[PDF] Oxygen: The Molecule That Made The World

Nick Lane - pdf download free book

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Description:

From The New England Journal of Medicine Nick Lane, the author of Oxygen, studied biochemistry at the University of London and did his doctoral research on oxygen free radicals at the Royal Free Hospital in London, but then left science to become the director of a multimedia company involved to a certain extent in medical education. His background suffuses this book, both for better and for worse. Apart from the first chapter, which is cast in a style approaching the juvenile, the book is very well written and easy to read. Lane makes his points clearly, and his lines of reasoning are well developed. The first half of the book is a very interesting and well-thought-out analysis of evolution, starting from the Archean eon and carrying on through the appearance of multicellular eukaryotes, such as humans. There is some awkward writing: "oxygen-hating" this and that, "first ever ice age," and a strained analogy about opinionated newspaper proprietors. Early in the book

there are three or four statements that look like errors, but they are corrected later in the book. Of considerable interest, however, are Lane's remarks about chlorophyll arising from purple bacteria. Even more interesting is his comment to the effect that the oxygen-evolving complex in plants arose from an adaptation of catalase. He astutely points out that Fridovich's discovery of superoxide dismutase was "the most important discovery in modern biology never to win the Nobel Prize," a sentiment with which I heartily concur. The second half of the book begins with an excellent chapter on vitamin C, in which the author appropriately describes the outstanding work of Mark Levine and quotes Linus Pauling: "I would trust the biochemistry of a goat over the advice of a doctor." But subsequently, there is a mistake: Sue-Goo Rhee is referred to as a woman, when in fact he is a man. The rest of the second half, though informative in many places, is chiefly a buildup to the author's own theory -- namely, that aging itself is due exclusively to the damage caused by the leakage of oxygen radicals from aging mitochondria. In the course of the book, Lane takes a couple of shots at scientists for working on little pictures instead of the big picture. He takes little cognizance of the fact that big pictures, including the cause of aging, are made by the assembly of little pictures and that his own theory, probably only in part correct, was derived from many little pictures. He cites a few articles that support his idea but none that oppose it. Despite the inclusion of a small number of references, the book is not a perfect work of scholarship. But it is not meant to be one. It is a thought-provoking popularization of evolution and oxygen biochemistry, and I'm glad I read it. Its shortcomings notwithstanding, I can recommend the book strongly because of its informational content and its breezy and accessible style. It has to be read, though, with eyes open. *Bernard M. Babior, M.D., Ph.D.*

Review
"Informative and entertaining."--Science

"A meticulously detailed history of oxygen on our planet.... Lane's book ranges widely over a host of topics, from the usefulness of antioxidants such as vitamin C in curing colds, to the potential for prolonging human life with enzymes that repair damaged DNA. And it turns out that the jump from the geological theme in the first part of the book to the medical theme in the second is not as great as it seems. A unifying thread of Lane's narrative, fascinating in its irony, binds it all together: oxygen, an essential element of life, is also an agent of death."--Natural History

"Lane marshals an impressive array of evidence--from the mechanics of insect flight to the levels of carbon 13 in rocks--to suggest that the ancient atmosphere may indeed have been oxygen-rich after all. But an explanation for the giant forests and creatures of the Carboniferous age is only a single part of this ambitious narrative. Oxygen is a piece of radical scientific polemic, nothing less than a total rethink of how life evolved between about 3.5 billion and 543 million years ago, and how that relates to the diseases we suffer from today.... This is scientific writing at its best."--Financial Times

"A breathtaking, broad vision of the role of a single gas in our life, from the origin of organisms, through the emergence of creatures, and to their deaths...packed full of interesting life--and death--stories.... A wonderful read."--Peter Atkins

"One of the most thought-provoking books I have ever read."--John Emsley

"Provocative and complexly argued."--Kirkus Reviews (starred review)

"A worthy effort with a clearly argued message, full of informative and entertaining details."--Christian de Duve, American Scientist

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