



## 70 EDWARD JENNER

1749 - 1823

The English physician Edward Jenner was the man who developed and popularized the technique of vaccination as a preventive measure against the dreaded disease of smallpox.

Today, when, thanks to Jenner, smallpox has been wiped off the face of the earth, we tend to forget just how frightful were the casualties it caused in earlier centuries. Smallpox was so contagious that a substantial majority of the people living in Europe caught the disease at some time during their lives. And it was so virulent that at least 10 to 20 percent of those who contracted the disease died from it. Of those who survived, another 10 or 15 percent were permanently disfigured by severe pockmarks. Smallpox was not confined to Europe, of course, but raged throughout North America, India, China, and many other parts of the world. Everywhere, children were the most frequent victims.

For many years, attempts had been made to find a reliable means of preventing smallpox. It had been known for a very long time that a person who survived an attack of smallpox was thereafter immune, and would not catch the disease a second time. In the Orient, this observation had led to the practice of inoculating healthy people with material taken from someone who had a mild case of smallpox. This was done in the hope that the person so inoculated would himself contract only a mild case of the disease and, after recovering, would be immune.

This practice was introduced into England in the early eighteenth century by Lady Mary Wortley Montagu, and it had become fairly common there a good many years before Jenner. Jenner himself, in fact, had been inoculated with smallpox when he was eight years old. However, this ingenious preventive measure had a grave drawback: a fair number of persons so inoculated developed not a minor attack of the disease but a virulent attack which left them badly pockmarked. In fact, roughly 2 percent of the time inoculation itself resulted in a fatal attack of smallpox! Clearly, a superior method of prevention was badly needed.

Jenner was born in 1749, in the small town of Berkeley, in Gloucestershire, England. As a boy of twelve, he was apprenticed to a surgeon. Later, he studied anatomy and worked in a hospital. In 1792, he received a medical degree from St. Andrew's University. In his mid-forties, he was well established as a physician and surgeon in Gloucestershire.

Jenner was familiar with the belief, which was common among dairymaids and farmers in his region, that people who contracted cowpox—a minor disease of cattle, which can, however, be transmitted to humans—never got smallpox afterward. (Cowpox itself is not dangerous to human beings, although its symptoms somewhat resemble those of an extremely mild attack of smallpox.) Jenner realized that if the farmers' belief was correct, then inoculating people with cowpox would provide a *safe* method of immunizing them against smallpox. He investigated the matter carefully, and by 1796, became convinc-



*Jenner administers the first vaccination.*

ed that the belief was indeed correct. He therefore decided to test it directly.

In May 1796, Jenner inoculated James Phipps, an eight-year-old boy, with matter taken from a cowpox pustule on a dairymaid's hand. As expected, the boy developed cowpox, but soon recovered. Several weeks later, Jenner inoculated Phipps with smallpox. As he had hoped, the child developed no signs of the disease.

After some further investigations, Jenner set forth his results in a short book, *An Inquiry into the Causes and Effects of the Variolae Vaccinae*, which he published privately in 1798. It was that book which was primarily responsible for the rapid adoption of the practice of vaccination. Jenner subsequently wrote five other articles concerning vaccination, and for years devoted much of his time to disseminating knowledge of his technique, and working for its adoption.

The practice of vaccination spread rapidly in England, and was soon made compulsory in the British army and navy. Eventually it was adopted throughout most of the world.

Jenner freely offered his technique to the world and made no attempt to profit from it. However, in 1802, the British Parliament, in gratitude, granted him an award of £10,000. A few years later, Parliament granted him an additional £20,000. He became world-famous, and many honors and medals were bestowed upon him. Jenner was married and had three children. He lived to be seventy-three, dying in early 1823, in his home town of Berkeley.

As we have seen, Jenner did not originate the idea that an attack of cowpox would confer immunity against smallpox; he heard it from others. It even appears, in fact, that a few persons had deliberately been vaccinated with cowpox before Jenner came along.

But although Jenner was not a strikingly original scientist, there are few men who have done as much to benefit mankind. By his investigations, his experiments, and his writings, he transformed a folk belief, which the medical profession had never taken seriously, into a standard practice which has saved countless millions of lives. Although Jenner's technique could only be applied to the prevention of a single disease, that disease was a major one. He richly deserves the honors which his own and all subsequent generations have accorded him.