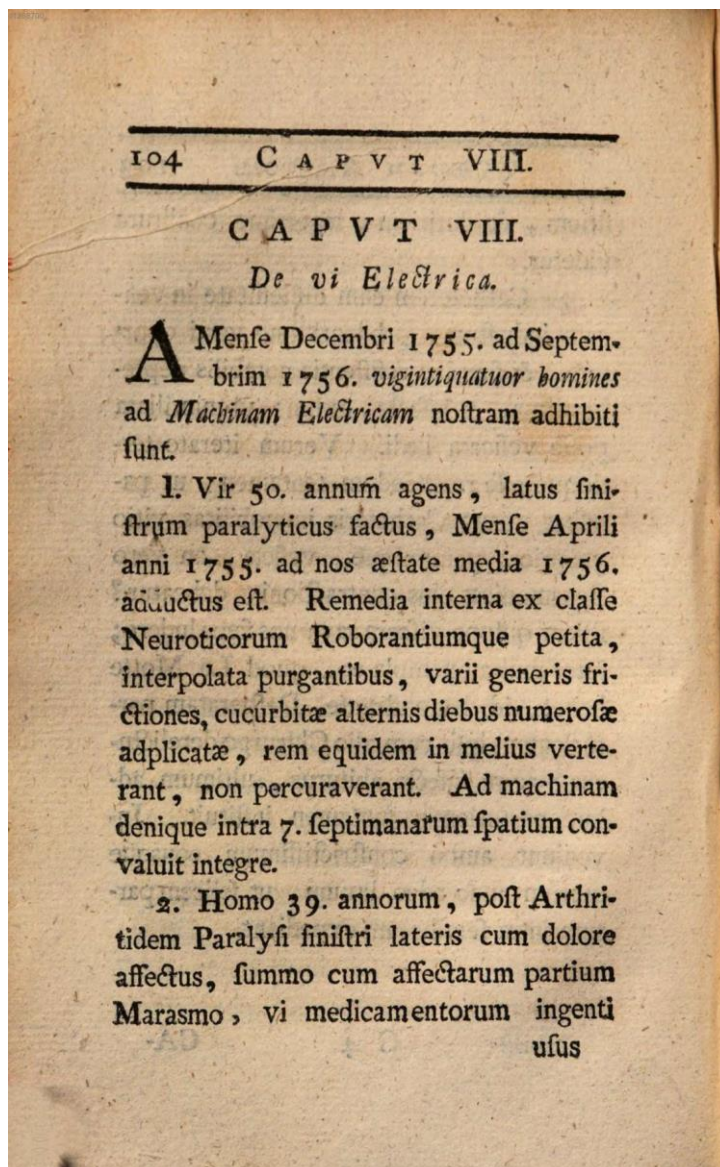
<sup>2</sup> Sonia Horn, Von scharfen Messern und kalten Fingern. Dekonstruktion und Rekonstruktion in der Medizingeschichte am Beispiel der Anatomie in Wien im 15. Jahrhundert. In: Wiener Geschichtsblätter (4/2002) 304 – 320. (<http://www.sonia-horn.eu/wp-content/uploads/2014/03/Dekonstruktion-und-Rekonstruktion-in-der-Medizingeschichte.pdf>)



faculty in 1365. Therefore, based on this long tradition, post mortems were a part of the case history of a patient in the 18<sup>th</sup> C., especially at hospitals where mainly poor citizens were treated. Also pharmacological experiments usually ended up in pathological descriptions of alterations that were found in post mortem dissections. This might explain why medicine and especially Neurosciences were strongly orientated towards morphology.

## Electrotherapy and Neurology

Electricity as a cheap method of medical treatment was very much in use especially for paralysis at Vienna hospitals since mid 18<sup>th</sup> C., already before the famous "General Hospital" was opened in 1784. The yearly reports of the clinic, where students were trained started in 1756 and indicate the therapeutic use of electricity for medical treatment.



Several publications however show quite critical approaches concerning the way electricity was used and suggested improvements of such treatments. It is quite reasonable that this caused efforts to improve the therapeutic use of electricity, understand the function of nerves and deepen existing knowledge of the anatomy and physiology of the nervous system.

During the late 18<sup>th</sup> and early 19<sup>th</sup> C. chairs for electrotherapy were established at Vienna and other universities of the Habsburg countries. These were the institutions at which neurological research became important – at the laboratories, in the dissection rooms and at the clinics.



