

## Two American Civil War Neurologists: The Civilian & The General

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A live recording of this lecture can be viewed here:  
[RAF5 - Two Civil War Neurologists The Civilian & The General](#)

This is another installment in the History of Neurology lecture series. This lecture is on Two Civil War Neurologists, the Civilian and the General.

The civilian is Silas Weir Mitchell. Dr. Mitchell was born in Philadelphia. He attended the University of Pennsylvania and then went to Jefferson Medical College. He traveled to Paris, where he studied under Claude Bernard and Pierre Rayer. Afterward, he returned to America to start a private practice. He also conducted research in toxicology using snake venom, and it was during this time that he began working with Dr. William Hammond, who became a general. Drs. Mitchell and Hammond published numerous papers before the Civil War broke out.

When the war began, Mitchell was assigned to the new neurology hospital called Turner Lane Hospital in Philadelphia. This neurology hospital was established by General Dr. Hammond, who placed Dr. Mitchell in charge, along with Dr. Morehouse and Dr. Keen, a surgeon. The hospital received many soldiers who had injuries from the Civil War. At the time of the Battle of Gettysburg, Dr. Mitchell actually went out to the battlefield and brought soldiers back to Philadelphia for care.

He, Dr. Morehouse, and Dr. Keen became acutely aware of nerve injuries caused by Minié balls, which were the ammunition used in firearms at the time of the Civil War. Minié balls and the Minié rifle were designed by Claude-Étienne Minié in 1846. Wounds inflicted by the conical Minié ball were different from those caused by the round balls from smoothbore muskets, since the conical ball had a higher muzzle velocity and greater mass, and easily penetrated the human body.<sup>1</sup> Mitchell described the term *causalgia* to refer to severe pain, color change, temperature change, and skin changes that occurred in patients with nerve injuries from these Minié ball wounds.

They published their experiences during the Civil War in a landmark book titled *Gunshot Wounds and Other Nerve Injuries*.<sup>2</sup> He also published another book during the war called *Reflex Paralysis* with the same co-authors.<sup>3</sup> After the Civil War, Dr. Mitchell published his most famous book, *Injuries of Nerves and Their Consequences*, in 1872.<sup>4</sup> This was the first comprehensive book on nerve injuries.

Figure 1



Silas Weir Mitchell  
1829-1914



### Silas Weir Mitchell (1829-1914)

- Born in Philadelphia
- Attended the University of Pennsylvania at the age of 15 - poor student
- Jefferson Medical College, graduated in 1851; age 21
- Went to Paris, inspired by Claude Bernard; and Pierre Rayer
- Returned to America, pursued private practice and snake venom research (toxicology)-numerous papers.
- Civil War; Turners Lane Hospital (Neurology) in Phil
  - Est. by Surg. Gen. Hammond. Drs. SWM, Morehouse in charge; Dr. Keen was associate surgeon.
- Traveled to Gettysburg to Rx and transport soldiers to Phil
- Nerve injuries due to Minié balls
- Described "**CAUSALGIA**" and Phantom limb pain
- *Gunshot wounds and other injuries of Neurology (1864)*
- *Reflex paralysis (1864)*
  - Both authored by SWM, Morehouse, Keen
- *Injuries of Nerves and Their Consequences (1872) SWM*

Figure 2

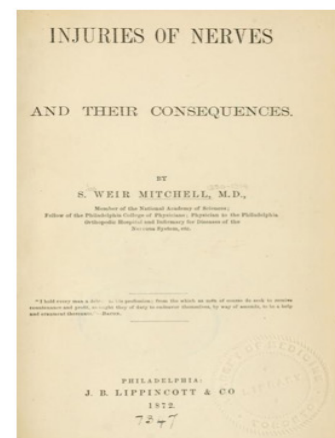
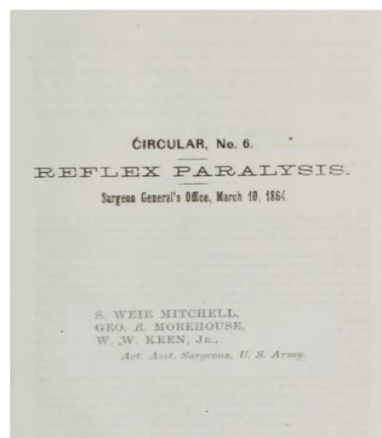
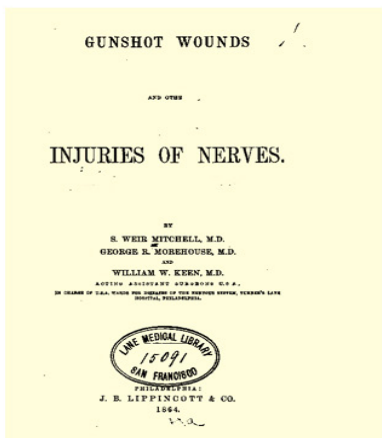
## Silas Weir Mitchell (1829-1914)



