A son of genius

Maurice Crosland

Humphry Davy: Science and Power. By David Knight. Blackwell: 1992. Pp. 218. £30. \$29.95.

"DAVY is a wonderful subject for a biography because he is so accessible", writes David Knight, and this is true in more senses than one. Not only was he concerned with scientific communication

He was the son of a woodcarver, and his career began as apprentice to an apothecary before he abandoned this path to become the assistant of Thomas Beddoes at his Pneumatic Institute in Bristol. Here Davy's investigation of nitrous oxide was to bring him favourable attention and he was offered a post at the newly founded Royal Institution, which was to provide him with both an excellent laboratory and a platform for popular lectures to fashionable audiences. He was a very successful showman but he was also brilliant in his research. Since Berman's work (*Social Change and Scientific Organization*, Heinmann, 1978), Davy's agricultural research cannot be overlooked; but Davy is probably remembered best for his isolation of the alkali metals, using the new electric battery which had not been available to the generation of Lavoisier. Yet at the height of his fame as professor at the Royal Institution he resigned his position. Had he felt that his creative powers were waning? The answer is rather that he had in his sights a wealthy widow. When she accepted his proposal of marriage, he could look forward to a life of leisure and greater social esteem. He had already been a prominent figure on the London social scene. On 8 April 1812 he was knighted for his services to science. On 10 April he delivered his last lecture and on 11 April, as Sir Humphry, he married Mrs Apreece who became Lady Davy. All this from a man who

Mary Evans

in his youth had spoken in the poem above of the "sons of genius" who despise "wealth, power and grandeur".

Yet Davy continued to contribute spasmodically to science, and his successful consultancy led to his invention of the miners' safety lamp. In his new social position it was not appropriate that he should seek a patent. He was an obvious candidate for the presidency of the Royal Society when Sir Joseph Banks died in 1820. Knight shows that Davy's presidency was not a happy one, nor were the last years of his life, to which the author gives inordinate attention. I would have liked more information on Davy's research career, including his rivalry with his exact contemporary Gay-Lussac over the discovery of chlorine and iodine, but it could well be argued that these topics have already been adequately covered.

Knight has been passionately concerned with Davy for a quarter of a century and could easily have written a book three times the size. Instead, he has produced a brief but authoritative and most readable overview of Davy's life and work, giving enough references and bibliography for readers to follow up aspects that particularly interest them. He reveals Davy not as an impersonal scientist, but as a full human being. □

Maurice Crosland is in the History of Science Unit, Physics Laboratory, University of Kent, Canterbury, Kent CT2 7NR, UK.

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Social climber: Davy (1778–1829).

and popularization, but much of his work was published, and for manuscript sources the researcher hardly has to go further than the Royal Institution in London. Davy has therefore naturally been the subject of many biographies, starting with that by J. A. Paris in 1831 which, because of some criticism contained in it, was followed by a further full biography by Davy's brother. More recently (1966), there was a biography by Sir Harold Hartley, who was exclusively interested in Davy's scientific work. Knight insists that this was only one aspect of Davy.

Knight reminds us that Davy was not only a chemist but a poet as well, and there are liberal quotations from Davy's verse throughout the book. Science and the Romantic imagination were related in such stanzas as:

To scan the laws of nature, to explore
The tranquil reign of mild Philosophy
Or on Nature's wings to soar
Through the bright regions of the starry sky.

Davy and Coleridge were close friends and clearly influenced each other. Davy also knew Wordsworth and managed to persuade him that there was a creative and imaginative side to science. Perhaps Knight performs a similar service for nonscientific readers. Yet he avoids presenting Davy simply as a hero.

Davy was very much a social climber.

Simple explanations

Michael Shlesinger

Applied Chaos Theory: A Paradigm for Complexity. By A. B. Çambel. Academic: 1993. Pp. 246. \$44.95, £33.

THERE have traditionally been two great trends in physics: investigating the very small (atomic, nuclear, particle physics) and investigating the very large (astronomy, cosmology). It is only in the past decade or so that a third trend has emerged: investigating the very complex. The best known examples are the overlapping topics of chaos and fractals, the recent success of which lies in understanding complex behaviour on the basis of simple laws. This fortunate turn of events allows one to learn a fair amount rapidly without great effort. The simplicity can be misleading, with the field being too easy for beginners and too hard for experts.

What should you read if you want to learn about the torrent of new ideas in the field of complexity? If you are an expert, there are several superb weighty mathematical physics tomes that demand

much effort and time. If you are not an expert, you could with great profit read James Gleick's bestseller *Chaos* (Viking, 1987), but this is more about scientists and their interactions than about science. *Applied Chaos Theory* provides one with an alternative. This short, somewhat conversational book is illuminating on a variety of topics, such as attractors, nonlinear population equations, logistic maps, fractal dimensions and Mandelbrot sets. It is written in an engaging manner at a level suitable for undergraduates, and the references are well chosen and fairly up to date.

Çambel sums up succinctly his rationale for the study of chaos: "The importance of chaos is . . . to tackle problems that in the past we simply shied away from." Limits to this approach exist. For example, the older field of fluid turbulence (the classic spatio-temporal dynamics problem) is still shied away from because it has not succumbed to simple arguments. Despite his wish to tackle problems and the word "Applied" in the book's title, Çambel's