From the Annals of the World History

Edward Jenner

-- 17 May 1749 - 26 January 1823

Edward Anthony Jenner was an English physician and scientist from Berkeley, Gloucestershire, who was the pioneer of smallpox vaccine. He is often called "the father of immunology", and his work is said to have "saved more lives than the work of any other man".

Early life

Edward Jenner was born on in Berkeley, as the eighth of nine children. His father was the vicar of Berkeley, so Jenner received a strong basic education. Jenner trained from the age of 13 for eight years in Chipping Sodbury, South Gloucestershire, as an apprentice to Daniel Ludlow, a surgeon. In 1770 Jenner became apprenticed in surgery and anatomy under surgeon John Hunter and others at St George's Hospital. William Osler records that Hunter gave Jenner William Harvey's advice, very famous in medical circles (and characteristic of the Age of Enlightenment), "Don't think; try."

Hunter remained in correspondence with Jenner over natural history and proposed him for the Royal Society. Returning to his native countryside by 1773, Jenner became a successful family doctor and surgeon, practicing on dedicated premises at Berkeley.

Jenner and others formed the Fleece Medical Society or Gloucestershire Medical Society, so called because it met in the parlor of the Fleece Inn, Rodborough, Gloucestershire, meeting to dine together and read papers on medical subjects. Jenner contributed papers on angina pectoris, ophthalmia, and cardiac valvular disease and commented on cowpox. He also belonged to a similar society that met in Alveston, near Bristol.

Natural history, science and marriage

Jenner was elected Fellow of the Royal Society in 1788, following his publication of a careful study of the previously-misunderstood life of the nested cuckoo that combined observation, experiment, and dissection. His description of the newly-hatched cuckoo, pushing its host's eggs and fledgling chicks out of the nest (contrary to existing belief that the adult cuckoo did it) was only confirmed in the 20th century, when photography became available. Having observed this behaviour, Jenner demonstrated an anatomical adaptation for it-the baby cuckoo has a depression in its back, not present after twelve days of life that enables it to cup eggs and other chicks. The adult does not remain long enough in the area to perform this task. Jenner's findings were published in Philosophical Transactions of the Royal Society in 1788.

Jenner married Catherine Kingscote (died 1815 from tuberculosis) in March 1788 after meeting her while he and other Fellows were experimenting with balloons. Jenner's trial balloon descended into Kingscote Park, Gloucestershire, owned by Anthony Kingscote, one of whose daughters was Catherine. Jenner earned his MD from the University of St Andrews in 1792. Jenner is also credited with advancing understanding of angina pectoris. In his correspondence with Heberden, he wrote, "How much the heart must suffer from the coronary arteries not being able to perform their functions."

Smallpox

Inoculation was already a standard practice but involved serious risks. In 1721 Lady Mary Wortley Montagu had imported variolation to Britain after having observed it in Istanbul, where her husband was the British ambassador. Voltaire, writing of this, estimates that at this time 60% of the population caught smallpox and 20% of the population died of it. In 1765, Dr Fewster published a paper in the London Medical Society entitled "Cow pox and its ability to prevent smallpox", but he did not pursue the subject further.

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In the years following 1770, at least five investigators in England and Germany (Sevel, Jensen, Jesty 1774, Rendell, Plett 1791) successfully tested a cowpox vaccine in humans against smallpox. For example, Dorset farmer Benjamin Jesty successfully vaccinated and presumably induced immunity with cowpox in his wife and two children during a smallpox epidemic in 1774, but it was not until Jenner's work some twenty years later that the procedure became widely understood. Indeed, Jenner may have been aware of Jesty's procedures and success.

Jenner's Theory

The initial source of infection was a disease of horses, called "the grease", which was transferred to cows by farm workers, transformed, and then manifested as cowpox. Noting the common observation that milkmaids were generally immune to smallpox, Jenner postulated that the pus in the blisters that milkmaids received from cowpox (a disease similar to smallpox, but much less virulent) protected them from smallpox. He may already have heard of Benjamin Jesty's success.

On 14 May 1796, Jenner tested his hypothesis by inoculating James Phipps, a boy eight years old (the son of Jenner's gardener), with pus scraped from the cowpox blisters on the hands of Sarah Nelmes, a milkmaid who had caught cowpox from a cow called Blossom, whose hide now hangs on the wall of the St George's medical school library (now in Tooting). Phipps was the 17th case described in Jenner's first paper on vaccination. Jenner inoculated Phipps in both arms that day, subsequently producing in Phipps a fever and some uneasiness but no full-blown infection. Later, he injected Phipps with variolous material, the routine method of immunization at that time. No disease followed. The boy was later challenged with variolous material and again showed no sign of infection.

Jenner continued his research and reported it to the Royal Society, which did not publish the initial paper. After revisions and further investigations, he published his findings on the 23 cases. Some of his conclusions were correct, some erroneous; modern microbiological and microscopic methods would make his studies easier to reproduce. The medical establishment, cautious then as now, deliberated at length over his findings before accepting them. Eventually, vaccination was accepted, and in 1840 the British government banned variolation - the use of smallpox - and provided vaccination - using cowpox - free of charge. The success of his discovery soon spread around Europe and for example was used en masse in the Spanish Balmis Expedition, a three year long mission to the Americas, Philippines, Macao, China, and Saint Helena Island led by Dr. Francisco Javier de Balmis with the aim of giving thousands the smallpox vaccine. The expedition was successful, and Jenner wrote, "I don't imagine the annals of history furnish an example of philanthropy so noble, as extensive as this."

Jenner's continuing work on vaccination prevented his continuing his ordinary medical practice. He was supported by his colleagues and the King in petitioning Parliament and was granted £10,000 for his work on vaccination. In 1806 he was granted another £20,000 for his continuing work in microbiology. In 1803 in London he became involved with the Jennerian Institution, a society concerned with promoting vaccination to eradicate smallpox. In 1808, with government aid, this society became the National Vaccine Establishment. Jenner became a member of the Medical and Chirurgical Society on its founding in 1805 and presented a number of papers there. The society is now the Royal Society of Medicine. In 1806, Jenner was elected a foreign member of the Royal Swedish Academy of Sciences.

Returning to London in 1811, Jenner observed a significant number of cases of smallpox after vaccination. He found that in these cases the severity of the illness was notably diminished by previous vaccination. In 1821 he was appointed Physician Extraordinary to King George IV, a great national honour, and was also made Mayor of Berkeley and Justice of the Peace. He continued to investigate natural history and in 1823, the last year of his life, he presented his Observations on the Migration of Birds to the Royal Society.

Jenner was found in a state of apoplexy on 25 January 1823, with his right side paralyzed. He never fully recovered and eventually died of an apparent stroke, his second, on 26 January 1823, aged 73. He was survived by one son