John Langdon Down (1828–1896) [1]


John Langdon Down studied medicine in England in the nineteenth century and was one of the first people to develop a complete description of the disorder that would later be known as Trisomy 21, or Down Syndrome. Down Syndrome is a condition caused by the presence of an extra chromosome, which may cause a person to be born with certain impaired learning abilities and physical features such as a short neck, flattened face, and almond-shaped eyes. In 1866, Down published one of the first accounts to accurately describe people with Down Syndrome, or what he called “Mongolism,” and identify it as a distinct condition. Additionally, Down advocated for people with mental disabilities at a time when their families commonly abandoned them and medical professionals did not prioritize them. He improved the quality of care for people in the centers he worked in and increased their educational opportunities so they would be better prepared to live a normal life. Down brought increased attention to Down Syndrome, leading to the future discovery of the chromosomal anomaly that causes the disorder, and promoting a higher standard of care for people with mental disabilities.

Much of Down’s work and descriptions of Down Syndrome used terms that researchers now consider inaccurate and offensive, but that scholars frequently used in the 1800s. For one, he commonly used terms such as “idiot” or “imbecile” to describe people with disabilities. According to the Merriam-Webster Dictionary, those words were used as psychological classifications into the 1900s. At the time, the dictionary states that the term “idiot” was used to refer to an individual whose mental development would never pass that of an average two-year-old child. Additionally, according to the dictionary, people used the term “imbecile” to refer to an individual whose mental development would never pass that of an average seven-year-old child. While those terms now have a negative connotation and are widely condemned as offensive, they were valid medical terms at the time of Down’s research. Additionally, Down repeatedly refers to the condition he studied as “Mongolism,” believing that Down Syndrome only affected people who had Mongolian heritage. Researchers have since proven that mental disabilities have no link to a person’s ethnicity, and in the specific case of Down Syndrome, are caused by a chromosomal abnormality. The condition was renamed Down Syndrome in the 1960s to correct what researchers came to recognize as inappropriate and racist terminology.

Down was born on 18 November 1828 in Torpoint, England, to Hannah Haydon and Thomas Joseph Almond Down as the youngest of six children. At the age of fourteen, his parents removed Down from school so he could help at his father’s grocery shop, where he worked for approximately the next four years. According to biographer Johan Van Robays, Down disliked working at his father’s shop, but changed his life trajectory at the age of eighteen when he had what some biographers refer to as a “mystical experience.” Down met a young girl who presented with what would later be called Down Syndrome. According to O. Connor Ward, who has also written extensively about Down, Down later recalled that during that encounter he had wondered what the girl’s condition was, and whether there was something he could do to help her. According to Robays, that encounter is what made Down realize that he wanted to pursue a career in medicine.

At the age of eighteen, Down took his first step towards the medical field by becoming an apprentice to a surgeon practitioner in London, England, where he learned basic skills such as pulling teeth and bloodletting, a practice that physicians used up until the nineteenth century. Bloodletting involved using leeches to remove supposedly contaminated blood. After some time, Down decided to take a few basic science courses at the Royal Pharmaceutical Society in London, though according to Ward, he never planned on becoming a pharmacist. Nonetheless, Down excelled in his studies and soon became a laboratory assistant at the Royal Pharmaceutical Society, helping other students learn basic pharmaceutical techniques. However, soon after, Down fell ill and returned to Torpoint where he stayed until he recovered from what was likely tuberculosis. Then, in 1853, Down’s father died, and he left Torpoint once again to attend The Medical School of the London Hospital [5] in London. He excelled there as well, and in his senior year he won three gold medals in the fields of medicine, surgery and obstetrics, which meant he was the best student in those subjects, as well as the London Hospital [5] Medal for best overall student in his year. In 1858, he graduated summa cum laude and received a Bachelor of Medicine degree from the Medical School of London Hospital [5].

In 1858, the same year he graduated from medical school, Down took a position as the medical superintendent at what was called the Earlswood Asylum for Idiots, which, according to Robays, was one of the most populated centers for people with mental disabilities at the time, with four hundred residents. When Down arrived, Robays states that the center was in terrible condition, with overcrowded rooms, neglected and beaten residents, and high mortality rates. Down hired all new staff and prioritized physical health and hygiene. He made sure to punish bad behavior without harming the residents and rewarded good behavior as frequently as possible. As a result of Down’s efforts, the asylum became world famous for the good example it set, according to Robays. Additionally, in 1859, Down began working as an assistant physician at the London Hospital [5] in London, a job that he kept throughout his time at Earlswood. Also, in 1860, after two years of work at the asylum, Down married Mary Crellin, who he had met years earlier while at The Medical School of the London Hospital [5]. Crellin volunteered often at the asylum and was also interested in helping those affected by mental illness. From 1862 to 1868, Down and Crellin had five
children.

Down served as the medical superintendent at the Earlswood Asylum for Idiots from 1858 to 1868. During those years, he was also pursuing research and focused on race classification. Down read the English translation of Johann Friedrich Blumenbach's [6] book titled *Über die natürlichen Verschiedenheiten im Menschengeschlechte* (About the Natural Differences in the Human Race), which identifies five different categories of race. Down began using Blumenbach's methods of classification according to skull measurements and comparative anatomy to classify the residents of the Asylum. Down took over two hundred pictures of residents in their nicest clothes with flattering poses. He used those pictures, along with residents' head measurements, to classify them as one of the five races from Blumenbach's book. Once he had sorted everyone, he noticed that he had many patients whom he classified as the “Mongolian race” because they had extremely similar physical features as well as similar mental delays. He published those findings in an article called “Observations of an Ethnic Classification of Idiots” in 1866.

