

William Withey Gull (1816-1890)

William Withey Gull studied paraplegia, anorexia, and hormones as a physician in England during the nineteenth century. In addition to caring for patients, he described the role of the posterior column of the spinal cord in paraplegia, and he was among the first to describe the conditions of anorexia and of hypochondria. He also researched the effects of thyroid hormone deficiencies in women who had malfunctioning thyroid glands. Gull's research on thyroid hormone confirmed that chemicals in the body directly affect health, and he contributed to the foundation of endocrinology, the scientific field for the study of hormones.

William W. Gull was born on 31 December 1816 to Elizabeth Chilver and John Gull in Colchester, England. His father was a barge and wharf owner who died of Cholera in 1827, leaving Gull's mother to raise their three sons and three daughters. According to Gull's son-in-law and biographer Thomas D. Acland, Gull claimed that his education came from his mother. As a child, Gull attended a school run by two churchwomen, and he learned skills like knitting before transitioning to a school run by the local clergyman. Gull taught himself Latin until he surpassed the skills of his teachers, and he became a Latin teacher at a school in Sussex, England. Gull then learned Greek from Joseph Woods, a scholar and botanist who also taught Gull about the local flora and fauna.

In 1834 at the age of nineteen, Gull had planned to move close to the sea to learn more about his father's former occupation. However, his mother would not allow him to leave and instead she contacted one of her friends, who offered to teach Gull classics, an opportunity Gull accepted. During his studies, Gull met and impressed Benjamin Harrison, who was the treasurer of Guy's Hospital, a teaching hospital in London, England. Harrison offered Gull two rooms and fifty pounds a year to serve as an apprentice at the hospital, a position Gull started in September 1837. While at Guy's, Gull continued to teach himself Greek, Latin, and math. Additionally, Gull applied for every academic award for which he was eligible, and he won all of them. In 1838, Gull matriculated to the University of London in London, and he graduated in 1841 with a Bachelor's of Medicine and honors in physiology, comparative anatomy, medicine, and surgery.

In 1842, the Guy's Hospital appointed Gull to teach medicine in return for a small house and 100 pounds a year. A year later, Gull began to care for patients at Guy's Hospital while also lecturing on natural philosophy. Gull also continued his education in medicine at the University of London, and in 1846, he tested for his MD. During his final exams Gull left the testing room, as he claims he judged himself unprepared, and he returned only at the urging of a friend. Gull received his MD and a gold medal, an award that distinguished the best medical graduates in the nation.

From 1846 to 1856, Gull remained at Guy's Hospital and lectured on physiology and comparative anatomy. In 1848, the Royal College of Physicians in London elected Gull as a fellow, and he became a resident physician at Guy's Hospital. That same year, Gull married Susan A. Lacy, and together they later had two children, William C. Gull and Caroline C. Gull.

In his early years as a practicing physician, Gull spent much of his time caring for patients and little time on specific topics of research, publishing on a variety of clinical subjects including aneurisms, the function of nerves, and skin lesions. In 1849, during the annual Goulstonian lecture series held by the Royal College of Physicians, Gull lectured about paraplegia. Paraplegia, the paralysis of lower extremities often caused by damage to the spinal cord, became Gull's major research focus after that lecture. However, in 1854 an outbreak of cholera in London interrupted his work on paraplegia, and he instead treated cholera with physician William Bayley. After the cholera outbreak subsided in 1856, Gull published the first of many articles on paraplegia's cause and treatment.

In "Cases of Paraplegia," Gull discussed thirty-two instances of paralysis, describing the clinical features of each case with a focus on the appearance of the spinal cord after the death of the patient. Specifically, Gull noted the lack of obvious spinal cord damage in paraplegia patients, and he suggested a role of the backside of the spinal column, the posterior column, in paraplegia. At the time, physicians had described the spinal cord as made up of two parts, the anterior and the posterior column. In particular, physicians claimed that the posterior column transmitted sensory information to the brain, while the anterior column related to motor function. Because motor function is impaired in paraplegia patients, researchers had hypothesized that the anterior column was somehow responsible for those impairments. However, Gull found evidence of damage to the posterior columns in paraplegia patients.

Later in 1856, Gull stopped teaching at Guy's Hospital to become an administrator at the University of London, a position he held until 1889. In the years after 1856, Gull still worked as a physician at Guy's Hospital, caring for patients and publishing articles about treatments in Guy's Hospital Reports. However, in 1868, Gull began to examine two types of psychological disorders, later classified as anorexia nervosa and hypochondriasis.

