

German and Austrian Neurology (and some Psychiatry) in the 1800s - A Cautionary Tale

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This History of Neurology article is about German and Austrian neurology in the 1800s and into the 1900s. I will discuss both famous and infamous neurologists, neuroscientists, and psychiatrists from that period. This history really serves as a cautionary tale, showing that events that happened in Germany can happen anywhere.¹

Before we focus on neurology (and psychiatry), we should mention Professor Rudolf Virchow, who many consider to be the father of modern medicine due to his pioneering work in the 1800s (Figure 1). Virchow conceived of the concept of the cell and cellular pathology as the basis for medical disease. He was a giant in the field of medicine, and he laid the foundation for medical thought and discoveries in all medical fields. He also became an expert in anthropology and published numerous anthropology articles in the second half of his career. Throughout his medical career, he was a progressive thinker and was an elected official to the Prussian House of Representatives. He authored more than 2000 scientific writings. He founded the journal that ultimately became known as Virchow's Archive, and he also started an ethnology journal through the German Anthropological Association. He was a progressive thinker and advocated for social and political reform.

The father of German neurology—and in many ways Western neurology—is Moritz Romberg (Figure 2) (*The Founders of Neurology*, p. 506-509; *Fragments of Neurological History*, p. 373-374).^{2,3} Romberg was born in Germany and spent his medical school years and his entire career in Berlin. Interestingly, he also did some postgraduate work in Vienna. He is best known for two main contributions.

Figure 1

Rudolf Virchow (1821-1902)

- B: Schivelbein, Pomerania (Prussia) (now Świdwin, Poland)
- Practiced medicine and conducted pathology research at Berlin's Charité Hospital
- Served as Professor of Pathological Anatomy at the University of Berlin and Director of the Charité's Institute of Pathology
- Founder of the cell theory of pathology
- First to describe and name leukemia, chordoma, embolism, thrombosis, neuroglia, agenesis, parenchyma, osteoid, amyloid degeneration, and spina bifida
- Developed the first systematic method of autopsy

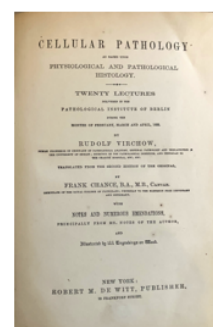


Figure 2

German Neurology Early 1800's

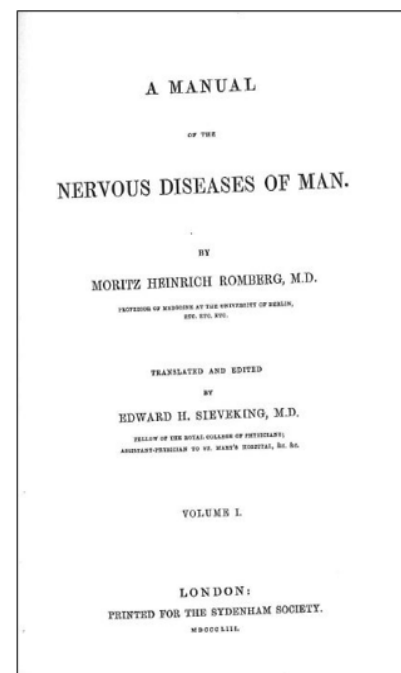
Moritz Heinrich Romberg (1795-1873)

- Founder of German Neurology
- B: Meiningen, Germany
- Medical School – Berlin
- Post-grad – Vienna
- Career – Berlin
- *Lehrbuch der Nervenkrankheiten des Menschen* (1846)
- *A Manual of the Nervous Diseases of Man*
 - 3 Volumes: 1840 – 1846 in German; 1853 in English
- 1st Neurology Textbook
 - In book, discussed tabes dorsalis. Described pathognomic sign: Loss of balance when standing patient closes eyes.
 - Now known as “Romberg Sign” due to sensory tract, pathology in spinal cord



Figure 3

Moritz Heinrich Romberg 1st Neurology Textbook



The first is the writing of what I consider the first true neurology textbook, *A Manual of Nervous Diseases* (Figure 3 & 4). It was published in Germany in three volumes in the 1840s and later published in English in London in 1853.⁴ It is a wonderful book and remains readable to this day.