George Adams demonstrates his electrotherapy machine to a woman and her daughter. Line engraving by J. Lodge, 1799, after T. Milne. <http://catalogue.wellcomelibrary.org/record=b1175778>

At that time it had been typical for clinical medicine at Vienna that dissections were regarded as the end of any treatment of patients already for quite some time, in order to find out about pathologies, but also about the usefulness of therapies. Therefore clinical medicine, pathology and laboratory research, including animal experiments, were closely linked together and supported each other.

## Spaces and Locations

Treatment of patients with neurological diseases was often provided at psychiatric clinics as well as at departments of internal medicine. Of course the round building of the hospital for psychiatric patients the so called “Narrenturm” is usually well known, but often seen as a place of cruel treatment of patients. Understanding this institution as a building that should give patients a specific place because of its architecture is not common. Further several treatments, especially with cold water, are seen as quite harsh treatments, but were used according to the way of thinking of these days, the existing knowledge and the prevalent theories. However, also music therapy was regarded as a relevant cure.

Further it is hardly known, that there were several other locations, where patients were treated, apart from “Narrenturm” and the clinical departments of the famous General Hospital.



Joseph Schaffer, Peter Schaffer, Allgemeines Krankenhaus mit Narrenturm. Ansicht von Norden mit Staffage. Nach der Natur gezeichnet und gestochen von Josef und Peter Schaffer. Foto nach Stich. 1781. ÖNB Bildarchiv und Grafiksammlung (POR), BDA 1.226 – C <http://data.onb.ac.at/rec/baa10307039>

## Philantropists and Sponsors

In the mid-19th C. it became fashionable for entrepreneurs to follow the example of the nobility by supporting charitable institutions that provided free treatment for poor patients. Usually such activities were rewarded by patents of nobility, which again supported social acceptance and social mobility also for Jewish families. Well known examples are two hospitals for patients with neurological conditions, that were founded by the Rothschild family – the hospital at Rosenhügel, which is still in existence, and the so called “Maria Theresienschlössl”. Both were intended to treat mainly poor patients.





Neurological Hospital Rosenhügel (<https://kliniksuche.at/klinik/916>)



Hofzeile 20 - Maria-Theresien-Schlössel (Gartenseite), 1903  
 ([https://www.geschichtewiki.wien.gv.at/Maria-Theresien-Schl%C3%B6ssel\\_\(19,\\_Hofzeile\)](https://www.geschichtewiki.wien.gv.at/Maria-Theresien-Schl%C3%B6ssel_(19,_Hofzeile)))

In 1872 a group of young doctors founded the “Poliklinik” at Vienna an outpatient clinic especially for poor patients, also this institution was financially supported by entrepreneurs and wealthy families.





Wolfgang Glock, Wolfgang Glock - Eigenes Werk, CC BY 3.0,  
<https://commons.wikimedia.org/w/index.php?curid=4173972>

Such institutions were also places of research because of the high number of patients. Often these were centres of investigations in medical fields that were not (yet) established at universities e.g. Neurology and Neurosciences. Sponsors would also support professorships in new fields. Heinrich Obersteiner's work has to be understood in this context.

## Biography



Portrait of Heinrich Obersteiner. Witout date. Archives of the University of Vienna AT-UAW/135.695

Heinrich Obersteiner was born into an Austrian-Jewish family of doctors on 13.11.1847. His father was the director of the sanatorium “Oberdöbling” for wealthy patients, who suffered from neurological and psychiatric conditions. This institution had been founded by the chief-physician at the psychiatric department of the Vienna General Hospital Dr. Bruno Görge (1777-1842) in 1819 and moved to “Döbling”, which is now the 19<sup>th</sup> district of Vienna in 1829. Several prominent patients were treated at this sanatorium, the “*Heilanstalt für Gemüths- und Nervenkrankte Oberdöbling*” according to concepts, that gave patients a surrounding that would be similar to the situation they were used to live in.<sup>3</sup>



Unknown author: Die Privatheilanstalt zu Ober-Döbling Wien, XIX. Bezirk, Hirschengasse 71“, Leipzig und Wien 1891. See also: [https://www.wienerzeitung.at/nachrichten/wissen/geschichte/419091\\_Unermuedete-Thaetigkeit.html?em\\_cnt\\_page=1](https://www.wienerzeitung.at/nachrichten/wissen/geschichte/419091_Unermuedete-Thaetigkeit.html?em_cnt_page=1)

Between 1842 and 1860 Görge’s son, Dr. Gustav Görge was director of this clinic, but resigned after the suicide of the famous Hungarian engineer and nationalist István Széchenyi (1791-1860). Max Leidesdorf (1818-1889) took over this position together with Heinrich Obersteiner sen. (1820–1891), the father of Heinrich Obersteiner jun.