In August of 1868, Gull described the symptoms of aepsia hysterica, a term Gull coined to describe a condition marked by extreme emaciation commonly affecting young women. The condition became called anorexia nervosa by 1874, when Gull published a paper titled, "Anorexia Nervosa (Aepsia Hysterica, Anorexia Hysterica)," which discussed the symptoms of two anorexic patients. In the article, Gull said he planned to treat the condition by feeding the patients against their wishes. Historians often credit Gull, along with neuropsychiatrist Ernest C. Lasègue in France, for describing the earliest clinical cases of anorexia nervosa.

In 1868, Gull published an article with physician Edmund Anstie about what they called hypochondriasis, a disorder in which the patient is preoccupied with imagined sickness. In the article, Gull and Anstie detail a case of hypochondriasis. They defined hypochondriasis as a nervous disease that patients inherit from their parents, and they said it is characterized by depression and an unfounded fear that the individual suffers from a serious illness based on misinterpreted symptoms. They proposed a treatment for that disorder that consisted of remedies that address the cause of the false belief and of trying to relieve the symptoms the patients believe they are feeling. Gull and Anstie treated the symptoms of hypochondriasis with cod-liver oil or some other fat. Gull and Anstie said that it is important to treat the symptoms without encouraging the patient's unfounded belief in their illness.

In 1871, an outbreak of typhoid fever again interrupted Gull's work. Typhoid fever had also affected Albert Edward, the Prince of Wales. After Gull treated the prince, Alexandria Victoria, who was the Queen of the United Kingdom of Great Britain and Ireland, knighted Gull and named him baronet of the baronetcy of Brook Street. A baronetcy is a hereditary honor that the ruler of Great Britain bestows, and it is similar to a knighthood but is also hereditary. Queen Victoria also appointed Gull as a physician in service to the crown, with an annual salary of 200 pounds, a position Gull held until 1883.

In 1874, Gull published an article that showed how insufficient thyroid hormone can cause severe symptoms in women. In 1865, physiologist Claude Bernard, who worked in Paris, France, had introduced the theory of homeostasis, an internal body environment modulated partly by chemicals. Bernard referred to these chemicals as internal secretions, but he did not propose any mechanism for their actions. In 1859 Moritz Schiff, a physiologist working in Bern, Switzerland, showed that removing the thyroid gland in dogs resulted in death, while administering thyroid hormone preserved their lives. In 1874, Gull wrote about a nervous disease that caused a lethargic mental state in women as well as constipation, chills, swelling of the face and hands, slowed heart beat or bradycardia, and the inability to sweat. Gull showed that, similar to Schiff's dogs, damage to or malfunction of the thyroid gland caused the same condition that occurred when the thyroid hormone was missing in the body. In 1878, medical researcher William Ord coined the term myxedema for extreme cases of the condition that Gull had described, and he used the term hypothyroidism to address more moderate cases.

Gull continued working as a physician and he conducted clinical research until 1887, when he had

a stroke while vacationing in Scotland. The stroke left him with limited feeling in his right side and prompted his retirement from medicine. On 29 January 1890, Gull suffered another stroke, this one fatal, and he died shortly thereafter.

Gull received posthumous attention in the second half of the twentieth century for alleged connections to Jack the Ripper. In 1970, Thomas E.A. Stowell, a physician in the UK, published an article in which indicated that Gull may have been an accomplice to the Whitechapel murders that Jack the Ripper had committed in 1888. Stowell indicated that the killer was Prince Albert Victor Christian Edward, the eldest son of Prince Albert Edward, whom Gull had treated in 1871. Stowell claims that Gull's private notes stated that Prince Albert Victor had contracted syphilis, a condition that affects the brain, and that the disease had driven the Prince to commit the murders before he died in November of 1888. However, Stowell recanted soon after due to issues with the timeline and veracity of his claims. But in 1976, journalist Stephen Knight published a book in which he detailed the theory that Gull killed the five women in order to cover up the marriage of Prince Albert Victor to a commoner. Knight relies on the fact that Jack the Ripper's mutilations exhibited knowledge of anatomy, which Gull would have possessed. However, in 1988 Donald Rumbelow, a historian in the UK, disproved such speculation by stating that Gull had been debilitated by a stroke the year before the Whitechapel murders.

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