In that book, Romberg also described the second contribution for which he is famous: what we now call the Romberg sign. In his textbook, he described that in patients with tabes dorsalis, one of the signs was loss of balance when

standing with the eyes closed.⁵ We now understand this as the Romberg sign, indicating sensory tract pathology in the spinal cord or peripheral nerves. Romberg had a huge impact on the field, and all subsequent Western neurologists acknowledge him as the true first neurologist and founder of the field.

There were many other famous German and Austrian neurologists immediately after Romberg. One was Nikolaus Friedreich, who spent his career in Heidelberg, Germany

Figure 4

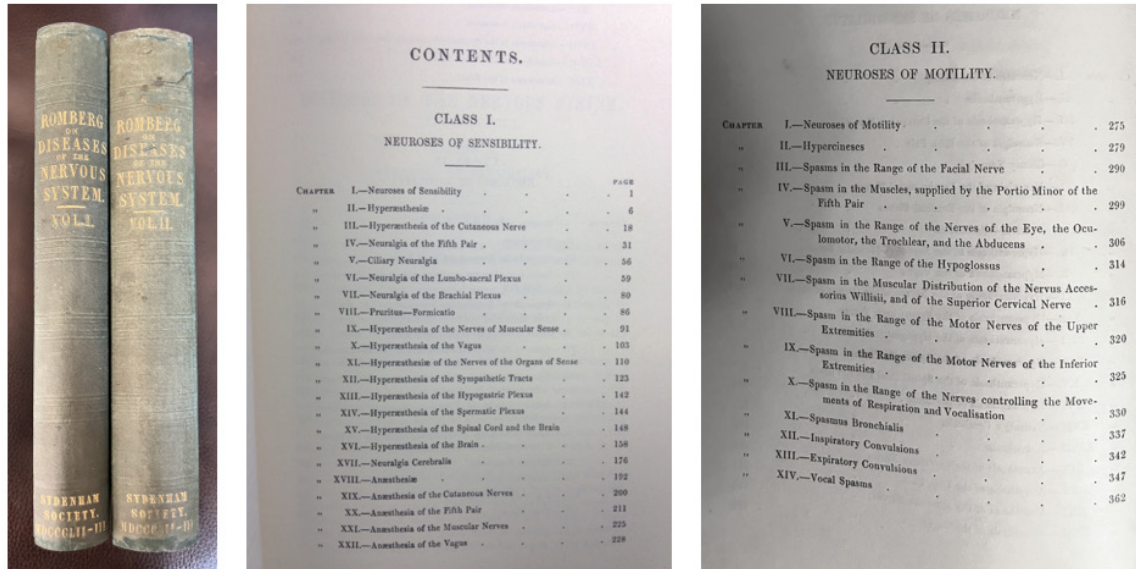


Figure 5

German/Austrian Neurology Mid-1800's

Nikolaus Friedreich (1825-1882)

- B: Würzburg, Germany
- Career in Heidelberg
- Erb's Mentor
- Ataxia, Muscular dystrophy

Theodor Meynert (1833-1892)

- B: Dresden, Germany but trained/worked in Austria
- Career at Univ. of Vienna, General Hospital
- Chair of Psychiatry
- Neuropathologist
- Believed mental illness was a cortical dysfunction
- Founder of cerebral cortex cytoarchitectonics & organization
- Famous Students:
 - Sigmund Freud (Austrian); Carl Wernicke (German); Sergei Korsakoff (Russian);
 - Auguste-Henri Forel (Russian); Paul Flechsig (German); Julius Wagner-Jauregg (German)



(*The Founders of Neurology*, p. 439-441).² He described ataxia and muscular dystrophies, which we now recognize as Friedreich's ataxia.^{6,7} Another was Theodor Meynert, who was born in Dresden but spent his entire career in Austria at the University of Vienna (*The Founders of Neurology*, p. 57-62).² He was chair of psychiatry and a neuropathologist who believed mental illness had an organic, cortical basis. He founded the field of cerebral cortex cytoarchitectonics and organization.⁸

Meynert had many famous students, including Sigmund Freud, whom we will discuss shortly. Other students included Sergei Korsakoff from Russia, Honoré Parrell, and Julius Wagner-Jauregg, who will be discussed later as one of the more infamous figures.

