

New Studies on Humphry Davy: Introduction

Frank A.J.L. James and Sharon Ruston

University College London / Royal Institution and Lancaster University, England

<http://orcid.org/0000-0002-0499-9291> and <https://orcid.org/0000-0002-3864-7382>

The month after Humphry Davy (1778-1829) died in Geneva, Thomas Carlyle (1795-1881) published his “Signs of the Times” in the *Edinburgh Review*. The timing was doubtless coincidental, but his target was clear:

No Newton, by silent meditation, now discovers the system of the world from the falling of an apple; but some quite other than Newton stands in his Museum, his Scientific Institution, and behind whole batteries of retorts, digesters, and galvanic piles, imperatively ‘interrogates Nature,’ – who, however, shows no haste to answer.¹

Leaving aside his ideas about the methods of Isaac Newton (1642-1727), Carlyle, even though he did not like it, showed here a remarkably firm grasp of the material necessities required for the practice of modern science. That is, chemists, such as Davy, needed to be located in institutions, such as the newish Royal Institution (founded 1799), where they could use modern equipment to implement the Baconian dream of interrogating nature. Although he did not name his specific target(s), there can be little doubt that Carlyle would have had Humphry Davy and the Royal Institution in mind. They provided an example of scientific investigation requiring significant institutional and material resources, which implied, to Carlyle, that there was no longer any room for individual heroic genius in modern science. What he did not appreciate, however, was the creative, active, exploratory, role that experimentation played (and plays) in the construction of scientific knowledge.

¹ [Thomas Carlyle], “Signs of the Times,” *Edinburgh Review* 49 (1829): 439-59 on 443.

As the historiography of science developed during the nineteenth century, Carlyle's railing against the increasing collaborative nature of scientific research of the present as opposed to the triumphs of individual genius of the past became rather ironic. Taking their lead from Newton, those who wrote about science during the nineteenth century tended to concentrate on individual geniuses working away in their basement laboratories. From William Whewell (1795-1866) with his "Epoch of Davy and Faraday"² to Henry Bence Jones (1813-1873) with his periodisation of the Royal Institution based on its succession of professors,³ all emphasised the notion of the lone genius as the prime generator of scientific knowledge.

Such an approach accentuated the human agency involved in science, but neglected, almost to the point of disappearance, the collaborative and institutional aspects of scientific work, not to mention much of its cultural and social significance. Focussing historical investigations on individuals necessarily diminished contextual significance and concentrated instead on what was taken to be the primary activity of an individual. For instance, Davy came to be seen almost entirely as a chemist, while his friend Samuel Taylor Coleridge (1772-1834) was perceived to be a poet. Such subject-specific identifications are to a large extent still widely held, despite Davy writing poetry and Coleridge having strong informed scientific interests. The identification of historical actors with specific disciplines then affected historical scholarship with, until fairly recently, Davy being studied in History of Science departments and Coleridge in English departments. That said, in recent years Davy has been warmly welcomed into the new subdiscipline of Literature and Science Studies; he appears in a number of key texts in this field and more generally in the field of English Literature and specifically "Romantic Period" modules.⁴

² William Whewell, *History of the Inductive Sciences from the Earliest to the Present Times*, 3 vols. (London: Parker, 1837), vol. 3, 154-75.

³ Henry Bence Jones, *The Royal Institution: Its Founders, and Its First Professors* (London: Longman, 1871). For a critique see Sophie Forgan, "'A national treasure house of a unique kind' (W.L. Bragg): Some Reflections of Two Hundred Years of Institutional History" in *'The Common Purposes of Life': Science and Society at the Royal Institution of Great Britain*, ed. Frank A.J.L. James (Aldershot: Ashgate, 2002), 17-41.

⁴ For example, *Romanticism: A Sourcebook* ed. Simon Bainbridge (Houndmills: Palgrave, 2008); *British Romanticism: An Oxford Anthology*, ed. David Duff (Oxford: Oxford University Press, 2018); *Revolutions in Romantic Literature: An Anthology of Print Culture, 1780-1832*, ed. Paul Keen (Peterborough, ON: Broadview, 2004); *The Routledge Research*

