

Horace Wells: pioneer of nitrous oxide anaesthesia

This year marks the 200th anniversary of the birth of Horace Wells, an American dentist who pioneered the use of nitrous oxide as an anaesthetic agent and who was to meet an early and tragic death.

From the earliest times, attempts had been made to assuage the agonies of injury, surgery and childbirth. Large doses of opium, of alcohol and of laudanum (tincture of opium in alcohol) were given by mouth, in addition to mandragora, obtained from the mandrake plant, which contains hyoscyne and other alkaloids.

Some good effects, in sensitive subjects, were achieved using hypnotism, introduced by Anton Mesmer (the bicentenary of whose death we celebrate this year).

However, the first truly effective means of anaesthesia were those produced by the inhalation of various vapours and gas. Humphrey Davy, later director of the laboratory of the Royal Institution, London, described the analgesic effects of inhaling nitrous oxide (first prepared by Joseph Priestley in 1772), gave it the name 'laughing gas' and wrote, in 1800: '... it appears capable of destroying physical pain. It may probably be used with advantage in surgical operations in which no great effusion of blood takes place.'

Although widely used for its euphoric effects, no one seemed to have taken Davy's suggestion seriously until the experiments of the American dentist, Horace Wells. Wells was born in January 1815 in Hartford, Vermont. After learning his trade as an apprentice in Boston, he set up a dental practice in Hartford Connecticut. (It was not until 1840 that the first dental school in the United States opened, in Baltimore, and the American Society of Dental Surgeons was founded.) Wells was a clever and ambitious young man, who wrote a book on dentistry and invented a new type of solder for attaching artificial teeth to a dental plate.

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In 1842, Wells took William Morton into his practice as a partner before Morton moved to Boston a year later. Their paths and interests were to cross later.

In 1844, Wells attended a public demonstration of the effects of laughing gas (nitrous oxide) by an itinerate showman, Gardner Quincy Colton, a member of a travelling circus. A young man who had volunteered to try the experiment badly bruised and lacerated his leg while under the influence of the gas. Wells noted that the young man seemed to be indifferent to

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the pain of his injury until the effects of the gas had worn off. Wells went on to persuade a dental colleague, John Riggs, to extract one of Wells' wisdom teeth, which was carious. After inhaling the gas, he found it entirely effective and exclaimed: 'this is a new era in teeth-pulling!'

Wells forthwith introduced nitrous oxide into his practice, his technique being to administer the gas from a distended animal bladder via a wooden tube placed in the patient's mouth. Not surprisingly, his practice flourished.

Wells then arranged through his former colleague, William Morton, now practicing in Boston, to give a demonstration of the use of nitrous oxide at the Massachusetts General Hospital. The senior surgeon, John Collins Warren, allowed Wells to lecture to the students and then call for a volunteer upon whom to demonstrate his technique. A young man with a painful tooth came forward, but Wells became flustered and dropped his instruments, at last managing to administer the gas. Taking up his forceps, he got a firm grip on the tooth, but as he started to pull, his victim gave a terrified yell. Bedlam broke out as the students laughed

and jeered. Poor Wells fled from the room, leaving his apparatus and instruments behind him.

Shocked by this disgrace, Wells gave up dentistry, let his house and became a travelling salesman.

Shortly afterwards, on 16 October 1846, William Morton demonstrated the effective use of ether as an anaesthetic agent in the removal of a small vascular tumour on the neck of a young lad, again at the Massachusetts General Hospital, and with John Warren as the surgeon. This

was followed, the next month, by Morton anaesthetizing a young woman for an above-knee amputation (for long-standing tuberculous disease of the knee). The news of a really effective anaesthetic agent for a major procedure (a 'capital operation', as it was then called) spread rapidly through the

world. This was followed shortly by the successful use of chloroform in midwifery by Sir James Y Simpson in Edinburgh.

Wells meanwhile had fallen onto hard times. He was now wandering through Connecticut selling household articles, including shower baths and canaries. He moved to New York, experimented with chloroform and appeared to have become addicted to this. One day in January 1848 he rushed into the street, apparently deranged by the drug, and threw sulphuric acid over the face of a prostitute standing there. He was arrested and held in Tombs prison. Here, having inhaled a phial of chloroform, he committed suicide by lacerating his thigh to the bone, severing the femoral artery. He left a note to his wife, which read: 'I feel that I am fast becoming a deranged man, or I would desist from this act. I cannot live and keep my reason.' At his graveside, his wife said: 'My husband's great gift, which he devoted to the service of mankind, proved a curse to himself and his family.'

A tragic end, at the age of 33 years, to one of anaesthesia's pioneers. **BJHM**

Conflict of interest: none.