- Erythromelalgia: known as “Weir Mitchell disease.”
- One of the first to use reflexes as part of Neurology exams.
  - Described sensory reinforcement of reflexes
- Rest cure for neurasthenia
  - Isolation, confinement to bed, diet, electrotherapy, and massage
- Published books on Rest Cure for public and medical audiences.
  - Wear and Tear (1871)
  - Fat and Blood and How to Make Them (1877)
  - Rest in the Treatment of Nerves Disease (1875)
  - The Treatment of Certain Forms of Neurasthenia and Hysteria (1877)
- A founder of American Neurological Association (1875)
  - President 1908-09
- Never had an academic appointment.
- In and out patient work at Orthopedic Hospital and Infirmary for Nerve Disease.

Figure 3

## Silas Weir Mitchell (1829-1914)



After the war, Dr. Mitchell became known for several other contributions. He first described erythromelalgia, a term we still use in our clinics to describe patients with burning, dysesthesia, and discoloration of the feet bilaterally. He was among the first to incorporate reflex testing as part of the routine neurological exam. In photographs, such as in Figure 3, you can see him holding a reflex hammer while examining a patient. The hammer that Dr. Mitchell is using in this picture was designed specifically for him by Dr. J. Madison Taylor, also from Philadelphia. The muscle stretch reflex was first described by Heinrich Erb and Carl Westphal in 1875. Physicians began using their fingers to elicit muscle stretch reflexes. Drs. Taylor and Mitchell believed that an instrument was necessary to test muscle stretch reflexes easily. The head

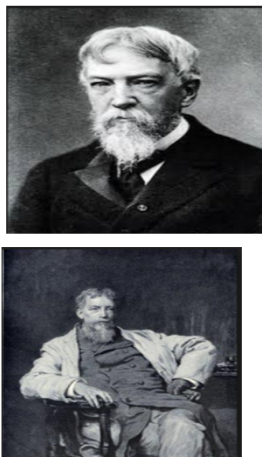
of the hammer was made of rubber which is still the material used for reflex hammers today. Therefore, Dr. Mitchell was one of the first to use a reflex hammer in his practice.<sup>5</sup>

Mitchell also developed the “rest cure” for neurasthenia. Neurasthenia was a term that Mitchell and others used for patients with a number of non-organic somatic complaints. The rest cure consisted of isolation and confinement, diet, electrotherapy, and time in rest homes for several weeks to recover from neurasthenic symptoms. He wrote several books about this, both for the lay public and the medical profession.

He was one of the founders of the American Neurological Association and served as its president in the early 1900s. Interestingly, he never held an academic appointment. He always worked in both inpatient and outpatient settings at the