The papers in this guest-edited double issue of *Ambix* examine, pursue and advance this newer historiography surrounding the life, the career, and the social and cultural contexts of Humphry Davy, as illuminated by the publication of his collected letters (discussed below). To some extent the disciplinary divisions mentioned above can be seen in the nineteenth-century biographies of Davy discussed in the contribution by Frank James, although Davy's poetry was always a recurrent theme. During the twentieth century, particularly from the 1970s onwards, historical approaches towards Davy's biography changed, as content became increasingly contextualised, a shift discussed in David Knight's contribution. In his 1992 biography of Davy, Knight showed the importance of Davy's poetry which had been minimally used in the 1966 biography by Harold Hartley (1878-1972).⁵ In recent decades the dichotomy largely broke down. The papers in this double issue examine various and hitherto largely unexplored aspects of Davy's life: his relationship with his brother, John Davy (1790-1868) and his wife, Jane Davy (1780-1855); his attitude to his health and to travel; his later life; his audiences; use of analogy in his writings; and his collaborators. All this casts light on his complexity, and illustrates that a fuller understanding of chemists and chemistry must go far beyond and behind conventional laboratory images and tropes. These essays also notably consider a range of materials from printed texts to letters, unpublished poems, lectures, and notebook entries, many of them new to contemporary scholarship. A number of the essays published here make use of Davy's posthumously published *Consolations in Travel* (1830), which until recently had quite fallen out of favour and was generally ignored by those writing about Davy. Indeed, Hartley told Knight that he "could make nothing of [it]."⁶

This special double issue of *Ambix* arose from a Symposium, "Using the Davy Letters", held at the Royal Institution on 22 April 2017 and supported by the Arts and Humanities Research Council. Most of the contributors to this special issue of *Ambix* spoke at the Symposium, though

Companion to Nineteenth-Century Literature and Science, ed. John Holmes and Sharon Ruston (London and New York: Routledge, 2017).

⁵ Harold Hartley, *Humphry Davy* (London: Nelson, 1966)

⁶ David M. Knight, *Humphry Davy: Science and Power* (Oxford: Blackwell, 1992; pbk 1994; reissued Cambridge: Cambridge University Press, 1996; 2nd ed. 1998), 6.

some have changed their topic for publication here. Sadly, David Knight died at the beginning of 2018, but not before he had sent us the text of his talk, which we have included here with the lightest of editing. We have also included an extended appreciation by W.H. Brock of Knight's contributions to the understanding the historical relations of science within other areas of culture and society, especially literature and religion including, not least, his career-long work on Davy.

At the time of the Symposium, the project to publish all Davy's extant letters was nearing completion and we conceived the Symposium and its subsequent publication as a way to draw attention to this new resource in understanding various aspects of science and culture in the fraught social, cultural and political climate that subsisted for almost the entirety of Davy's adult life. Correspondences produce a window through which we can view the life and work of an individual in all its messy detail, even if, as is usually more often the case than not, it will be incomplete, obscured, or ambiguously misty. *The Letters of Sir Humphry Davy*, published by Oxford University Press in four volumes in 2020, makes available every known, extant letter written by Davy, amounting to 1203 letters.⁷ Seventy-one letters written by his wife, Jane Davy, and thirty-five by his brother, John Davy, have also been included, selected for their relevance to Davy. The edition also contains a comprehensive bibliography of work on Davy. The authors of the essays in this special issue have had access to this edition and have used it in their work. Many letters used had not been known to scholars before, with only a third having been published previously.

We are currently living through a number of bicentennial celebrations: 1819 was the year that John Keats (1795-1821) wrote his "Great Odes"; John Polidori (1795-1821) published *The Vampyre*; James Watt sr (1736-1819) died; the "Peterloo Massacre" took place, and Percy Shelley (1792-1822) wrote "England in 1819" and "The Mask of Anarchy" in response. We will also see celebrations this year for the sesquicentenary of the Periodic Table. Davy spent the entirety of 1819 in Italy where he had gone at the personal request of the Prince Regent (soon to be George IV, 1762-1830) to help unroll the papyri excavated from Herculaneum. By this point he had

⁷ *The Collected Letters of Sir Humphry Davy*, ed. Tim Fulford and Sharon Ruston, advisory ed. Jan Golinski, Frank A.J.L. James and David Knight, 4 vols. (Oxford: Oxford University Press, 2020).

achieved much of what he was best known for: the nitrous oxide experiments; the isolation of potassium and other elements; and the invention of his miners' safety lamp, the so-called "Davy lamp."

It was after 1819 that Davy's fortunes began to wane, with his election as President to the Royal Society of London in 1820 and perceived failure in this role. As David Knight put it in his *Oxford Dictionary of National Biography* entry on Davy: "In the event, Davy's reputation was tarnished by his taking this responsibility: had he died in 1819 it would have been glittering." Studies of Davy have perhaps unevenly concentrated on Davy's early career to date, exploring, often critically, how the "glittering" reputation was formed and Davy's role in shaping that reputation. Some essays in this volume focus on less well-known periods in Davy's life, such as his travels later in life after his resignation from his presidency at the Royal Society (Jan Golinski), or the stages through which his reputation and legacy were formed (James).

