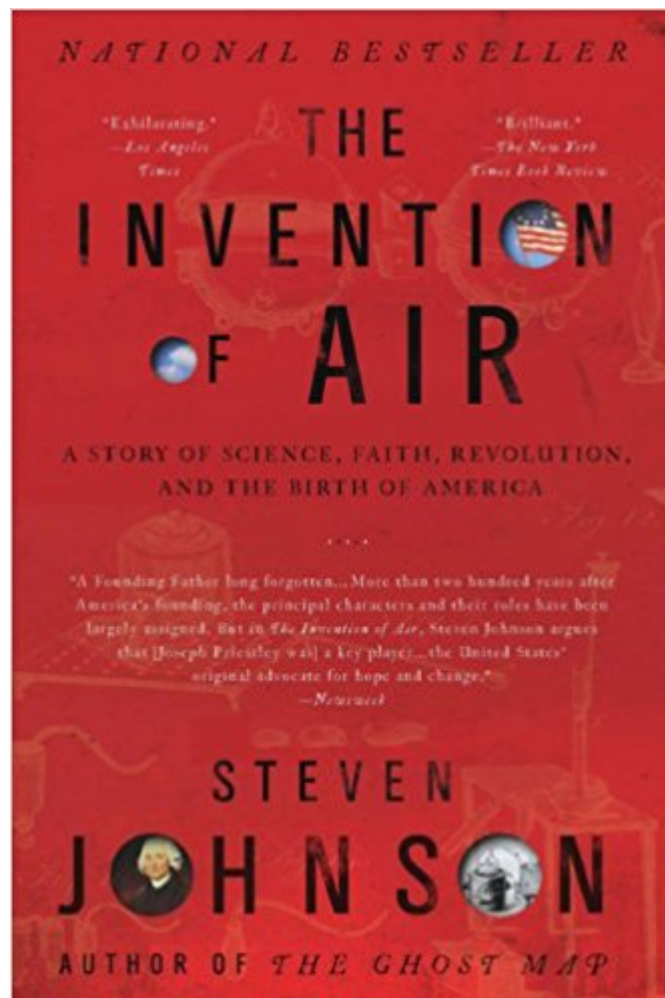




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The Invention Of Air: A Story Of Science, Faith, Revolution, And The Birth Of America



Synopsis

From the bestselling author of *Where Good Ideas Come From*, *The Ghost Map* and *Everything Bad Is Good for You*, a new national bestseller: the “exhilarating” (Los Angeles Times) story of Joseph Priestley, “a founding father long forgotten” (Newsweek) and a brilliant man who embodied the relationship between science, religion, and politics for America’s Founding Fathers. In *The Invention of Air*, national bestselling author Steven Johnson tells the fascinating story of Joseph Priestley—scientist and theologian, protégé of Benjamin Franklin, friend of Thomas Jefferson—an eighteenth-century radical thinker who played pivotal roles in the invention of ecosystem science, the discovery of oxygen, the uses of oxygen, scientific experimentation, the founding of the Unitarian Church, and the intellectual development of the United States. As he did so masterfully in *The Ghost Map*, Steven Johnson uses a dramatic historical story to explore themes that have long engaged him: innovative strategies, intellectual models, and the way new ideas emerge and spread, and the environments that foster these breakthroughs.

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Customer Reviews

Signature
Reviewed by Simon Winchester This is an intelligent retelling of a rather well-known story, that of Joseph Priestley, the Yorkshire dissenting theologian and chemist, and then went on to emigrate to America and advised the creators of the new republic—Thomas Jefferson, most notably—on how best to run their country. Steven Johnson, who has a fine reputation for