Other neurologists who made major contributions during this time include Carl Wernicke, who was born in Poland but trained and spent his career in Berlin (*The Founders of Neurology*, p. 531-535; *Fragments of Neurological History*, p. 81-83).^{2,3} He described the sensory form of aphasia resulting from temporal lobe lesions.⁹ He also described the alcoholic complications to the central nervous system consisting of nystagmus, ataxia, ophthalmoplegia, and disturbances of consciousness.¹⁰ He described the pathology of this disorder as an acute hemorrhagic superior polioencephalitis and we still refer to the clinical presentation as Wernicke's syndrome. Eduard Hitzig was prominent in the field of cortical localization and was the first to stimulate the motor cortex and demonstrate movement on the opposite side of the body (*The Founders of Neurology*, p. 229-233).^{2,11} Alois Alzheimer, born in Munich, devoted his career to the study of dementia and wrote his famous monograph in 1907,

describing presenile dementia with plaques and tangles (*The Founders of Neurology*, p. 315-319; *Fragments of Neurological History*, p. 103-107).^{2,3,12}

It is impossible to discuss neurology and psychiatry in Germany and Austria without mentioning Sigmund Freud (*Fragments of Neurological History*, p. 615-621).³ Freud was born in what is now the Czech Republic, but his family moved to Vienna early in his life, and he was educated there. Early in his career, Freud was very much a neuroscientist. He conducted research on the nervous system of the eel and developed new staining techniques, which he published in the journal *Brain*.¹³ He also spent time studying under Charcot in Paris, an experience that had a lasting influence on him (*History of Neurology: French Neurology in the 19th Century – Charcot, his Legacy, and Other Notable Physicians*).

Freud later founded psychoanalysis and developed the concepts of the unconscious, the ego, and the superego. His most famous book, *The Interpretation of Dreams*, was published in 1900.¹⁴ However, before this work, he wrote important neurological texts on aphasia and infantile cerebral palsy, underscoring his early identity as a neurologist.^{15,16}

Other well-known neurologists from this era include Carl Westphal, who spent his career at the Charité Hospital in Berlin and became the first professor of neurology at Berlin University. He noted absent deep tendon reflexes of the knees in patients with tabes dorsalis.¹⁷ Hermann Oppenheim, a student of Westphal, also spent his career in Berlin (*The Founders of Neurology*, p. 492-495; *Fragments of Neurological History*, p. 359-361).^{2,3} He wrote on traumatic neuroses, tetany, and myotonia congenita, and authored a highly regarded two-volume textbook on nervous diseases in 1911 which is still very readable.¹⁸

Figure 6

German Neurology Late 1800's

Carl Wernicke (1848-1904)

- B: Tarnowskie Gory, Poland
- Berlin
- Sensory aphasia, Temporal lobe



Eduard Hitzig (1838-1907)

- B: Berlin, Germany
- Motor cortex stimulation
- Movement opposite side



Alois Alzheimer (1864-1915)

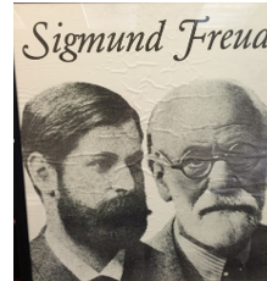
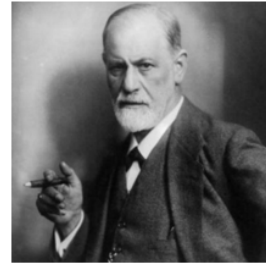
- B: Munich, Germany
- Devoted career to study of dementia
- On a peculiar disease of the cerebral cortex, 1907
- Description of presenile dementia and pathology of plaques and neurofibrillary triangles.



Figure 7

Austrian Neurology Sigmund Freud (1856-1939)

- B: Pribor, Czech Republic
- Education & career in Vienna
- Early in career did lab research on nervous system of eels (gold chloride staining)
- Briefly with Charcot
- Founder of psychoanalysis
- Unconscious – ego, super-ego, id
- *Interpretation of Dreams* – 1900
 - But he was a Neurologist!
- *On Aphasia*
- *Infantile Cerebral Palsy*



Poster of the youthful and elderly Freud that I purchased at the Freud Museum (Freud's Vienna home and office in 1982)

