

Book Review
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Gaynes, Robert P 2023 *Germ Theory – Medical Pioneers in Infectious Diseases*, 2th Edition ASM Press/Wiley 360pp. Paperback \$69.95

As a microbiologist and a keen student of the history of science, I purchased Robert Gaynes's second edition of his book *Germ Theory – Medical Pioneers in Infectious Diseases*. My first question on reading the book was whether my favorite microbiologists were featured in the book. Pioneers like Spallanzani, van Leeuwenhoek, Jenner, Semmelweis, Pasteur, Koch, Lister, Ehrlich, and Fleming were included, but not Snow, Chadwick, Nightingale, Florey, Salk, Prusiner, and Woese. Since the first edition, Gaynes has added HIV virus discover Francois Barre-Sinoussi, *Helicobacter pylori* discover Barry Marshall, and NIH-infectious disease physician and administrator Anthony Fauci, all of who he had the opportunity to interview. These interesting additions to the book are very welcomed.

As with many scientists of my age, I grew up reading Paul de Kruif's 1926 best-selling book, *Microbe Hunters*, which inspired a generation of young men and women to become microbiologists or physicians. De Kruif who worked briefly at the Rockefeller Institute for Medical Research (Rockefeller University) assisted Nobel laureate Sinclair Lewis in writing the novel *Arrowsmith* loosely based on Rockefeller scientists. Interestingly the fictional Arrowsmith uses a bacteriophage discovered by d'Herelle at the Pasteur Institute to combat the bubonic plague on a Caribbean Island. Briefly phages held the promise of defeating infectious disease before being eclipsed by antibiotics. Perhaps you can watch the 1931 movie *Arrowsmith*, directed by John Ford and starring Ronald Colman as Arrowsmith on Hulu streaming. The *Microbe Hunters* features profiles different set of microbiologists in van Leeuwenhoek, Spallanzani, Pasteur, Koch, Roux, Behring, Metchnikoff, Smith, Bruce, Ross, Grassi, Reed, and Ehrlich. Of course, the microbiologist selection is the author's choice and was governed by the historic development of the germ theory, which is the underlying foundation of the Gaynes's book.

The reviewer could argue that improved water supplies and sanitation played a huge role in the development of modern cities and the control of infectious disease, perhaps equal to the development of vaccination and antibiotics saving millions of lives. For example, the distribution of clean water piped from the Croton reservoir, north of White Plains, and the construction a sewage system in the 1830's enabled New York City to grow into a world city. In this regard, Victorians John Snow and Edwin Chadwick deserved more attention.

In terms of infectious diseases, Stanley Prusiner's discovery of the prion, a proteinaceous infectious agent responsible for scapies, Creutzfeldt-Jakob disease, and bovine spongiform encephalopathy is largely overlooked, as is the role of Carl Woese and Norman Pace as the pioneers in the development of genotypic methods that are revolutionizing microbiology. However, it was interesting to learn Jenner faced relentless opposition and ridicule from an anti-vaccine elements and Koch's tuberculosis cure was totally ineffective.

This reviewer found Gaynes's book engrossing giving the reader greater insight into history of microbiology and modern medicine. I highly recommend that PMF members purchase the book to read either by the open fire or on the beach in 2024.

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