

## Plagues and people meet the microbe hunters



### The Power of Plagues

Irwin W Sherman

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Reviewed by Bruce R Levin

In the history many of us are taught, the fates of societies are determined almost exclusively by the acts of humans, and then primarily humans bearing at least one Y chromosome. In *The Power of Plagues*, Irwin Sherman challenges this perspective. In the tradition of the Hans Zinsser's 1935 *Rats, Lice and History* and William McNeil's 1976 *Plagues and People*, Sherman describes the dominant role of disease in shaping human history.

His approach to the subject is more that of a biologist than a historian; like Zinsser, he is a broadly informed biologist with an appreciation for and knowledge of history, epidemiology, anthropology, classical art and literature. The volume is replete with information, diagrams and micrographs about the life cycles of parasitic worms, the mechanisms of the pathogenesis of bacteria, viruses and parasitic protozoa, and elements of the biochemistry of disease. It even has some mathematical epidemiology: an elementary discourse on the basic reproductive number  $R_0$ —the number of secondary infections caused by a single infected individual in a wholly susceptible population of hosts. The presentation of much of microbiology is an appreciative, historical/biographical narrative reminiscent of Paul de Kruif's 1926 classic, *The Microbe Hunters*, albeit less romantic. The biology and the history he presents are at a level that would be appropriate for undergraduates and for an educated lay audience.

Sherman's inspiration for his enterprise was McNeil's work, written when the prevailing view was that technology triumphed over infectious disease and would continue to do so. By the 1970s, at least in the developed world, many infectious diseases had been conquered through improvements in public health, nutrition, living conditions, vaccines, antibiotics and other medical interventions. Tuberculosis was rare, smallpox was virtually eradicated, and measles, polio, diphtheria and other scourges were well under control. The then-looming Swine Flu epidemic fizzled out, and the memory of the 40 million people who died in the 1918 flu pandemic had virtually disappeared from the public consciousness. Back then, drug-resistant bacteria had not caught the attention of the popular press and hospital-acquired infections had not reached the epidemic proportions that have recently been reported. Legionnaires' disease, West

Nile fever, Lyme disease, Hanta virus pneumonias, toxic shock syndrome, SARS and, crucially, HIV had yet to be recognized. *The Power of Plagues* updates McNeil's treatment and brings it into our current, more humble perspective about our ability to control infectious diseases and into this era where the study of emerging and re-emerging disease have become enterprises in their own right.

Like Zinsser, McNeil, Alfred Crosby in *Columbian Exchange* (1972) and Jared Diamond in *Guns, Germs and Steel* (1997), Sherman makes a good case for the importance of disease in shaping the political and social history of humans. But he also makes a fine case for the other side of this coin—the role of human politics, behavior, sociology and technology in shaping the epidemiology, ecology and evolution of infectious diseases. Why this perspective has not received the attention it deserves in the teaching of world history is a mystery to me.

In McNeil's *Plagues and People*, there is an underlying thesis. Because of their high densities, European populations maintained endemic diseases like measles and smallpox that could not persist in low-density populations. These diseases were allies in the imperial endeavors of European nations. They facilitated their expansion into areas where the indigenous populations were immunologically naive because their densities were too low to maintain the microbes responsible for these diseases or had lost or never acquired them. By contrast, other than illustrating the importance of infectious disease in human history, *The Power of Plagues* has no underlying thesis. 'Intriguing tales of diseases and their implications for human society and history' would be an appropriate subtitle for this volume.

*The Power of Plagues* is organized as an array of chapters that can be read independently. Most of them discuss the biology of one or more specific disease along with the story of the discovery of the etiologic agent responsible and their effects on human history. But as Sherman recommends, it would behoove the reader to read a few of the background chapters before reading the parts of the book devoted to specific diseases.

The book could have done with some more careful editing; there are some redundant passages and material such as a discourse on the history of the dye industry that impatient readers (not this reviewer) may see as irrelevant. Controversial subjects, like the evolution of virulence of micro-parasites, are presented uncritically. There are also occasional errors in facts or interpretations. For example, recent estimates show that the  $R_0$  of pandemic influenza is closer to 2 than to 10, as reported in the book; these numbers have different implications for our prospects of containing the next flu pandemic. Last, although references are provided on each page, the source of the information is not always clear.

These criticisms aside, *The Power of Plagues* is a worthwhile contribution to the literature on the role of disease in human history. It would serve well as source material for undergraduate courses in biology and anthropology, as well as for enlightened courses in world history. However, for scientists working on infectious diseases, there is little new information. And, for those who are familiar with McNeil's *Plagues and People* or other broad treatises on disease in history, *The Power of Plagues* will provide a few new examples but no novel insights. However, his ideas about the contribution of politics and behavior to the epidemiology of disease are important and worthy of deeper consideration. And perhaps in a more tightly edited, soft-cover version, *The Power of Plagues* may even do well as a trade book for a broader audience.

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