As it was the concept of the clinic, the director lived in the sanatorium too, which means that Heinrich Obersteiner jun. could gain experience in the field of Neurology and Psychiatry quite early in his life. He was married to Helene, the daughter of Maximilian Leidesdorf and became director of the institution in 1872, only two years after his promotion as doctor of medicine.

Heinrich Obersteiner had attended the traditional Benedictine gymnasium “Unsere liebe Frau zu den Schotten” and started his studies in medicine in 1865 at Vienna. In 1870 he was promoted as doctor of Medicine and one year later as doctor of Surgery. Already as a student he had started to work with the team of the laboratory of Neurohistology that was headed by the physiologist Ernst Wilhelm von Brücke (1819–1892). In 1867 he published his first paper.<sup>4</sup> He achieved the habilitation in the field of “Physiology and Pathology of the Brain” in 1873 and with this he was allowed to teach students of medicine. In his application

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<sup>3</sup> Anna Lehninger, Mapping the Sanatorium. Heinrich Obersteiner and the ART of Psychiatric Patients in Öberdöbling around 1900. In: Gemma Blackshaw, Sabine Wieber (eds.) *Journeys into Madness: mapping Mental Illness in the Austro-Hungarian Empire*. (2012) 162-181

<sup>4</sup> Heinrich Obersteiner. Über Entwicklung und Wachstum der Sehne. *Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften – Mathematisch Naturwissenschaftliche Klasse* (Wien), 56:162–171, 1867

for the habilitation he had to add a concept of the course he would be going to teach and mentioned that he would carry out dissections as well as vivisections of animals together with his students<sup>5</sup> In 1882 he was allowed to establish a research institute for “Anatomy and Physiology of the Central Nervous System” at the University of Vienna on his own costs. The name of this institution was changed to “Institute of Neurology” in 1890. In 1888 Obersteiner published his highly estimated book “*Anleitung beim Studium des Baues der nervösen Centralorgane im gesunden und kranken Zustande*” that was translated to English, Russian, Italian and French, but was also published in four German editions. It received a very diligent and favourable review written by Sigmund Freud in the journal “Wiener medizinische Wochenschrift”<sup>6</sup>

Obersteiner was appointed as full professor of “*Physiology and Pathology of the Central Nervous System*” at his institute in 1898, was honoured with the title of “Hofrat” in 1906 and retired in 1919. Heinrich Obersteiner held an honorary degree from the University of Oxford and was member of several highly recognised institutions like the Leopoldina and other academies of science. Since 1897 he was associate member of the American Neurological Association.

## The research institute

The aim of this institution was to produce knowledge about the structure and function of the central nervous system. The intense collaboration between the institute and the clinic of Neurology, as well as of other institutes like those of Anatomy, Histology, Physiology, Pathology and several others was characteristic since the foundation.



Heinrich Obersteiner at his laboratory. Without date. Archives of the University of Vienna 106.I.2142

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<sup>5</sup> Archives of the University of Vienna (UAW), Habilitationsakt Heinrich Obersteiner

<sup>6</sup> Paul D. Hatzigiannakoglou and Lazaros C. Triarhou, A review of Heinrich Obersteiner's 1888 textbook on the central nervous system by the neurologist Sigmund Freud. In: Wiener Medizinische Wochenschrift 161/11–12: 315–325 (2011)

Since 1882 Obersteiner published annual proceedings "*Arbeiten aus dem Institut für Anatomie und Physiologie des Centralnervensystems an der Wiener Universität*". About the results of research that was carried out at his institute or by researchers from other countries, who were somehow connected with this institution, usually because they had passed some time carrying out investigations here. Later the series changed its name to "*Arbeiten aus dem Institut für Neurologie*". With this Heinrich Obersteiner and his institute gained international reputation. Students from various countries came to Vienna in order to work and study with Obersteiner and his team. Remarkably also Japanese students and young doctors got involved in these research activities and eventually transferred knowledge and the methodological approaches to Japan.<sup>7</sup>

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<sup>7</sup> Bernhard Leitner, Psychiatrie und Neurologie zwischen Wien und Tokyo. Zur Rolle eines transnationalen Netzwerkes in der Entwicklung der akademischen Medizin in Japan circa 1900 (Psychiatry and neurology between Vienna and Tokyo. On the role of a transnational network in the development of academic medicine in Japan circa 1900) In: Daniela Angetter, Birgit Nemec, Herbert Posch, Christiane Druml, Paul Weindling (eds.) Strukturen und Netzwerke: Medizin und Wissenschaft in Wien 1848–1955. 533-554