

Language characterised by lucidity, simplicity and common sense was attributed to Dr William Farr, for 40 years the Collator of Abstracts at the office of the Registrar General. Here, Dr Chris Collins delves a little deeper into the life of one of the first epidemiologists.

Who was William Farr?

Historians who comment on the epidemics of cholera in Britain in the mid-19th century and their probable influence on the 'sanitary revolution' that followed, may be forgiven for omitting mention of William Farr, the Collator of Abstracts at the office of the Registrar General. Yet this man not only finally confirmed the findings of John Snow, that cholera is a waterborne infection, but may well be regarded as the founding father of medical statistics and epidemiology.

The early years

William Farr was born in 1807 in humble circumstances in Kenley, Shropshire. As a boy, attending the local school, he attracted the interest of the local squire, who gave him access to his large library. Farr was 19 when he decided to follow a career in medicine.

Unfortunately, at that time, the degree and title of Doctor of Medicine (MD) could be conferred only on graduates (in classical studies) at the major English universities, and then often after disputation rather than by examination. However, Bishops of the Church of England could also confer the degree of MD on 'suitable' candidates. Farr therefore followed the pathway of apprenticeship. He walked 14 miles (each way) to Shrewsbury where he studied under a local physician and attended the local infirmary.

The squire died in 1829 and left Farr a legacy of £500. This enabled the young man to visit the medical school at University College London, and also the hospitals in Paris. During this period he developed an interest in hygiene and mathematics, and also became proficient in several European languages, including Latin and Greek.

After his return to England, Farr held a locum post in Shrewsbury for a few months and then studied again at University College London. In 1832 he qualified as a Licentiate of the Society of Apothecaries but, even so, remained plain Mr Farr, as apothecaries occupied the lowest level of the medical profession, and the title of Dr remained the prerogative of those with an MD qualification and of Fellows of the Royal College of Physicians.



Dr William Farr, 1807–1883.

Vital statistics

Farr set up his practice in Grafton Street, London, and augmented his income by writing and lecturing on hygiene, public health and vital statistics. It was during this period that he became acquainted with the distinguished physician Sir James Clarke and with the founder and editor of *The Lancet*, Thomas Wakely. These two people were largely instrumental in securing for Farr his post at the Registrar General's office, which was created in 1838 for political and demographic purposes.

Farr's interest in vital statistics and public

health, as well as his background in medicine, made him particularly eligible for the post, which he held for 40 years. Under his hand, the rough and wildly inaccurate reports of the old Bills of Mortality were properly regulated, and death certificates, issued by registered medical practitioners, gave the (reasonably) reliable causes of death. This information was invaluable during the investigations, by boards of inquiry, as well as by John Snow, into the course and cause of the cholera epidemics.

A matter of altitude

In respect of cholera, Farr subscribed to the long-held 'miasma' theory, that many diseases arise from foul odours. He believed that miasmas were most likely to arise in places where the poorer classes lived. In this he was probably influenced by Liebig, the German chemist who regarded disease in terms of fermentation

and putrefaction, producing a chemical poison. Farr suggested that the pathological transformation that occurred during an attack of an epidemic disease was analogous to fermentation. He introduced the word 'zymotic' to describe it and named the poisons produced by the fermentation after the diseases concerned; thus 'cholérine' caused cholera, 'pestine' caused plague, and so on.

About the same time Farr advanced his Elevation Theory. The statistics he

'Apothecaries occupied the lowest level of the medical profession'

accumulated during the cholera years indicated that many more cases of cholera occurred in low-lying areas (eg near to the Thames) than in higher places such as Hampstead and Highgate. His relationship of altitude above sea level to the incidence of cholera might have satisfied the miasma theory but it did not take into account the difference between the polluted nature of the water supply to these areas.

Although he did not subscribe to Snow's waterborne theory, Farr did take an active interest in his work, and supplied statistics about the South London and Golden Square (Broad Street pump) outbreaks. It was this Elevation Theory, however, that influenced him when he was a member of the General Board of Health's Scientific Committee. This dismissed the part played by the Broad Street pump in favour of the 'noxious atmospheric influences emanating from putrefying organic matter' (ie miasma).

Farr continued his interest in the statistics of the cholera epidemics culminating in a personal (on-site) investigation into the 1866 outbreak in East London. He noted that an area that accommodated half of the population of London suffered five-sevenths of the deaths from cholera, and that this area was served by one water company that obtained its supplies from the River Lea.

In spite of the water company's protestations that all the water was filtered and that the reservoirs were covered in accordance with legal requirements, this proved to be untrue. Subsequent independent investigations confirmed this and the water company was prosecuted. These observations caused Farr to change his mind about miasmas and he joined the waterborne infection camp, albeit with reservations.

Cholera and other diseases were not Farr's only interests, however, as he was concerned about infant and maternal mortality and the lack of training and qualifications of doctors and nurses in midwifery.

Final recognition

As well as those of the General Board of Health, Farr served on a number of other government committees, including the appointment as a census commissioner for 1861 and 1871. When Florence Nightingale returned from the Crimea she nominated

'Cholera and other diseases were not Farr's only interests, as he was also concerned about infant and maternal mortality'

him to serve on a Royal Commission to enquire into the health of the Army, both at home and abroad. The volume and quality of his work led to his election to Fellowship of the Royal Society in 1855 and to Presidency of the (later Royal) Statistical Society in 1871. He was awarded an honorary MD by Oxford University in 1857 and thus was entitled to be called Dr Farr.

When the Registrar General of the time retired in 1877, Farr expected to succeed him but he was passed over for the post. He retired the following year and was made a Companion of the Order of the Bath. He died in 1883 and his obituaries contained many tributes, not the least of which was one that included the words "...the language he used was always characterised by lucidity, simplicity and common sense".

With Farr's death, the miasma theory of disease died out. The one surviving adherent was Florence Nightingale, who believed, to her dying day, that miasmas were responsible for infectious disease. Her legacy in that field was cross-ventilation through the use of opposite windows and fireplaces at each end of large wards, to clear away the miasmas – a clear demonstration of a sound practice based on an incorrect assumption.

Farr is remembered today by epidemiologists for his Law on Epidemics, which stated that infectious diseases spread exponentially (ie the number of cases will be few to start with, then explode rapidly as the infection spreads). The figures may be plotted on a bell curve, showing a rapid increase, then, after peaking, a rapid decrease as the number of susceptible individuals falls.

'With Farr's death, the miasma theory of disease died out'

Company Membership

Commercial organisations and institutions are invited to join the Institute as Company Members. They can thereby join biomedical scientists in working to improve standards and communications in the pathology laboratory field. Company Members can make their views known through a liaison group.

A brochure is available on request to the IBMS office at:

12 Coldbath Square, London EC1R 5HL, tel 020 7713 0214, mail@ibms.org.