> By 8 November the unit was reestablished at Cherbourg, ... and Stoney and her staff of seven women doctors and twelve nurses served there until 24 March 1915. This time they were quartered in the sixteenth-century Chateau Tourlaville, picturesque but hardly ideal for their purposes. ... Sanitation was primitive, a bucket system being necessary and no running water except on the ground floor. Water for surgical use had to be carried up two flights and sterilized by boiling over oil stoves. Within a week of their arrival the French had filled the seventy-two beds with critically wounded men ... The less seriously ill were sent south directly. Most of Stoney's cases were compound fractures, and her X-ray work was invaluable in determining the precise locations of shell fragments in the exceptionally septic wounds. With constant practice she also became skilled at distinguishing dead bone from living and found that removal of the former speeded recovery. Of the 120 patents the women's team treated during their four and half months only ten died.

The second relates to the life of chemist Ellen Swallow Richards. She was recognized as a prominent chemist and was the first woman student at MIT and its first woman instructor:

> However, as early as the 1880s Richards was well aware that, despite her extensive involvement in the Massachusetts water survey and other projects, her opportunities for professional development and advancement in chemistry were limited. So she gradually turned to other areas where she felt she had something to offer. Her public health work had made her increasingly conscious of the then barely recognized dangers from air and water pollution and adulterated foodstuffs in a society rapidly becoming more and more urban and overcrowded. Nutrition research and the setting up of dietary standards became special concerns, and from there she was drawn into the tasks organizing the field of home economics.

Both excerpts reflect how the times and the conditions had a tremendous effect on the women involved. The survey is filled with these stories—some tragic, some heroic, and some frustrating. The survey also includes the impact on these scientific women of mentors, the schools, and the trends in scientific institutions such as the Academy of Science and the formation of the American Association of University Women. Creese treats us to the nonscientific accomplishments of these women as well. Because of the drive and strength of character, many of these women were active in social endeavors as reflected in the excerpt on Ellen Richards.

The survey that Creese has put together is extremely comprehensive. It includes a wealth of biographical and bibliographic information that makes it an essential reference for anyone who is interested in the history of women in science. Mary Creese has achieved success in a most difficult task: bringing the lives and accomplishments of women scientists into the open while at the same time not rewriting history. She has put a face to the challenges and has described how the women coped within the confines of the social framework of the time. Thus, the role models and the change agents have come to life for all to see. These women truly were trailblazers in the world of science. *Frankie K. Wood-Black, Phillips Petroleum, Borger Refinery and NGL Center, Borger, TX 79008*

A Chemical History Tour: Picturing Chemistry from Alchemy to Modern Molecular Science Arthur Greenberg, John Wiley and Sons, New York, 2000. xx + 312 pp, 164 figures, index, ISBN 0-471-35408-2. $59.95.

Greenberg, who is Chair of the Chemistry Department at the University of North Carolina-Charlotte, provides what he calls a "light-hearted tour through selected highlights of chemical history." He is writing for chemists, chemistry teachers, and interested lay readers, not professional historians of chemistry. Although he has aimed at producing "light reading," filled with intriguing illustrations and richly peppered with humorous episodes, ironic anecdotes, and jokes, he also wished to create an effective adjunct for teachers and a book that might lead the general reader toward a greater appreciation for the chemical arts. He succeeded.

This is, indeed, a delightful book, filled with curious lore and wry observations. Greenberg states in the front matter that "I am not a chemical historian," and at times this is noticeable (a minor point in illustration: George Starkey and James R. Partington both acquire here the first name "John"). But Greenberg never intended to write a contribution to scholarship in history of chemistry. Instead, regarding alchemy, we read a section on "Ratso Rizzo and the Poet Virgil as Transmuting Agents;" regarding Van Helmont, "A Tree

Grows in Brussels;" regarding Starkey, "A Harvard-Trained Alchymist;" regarding Priestley, "Making Soda Pop;" regarding a famous Edinburgh professor, "Black's Magic;" and regarding Cannizzaro, "My Parents Went to Karlsruhe and All I Got Was This Lousy Tee-Shirt!"

It is a measure of Greenberg's success that even professional historians of chemistry will find this book filled with clever—and sometimes even profound—observations, and many arresting illustrations. "And if a few students are caught snickering over a page of Rabelaisian chemical lore or some bad puns," Greenberg remarks, "would that be such a bad thing?" This reader does not think so. *Alan J. Rocke, History of Technology & Science, Case Western Reserve University, Cleveland, OH 44106.*

The Chemical Industry in Europe, 1850-1914: Industrial Growth, Pollution, and Professionalization, E. Homburg, A. S. Travis, and H. G. Schröter, Ed., Kluwer Academic Publishers, Dordrecht, 1998. x + 344 pp, hardbound, ISBN 0-7923-4889-3. $154.

Determinants in the Evolution of the European Chemical Industry, 1900-1939: New Technologies, Political Frameworks, Markets and Companies, A. S. Travis, H. G. Schröter, E. Homburg, and P. J. T. Morris, Ed., Kluwer Academic Publishers, Dordrecht, 1998, xii + 393 pp, hardbound, ISBN 0-7923-4840-7. $195.

These books comprise volumes 17 and 16, respectively, of *Chemists and Chemistry*, a series by Kluwer Academic Publishers "devoted to the examination of the history and development of chemistry from its early emergence as a separate discipline to the present day." Previous topics in the series have been biography, chemical concepts, nomenclature, scientists' attitudes, polyolefins, lactic acid, rare earths, instruments, chemistry in America, and the development of chemical engineering.

The volumes reviewed here augment and expand on the meager amount of work published in book form in English on the history of chemical technology and manufacturing in Europe, particularly that of Haber (1, 2) and to some extent that of Hohenberg (3), Aftalion (4), and Arora, Landau, and Rosenberg (5). They grew out of two workshops sponsored by the European Science Foundation during 1995 and 1996 on the Evolution of Chemistry in Europe. Twenty-nine authors, mostly academics from fourteen countries, bring expertise and insight from such diverse fields of learning as history, chemistry, chemical engineering, economics, control engineering, general science, and technology. Longer than usual "Notes on Contributors," including their addresses, bolster the academic worth of the books.

All essays in both books are well researched, well documented, well indexed and will be of lasting value. Issues they raise will provide grist for the mills of future research. As might be expected of the output from a cadre of authors, some chapters are more interestingly written than others, and some contain more meat than others. Because the essays as collections tend to be disjointed, and fail to present a "big picture," namely, a coherent unified history, they are far more likely to be consulted for the important details, insights, and perspective they can bring to the standard works. I found less of an overarching commonality among the essays within a theme of Volume 16 than those of Volume 17. For that reason, I reviewed each essay of Volume 16 separately.

Obscure words and complex sentence structures in a few essays in both books often caused me to reread for meaning. The lack of thorough copy editing and proofreading is apparent in both. Missing punctuation, missing words, misspellings, and inconsistencies in format and layout, although stumbling blocks to the perfectionist, are not sufficient in number to mar the value of the contents. The print in Volume 16 was more difficult to read than that of Volume 17. Prices of both volumes, at about $0.45 per page, although steep for the average reader, are in keeping with those of other works of limited distribution.

The 17 chapters of Volume 17 are published in three themes: **Patterns of Industrialization, Pollution,** and **Chemists and Companies**.

In the first theme, **Patterns of Industrialization**, five chapters cover the formation and growth of chemi-