In his article, “Observations of an Ethnic Classification of Idiots” Down states that he conducted his studies in hopes of finding a useful classification system for different mental disabilities based on race. In the article, he especially focuses on his residents that he classifies as “Mongolian.” He described their physical appearance saying that they have flat and broad faces, round cheeks, oblique eyes, wrinkled foreheads, large and thick lips, long tongues and a small nose. He also commented on their skin, saying it had a yellow tint and that it lacked elasticity. Down continued, saying that despite their limited mental abilities, “Mongols” are good at imitating those around them and that they are humorous and full of life. He also stated that while they do not naturally speak well or have good coordination, they can improve those skills with applied techniques. Lastly, he states that “Mongols” have a relatively short life expectancy due to their weakened immune systems. Down concludes his paper by questioning the idea that races had distinct evolutionary origins, a common belief among researchers at his time. Down puts forth that the ability of diseases to similarly impact people of different races suggests that the races may not be so distinct. As of 2021, most researchers recognize that races are not biologically distinct and that Down Syndrome can affect people of any ethnicity.

Despite all the years that Down and his wife had spent working at the Earlswood Asylum, tensions arose between them and the center’s owners in the 1960s. Down’s wife had put in countless hours of work providing for the residents, and she and Down asked for her to be compensated. After the owners denied that request, as well as a request for funding a showcase of the residents’ art, Down resigned and he and his wife moved back to London in 1868, where Down continued working as a physician at the London Hospital [8]. That year, Down and his wife also purchased a large white house in Hampton Wick, England, and began converting it into their own center for the mentally disabled. To finance the center, the Downs originally catered to wealthy families with children who had mental disabilities who would be willing to pay more for quality care. In 1869, Down and his wife opened the center, which they called Normansfield, with nineteen children as permanent residents.

Down and his wife set up Normansfield as a place where people with disabilities could be educated and have an improved quality of life, according to Robays, rather than a place where parents abandon their children. Robays states that Down aimed to prove that it was possible for people living with disabilities to learn and become functioning members of society. To do so, Down and his wife offered specialized education. They taught the residents specialized skills such as stable cleaning, farming, and gardening so they could one day find jobs. They also made time for arts through courses such as puppet making or events like small plays and concerts. The center continued to prosper and grow and by 1896, there were one hundred and sixty residents. Down continued working at Normansfield for the remainder of his life.

In the 1870s and 1880s, other researchers began noticing and referencing Down’s classification of people with Down Syndrome in their work, most commonly calling the condition “Mongolism.” That recognition increased after 1887, when Down gave three lectures at the Medical Society of London detailing different kinds of mental afflictions he had noticed among his residents. He published those lectures in a book called *On Some of the Mental Affections of Childhood and Youth* that same year. Andrzej Grzybowski and Joanna &Zdot;o&lstrok;nierz, who have written biographies about various influential researchers in history, state that after publishing those lectures, the term “Mongolism” gained popularity and, according to the biographer Ward, became widely used by the 1900s.

Researchers in the twentieth century continued looking into the condition that Down had described, and decades later, found the cause of it. In 1958, Jérôme Lejeune, a French physician and researcher, discovered that people with Down Syndrome have an extra copy of the twenty-first chromosome. A chromosome is a threadlike structure made up of nucleic acid and proteins that contain genetic information. The condition of having an extra chromosome is called trisomy, and so researchers started calling the condition Trisomy 21. The presence of an extra chromosome likely causes cells to overexpress certain genes [7]. That can result in the cell making too many proteins, hormones [8], or other products that can interfere with the cell’s normal functioning. According to André Mégarbané, who researches genetics, and his colleagues, Lejeune was the first researcher to discover that chromosomal abnormalities could cause mental disabilities.

The discovery of Trisomy 21 as the cause of Down Syndrome made it clear that race had nothing to do with the disorder and the term “Mongolism” was soon discarded in favor of naming the condition after Down. In 1961, a group of genetic experts wrote a letter to *The Lancet*, a scientific journal, urging that the scientific community abandon the term “Mongolism,” which inaccurately implied that Down Syndrome had a racial basis and was, in the authors’ words, embarrassing. The group suggested the use of a more appropriate term for the condition instead, suggesting names such as “Down Syndrome Anomaly” or “Trisomy 21 anomaly.” The editor of *The Lancet* at the time chose to call the condition Down Syndrome. In 1965, the World Health
Down was one of the first researchers to provide a comprehensive description of individuals with Down Syndrome and called increased attention to the condition in his time. Additionally, Down is remembered for pioneering humane treatment towards individuals with mental disabilities through his work at both Earlswood Asylum and Normansfield. Normansfield continued to house and care for people with disabilities until 1997. As of 2021, the old Normansfield center houses the national office of the Down Syndrome Association and the Langdon Down Museum of Learning Disabilities.

Down unexpectedly died in Hampton Wick, England in 1896.

Sources

2. Blumenbach, Johann Friedrich. Über Die Natürlichen Verschiedenheiten Im Menschengeschlecht (About the Natural Differences in the Human Race). Weisbaden, Germany: Breitkopf und Härtel, 1798.

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