

# [PDF] The Alchemy Of Air: A Jewish Genius, A Doomed Tycoon, And The Scientific Discovery That Fed The World But Fueled The Rise Of Hitler

Thomas Hager - pdf download free book

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**Books Details:**

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Author: Thomas Hager

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**Description:**

**From Publishers Weekly** Fixed nitrogen (which is immediately usable to plants) is essential in agriculture. Its rarity, as science writer Hager (*The Demon Under the Microscope*) shows, dramatically shaped the world and its politics. But by 1905, as Hager details, German chemist Fritz

Haber discovered a process for transforming abundant air-borne nitrogen into ammonia, and Carl Bosch's ingenious engineering scaled Haber's benchtop chemistry into industrial processes to make fertilizer. But Hager's story is not only one of triumph, of how Haber and Bosch invented a way to turn air into bread, earning a Nobel Prize and saving millions from starvation. This is also a story of irony and tragedy. First, life-saving nitrogen is also the main ingredient in explosives, and Hager cogently summarizes the Haber-Bosch process's critical role in both world wars. In addition, Hager illustrates Haber's extreme German patriotism and desperate wish to assimilate; shattered by the rise of Hitler, he became an outcast, abandoned even by his onetime colleague Bosch. It's unfortunate that Hager ends his fine book with only a brief look at the deleterious role of nitrogen on the environment. (*Sept.*)

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### **Review Named one of the Best Books of 2008 by *Kirkus Reviews***

"Make[s] the scientific process as suspenseful as a good whodunit."

—*Oregonian*

"[A] smooth, well-researched book that reads like a fast-paced novel."

—*News & Observer* (Raleigh)

"This scientific adventure spans two world wars and every cell in your body."

—*Discover* magazine

"Haber and Bosch are fascinating if troubled personalities, brought by Hager compellingly to life."

—*Washington Post Book World*

"[A] gripping account of the partnership between two Nobel Prize winners whose efforts to save the world had tragic consequences we're still sifting through today."

—*Plenty* magazine

"You will certainly find [Hager's] story of [Fritz Haber and Carl Bosch] and their discover to be enlightening and entertaining....I know of few other books that provide the general reader with a better portrait of chemistry as the most useful of sciences, and I intend to recommend it to scientists and non-scientists alike."

—*The Journal of Chemical Education*

"Many discoveries and inventions are touted as history-changing. But as Thomas Hager admirably proves in his new book, *The Alchemy of Air*, Fritz Haber and Carl Bosch not only changed history, they made much of recent human history possible. As Hager solemnly notes in his introduction, 'the discovery described in this book is keeping alive nearly half the people on earth.' ....As with almost all technological advancement, however, there is a downside. The synthetic Haber-Bosch nitrogen, which now makes up about half the nitrogen in every human body, also fueled the weapons of the world wars and created a nitrogen-rich environment that is having a huge impact on Earth, from lush vegetative growth to dead zones in the oceans. Thanks to two visionary and troubled scientists, we are all now, in Hager's words, 'creatures of the air,' dependent for our very existence on a process whose consequences we don't completely understand."

—*BookPage*

A fast-paced account of the early-20th-century quest to develop synthetic fertilizer. Today hundreds of factories convert atmospheric nitrogen to ammonia in order to manufacture the artificial fertilizers that make modern-day agricultural yields possible. They are based on the technological

advance known as the Haber-Bosch process, developed prior to World War I by the German chemists and Nobel laureates Fritz Haber (1868–1934) and Carl Bosch (1874–1940). Hager (*The Demon Under the Microscope: From Battlefield Hospitals to Nazi Labs, One Doctor's Heroic Search for the World's First Miracle Drug*, 2006, etc.) offers a superb narrative of these brilliant men and their scientific discovery. Around the turn of the century, the world faced a shortage of the fixed nitrogen needed to provide food for a growing population. Hager sets the stage by describing the world's reliance in the 19th century on nitrates from Peru and Chile that could be used as natural fertilizer or to make gunpowder, and finds plenty of human drama in the battles to control the lucrative international trade. Determined to help end Germany's dependence on South American nitrates, Bosch and Haber worked at the German chemical company BASF to find a way to convert nitrogen into ammonia. Bosch developed the process, and Haber designed bigger industrial plants. By 1944, the Haber-Bosch factory at Leuna—a primary target for U.S. bombers—occupied three square miles and employed 35,000 workers. The author not only illuminates the scientists' complex work, but also digs into their personal lives. Bosch, a melancholic with a huge villa in Heidelberg, asked Hitler to spare Jewish scientists for the sake of German chemistry and physics (the Fuhrer replied: "Then we'll just have to work 100 years without physics and chemistry!"). Haber, a Jew, developed the chlorine gas used in World War I, sought a way to extract gold from the oceans to pay off German war reparations and conducted research that led to the development of the Zyklon B gas used in Nazi death camps. Science writing of the first order.

—*Kirkus Reviews*, starred review

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