Figure 8

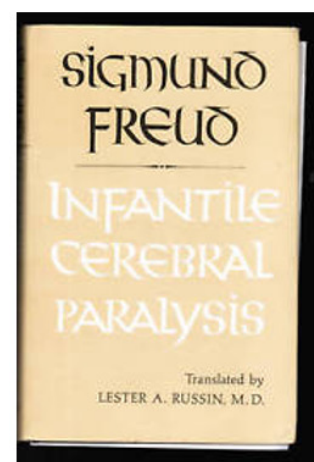
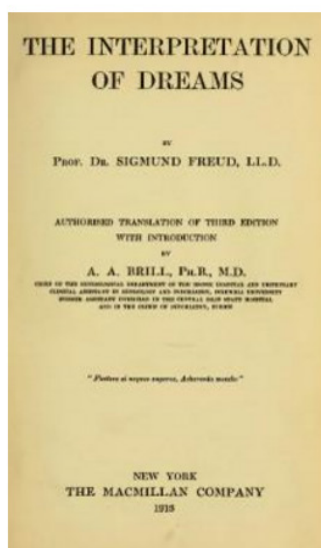
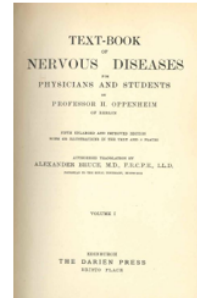


Figure 9

German Neurology Late 1800's

Carl Friedrich Otto Westphal (1833-1890)

- B: Berlin, Germany
- Charité Hospital in Berlin
- First Professor of Neurology at a Prussian University
- Absent knee reflexes in tabes



Herman Oppenheim (1858-1919)

- B: Warburg, Germany
- Charité in Berlin; Student of Westphal
- Traumatic neurosis, dystonia, tabes, amyotonia congenital
- *Textbook of Nervous Diseases for Physicians and Students of Professor H. Oppenheim* – translated into English (1911)

Figure 10

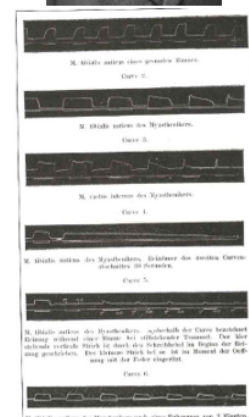
German Neurology Late 1800's

Wilhelm Heinrich Erb (1840-1921)

- B: Winnweiler, Germany
- Career in Heidelberg
- MG, MD, spastic spinal paralysis, upper brachial plexus palsy

Friedrich Jolly (1844 – 1904)

- B: Heidelberg, Germany
- Berlin - Followed Westphal at Charité as Chair
- "The Myasthenic Reaction" on rep stim
- Jolly Test – i.e. Repetitive Nerve Stimulation in MG (1895)



Wilhelm Erb was another major figure who practiced in Heidelberg throughout his career. He wrote extensively on myasthenia gravis, muscular dystrophy, spastic paralysis from spinal cord lesions, and is perhaps most famous for describing upper brachial plexus palsy (*The Founders of Neurology*, p. 435-438; *Fragments of Neurological History*, p. 44-47).^{2,3,19} Friedrich Jolly, though his name may not sound German, was born in Heidelberg and practiced in Berlin. He succeeded Westphal as head of neurology at the Charité Hospital and wrote widely on myasthenia gravis. Jolly invented repetitive nerve stimulation testing and described the decremental response, a test that some still refer to as the Jolly test (Although it does not feel Jolly to patients on the receiving end of the electrical stimulus).²⁰

There were also infamous neurologists whose legacies are more troubling. Emil Kraepelin, born in Germany, spent his career in various German cities and is considered the founder of modern scientific psychiatry.^{21,22} He classified psychiatric diseases in ways still used today in the DSM system. However, he was also a proponent of eugenics and racial hygiene, believing it was important for Germany to preserve and enhance the race. His writings included explicitly antisemitic views.

