

The Ghost Map: The Story of London's Most Terrifying Epidemic—and How it Changed Science, Cities, and the Modern World. By Steven Johnson. (Riverhead Books: Penguin Group (USA) Inc, 375 Hudson Street, New York, New York 10014, USA. Pp. xv + 262. Preface, map, epilogue. \$15. )

Vibrio cholera, one of the deadliest enemies men of the nineteenth century had ever faced, yet never seen; the Doctor who would try to expose its source, the curate who would comfort its victims, and the city in which they all lived, that is what Steven Johnson's book is about. Steven Johnson is a Distinguished Writer in Residence at New York University's Department of Journalism, and a bestselling author of four other works. Johnson mentions his work in graduate school in the epilogue, but never actually says what field; the assumption is that it is Journalism. With that in mind, his book is very well developed scientifically.

Johnson's book starts out explaining the daily toils that are the existence of the London poor and working class. Throughout most of the text involving the city his quotes are from the prominent British author Charles Dickens. It is on this backdrop that the picture of cholera in the nineteenth century is painted. The first broad strokes Johnson uses are the detailed descriptions of how the waste of the Londoners is dealt with. Cesspools, open sewage, piles of human feces in cellars, are commonplace throughout every slum in London.

From this cheerful base comes the first case of cholera linked to this particular outbreak. One or two cholera deaths a day are not uncommon during this time. Johnson mentions this one almost in passing, to get on to the delightful experience that it is to have cholera. The history of cholera is briefly outlined and the book lays out in great detail the microscopic world of V. cholera inside the suffering small intestine. Both

subjects are well researched and quite astute historical and medical writing for a journalist.

With the playing field and the opponent introduced, Johnson turns to the roster of what will be the home team of the cholera outbreak of eighteen fifty four. He introduces Dr. John Snow with a mini biography. Johnson lists his accomplishments and qualifications with respect to their effectiveness in the battle against cholera. The other major player is Henry Whitehead. Johnson's brief synopsis of Whitehead's life up to eighteen fifty four highlights his intimate knowledge of the city. With Whitehead's connection with the poor in his parish and Snow's scientific mind, it seems more than a mere coincidence that the two would become allies in this battle.

With introductions out of the way, Johnson starts in on the battles in the streets of London; most specifically Broad Street and its public water pump. The book also looks beyond the disease, into the battle between science and superstition, between rhetoric and reform, and between those working for the good of the public, and that public they are supposedly working for.

In many cases Johnson's suppositions are backed up with quotes from John Snow's reports, or, with more frequency, newspapers. Whitehead's thoughts are less recorded and are attributed to him by the author, which he defends in the Author's Note (p 257). More often than not, characters from Dickens' novels make cameos. What Johnson does do is personify those with the most impact on the epidemic. He does this with a photograph or illustration at the beginning of each chapter. This helps considerably in giving faces to the voices in the reader's mind's eye. There is also a localized two page

map spread at the beginning. This proves helpful if one wants to follow all the footwork that Whitehead and Snow did during their respected investigations.

Johnson ends his book dealing with how the map that Snow drew up revolutionized epidemiology of the time, and how it trickles down to modern London. The building of London's grand sewer system is mentioned, including the final outbreak of cholera before its completion. This final outbreak allows for further study of Snow and Whitehead's earlier works. Johnson has the knack of a writer to overshadow such tragic times with the "big picture" scenario. His final paragraph is fitting as it describes the one constant spanning the one hundred fifty years since the outbreak, a pub on the corner of Broad and Cambridge Streets. The pub has been renamed The John Snow, ironic since the scientist was a teetotaler.

Thus, the story of the ghost map ends. So, does the story of London's most terrifying epidemic and how it changed modern science and cities. Unfortunately, that is not where the book ends. Johnson is convinced that this episode in history has also changed the modern world. The epilogue is a horribly urbanistic eulogy to an otherwise wonderful book to read. Johnson did so well in his main story with his dogged research and fantastic scientific, biological, and medical writings. And, then, his bias comes out. Johnson lives in Brooklyn and is a self proclaimed urbanite. His sermon on global cities and the Darwinian arms race between man and microbe is a jump way out of the perspective his previous chapters gives. Johnson tries very hard not to be biased in showing both sides of the coin. He mentions 9/11 and how the towers had a population of 50,000 on a workday in a space of about an acre. Such numbers in tightly packed urban centers increase the body count he says, but then counters with the praises of the internet

and New York's 311 program. The pros and the cons are so diametrically opposed to each other that it looks as though Johnson is schizophrenic during his final thoughts. He even mentions how great mega cities are and in nearly the same breath speaks of how the government should do more with public services and works for them.

Steven Johnson is on par with writers such as Erik Larsen and Simon Winchester on readability. He blends complex ideas seamlessly into a coherent work that the majority of people can understand. His flaw in this book is getting overly, and needlessly political in the epilogue. It is unclear where exactly Johnson was going with his last twenty five pages of urbanization, avian flu, and nuclear fallout rants. He continuously compares urban and rural areas, but never actually defines either. Are rural areas those with a population less than one thousand, one hundred thousand, or one million? He never does say. To Johnson it seems there are those who live in the cities and those who do not. The world is not that simple and making it sound that way, Johnson effectively makes himself sound like Edwin Chadwick, to whom he devotes an entire chapter. Johnson berates Chadwick's Miasmatic beliefs. Johnson obviously knows that not all smell is disease, but he is having more of an issue seeing that not all cities are London.