

## The art of medicine

### When respiring gas inspired poetry

Sir Humphry Davy (1778–1829), the foremost British chemist of the 19th century, is best known now for his invention of the miner's safety lamp; he also isolated more chemical elements than any other individual has before or since, including chlorine, magnesium, and potassium. What is now less well known is that Davy wrote poetry throughout his life. A friend of the Romantic poets William Wordsworth, Samuel Taylor Coleridge, and Lord Byron, like them Davy wrote poems about nature, the imagination, and the sublime. Davy also began a medical career: he was apprenticed to an apothecary-surgeon in his native Penzance, but was released from his indentures to join Thomas Beddoes, a chemist who courted controversy, at the Pneumatic Institute at Clifton in Bristol in 1799. It was there that Davy made his name, experimenting with nitrous oxide gas and recording its effects in his notebooks, letters, poetry, and in a published book. This was a time before the arts and sciences had divided into two cultures and Davy saw a role for poetry within this medical research.

The Pneumatic Institute in Bristol was set up specifically to test the efficacy of the new gases that Joseph Priestley had discovered and analysed. It was conceived as a medical research centre with a hospital attached where pneumatic medicine was tried in patients whose diseases were thought

to be incurable, particularly those with consumption or paralysis. Beddoes was known to be radical in his politics having supported the democratic ideals of the French revolution even after Britain had declared war with France; he resigned from a readership at Oxford University in 1793. In these early years, Davy was a young firebrand, hungry for fame and keen to make his reputation. Through Beddoes, he was introduced to many interesting people then present in Bristol, including Coleridge, Robert Southey, who would become Poet Laureate in 1813, Peter Mark Roget, who was then a physician but went on to write the *Thesaurus*, and James Webbe Tobin who later became an abolitionist. The group gathered together around Beddoes as much for his political views as their interest in medicine. To the wider public, pneumatic medicine became associated with what Edmund Burke scornfully called the "wild gas" of liberty in a time of turbulence after the revolutions in America and France. Davy's particular contribution to medicine was his discovery that nitrous oxide was not, as had been thought previously, fatal when breathed. Unfortunately, although Davy noticed the anaesthetic properties of the gas, these were not further pursued until 1844.

It was really quite brave, or perhaps foolhardy, for Davy to breathe the gas at a time when it was believed to be fatal. He noted in a letter to a friend, dated April 10, 1799: "I made a discovery yesterday which proves how necessary it is to repeat experiments." His euphoric account of the drug—it "made me dance about the laboratory as a madman, and has kept my spirits in a glow ever since"—seemed to promise great things. Beddoes thought that nitrous oxide might offer a means by which to control pleasure and pain, asserting: "Man may, some time, come to rule over the causes of pain and pleasure, with a dominion as absolute as that which at present he exercises over domestic animals and the other instruments of his convenience". In the published account of his experiments, *Researches, Chemical and Philosophical, Chiefly Concerning Nitrous Oxide* (1799), Davy wrote almost as an aside: "As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place." The problem was that, at this time, little attention was paid to the notion of anaesthesia because pain was believed to be an important part of the surgery—not least because it demonstrated that the patient was still alive. It is chastening to consider how many patients might have been saved from needless suffering during the next four decades had Davy pursued this path.

Between May and July, 1800, Davy inhaled nitrous oxide regularly; his published descriptions of these experiences



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Sir Humphry Davy (1778–1829) portrait in oils by Sir Thomas Lawrence

share a number of characteristics. Davy described feeling a “highly pleasurable thrilling” through the limbs, the chest, and in his hands and feet. He often noted a “fullness” in the head; claimed that his hearing and other sensations become more acute; described a “sense of muscular power”, “an irresistible propensity to action”, and wrote that “vivid ideas passed rapidly through the mind”. Davy also described his experience of nitrous oxide as one of intense pleasure, although this is manifested in different ways: “sometimes [...] by stamping or laughing only; at other times, by dancing round the room and vociferating”. Creativity seemed to be enhanced: Davy described what he called “sublime emotions connected with highly vivid ideas” and had reveries of “visible imagery” occupying his mind before sleep. After July, 1800, Davy wrote that he left off his “habitual course of respiration” though continuing “occasionally to breathe the gas”, sometimes purely for “the sake of enjoyment”. By this time, in any case, Davy had a new interest in the Voltaic battery, which he would go on to use to isolate potassium and other elements.

