

FAMOUS FIGURES

DR JOHN SNOW

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Another man who was never in the Army but whose enormous contribution to public health and the understanding of infectious disease which affected the Army was John Snow. He was the eldest of nine children of William and Fanny Snow, born in North Street, York alongside the overcrowded River Ouse on 15th March, 1813. His father was described as a labourer, but both he and his

wife must have been intelligent, as they both signed their names on John's Birth Certificate, an unusual occurrence in working-class in England at the time. His family achieved success in industry, teaching and the clergy, as well as Medicine. Religion was central to the family's life, and Snow's faith remained all his life. His relationship with the church would play a central role in the events in Broad Street. In June 1827, at the age of 14, John Snow was accepted as apprentice to William Hardcastle, a surgeon-apothecary in Newcastle. Hardcastle was also surgeon and secretary to the Maternity Hospital beside his home, and his apprentice, as well as being taught all the necessary skills of medicine, was exposed to midwifery also. He later studied at the new School of Medicine in Newcastle where the lectures prepared him for the examinations of the Society of Apothecaries and the Royal College of Surgeons of England. London followed, first in the Hunterian School of Medicine, and later in Westminster Hospital. He became an MD of London University and later a Member of the Royal College of Physicians of London. He had his own home in Soho and a large practice in the capital.

Cholera was the major epidemic disease of the day. It had appeared in the Lower Ganges area of India in 1817, and been treated and reported by medical officers of the Indian Medical Service. It spread by way of Iraq, along sea routes, and reached Britain in the 1830s. Snow had experienced an outbreak in Killingworth, a colliery town near his native York, while an apprentice in 1832. But now it was appearing in London, and the first epidemic caused 32,000 deaths. At the time there were many theories about the cause of cholera. Some believed in a 'poison' which came from within the earth. Others thought electrical disturbances from the newly built railways in the North of England were to blame. Others again thought patients

who developed the disease had too much carbon in their bodies, just as carbon smoke in air was believed a century later to be the cause of carcinoma of the lung. But most doctors held the 'miasma' theory. They thought that bad gases from rotting matter were inhaled, and this view was widely and strongly believed.

The population of London increased dramatically in the early nineteenth century to 2.5 million, mainly due to the industrial revolution. People lived in cramped, dirty conditions, and it was here that the country experienced its second cholera epidemic between 1848 and 1849. It was now that Snow began his campaign to find the true cause and possible treatment of the disease. Snow believed the 'cholera poison' must be acting directly on the mucous membrane of the gastro-intestinal tract. He came to this opinion from the primary symptoms of profuse watery diarrhea and vomiting. For Snow, the miasma theory was wrong because if the poison was inhaled, why was the respiratory system not affected? He then systematically collected data from all over London, putting himself at much risk. By 1849 he had collected enough data to publish a pamphlet called *'The Mode of Communication of Cholera.'* During the third epidemic of 1854, he published a second, showing that the incidence was much higher at lower levels of the river, where the sewage amount was much greater than when higher. The maps he made showed an amazing amount of insight into what in later times was called 'Epidemiology'. Snow's maps showed cases by marking the local streets in detail, and they are preserved in historical accounts. He also gave examples of the transmission mechanisms he believed in. It must be remembered that this had never been done before – no-one had had any notion of charting the spread of a disease before Snow.

The most famous of Snow's work was his study of deaths around and in Broad Street, which was near his own home in Soho (Fig 1). It was here that he persuaded the authorities to remove the handle of the pump which supplied all the houses around in August of 1854. Being happy to co-operate with the local clergy, Snow gave a talk to the vicar of the area and his vestrymen of an evening. They believed his theory. It is of great interest and significant that it was not Snow who removed the Broad Street pump handle, but these vestrymen, on the direction of their local vicar, the Reverend Henry Whitbread, the close friend and collaborator of Dr John Snow. In his own paper on the subject later, Whitbread wrote that, although the removal of the pump handle had no effect on reducing the current epidemic, it prevented a second one. Following its removal, nevertheless, the incidence of cholera reduced dramatically. But despite this obvious happening, few doctors were convinced. They claimed that Snow did not identify 'the poison in the water', and that the incidence was declining during the collection of his data, so making them unreliable.

Snow died in 1858, still unable to convince the doubters of his finding. It was not until *Vibrio Cholera* was discovered in 1883 by Robert Koch that it was accepted. It is of interest that 30 years earlier, an unknown Italian bacteriologist called Filippo

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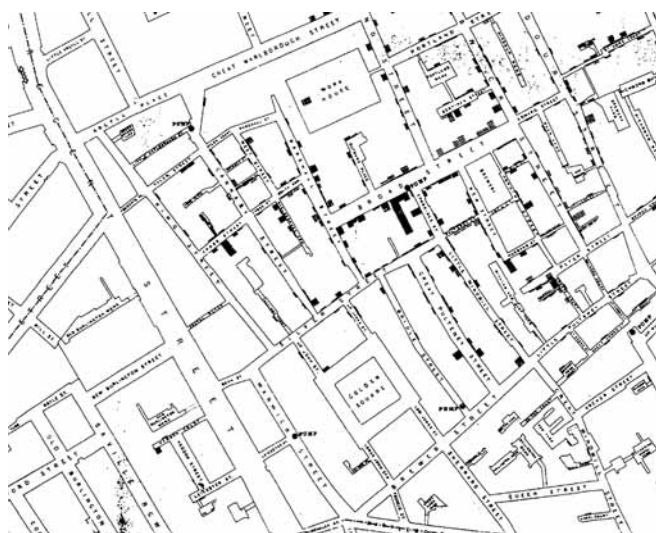


Figure 1 - The map of the Broad Street area with the deaths marked in black

Pacini, had already seen the bacterium of cholera - had this finding been known then, Snow would have been recognized in his lifetime and not till much later. Admiration for his epidemiological discovery should not obscure Snow's other major work in anaesthesia, in which he pioneered obstetric anaesthesia with chloroform. Queen Victoria was a forward-looking person in many medical fields and after she agreed to have chloroform anaesthesia for the birth of Prince Leopold in 1853 the new anaesthetic became accepted and stopped the previous ethical and social objections. It is again of interest that although the official announcement of the Prince's birth was signed by the physicians who attended the confinement, Snow's name was not included, although he must have certainly contributed more to the patient's well-being than any of the others.

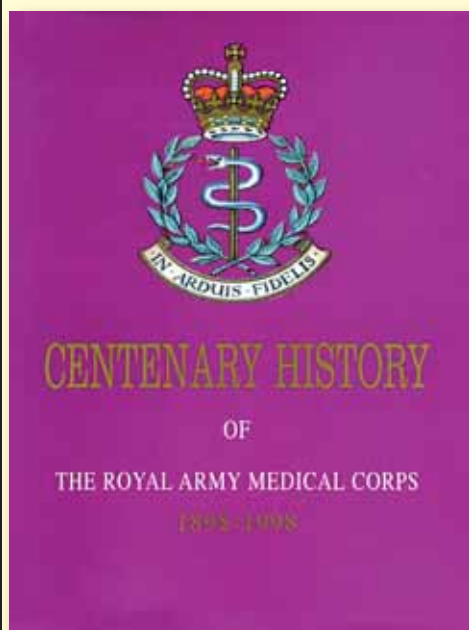
This then was a man whose contribution to what we now call public health was of great significance. Before Snow, no-one had systematically studied the distribution of infectious disease and he remains a pioneer to be studied and a researcher to be followed.

Acknowledgement

I wish to thank the Royal College of Physicians of Edinburgh for providing information concerning Snow's researches.

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