Microbe Hunters—then and now

edited by Hilary Koprowski and Michael B.A. Oldstone

Medi-Ed Press

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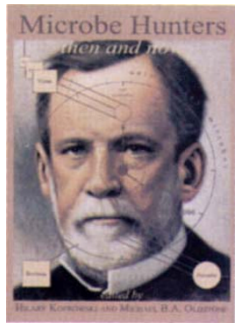
Published in 1926, Paul de Kruif's *Microbe Hunters* tells the story in heroic terms of a dozen scientists who opened the fields of microbiology and immunology. Beginning with Leeuwenhoek's discovery of microbes, it chronicles the contributions of such greats as the ingenious country doctor, Robert Koch, who identified the organisms that cause anthrax, tuberculosis and cholera; Louis Pasteur, who developed the first vaccines; and Paul Ehrlich, the father of immunology and the discoverer of the 'magic bullet' which introduced the era of chemotherapy. That book, written in the style of a spellbinding detective novel and read by millions has inspired generations of young men and women to enter the fields of biology and medicine.



Microbe Hunters—then and now follows in the footsteps of de Kruif. The intent of the book is to document some of the remarkable discoveries that have been made in infectious diseases over the past 70 years. The approach, however, is quite different from that of de Kruif. Instead of a text written by a single author about historical figures, *Microbe Hunters—then and now* consists of 30 chapters written by some of the very people who played a key part in the discoveries that they describe. The format is unusual in that pairs of authors were asked to deal with each topic. The first member of each pair wrote a historical chapter and the second member a state-of-the-art chapter. For topics dealing primarily with new approaches and emerging infectious agents, a single author discussed both the history and the state-of-the-art in one chapter.

The topics selected by the editors, Hilary Koprowski and Michael Oldstone, not only admirably portray the remarkable discoveries that have been made in recent years, but also describe what is nothing short of a success story in infectious diseases. One cannot help but be thrilled by the chapters on smallpox, a disease which is estimated to have caused up to 300 million deaths in the 20th century alone, two to three times more than the fatalities caused by wars, and which now has been eliminated world-wide by vaccination. Equally exciting is the story of polio virus which has been eliminated from North and South America, and which the World Health Organization hopes to eliminate from the rest of the world by the year 2000. The chapter on measles describes how vaccines have reduced the annual number of cases in the United States from two million to less than 400, but notes that in parts of the world where vaccines are not used, millions are still infected. Other chapters deal with the success of vaccines against yellow fever, varicella, rubella, influenza and hepatitis. No less exciting are the chapters that describe the discovery of *Helicobacter pylori* as the cause of gastritis and duodenal ulcers; *Borrelia burgdorferi* as the etiologic agent of Lyme disease; human immunodeficiency virus (HIV) as the cause of AIDS; prions as the non-nucleic acid infectious proteins that cause certain chronic degenerative neurologic diseases; and viruses such as Ebola, Hanta and Lassa as the etiologic agents of often fatal hemorrhagic fevers. The re-emergence of tuberculosis, the problems in developing effective vaccines against malaria and pneumococci, new approaches to mucosal immunity and plant viruses as vaccines also make fascinating reading.

The authors, all distinguished and well known scientists, recognize the difficult challenges that lie ahead, but in general hold an optimistic view of the outcome of future research. The historical chapters, especially those written by some of the principle players in the field, provide a fascinating and lasting record of their contributions and views. Most likely, these chapters will be of greater long-term interest than the equally well written chapters dealing primarily with the state-of-the-art. The book, because of its two-tier organization (historical and technical), will have greater appeal to biomedical scientists in general, and students of infectious diseases in particular, than to the lay public.

Although not quite as flowing as a text written by a single author, *Microbe Hunters—then and now* is both interesting and enjoyable to read, a timely sequel to de Kruif's original book and a solid historical document written by the microbe hunters themselves.

Typhoid Mary: Captive to the Public's Health

by Judith Walzer Leavitt

Beacon Press

1996 ISBN: 0-8070-2102-4 $25.00

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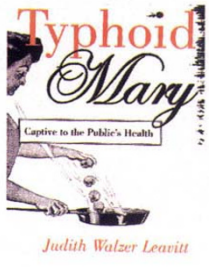
Why don't we treat HIV/AIDS like every other disease? Why shouldn't all carriers of dangerous contagious diseases be identified and those posing a continuing threat be quarantined to protect others? How do we balance threats to personal liberty, resource constraints and the selective impact on 'vulnerable' persons when formulating public health policy? These questions and others are posed in this interesting, well-documented history of 'Typhoid Mary' Mallon written by Dr. Judith Walzer Leavitt, Professor of History and Medicine and Women's Studies at the University of Wisconsin.

At the turn of the Century, typhoid fever was a serious public health problem and in 1900 it accounted for over 35,000 deaths in the United States. Contributions from the 'new' science of bacteriology were just emerging. It was only in 1884 that Gaffkey had isolated the typhoid bacillus from spleens of infected patients in Germany. Such bacteriologic breakthroughs led to improved understanding of the transmission of typhoid and hope for more effective policies and procedures to control the disease.



