The Chemical History of a Candle, Sesquicentenary Edition, Michael Faraday; Frank A. J. L. James, Editor, Oxford University Press, Oxford & New York, 2011, xlviii + 152 pp, ISBN 978-0-19-491-4, $24.95.

In view of the preoccupation of today's youngsters with the latest technological invention and disdain for even yesterday's products, one would think that a candle would interest them as little as would whale oil for illumination or horses as a source of locomotion. However, since the largely self-taught British scientist, inventor, and electrical pioneer Michael Faraday (1791-1867) delivered his series of six Christmas lectures for juveniles at London's Royal Institution during December 1860 and January 1861 and promptly published them (edited by William Crookes; Griffin, Bohn & Co., London, 1861), this classic work of popular science has remained in print. This 150th anniversary edition of this timeless, charming masterpiece, written in Faraday's straightforward, accessible style, makes an elegant, inexpensive gift for young and old alike—from scientific tyro to seasoned investigator—or anyone interested in simple but universal chemical and physical concepts.

This new edition, dedicated to the memory of historians of science A. Rupert Hall (1920-2009) and Marie Boas Hall (1919-2009), includes, for the first time, facsimile reproductions of Faraday's original handwritten lecture notes from Royal Institution (MS F4 J21), and an introduction by Frank A. L. James, to the historical context, the background of the lectures, and to Faraday himself. Ideally qualified for this task, James received his Ph.D. in the history of science from Imperial College London with a dissertation on the development of spectroscopy in the 19th century. He joined the Royal Institution, where Faraday worked, and was appointed Professor of the History of Science there in 2004. His primary research has involved editing *The Correspondence of Michael Faraday*, a complete edition of Faraday's approximately 4900 extant letters in six volumes (1991-2011), published by the Institution of Electrical Engineering and Technology (formerly the Institution of Electrical Engineers).

Faraday began his lectures:

> There is no better, there is no more open door by which you can enter into the study of natural philosophy [as science was then called], than by considering the physical phenomena of a candle.
>
> And before proceeding, let me say this also—that though our subject be so great, and our intention that of treating it honestly, seriously, and philosophically, yet I mean to pass away from all those who are seniors amongst us. I claim the privilege of speaking to juveniles as juvenile myself. I have done so on former occasions—and, if you please, I shall do so again. And now, my boys and girls, I must first tell you of what candles are made.

James' 31-page Introduction is followed by a 2-page Note on the Published Text, a 1-page Preface, and the lectures themselves, which include 35 figures of his simple but cleverly constructed experiments: Lecture I. A Candle: the Flame—Its Sources—Structure—Mobility—Brightness; Lecture II. Brightness of the Flame—Air Necessary for Combustion—Production of Water; Lecture III. Products: Water from the Combustion—Nature of Water—A Compound—Hydrogen; Lecture IV. Hydrogen in the Candle—Burns into Water—The Other Part of Water—Oxygen; Lecture V. Oxygen Present in the Air—Nature of The Atmosphere—Its Properties—Other Products from the Candle—Carbonic Acid—Its Properties; Lecture VI. Carbon or Charcoal—Coal Gas—Respiration and its Analogy to the Burning of a Candle—Conclusion. The volume concludes with Notes; the Facsimile; and Original page Running Heads.

Klaus Roth, in a series of three articles (1) written in German and translated into English by W. E. Russey, pursues the fate of a candle from its raw materials through its combustion as discussed by Faraday in his Christmas lectures. The series is available on the Internet (2). Those interested in reading further on the subject should view the online *ChemViews* magazine article, "What Makes a Candle Flame?" (3).

In his Foreword to the sesquicentenial edition, David Phillips, Professor Emeritus, Imperial College London and President of the Royal Society, who himself served as Royal Institution Christmas Lecturer (1987-1988), praised it as "a text that demonstrates Faraday's capabilities to engage and enthuse an audience; a process as necessary today as it was then." I echo his concluding admonition, "Enjoy it!"

