

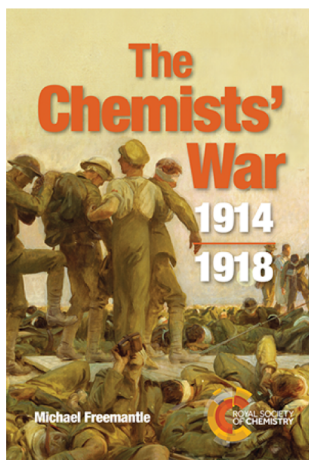
Review of *The Chemists' War: 1914–1918*

Jeffrey Kovac*

Department of Chemistry, University of Tennessee, Knoxville, Tennessee 37996-1600, United States

Chemists' War: 1914–1918, by Michael Freemantle. Royal Society of Chemistry: Cambridge, 2015. xvi + 342 pp. ISBN 9781849739894 (paperback). \$32.00.

World War I has often been called the “chemist’s war”, and World War II the “physicist’s war”. This is because World War I is regarded as the beginning of modern chemical warfare, the opening of nearly 6000 cylinders of chlorine gas by the German Pioneer Regiment under the command of future Nobel Laureate Fritz Haber near Ypres, Belgium, on April 22, 1915, while World War II was punctuated by the atomic bomb attacks on Hiroshima and Nagasaki, Japan, in August 1945. *The Chemists' War: 1914–1918* by chemist and science writer, Michael Freemantle, seeks to expand our knowledge of the role of chemistry in World War I beyond gas warfare.



Cover image provided by Royal Society of Chemistry and reproduced with permission.

The Chemists' War has several chapters on chemical weapons, including a detailed description of the methods of production of mustard gas, which was probably the most effective agent used during World War I. Chapter 14 sketches several interesting asides, including the story of a disaster during World War II when an American ship full of mustard agent was destroyed by German planes in the harbor at Bari, Italy, releasing the lethal compound into the water. Many survivors swam to shore through the slicks of fuel oil and mustard agent. Others inhaled the mustard agent that evaporated. There were more than 800 casualties and 70 deaths that were wholly or partly the result of exposure to mustard. The incident was quickly covered up by the military and only came to public attention in 1971.

The war created several industrial crises as supplies of essential chemicals were cut off. The Allied blockade deprived Germany of imports of nitrates from Chile. Nitrates are essential for the production of fertilizer and explosives. A crash program by Carl Bosch and BASF to scale up Fritz Haber's

catalytic synthesis of ammonia from atmospheric nitrogen solved that problem. In Britain, the problem was a shortage of acetone needed for the production of cordite, an explosive used in shells. Eventually, an industrial process to produce acetone from ethanol was developed. Several famous chemists—among them, Chaim Weizmann, Nevil Sidgwick and William Henry Perkin, Jr.—were involved in this effort.

One of the strengths of this book is that it tells the stories of many of the individual scientists who carried out the work. Some of the people such as Fritz Haber and Chaim Weizmann are quite well-known. Others' contributions are completely obscure or long forgotten. For example, there is a brief chapter on May Sybil Leslie, a British physical chemist who worked with the Curies in Paris and during the war helped make the production of nitric acid more efficient. After the war she earned a Ph.D. from the University of Leeds and was eventually promoted to lecturer in physical chemistry at that university.

The Chemist's War reads more like a collection of essays than a more coherent book. Other than chemistry and chemists, there is no overall theme and no conclusion. Some of the chapters seem out of place. For example, there is a chapter on two German brothers, both chemists, who served in various roles during the war. Most of the chapter is a discussion of the development and use of tanks. I was amused to learn that the term tank was used to keep the real purpose of these vehicles secret. The factory workers were told that they were “tanks” for carrying water in the Middle East. Other than the fact that one of the two chemist brothers was a tank commander and some discussion on the metals used in tanks, there is very little connection to chemistry.

Finally, the book would have benefitted from better editing. Because the chapters seem to have been written as stand-alone essays, there are some unnecessary repetitions and inconsistencies. One example of the inconsistencies that stood out for me was the references to Fritz Haber's son, Ludwig Fritz (Lutz) Haber. Lutz Haber wrote an excellent book on chemical weapons, *The Poisonous Cloud, Chemical Weapons in the First World War*,¹ which is quoted in several chapters. In some places, the author is referred to as Lutz and in others as Ludwig. These are minor irritations that could easily have been eliminated by a careful editor.

Overall, I learned a great deal from *The Chemists' War: 1914–1918* and found it rather enjoyable to read once I understood that it is a collection of stories rather than a real history. It is a reminder that the industry behind the war effort is essential and that often-heroic efforts need to be made to supply some essential compound. It also contains delightful historical surprises. For example, I was unaware of the importance of whale oil for the war effort. It was used as rifle

oil, fuel for stoves, as a preventative for trench foot, and to produce glycerine for the manufacture of explosives. *The Chemists' War* is a book that can be profitably read by both historians and chemists.

■ AUTHOR INFORMATION

Corresponding Author

*E-mail: jkovac@utk.edu.

Notes

The authors declare no competing financial interest.

■ REFERENCES

(1) Haber, L. F. *Book The Poisonous Cloud: Chemical Weapons in the First World War*; Clarendon Press: Oxford, U.K., 1986.