The essays in this special issue also reflect upon what constituted chemistry at that time and where Davy located himself within that science and beyond. The title of his *Elements of Chemical Philosophy* (1812) reveals that he thought chemistry provided knowledge about the world in general – what he termed the "transcendental part of chemistry."⁸ Here Davy held views that were quite different from many of his contemporaries: he rejected the physicality or materiality of the atoms proposed by John Dalton (1766-1844)⁹ and he never fully accepted the chemistry of Antoine Lavoisier (1743-1794). While some evidence supported these positions, much of his opposition came from a burning desire to be seen as the Newton of chemistry, of founding a new science. This doubtless accounts for the frequency with which he deployed the metaphor of the infant in his writings. It is not known whether he was aware of the reply "what use is a new born baby" given by Benjamin Franklin (1706-1790), American ambassador to France from 1778 to 1785, when asked about the value of the balloon ascents in Paris that began in

⁸ Quoted from Davy's lecture notes in *The Collected Works of Sir Humphry Davy, Bart.*, ed. John Davy, 9 vols. (London: Smith, Elder, 1839-40), vol. 8, 328.

⁹ Alan J. Rocke, *Chemical Atomism in the Nineteenth Century: From Dalton to Cannizzaro* (Columbus: Ohio State University Press, 1984), 55-61.

1783, a *bon mot* that circulated widely.¹⁰ Davy viewed the sciences he was working in – chemistry, agricultural chemistry, chemical geology, etc. – as all being in their infancy.¹¹ The implication being that they would be of use when they matured and that he would be seen as their progenitor.

Davy's chemistry went far beyond what the term might be taken to denote, and may explain his enthusiasm in using chemistry in a wide range of arenas, from agriculture to archaeology, from mining to war. In turn, Davy's chemical philosophy attracted significant interest and following. Women flocked to hear him at the Royal Institution to assert the chivalrous values of chemistry in the course of which he turned the politically suspect science of the 1790s into the respectable science of the 1810s and later (as described in Hattie Lloyd Edmundson's paper). His brother John Davy so admired him that he devoted much of his own life to producing biographies about him as well editing nine volumes of his *Collected Works* (James's paper), but as Andrew Lacey shows John Davy also had his own distinguished career. Davy considered himself a philosopher with a wide purview, not limited to what Mary Shelley (1797-1851) would label "petty" experimentalism in her novel *Frankenstein* (1818).¹² Instead, Davy used analogy to demonstrate his philosophical character (Sharon Ruston's and Gregory Tate's contributions). As Tim Fulford argues, Davy's discussions (dialogues) with his friends were crucial to developing and articulating his research, not that he wished to admit as much, preferring to construct himself as an individual genius.¹³ In his contribution, Golinski demonstrates that Davy's late travels were motivated by his understanding of medicine.

¹⁰ I. Bernard Cohen, "Faraday and Franklin's "Newborn Baby"," *Proceedings of the American Philosophical Society* 131 (1987): 177-82.

¹¹ For example, Frank A.J.L. James, "'Agricultural Chymistry is at present in it's infancy': The Board of Agriculture, The Royal Institution and Humphry Davy", *Ambix* 62 (2015): 363-85 and "Negative Geology: Humphry Davy and the Forming of the Royal Institution's Mineralogical Collection, 1803-1806," *Earth Sciences History* 27 (2018): 309-32 on 311.

¹² Mary Shelley, *Frankenstein*, ed. Marilyn Butler (Oxford: Oxford University Press, 1993), 31.

¹³ Jan Golinski, *The Experimental Self: Humphry Davy and the Making of a Man of Science* (Chicago: University of Chicago Press, 2016).

When Carlyle wrote his coruscating attack on modern science, he did so knowing that Davy's reputation was in tatters following his presidency of the Royal Society of London from 1820 to 1827.¹⁴ Carlyle's praise of Newton was particularly apposite, as perhaps more than anything Davy desired, from a very early age, to be seen as the new Newton, writing in his notebook in August 1799 in large letters, albeit under the influence of several litres of nitrous oxide: "Davy & Newton".¹⁵ Despite the best efforts of his brother, Davy was never viewed in this way – the publication failure of his *Collected Works*, discussed in James's paper, illustrates that.