Figure 4

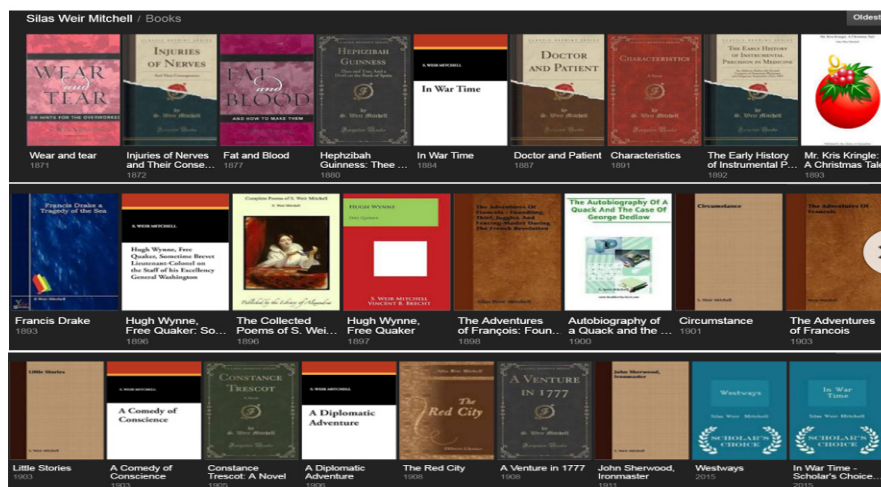
### Silas Weir Mitchell-Author Published poetry, novels, and short stories



- The Case of George Dedlow (Short Story) Atlantic Monthly (1866)
  - Launched literary career
- *Autobiography of a Quack* (1867) (Short Story)
- *Hephzibah Guinness* (1880)
- *The Hill of Stones and Other Poems* (1883)
- *In War Time* (1884)
- *Doctor and Patient* (1887)
- *Characteristics* (1891)
- *Mr. Kris Kringle* (1893)
- *Francis Drake: A Tragedy of the Sea* (1893)
- *Collected Poems of S. Weir Mitchell* (1896)
- *Hugh Wynne, Free Quaker: Sometime Brevet Lieutenant-colonel on the Staff of His Excellency General Washington* (1896)
- *Adventures of François* (1898)
- *Dr. North and his friends* (1900)
- *Circumstance* (1901)
- *The Youth of Washington* (1904)
- *Constance Trescot* (1905)
- *A Diplomatic Adventure* (1906)
- *The Red City* (1907)
- *The Guillotine Club* (1910)
- *Westways* (1913)

Figure 5

### Literary Works of S. Weir Mitchell Still in Publication



Orthopedic Hospital and Infirmary for Nervous Diseases in Philadelphia.

Mitchell was also famous for pursuits outside of medicine. He was an author of novels and poetry. His novels were extremely popular and sold very well at the time, and some are still in print today. Figure 5 shows a screenshot from a recent search I did on Weir Mitchell's books that, surprisingly, are still being republished. I say that I am surprised by this because I have collected and tried to read the early editions of his novels and have found that they do not translate well to the modern era. Nevertheless, he was indeed a very successful author.

As an aside, I think that the young Weir Mitchell, as shown in Figure 6, has a striking resemblance to the modern actor Donald Sutherland (M\*A\*S\*H, Animal House, A Time to Kill, The Hunger Games) when he was a young man!

The general was Dr. William Hammond. He was Weir Mitchell's friend, and as I mentioned earlier, they conducted research together on snake venoms. Dr. Hammond was a US Army physician who served tours in New Mexico, Kansas, and Florida, and he was stationed at West Point for a time. He was involved in the Sioux Indian Wars and briefly chaired Anatomy and Physiology at the University of Maryland after his initial army service.

When the Civil War broke out, President Lincoln appointed him Surgeon General at a very young age. General Hammond assigned Dr. Mitchell to lead the neurological hospital at Turner's Lane. Dr. Hammond also founded the Army Medical Museum, which later became known as the AFIP (Armed Forces Institute of Pathology). He improved sanitation in wartime hospitals and developed the pavilion system for Army hospitals, which was used for generations.

