



## Allies and enemies

*How the world depends on bacteria*

Anne Maczulak

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**A**llies and Enemies: *How the World Depends on Bacteria*, by Anne Maczulak, is an impressive undertaking for a short book (165 pages of text). Capitalizing on her unusually broad background in microbiology, Maczulak has written (or consulted on) several books on these organisms and is also a regular guest on radio programs to discuss and answer wide-ranging questions on microbes. She is an expert on this diverse group of organisms and thus an ideal person to write a book subtitled *How the World Depends on Bacteria*.

*Allies and Enemies* presents many fascinating tidbits of information about varied types of microbes and assumes no prior knowledge of these organisms. The target audience for this book is not clear to me; however it's almost certainly not the clinician. If the book has a main idea or theme, it is the diversity of microorganisms, an idea with which clinicians are likely to be very familiar. The style of the book suggests that the target audience is the layperson, or even the older child, and it could serve as an interesting introduction for the layperson to the wonderful microbial world. However, I found the style disconcerting: it is written in short, staccato sentences in the manner of a children's book. Furthermore, no theme is fully developed; instead, almost every paragraph concerns a new idea. It is possible that this is an editing problem, but it made the book less fun to read.

The book presents many interesting vignettes, but there seems to be a dichotomy of purpose that is not clearly addressed in its organization and presentation. On one hand, the essential role of bacteria, i.e., their positive role in our world, is emphasized in the subtitle, and on the other, the disease causation by human pathogens is given the majority of coverage in the text. From the title, I expected the book would make a major point of the possibility that a pathogen might also have a positive role for humans or that an organism useful in its proper environmental niche might cause disease in humans. Surprisingly, however, this is not even discussed. In addition, there is no mention of the currently fashionable important concept of the "human microbiome," the resident diverse bacterial inhabitants of specific niches in the body that are useful or essential for our health, and the interaction of these residents with their particular (human) environmental sites. Biofilms, another important modern concept in bacteriology, are mentioned, but only briefly, and largely in a negative context. Thus, the book does not introduce the reader to the newest and most exciting concepts of bacteria and their interactions with the environment.

I also found the logic of the organization of the material discussed to be unclear. For example, chapter 1, "Why the world needs bacteria," includes sections about how bacteria are detected, their size, the origins of bacteria, tricks bacteria use to survive, and a

description of some bacteria that live in the human body. Some of this material is then reiterated in chapter 2, entitled "Bacteria in history." Although this chapter contains interesting anecdotes, it seemed odd to have a separate section devoted to the history of specific incidents concerning bacterial pathogens in a book subtitled *How the World Depends on Bacteria*. Instead, the history might have been discussed in each individual chapter because specific bacteria are mentioned in other contexts (which is done in many cases in other chapters).

Despite the title of chapter 1, the need for bacteria in the world is not really addressed in this chapter. In fact, one of my greatest disappointments with this book is that it missed the opportunity to emphasize that bacteria are essential for degradation of by-products that would otherwise swamp our world. This is mentioned in other contexts, but is not a theme that is specifically developed or emphasized. If the subtitle were removed and I didn't expect to find our dependence on bacteria as the main theme, perhaps I would have enjoyed the book more. That said, this book presents many fascinating specific facts about bacteria that might encourage the layperson to learn more about these microorganisms, and an extensive reading list is provided at the end. In conclusion, although I doubt this book would be exciting reading for clinicians, it might be fun for a layperson with little prior knowledge of bacteria.