Even in his native Cornwall efforts to memorialise him were not particularly effective. It was not until over thirty years after his death that plans materialised in the early 1860s to commemorate him by means of a monument in Penzance. However, the initial conception was ambitious, involving constructing a tower on the Iron Age hill fort at Leskudjack just to the north of Penzance. Judging by the drawing that survives, which is reproduced on the cover of this issue of *Ambix*, it would have been in excess of 100 feet high surmounted by a statue of Davy; it would have dominated Mount's Bay. The necessary funds for the project proved impossible to raise, suggesting that even local pride could not make up for Davy not being Newton. Eventually a more modest statue in Penzance town square was erected in 1872.¹⁶ Nevertheless, the efforts made to provide a fitting memorial to Davy illustrates the strong tendency from the mid-nineteenth century onwards to view the creation of scientific knowledge, even in the nineteenth century, as that of a single individual, by implication a genius. Carlyle would have doubtless been pleased.

What we have sought to do, by bringing these papers together, is to provide much richer and more nuanced accounts of aspects of Davy's life, showing how he and his work fitted into the very complex and difficult social, cultural, and political contexts of the opening decades of the

¹⁴ David Philip Miller, "Between Hostile Camps: Sir Humphry Davy's Presidency of the Royal Society of London 1820-1827," *The British Journal for the History of Science* 16 (1983): 1-47. For a more nuanced account see Tim Fulford, "The Role of Patronage in Early Nineteenth-Century Science, as Evidenced in Letters from Humphry Davy to Joseph Banks," *Notes and Records of the Royal Society of London*, forthcoming.

¹⁵ Royal Institution MS HD/20/B, 182. See also Geoffrey Cantor, "Humphry Davy: A Study in Narcissism?," *Notes and Records of the Royal Society of London* 72 (2018): 217-37 on 219.

¹⁶ For the details see Christine MacLeod, *Heroes of Invention: Technology, Liberalism and British Identity, 1750-1914* (Cambridge: Cambridge University Press, 2007), 309-12.

nineteenth century. As Coleridge perceptively pointed out, Davy became “more and more determined to mould himself upon the age in order to make the age mould itself upon him.”¹⁷ Knowledge construction was indeed a collaborative, even symbiotic, effort.

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Notes on Contributors

Frank James is Professor of the History of Science at the Royal Institution and University College London and Chair of the Society for the History of Alchemy and Chemistry. His main research concentrates on the physical sciences in the late eighteenth and nineteenth centuries and how they relate to other areas of society and culture, for example art, business, media, religion, technology and the military. He edited the *Correspondence of Michael Faraday*, published in six volumes between 1991 and 2012, and a number of essay collections including ‘*The Common Purposes of Life*’ – a set of essays on the Royal Institution. His *Michael Faraday: A Very Short Introduction* was published in 2010 by OUP who the following year also published his sesquicentenary edition of Faraday’s *Chemical History of a Candle*. His current research is on the practical work of Humphry Davy, including his work on nitrous oxide, agricultural chemistry,

¹⁷ Samuel Taylor Coleridge, January 1804, in *The Notebooks of Samuel Taylor Coleridge* ed. Kathleen Coburn, 5 vols. (London: Routledge and Kegan Paul, 1957-2002), vol. 2, entry 1855. With thanks to Lloyd Edmondson for drawing our attention to this quotation.

mineralogy, the miners' safety lamp, analysis of ancient Roman pigments and his attempts to unroll chemically the papyri excavated from Herculaneum. He has been President of the British Society for the History of Science, the Newcomen Society for the History of Engineering and Technology and the History of Science Section of the British Science Association. He was elected a Member of the Academia Europaea in 2012 and is a Membre Effectif of the Académie internationale d'histoire des sciences. Address: Department of Science and Technology Studies, University College London, Gower Street, London, WC1E 6BT, England; e-mail: frank.james@ucl.ac.uk.

Sharon Ruston is Chair of Romanticism at Lancaster University. She has published *Shelley and Vitality* (2005); *Romanticism: An Introduction* (Continuum, 2007), and *Creating Romanticism: Case Studies in Literature, Science and Medicine in the 1790s* (Palgrave, 2013). She is the editor of a special issue of *Essays and Studies* on 'Literature and Science' (2008); and the co-editor of *The Collected Letters of Sir Humphry Davy*, 4 volumes (Oxford: Oxford University Press, 2019). Address: English Literature and Creative Writing, B92, County College, Lancaster University, Bailrigg, Lancaster, England, LA1 4YW; s.ruston@lancaster.ac.uk.