Figure 6



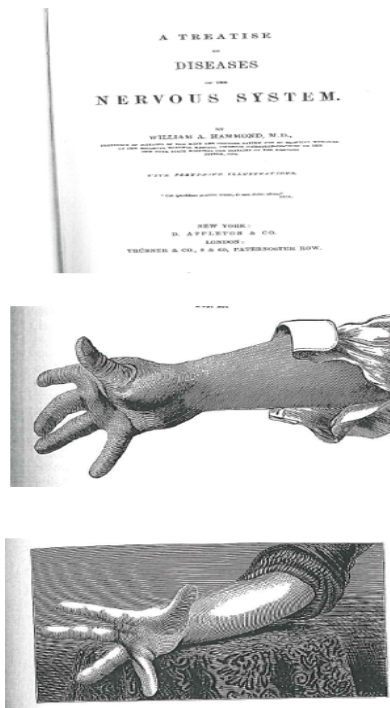
Figure 7

## William Hammond MD 1828-1900



- Born 1828 in Annapolis, MD. Med School NYU (1848)
- 1849-1860 Assistant Surgeon US Army
  - New Mexico, Kansas, Florida, West Point; Sioux Wars
  - In leisure time researched snake venoms (toxicology) with S.W. Mitchell (1859)
- 1861 Briefly Chair of Anatomy and Physiology at U of Maryland
- Civil War, rejoined the Army
- 1862 Lincoln appointed him 11<sup>th</sup> US Surgeon General Age 34; Brigadier General
  - Assigned S.W. Mitchell MD to co-direct Turner's Lane Hospital
  - Founded Army Medical Museum (later AFIP)
  - Improved sanitation; developed Pavilion system for Army hospitals
- 1864 Court-martialed after disagreement with Stanton
  - Because he banned mercury (calomel) from use
  - Later restored to rank in 1878

Figure 8



## William Hammond MD 1828-1900

- 1867 Prof of Nervous and Mental Diseases at Bellevue Hospital NYU; lectured in neurology, Columbia.
  - Later on faculty at U of Vermont, Burlington (1871)
- Practice limited to nervous or mental diseases. (first in the USA)
- 1871 *Treatise on Diseases of the Nervous System*
  - First real neurology text book in the USA
- Described athetosis (Hammond's Disease)
  - Speculated lesion was in corpus striatum.
- Research on lithium for mania
- Co-founder with S.W. Mitchell and others of the ANA (1874)
  - President 1882
- Critic of Spiritualism. *The Physics and Physiology of Spiritualism* (1871) and *Spiritualism and Allied Causes and Conditions of Nervous Derangement* (1876)
- Wrote 7 novels (1868-1887)

However, Hammond eventually came into conflict with Secretary of War Edwin Stanton and was court-martialed. His rank was later restored in 1878. A well-known photo shows Dr. Hammond putting on his uniform late in life after being reinstated as a general.

After the war, Hammond set up a private practice in New York devoted to nervous and mental diseases. This was the first practice of its kind, and he can therefore be justly described as the first neurologist in the United States. He joined the staff at Bellevue Hospital, lectured at Columbia, and later joined the faculty at the University of Vermont. He wrote what is considered the first major American textbook on diseases of the nervous system, titled *A Treatise on Diseases of the Nervous System*.<sup>6</sup> It is an impressive and well-illustrated volume. Reproductions of this volume are still easily obtainable.

Hammond coined the term athetosis and correctly speculated that its cause lay in the basal ganglia, or corpus striatum. The condition was known as "Hammond's disease" for many years. He also conducted research on lithium for mania, which is remarkable since it remains one of our main treatments today. Along with Weir Mitchell, he co-founded the American Neurological Association.

Hammond was also a vocal critic of spiritualism, which was fashionable in the late 1800s. He wrote books debunking

spiritualism as pseudoscience. He wrote seven novels, not as many as Weir Mitchell, but still a notable number for a neurologist.

So, not only were Drs. Mitchell and Hammond great physicians, but they were also prolific novelists whose books were widely read at the time.

This concludes the History of Neurology lecture on Two Civil War Neurologists, the General and the Civilian.

### References

1. Keegan J. *The American Civil War: A Military History*. 1st ed. Alfred A. Knopf; 2009.
2. Mitchell SW, Keen WW, Morehouse GR. *Gunshot Wounds and Other Injuries of Nerves*. Philadelphia: J.B. Lippincott. 1864.
3. Mitchell SW, Keen WW, Morehouse GR. *Reflex Paralysis*. Washington, D.C. 1864.
4. Mitchell SW. *Injuries of Nerves and Their Consequences*. Philadelphia: J.B. Lippincott. 1872.
5. Lanska, DJ. *The History of Reflex Hammers*. *Neurology*. 1989;39(11):1542.
6. Hammond WA. *A Treatise on Diseases of the Nervous System*. New York, D. Appleton and company. 1871.