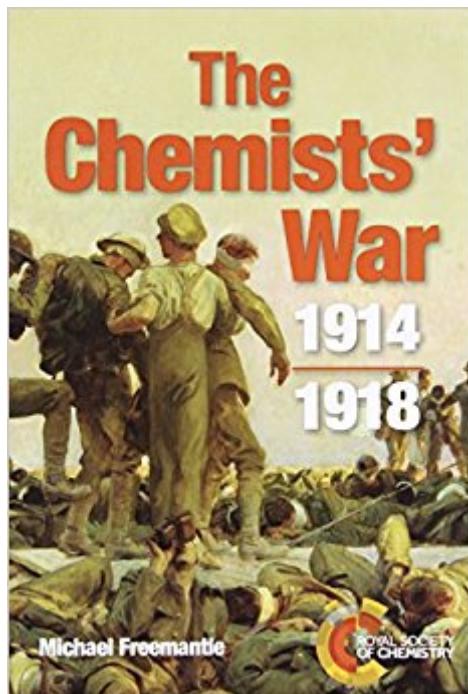


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# The Chemists' War: 1914-1918



## Synopsis

Within months of the start of the First World War, Germany began to run out of the raw materials it needed to make explosives. As Germany faced imminent defeat, chemists such as Fritz Haber and Carl Bosch came to the rescue with Nobel Prize winning discoveries that overcame the shortages and enabled the country to continue in the war. Similarly, Britain could not have sustained its war effort for four years had it not been for chemists like Chaim Weizmann who was later to become the first president of the State of Israel. Michael Freemantle tells the stories of these and many other chemists and explains how their work underpinned and shaped what became known as The Chemists' War. He reveals: how chemistry contributed to the care of the sick and wounded and to the health and safety of troops; how coal not only powered the war but was also an important source of the chemicals needed for the manufacture of explosives, dyes, medicines and antiseptics; how Britain's production of propellants relied on the slaughter of tens of thousands of whales; how a precious metal played a critical role in the war; how poisonous chemicals were used as weapons of mass destruction for the first time in the history of warfare and how chemists developed gas masks for protection against these weapons; how the British naval blockade of Germany imperilled agricultural production in the United States. The book will appeal to the general reader as well as the many scientists and historians interested in the Great War.

## Book Information

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## Customer Reviews

This is an interesting book offering a different view from the large number that have been written on

the politics and strategies of the war. It is well written, extensively referenced and includes a useful last chapter on the top 50 chemicals of the Great War. There is a lot of interesting chemistry but the human story is also strong. (School Science Review - Alex Chaplin)"...a remarkably diverse collection of essays...""The book will appeal to the general reader as well as the many scientists and historians interested in the Great War" (Brian Clegg Popular Science)Michael Freemantle's book explores the key role of chemists in the Great War and clearly establishes that the colossal war effort would not have been possible without the work of scientists. He describes in great detail the need for power and chemicals to make the military ordnance that was consumed in huge quantities. A constant theme of the book is how chemists from both sides rise to the challenge of shortages of resources and develop new feedstocks and reactions to produce desired products. The book has many examples; the one that probably jumps out, however, is the use of huge quantities of whale oils to not only produce the more obvious nitroglycerine but also to combat trench foot. Soldiers to mud and water that can cause the medical condition known as trench foot, which in the most extreme cases leads to amputation of affected limbs. Better boots, a foot-care regime that still exists in the army today, and a good rubbing down the problem. The role of individuals is well covered throughout the book, including a chapter devoted to Nobel Prize winners. There is also a chapter on the oftendownplayed role of women in the war effort. We are all probably familiar with images of women driving buses and aware of the huge number of working class women working in munitions factories, often in very dangerous conditions. What is probably not well known is the contribution of women chemists. In particular, Freemantle highlights the contribution of May Sybil Leslie, calling her an unsung champion of the war. Freemantle also devotes a chapter to the career of Fritz Haber subtitled "Revered and Reviled". In the early part of my teaching career we taught about Haber's work on the process named after him and its contribution to feeding the world via the production of ammonia-based fertilisers, but the other aspects of his research on chemical warfare were not mentioned. This highlights for me an important theme about the role of scientists in war related to the morality of personal action. Both sides developed and subsequently used chemical weapons on the so easy to decide who is good and who is bad. What often surprises people is the welldocumented willingness of ordinary people to engage in extreme activities. This is an interesting book offering a different view from the large number that have been written on the politics and strategies of the war. It is well written, extensively referenced and includes a useful last chapter on the top 50 chemicals of the Great War. There is a lot of interesting chemistry but the human story is also strong.Alex Chaplin (School Science Review - Alex Chaplin)From the title of this book you might expect it to be a chronological history of the First

World War told from the point of view of the chemists involved in it, most likely focusing on the chemical weapons that played such a controversial role in that conflict. But actually it's much broader in scope and more loosely structured than that. As the author says in his preface: 'It was not my aim to write a book that could be read from cover to cover but rather one for the reader to dip into. Each chapter is intended to be self-contained and can be read independently of the other chapters.' The result is a remarkably diverse collection of essays whose only common thread is some kind of connection with both chemistry and World War One. I was surprised to find that only one of the chapters – Chapter 13: 'The World's First Weapons of Mass Destruction' – is focused entirely on chemical weapons and their use in WW1. The subject crops up in other chapters, but only as part of a broader context. For example, Chapter 12 is a 30-page biography of Fritz Haber, Germany's unrepentant 'father of chemical warfare', but only six pages of it deal with his activities during the war. Chapter 14, about mustard gas, starts in WW1 but then fast-forwards to WW2 and the Bari tragedy. The title of Chapter 1 is 'Much More than Chemical Warfare', and that could really have been the book's subtitle. Explosives are chemicals too, after all, and chemists were in demand to keep a step ahead of the opposition in this area too. Sometimes the link between a problem and its solution was far from obvious, and it's here that the book can often become unexpectedly fascinating. Why did the British government suddenly urge children to collect conkers (horse chestnuts) for them? The answer was a state secret, but it came down to the fact that they could be converted into acetone – a key chemical needed in the manufacture of cordite. There was also a sudden upsurge in the demand for whale blubber, which could be used to make nitro-glycerine, and even chamber-pot urine, which proved to be a useful source of the nitre needed to make gunpowder. Although the author is a professional chemist, this is very much a history book rather than a science book. 'Chemistry', as far as this book is concerned, simply means 'chemicals' – and chemicals are always referred to by name rather than formula. There is nothing about chemical reactions and no explanation of why certain chemicals have the effects they do. Personally I was disappointed by the lack of scientific explanation or insight the book provides, but I guess that for a general readership it's safer to err on the side of too little technical detail rather than too much. The blurb on the back cover says 'The book will appeal to the general reader as well as the many scientists and historians interested in the Great War' – and I wouldn't disagree with that. (Brian Clegg Popular Science)

The 1914-18 war has been referred to as the 'chemists' war' and to

commemorate the centenary, this collection of essays will examine various facets of the role of chemistry in the First World War. The industrial-scale slaughter of the war was underpinned by the industrial-scale production of a vast variety of chemicals, particularly chemical warfare agents, propellants and high explosives, and metals for the manufacture of shells and guns. However, chemicals not only killed, they also played a key role in the protection of troops and the care of the sick and wounded. Alloy steels for armour, dyes for camouflaging military and naval uniforms, disinfectants, antiseptics, pharmaceutical preparations, anaesthetics, and painkillers are all examples. Written by an experienced science writer and aimed at the general reader, this book will be of interest to scientists and historians with an interest in this technologically challenging time.

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