Others in Davy’s circle at Bristol as well as the patients tried the gas with similar results. Southey exclaimed to his brother in a letter dated July 12, 1799: “Davy has actually invented a new pleasure for which language has no name”. Searching for the words with which to describe the experience, one anonymous “paralytic” patient made links with the experience of music and drama saying: “I felt like the sound of a harp”. Davy accounts for such an odd statement with the interpretation that, for the patient, “the pleasurable thrilling were similar to the sensations produced by music”. A woollen manufacturer called Henry Wansey, presumably one of Beddoes’s circle, described “sensations so delightful, that I can compare them to no others, except those which I felt (being a lover of music) about five years since in Westminster Abbey, in some of the grand choruses in the Messiah, from the united powers of 700 instruments of music”. Similarly struggling to represent how it felt to breathe the gas, Tobin, whose brother was a playwright, wrote that it “resembled [feelings] produced by a representation of an heroic scene on the stage, or by reading a sublime passage in poetry when circumstances contribute to awaken the finest sympathies of the soul”. In these accounts, nitrous oxide seems to have offered a particular receptivity to the sublime qualities of music, poetry, and drama.

Davy’s efforts to put into words his own experience of nitrous oxide led him to write a poem in one of his notebooks and, as with many of Davy’s poems, it was not published within his lifetime. The poem is titled “On breathing the Nitrous Oxide”:

Not in the ideal dreams of wild desire  
Have I beheld a rapture waking form  
My bosom burns with no unhallowed fire  
Yet is my cheek with rosy blushes warm  
Yet are my eyes with sparkling lustre filled

Yet is my mouth implete with murmuring sound  
Yet are my limbs with inward transports thrill’d  
And clad with new born mightiness round –

Although the quality of Davy’s verse is unimpressive, it offers a personal, intimate, and honest account of his bodily and mental state. The difficulty Davy has in describing the experience can be seen in the fact that he begins the poem by describing what it is not. He seems to be saying that this experience has not been caused by a dream of “wild desire” in which a dream-figure awakens “rapture” within him. Neither is this feeling the result of some “unhallowed” or profane encounter with the occult. The poem maps very easily onto Davy’s other recorded accounts of the experience of inhaling nitrous oxide in his notebooks and the published *Researches*. It enacts the difficulty of expressing his feelings, beginning with the negative (it is not because...), and continuing with the repetition at the beginning of the line of the word “Yet”. The verb “to thrill” occurs repeatedly in Davy’s scientific accounts and his poetry, used to describe a peculiar tremor of the nerves or a tingling through the body. The idea that his mouth is full of “murmuring sounds” not necessarily his own can be seen in other accounts in which Davy records “trains of vivid visible images [...] connected with words in such a manner, as to produce perceptions perfectly novel”. He is no longer completely in control of the words that he utters but in their utterance he finds new perceptions of the world. The poem sits alongside Davy’s notebook and published scientific work on nitrous oxide but offers something different in its perspective and expression.

The association with Beddoes’s radical politics tainted the nitrous oxide experiments. They became the target of a satirical poem, “The Pneumatic Revellers” in the Tory-sympathising *Anti-Jacobin Review*, whilst a demonic-looking Davy, holding a pair of bellows in a sinister fashion, can be seen in James Gillray’s cartoon of 1801 *Scientific Researches! New Discoveries in Pneumatics! Or an Experimental Lecture on the Powers of Air*. Davy moved on to pursue his galvanic researches, leaving nitrous oxide behind. He took up a post at the Royal Institution in London in 1801, where he became a popular lecturer while undertaking important scientific research. Davy continued writing poetry though, with hundreds of poems written up to the year of his death. Poetry clearly offered Davy something that his published scientific accounts of experiments could not, a different mode of expression, a further means by which to describe emotional and physical states, which complemented rather than opposed his scientific research.

I am currently co-editing Davy’s Letters with Tim Fulford and advisory editors, Jan Golinski, Frank James, and David Knight.

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**Further reading**

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- Knight D. Humphry Davy: science and power. Oxford: Blackwell, 1992
- Snow S. Operations without pain: the practice and science of anaesthesia in Victorian Britain. Basingstoke: Palgrave Macmillan, 2006
- Quotations from the notebook of Humphry Davy, RI MS HD/13c are published here courtesy of the Royal Institution of Great Britain
- For **The Davy Letters project** see <http://www.davy-letters.org.uk>