

John Snow: early anaesthetist and pioneer of public health

This year marks the 150th anniversary of the death of an English physician who achieved lasting fame in two entirely unrelated fields. He was the first professional anaesthetist in England, making important contributions to the newborn specialty, and he was also one of the founding fathers of modern epidemiology and public health.

John Snow (*Figure 1*) was born in York in 1813; his father was a farmer. He was one of the eight medical students who entered the newly opened medical school in Newcastle in 1832. In 1836 he moved to London, studied at Westminster Hospital, and passed his MRCS in 1838. He set up in general practice, settled in Sackville Street, and remained there for the rest of his life.

Ether anaesthesia was first used in London on December 19 1846, when a dentist, James Robinson, acting as both surgeon and anaesthetist, extracted a molar tooth from a young woman. Two days later, Robert Liston carried out an amputation of the leg for chronic osteomyelitis of the tibia at University College Hospital under ether administered by a medical student, William Squire.

Snow took an immediate interest in the use of ether and early in 1847 was appointed anaesthetist to outpatients at St George's Hospital, where he gave ether for dental extractions. Later in the same year he was appointed anaesthetist to the inpatients, the first such post to be established, and rapidly became the leading specialist in this field in London, working for Liston at University College Hospital and Sir William Ferguson at King's College Hospital.

Following the report by James Young Simpson of the use of chloroform in midwifery and surgery in November 1847, Snow took up the use of this agent with great enthusiasm. For anaesthesia during labour, Snow poured a little chloroform

onto a folded handkerchief; a drop of the agent was added at each breath of the patient.

For surgical operations, Snow devised a simple apparatus that provided a 4% mixture of chloroform vapour in air. He was well aware of the danger of the drug, believing it caused cardiac failure if the vapour was too strong. He personally gave 4000 anaesthetics with this agent with only one death which might have been attributed to the chloroform. Undoubtedly Snow's most important patient was Queen Victoria. At the request of her physician, Sir James Clark, Snow administered chloroform in 1853 to the Queen at the birth of her eighth child, Prince Leopold, later the Duke of Albany, who was to die of haemophilia. Snow also attended the Queen in 1857 at the birth of her last child, Princess Beatrice. These royal obstetrical anaesthetics earned the Queen's enthusiastic approval and made anaesthesia in midwifery 'respectable' in the face of the diehards (nearly all men!), who protested that the Bible states 'in pain thou shall bring forth children'. His book *On Chloroform and other Anaesthetics* was published posthumously in 1858.

Snow is perhaps even better remembered today for his work on the epidemiology of cholera. Epidemics of this occurred in 1831–2, which had been encountered by Snow when he was in Newcastle as a young man, and again in 1848–9 in which over 5000 died of the disease. At that time nothing was known of its aetiology, and many regarded it as a divine visitation to punish sinners. At the end of this second epidemic, Snow published a short book *On the Mode of Communication of Cholera*, in which he proposed that cholera was spread by the accidental contamination of drinking water with the liquid excreta of infected patients. He noted that most of the cholera deaths occurred in an area of the metropolis that obtained its drinking water from a part of the Thames which was heavily contaminated with sewage. Snow went on to recommend that the contaminated water could be cleared of contagion by filtration

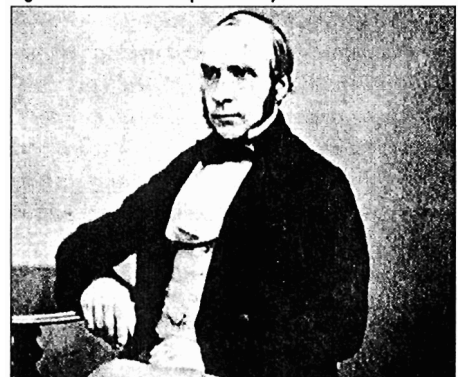
through sand or gravel, or even by allowing the water to stand in reservoirs so that the infecting material would settle. All this, remarkably, some 40 years before the discovery of the vibrio of cholera by Robert Koch in 1883.

Towards the end of the 1853–4 cholera epidemic, the famous incident of the Broad Street pump took place. In a small area in central London over 500 cholera deaths occurred over a period of 10 days. Snow carried out a house to house survey of the neighbourhood and discovered that only those who had obtained their water supply from the pump in Broad Street had contracted the disease. He advised removal of the pump handle and the epidemic ceased. A few months later, Snow published a second edition of his book, now grown to a substantial volume, in which he documented the source of the drinking water of every household south of the Thames in which a case of cholera had occurred. The book has become a classic of epidemiological investigation.

Snow was not a fit man. He suffered from tuberculosis and from nephritis, and was treated for the latter by Richard Bright, after whom Bright's disease is named. He was a vegetarian and a teetotaler. He died in 1858 at the age of 45 years. Would he have been amused or dismayed that, near the site of the pump in Broad Street, a public house is named The John Snow? BJHM

Conflict of interest: none.

Figure 1. John Snow (1813–58).



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