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References and Notes

1. Klaus Roth, "Alle Jahre wieder: die Chemie der Weihnachtskerze," Chemie in Unserer Zeit, 2003, 37(6), 424-429.
2. http://www.chemistryviews.org/details/ezine/1369631/Chemistry_of_the_Christmas_Candle__Part_1.html; http://www.chemistryviews.org/details/ezine/1393371/

Chemistry_of_the_Christmas_Candle__Part_2.html; and http://www.chemistryviews.org/details/ezine/1406001/Chemistry_of_the_Christmas_Candle__Part_3.html

3. "What Makes a Candle Flame?" ChemViews, December 6, 2011, 10.1002/chemv.201000145; http://www.chemistryviews.org/details/ezine/1393243/ What_Makes_a_Candle_Flame.html.

European Women in Chemistry, Jan Apotheker and Livia Simon Sarkadi, Editors, Wiley-VCH, Weinheim, Germany, 2011, 256 pp, ISBN 978-3-527-32956-4, $29.95.

European Women in Chemistry was developed in an effort to document women's careers and inspire young women. Part of the International Year of Chemistry 2011 and its efforts to celebrate the centennial of Marie Curie's 1911 Nobel Prize in Chemistry was the concerted effort to promote the cause of women in chemistry and *European Women in Chemistry* conforms nicely to that stated aim. With the purpose of motivating and inspiring younger women through life experiences described as "difficult or extraordinary," the book consists of over fifty short biographical entries of European women who pursued careers in the chemical sciences.

Arranged chronologically, the biographical entries begin with Maria the Jewess, an alchemist who lived in first or third century, and end with Katharina Landfester, the current director of the Max Planck Institute for Polymer Research in Mainz, Germany. In between are biographical entries of women likely unfamiliar to young, aspiring chemists today. Some of the earliest entries offer little in the way of either inspiration or even information about the woman and her role in relationship to chemistry. Cleopatra the alchemist, like Maria the Jewess, is shrouded in mystery. Unlike Maria the Jewess, Cleopatra the Alchemist does have an extant document. However, we know nothing about her at all; the details of her life and the majority of her work remain hidden.

One of the most interesting early women in the book is Anna, Princess of Denmark and Norway, Electress of Saxony. Having never heard of her, I assume that young women, the intended audience, will likewise be unfamiliar with this remarkable woman. An early example of how class and birth status provide a distinct advantage in chemical pursuits, Anna sponsored and pursued pharmaceutical sciences. Additionally , the biographical entry claims Anna and her husband were interested in alchemy and not just medical chemistry. Unfortunately, the biographical entry format of the book does not allow space to explore one of the most interesting aspects of Anna's life and career—possible implications of witchcraft. The last sentence simply states that "Anna's high social status as a Princess may have saved her from being suspected of witchcraft and being sentenced to the stake." Understanding more about the threat of a witchcraft accusation in the sixteenth century would not only have been interesting but it could have been truly inspirational to understand the ways in which Anna's pursuits placed her in mortal danger.

In the middle of the book, when the biographical entries reach the eighteenth century, it becomes more likely that young women reading the book will have a level of familiarity with some of the women highlighted. While most will have heard of Lavoisier, they will be familiar with Antoine Lavoisier and not his wife Marie. However, the biographical story of Marie Lavoisier with the backdrop of the French Revolution and a subsequent marriage to Count Rumford of Bavaria offers little in the way of inspiration to a modern young woman in chemistry. Instead what Madame Marie Lavoisier's biographical entry does do is highlight the ways in which intelligent young women were steered. As her husband's laboratory assistant and research partner, Marie Lavoisier was instrumental in the work her husband receives most of the credit for. Indeed Marie was the author of all the hand engravings featured in *Traité élemetaire de chimie*, Antoine Lavoisier's seminal chemistry publication in 1789.