It was in this context in 1906 that care-

ful epidemiologic and laboratory investigations documented that 37 year-old Mary Mallon was an asymptomatic typhoid carrier, perhaps the first to be proven to be the source of a typhoid outbreak in the United States. Mary Mallon was born in 1869 in Ireland and had immigrated to the United States as a teenager. As an adult, she was employed as a cook in the homes of the elite in New York City and on Long Island. An unmarried woman, she usually boarded with her employers or lived with friends in the city. Though she had no history of illness herself, from 1900 through 1906, 22 cases of typhoid fever and one death occurred in persons eating food she prepared. Public health authorities declared her a menace and quarantined her to a small bungalow on North Brother Island in the East River. After three years, which included an unsuccessful legal appeal, she was released by a sympathetic health department official. Although she tried other types of domestic service, she eventually returned to cooking. An investigation in 1915 linked her to an additional 25 cases of typhoid fever, including two deaths. As a result, she was sent back to North Brother Island to live in isolation for the rest of her life. On November 11, 1938, 23 years later, she died.

Leavitt's *Typhoid Mary* documents and explores this history in the scientific and societal context of the early twentieth century and examines the implications for today. The book examines this context through multiple perspectives. The first perspective and the ultimate authority came from medicine and the science of bacteriology. The next chapters present the perspectives of public policy makers and the law. The social perspective examines the expectation and prejudices of the times. Why was an independent unmarried Irish woman singled out for such harsh treatment when hundreds or even thousands of other typhoid carriers existed in New York City? The role of the media in reporting the story and creating the 'Typhoid Mary' image is explored in a chapter which emphasizes the important role that the media has in influencing public perception of health and social problems. An attempt to reconstruct Mary Mallon's own perspective is made in which her personal misfortunes and loss of liberty are documented and analyzed. Finally, the book reflects upon the 'retelling' of the story since Mary Mallon's death. She has become a symbol of point source transmission, the chronic carrier state, intransigent behavior, the ultimate public health authority of quarantine and lifelong loss of civil liberty. The 26 years Mary Mallon spent on North Brother Island exceeds the average currently served by felons convicted of murder or rape.

Although typhoid fever remains a serious global health problem, improvements in sanitation and effective antimicrobial therapy have reduced its significance in the United States. American public health concerns about typhoid fever have been replaced by HIV/AIDS, tuberculosis and other life threatening emerging infections. As Leavitt's story illustrates, how we view infected carriers of disease depends upon the individual perspective — from innocent victim to irresponsible purveyor of death. She convincingly calls for 'policies that, when health needs and personal rights conflict, put the least restriction on individual lives compatible with protecting the public's health.' By ensuring the rights and economic security of individuals, we best ensure their cooperation in public health.

The dilemma of balancing the protection of the public health with the protection of individual freedom remains. Readers of this fascinating and informative book will gain insight into how societal policies should change while seeing how much the issues remain the same.

Impure Science: AIDS, Activism, and the Politics of Knowledge

by Steven Epstein

University of California Press

1996 ISBN: 0-520-20233-3 $29.95

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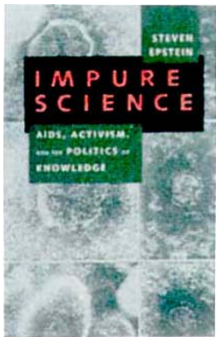
My first day as a postdoctoral fellow at the National Institutes of Health (NIH) coincided with the 1990 'Storm on NIH' organized by the activist group 'AIDS Coalition to Unleash Power (ACT-UP)'. At the top of the escalator leading from the subway, a sea of angry demonstrators protested the quality and quantity of science being done. 'NIH-NIH,' they chanted, 'Not Interested in Homosexuals,' and the ultimate shout of derision and accusation: 'Shame, shame, shame!' As a newly minted scientist, I was angered at their shallow understanding of how science proceeds and their assumption that scientists didn't care about real, suffering people. But as a gay man losing friends to AIDS, I was also angry at the lackluster attitude displayed by many scientists I'd met who didn't understand the urgency for something — anything — to dispel the nightmare that enfolded us. Having one foot in the camp of scientific rigor and the other in personal experience, the contradictory demands of each caused me some confusion and a great deal of pain.



In his book, *Impure Science: AIDS, Activism, and the Politics of Knowledge*, sociologist Steven Epstein describes how these two realms of knowledge — that of scientific method and fact and that of personal experience and need — have collided in the AIDS epidemic, how they have altered each other (particularly the influence of activists on researchers) and the uneasy alliance still in negotiations. *Impure Science* is not an easy book for a scientist to read, partly because the language is often that of sociology and partly because some statements are uncomfortably close to dismissing the idea of 'objective' or even 'rational' science as a myth. But the book does score several telling points and is worth reading for anyone in biomedical science — not just those with an interest in AIDS or other diseases that have developed activist constituencies.

At one level, the book is an interesting sociological history of what Epstein (and others) calls 'the politics of knowledge' in the AIDS epidemic. Through his recounting of the story of the drug azidothymidine and, even more pointedly, the Peter Duesberg controversy, Epstein reinforces the fact that knowledge is power. He details the scientific 'education' of AIDS activists, which forced AIDS researchers not only to acknowledge the activists as intellectual equals, but to share the power associated with owning scientific knowledge, such as assigning grants, deciding research directions, designing and