discerning trends and for his iconoclastic appreciation of popular culture, chooses his topics well. His most recent book, *The Ghost Map*, looked at the story of the London cholera epidemic of 1854, and of the heroic epidemiologist, John Snow, who discovered the ailment's origins and path of transmission. It was a good story, but essentially a simple one. With *Priestley*, Johnson has now taken on a subject that is every bit as complex and multifaceted as any of the Quentin Tarantino films he so admires. Priestley was a scientist, true, and his meditations on the exhalations of gases from mint leaves and the curiosities of phlogiston and fixed air, his discoveries of sulfur dioxide, nitrous oxide, ammonia gas and oxygen, most importantly and his relationship with his French rival Lavoisier have been the stuff of schoolroom chemistry lessons for more than two centuries. But it is his politically liberal and spiritually dissenting views that underpin the story that Johnson chooses to tell—views that led in 1794 to Priestley, whose house in Birmingham had been sacked by rioters, emigrating to America, thereby becoming the first great scientist-exile, seeking safe harbour in America after being persecuted for his religious and political beliefs at home. Albert Einstein, Otto Frisch, Edward Teller, Xiao Qiang—they would all follow in Priestley's footsteps. Johnson unearths an interesting and illuminating statistic: in the 165 letters that passed between Thomas Jefferson and John Adams, the name Benjamin Franklin is mentioned five times, George Washington three times, Alexander Hamilton twice—and Joseph Priestley, a foreign immigrant, is cited no fewer than 52 times. The influence of the man—he was a fervent supporter of the French Revolution, a tolerant stoic and a rationalist utterly opposed to religious fundamentalism—was quite astonishing, and Steven Johnson makes a brave and generally successful attempt to summarize and parse the degree to which this influence infected the founding principles of the American nation. As a reminder of the underlying sanity and common sense of this country—a reminder perhaps much needed after the excesses of a displeasing presidential election campaign—*The Invention of Air* succeeds like a shot of the purest oxygen. Illus. (Jan. 2) Simon Winchester, author of *The Professor and the Madman*, is working on a biography of the Atlantic Ocean. Copyright © Reed Business Information, a division of Reed Elsevier Inc. All rights reserved. --This text refers to an out of print or unavailable edition of this title.

The author of *Everything Bad Is Good for You* provides an entertaining account of the eighteenth-century scientist and radical Joseph Priestley's monumental discovery that plants restore "something fundamental"—what we now know as oxygen—to the air. Johnson also offers a clear-sighted and intelligent exploration of the conditions that are propitious to scientific

innovation, such as the availability of coffee and the unfettered circulation of information through social networks. The members of the networks that Priestley belonged to, including Benjamin Franklin and Thomas Jefferson, provide Johnson with some of his strongest material. But he sometimes overstates the relationship between politics and science, particularly when he strains to make the case that Priestley, after fleeing England in 1794, became a pivotal figure in the formation of the American republic. Copyright © 2008 Click here to subscribe to The New Yorker --This text refers to an out of print or unavailable edition of this title.

The preface explains the goal is to explain the key role of Priestly in the formation of America. In the fourteen year correspondence of Adams and Jefferson, Washington is mentioned three times and Priestly fifty-two times. Why? This book explains. Covers Priestly's connection to Benjamin Franklin and the 'Honest Whigs' in London. In his twenties, Priestly came to these scientists to ask permission to write a book on the history of electricity. He did. It became a book of seven hundred pages used as the basic text for a hundred years. Developed close friendship with Franklin, Erasmus Darwin, etc. Became a leading scientist in Europe. Royal Society, French Royal Society, American Philosophical Society, etc. Nevertheless, his primary work was as a clergyman. Eventually his penchant for analysis impelled him to write a detailed history of Christianity. Priestly wrote in 1774, "this rapid process of knowledge will, I doubt not, being the means, under God, of extirpating error and prejudice, and a putting an end to all undue and usurped Authority in the business of religion, as well as of science." In 1782 he published "A History of the Corruptions of Christianity": "The Corruptions was a kind of historical deconstruction of the modern church. Starting, of course, with divinity of Jesus Christ. . . and tracing each back to the distortions of Greek and Latin theologians starting the fourth and fifth century A.D. about the time of the Council of Nicaea. The corruptions opens with a meticulous assault on the Trinity, which takes up the first quarter of the book, and then widens into a long litany of smaller abuses, the false mysticism of the Eucharist, predestination, the immateriality of the soul, the last supper." Priestly explained his method in the preface, "this historical method will be found to be one of the most satisfactory modes of argumentation, in order to prove that what I object to is really of the corruption of genuine Christianity and no part of the original scheme." Servetus, Newton and Whiston used the same method and reached the same conclusions. (Page 172) "A religious man forced to alter and reinvent his beliefs - and challenge the orthodoxies of the day - in the light of science and history, who was nevertheless determined to keep the core alive. Priestly was a heretic the first order who nonetheless possessed an unshakable faith. . . Ironically, it was "The Corruptions" itself - a work

