

Book Review

Sir James Dewar, 1842-1923: A Ruthless Chemist, J. S. Rowlinson, Ashgate, Farnham, 2012, xviii + 236 pp., ISBN 978-1-4094-0613-6, \$124.95.

The dictionary defines a clerihew as a “whimsical, four-line biographical poem” invented by the British humorist, Edmund Clerihew Bentley (1875-1956), while still a 16-year old schoolboy. One of his earliest attempts is an example well-known to historians of chemistry:

Sir Humphry Davy
Abominated gravy.
He lived in the odium
Of having discovered sodium.

Recently I had occasion to examine Bentley’s first published collection of clerihews, *Biography for Beginners* (London, 1905), and was delighted to discover that, in addition to Davy, yet another chemist was embedded among the many satirized literary figures, politicians, philosophers and theologians:

Professor Dewar
Is a better man than you are,
None of you asses
Can condense gases.

Aside from the rather exaggerated pronunciation of Dewar required to make the rhyme work, this little ditty is of interest for two reasons. First, it focuses on Dewar’s later work on the liquefaction of gases at low temperatures, which led in turn to his development of the vacuum flask or thermos bottle – probably the only aspect of his career known to most present-day chemists. In recognition of this accomplishment, the vacuum flask – at least among American chemists – is often referred to simply as a “Dewar.”

Second, there is a suggestion of intellectual arrogance on the part of Dewar – an aspect of his personality also reflected in the subtitle of the book under review: *A Ruthless Chemist*. Though short biographical summaries of Dewar’s life and career have long been available, this is the first book-length study of this talented, albeit irascible, Scottish chemist. Its author, Sir John Rowlinson, is well-known among physical chemists for his work on the theory of liquids and liquid mixtures, and is increasingly known among historians of science as well for such works as his reprinting with commentary of the English translation of J. D. van der Waals’ classic 1873 thesis, *On the Continuity of the Gaseous and Liquid States* (Amsterdam, 1988); his coauthoring (with A. Y. Kipnis and B. E. Yavalov) of the biography, *Van der Waals and Molecular Science* (Oxford, 1996); his magisterial study, *Cohesion: A Scientific History of Intermolecular Forces* (Cambridge, 2002); and, most recently, his coediting of the volume, *Chemistry at Oxford: A History from 1600 to 2005* (Cambridge, 2009).

Rowlinson's path from the work and life of van der Waals and the history of the study of molecular cohesion to the life of Sir James Dewar is perhaps a natural one, given Dewar's experimental contributions to the study of the liquefaction of gases mentioned above. But, of course, a reading of his book quickly reveals that this was but one aspect of Dewar's long and fruitful career. Trained in chemistry at the University of Edinburgh by Lyon Playfair and Alexander Crum Brown, Dewar's first publications were in the field of organic chemistry, including the invention of a flexible 2D mechanical model to illustrate the application of Crum Brown's topological bonding symbolism to the problem of the structure of benzene, and his proposal that pyridine had an analogous aromatic ring structure. This led to postgraduate work in the laboratory of Kekulé at Ghent, after which he held a series of short-term appointments at Dick College and the Highland and Agricultural Society of Scotland. Finally, in 1875, at age 33, Dewar was appointed Jacksonian Professor of Natural Philosophy at Cambridge University, followed two years later by a concurrent appointment as the Fullerman Professor of Chemistry at the Royal Institution in London. These events were accompanied by an increasing preference for work in the field of physical chemistry and pure physics. Thus, while at Cambridge, he initiated a long series of researches in the area of atomic spectroscopy in collaboration with the Cambridge Professor of Chemistry, George Liveing, and it is largely in connection with his appointment at the Royal Institution that he began his best known work in the field of cryogenics, including both gas liquefaction and the measurement of physical properties at low temperatures. In between he found time to do work on the metal carbonyls and to invent, in collaboration with Frederick Abel, the explosive known as cordite – a commercial venture which led to a long and acrimonious dispute with Alfred Nobel over patent rights. Nor was Dewar's combative behavior reserved for commercial competitors, as throughout his career he also managed to become entangled in personal disputes with both his scientific competitors and with many of his colleagues and assistants – whence Rowlinson's choice of subtitle.

Unlike many biographies of scientists by professional historians and science journalists in which little is said of the scientist's actual laboratory work for fear it will turn off the lay reader, Rowlinson takes great pains to explain the nature of Dewar's work and has included many diagrams illustrating the apparatus used. About the only criticism I would have is the absence of a similar series of photos illustrating Dewar's personal life (i.e., his appearance at various ages, his family, his close friends and associates, etc.) – the only photo of him in the entire book being the frontispiece, which shows the famous portrait taken by his assistant, Alexander Scott, in which Dewar is examining a vacuum flask in his laboratory at the Royal Institution. But this is a purely personal bias and should not deflect the interested reader from acquiring and enjoying this informative biography.

William B. Jensen, McMicken Professor of Chemistry, University of Cincinnati,
jensenwb@ucmail.uc.edu