Julius Wagner-Jauregg, who trained under Meynert in Austria, later became professor of psychiatry and nervous diseases in Vienna (*The Founders of Neurology*, p. 528-531).² He is known for developing pyrotherapy, using fever as a treatment for neurosyphilis-related dementia by inducing

Figure 11

Infamous Germans Part I: Neuropsychiatrists

Emil Kraepelin (1856-1926)

- B: Germany
- Founder of modern scientific psychiatry
- Travelled & worked in Leipzig, Warzburg, Dresden, Heidelberg, Munich
- Classified psychiatric disease in a way still used today in DSM system
- But also proponent of Eugenics/Racial hygiene
 - Preserve & enhance German race
 - “the well known example of the Jews, with their strong disposition towards nervous and mental disorders, teaches us that extraordinarily advanced domestication may eventually imprint clean marks on the race”



Julius Wagner-Jauregg (1857-1940)

- Psychiatry – trained under Meynert, took his position as Prof of Psychiatry & nervous disease
- B: Austria; Univ: Vienna
- Fever as treatment for dementia paralytica for syphilis
- Pyro-therapy for malaria infections (Malariotherapy); 1917-1940s
- Nobel Prize 1927
- Book – *Prevention & Treatment of Progressive Paralysis by Malaria Inoculation* – 1931
- Nazi affiliation & anti-Semite
- Advanced racial hygiene/eugenics & advocate of sterilization for mentally ill and criminals

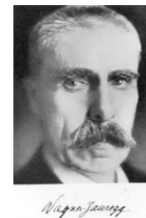


Figure 12

Infamous Germans Part II: Neuroscientists

Hans Berger (1873-1941)

- Psychiatrist
- Worked under Otto Binswanger in Jena, Chair Psych & Neuro
- Succeeded him 1919
- Invented the EEG – 1924
 - Discovered alpha rhythm
- Nazi and member of the SS “Schutzstaffel” – Discovered 2005



Julius Hallervorden (1882-1965) & Hugo Spatz (1888-1969)

- Hallervorden-Spatz Disease
 - Now more commonly referred to as “Pantothenate kinase-associated neurodegeneration” – name change in last 20 years
- Known Nazi Party members

Figure 13

Carl Jung (1857 – 1961) ? Famous or Infamous

- B: Switzerland, but close relations with Germany/Austria
- Disciple of Freud, then broke away
- Founded analytic psychology; Archetypal images
- 1933 – Restructured German Medical Society for Psychotherapy, led by Matthias Goring, excluding Jews, promoted *Mein Kampf*
- “The Jew, who is something of a nomad, has never yet created a cultural form of his own and as far as we can see, never will”
- “The Aryan unconscious has a greater potential than the Jewish unconscious”



malaria infections. Remarkably, he won the Nobel Prize in 1927 for this work. In 1931, he wrote a book on the prevention and treatment of progressive paralysis.²³ However, he later had strong Nazi affiliations and supported racial hygiene, eugenics, and sterilization of the mentally ill and criminals.

Hans Berger, a German psychiatrist who worked under Otto Binswanger, invented the EEG and was the first to recognize the alpha rhythm of the brain (*The Founders of Neurology*, p. 171-175).^{2,24} This was a major scientific breakthrough. However, it was later discovered that Berger was a Nazi and a member of the SS, information that only became widely known in 2005.^{25,26}

Similarly, Julius Hallervorden and Hugo Spatz (*The Founders of Neurology*, p. 369-375), who described the disorder once known as Hallervorden–Spatz disease, were later revealed to be Nazi Party members.^{2,27} As a result, the condition is now referred to as pantothenate kinase–associated neurodegeneration, and the original eponym has been abandoned.

To conclude, I will mention Carl Jung, who was almost as famous as Freud and perhaps equally controversial.²⁸ Born in Switzerland, Jung maintained close ties with Germany

and Austria throughout his career. Initially a disciple of Freud, he later broke away and founded analytic psychology, introducing concepts such as archetypes. In the 1930s, Jung helped restructure the German Medical Society for Psychotherapy, which excluded Jews and promoted Nazi ideology. His published statements from this period reflect antisemitic views. However, Jung is such a towering figure in the field of psychoanalysis, and he has had many defenders over the decades that attempt to mitigate what to many seemed like an antisemitic mindset and Nazi sympathizer.

As you can see from this brief overview, German and Austrian neurologists, psychiatrists, and neuroscientists made extraordinary contributions to neurology and psychiatry in the 1800s and early 1900s. However, during the 1930s, many of these same figures were influenced by, and in some cases actively supported, Nazism. This history shows that such developments can occur anywhere, even in advanced cultural societies. As I said at the beginning, it can happen here—to paraphrase the title of Sinclair Lewis’s famous novel, *It Can’t Happen Here*.²⁹ A similar theme is discussed in Philip Roth’s novel, *The Plot Against America*.³⁰

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