devoted to dismantling so many central values of modern Christianity - that finally gave Jefferson enough philosophical support to call himself a Christian again." (Page 174) Jefferson wrote to Adams, "I have read Priestley's corruptions of Christianity, and early opinions of Jesus, over and over again; and I rest on them as the basis of my own faith. These writings have never been answered." Most today have never considered Priestly's conclusions. (Page 175) To Jefferson "Christianity was not the problem; it was the warped, counterfeit version that had evolved over the centuries that he could not subscribe to. Thanks to Priestly, he could be a Christian again in good faith - indeed, his Christianity would be pure, more elemental than that of believers who clung to the supernatural trappings of modern sects." Interesting that Servetus wrote in the 1500's "On the Errors of the Trinity" to help Moslems convert to Christianity. Priestly also spoke out in favor of the French Revolution. These two radical ideas led to the Birmingham riots. His home and laboratory were burned to the ground. Dozen others houses and some churches also. Priestly went in to hiding. Emigrated to Pennsylvania. First became friends with Adams and then very close to Jefferson. Converted Jefferson from deism to Unitarianism. Johnson uses Priestly's faith in future progress to contrast today's faith in self-destruction. However, Priestly's faith was a result of decades of keen Bible study and analysis. Today's faith, or loss of faith, is the result of the keen misery from human reason.

As a formally educated chemist, I remember Priestly very well from college class, but I had never been taught his non-scientific interests and career. In this book we learn Priestly the Man, Priestly the Minister and Priestly the Political Refugee fleeing for his life. We also learn of Priestly's failings in Science such as his refusal to leave Phlogiston theory behind with the Alchemists. The reason I bought this book was due to a visit to Priestly's retirement home in America at Northumberland, Pa. I had not realized, or was not in class the day it was taught, that he had a home and home lab in America, being English citizen to his death. Neither had I realized that he was one of the founders of the Universal Unitarian Church. Oh! was he ever hated by King George and the Aristocrats. Neither did I realize how much influence I had on our American Founding Fathers. They were not as Conservative as many Christians of today think.

It would be an exaggeration to suggest that Joseph Priestley (1733-1804) is the focal point of this book. He isn't. However, he is one of several focal points whose life and work serve as a linchpin to the other focal points, notably the colonial leadership (e.g. Franklin, Washington, Adams, Jefferson), theological, scientific, and political issues, and tumultuous events preceding and then following the

war for independence. Steven Johnson is also intrigued by why some ideas succeed and others don't. Also, "why these revolutions happen when they do, and why some rare individuals end up having a hand in many of them simultaneously." This last comment suggests an element of serendipity in human affairs, one that Johnson also discusses brilliantly in another of his books, *The Ghost Map*. Priestley played a central and prominent role (albeit an underappreciated one since then) during the Enlightenment and the American Revolution, simultaneously. As Johnson notes on Page 147, "Scientific innovation tends to be imagined as something that exists outside the public sphere of politics, or the sacred space of faith...But for Priestly, these three domains [i.e. science, religion, and politics] were not separate compartments, but rather a kind of continuum, with new developments in each domain reinforcing and intensifying the others." For me, those comments capture the essence of what motivated Priestly. They also help to explain the nature and extent of his appeal and influence during an era in which there was no shortage of human talent and skill. The title of this book should not be interpreted literally. Rather, it refers to a process of rigorous scientific inquiry over time during which men such as Franklin and Priestley began to formulate ("invent") concepts to increase human understanding of natural forces. Note Johnson's lengthy discussion of waterspouts in the Prologue, "The Vortex." In fact, Johnson observes, "One of Priestley's greatest scientific discoveries involved the cycle of energy flowing through all life on Earth, the origin of the very air he was breathing there on the deck [of the ship transporting him from England to America] as he watched his thermometer line bob in the waters of the Atlantic. Together, all those forces converged on him, as the *Samson* struggled against the current bearing west to the New World..." As we proceed into an uncertain future, Steven Johnson asserts, we must rely on old institutions and remain hostage to what James O'Toole characterizes as "the ideology of comfort and the tyranny of custom" because that would betray "the core and, connected values that Priestly shared with the American founders." Today, "we now see the web of relationships far more clearly than Priestly or Franklin or Jefferson could" and thus can take full advantage of opportunities in a world "still ripe for radical change." There is indeed cause for hope.

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