

## Book Review

**Plagues: Their Origin, History and Future.** Christopher Wills  
HarperCollins Publishers, 77-85,  
Fulham Palace Road, Hammersmith,  
London W6 8JB, UK. 1996. 324 pp.  
Price: £13.95.

The medical lexicon has usurped the word plague to refer to the disease caused by *Yersinia pestis*, although lay English usage (as in plagues and pestilence) adopts a much wider definition for the term. In his book, Christopher Wills also employs it in this larger context as he describes the toll of human mortality and morbidity exacted by a select list of infectious diseases both in the past and in the present-day world. Needless to say, India and its infamous plague epidemic of 1994 merit considerable attention in his discourse.

Implicit in the world plague is a sense of fear, morbid panic and mass hysteria, sometimes bordering on the unjust and irrational, and Wills does well to describe these reactions in respect of the diseases he chooses to cover: the plague, cholera, typhoid fever, malaria, tuberculosis, syphilis and, of course, AIDS. Strangely, the author excludes smallpox, a scourge comparable to those he covers, from his list. He does so on the ground that this disease no longer exists. But then an analogous argument could be made for syphilis, which has lost its sting, if not its bite, since the advent of the penicillin era.

I found Wills to be a fascinating story-teller. Without being encyclopaedic, he mixes history with science with anecdotal information and personal glimpses to sustain the reader's interest all through. For each disease in the list, Wills recounts (not necessarily in that order) its description in historical records, the discoveries associated with research on the infectious agent, its virulence characteristics and its mode of spread and the circumstances surrounding its epidemic outbreaks. The *Yersinia* plagues of the Justinian and the Black Death, the inconclusive debate on whether or not syphilis in Europe pre-existed Christopher Columbus, the controversy between Ronald Ross and Battista Grassi con-

cerning the discovery of malarial transmission by the *Anopheles* mosquito vector, the first documented experiment in epidemiology involving John Snow and the London Broadstreet water pump, and the saga of 'Typhoid Mary' are all recounted here, and in a manner refreshingly different from other accounts on these episodes that I have read earlier.

The author explains that each of these diseases represents but 'the eyes of the [submerged] hippopotamus' of infections in the affected communities and, moreover, that plagues are not confined to the human species but occur in other animals and plant species as well. He also discusses the interplay between pathogens and hosts in shaping the evolution by natural selection of each other's genetic make-up, and is particularly brilliant when he draws upon the analogy of tropical rainforest diversity in explaining the existence of extensive genetic polymorphisms in populations of both hosts and their pathogens.

A variety of events have to fall into place for an epidemic of vast proportions to occur, and breaking any one of the links in the chain is often sufficient to ensure that it does not propagate. 'It is one of nature's supreme ironies that, during the unusual juxtaposition of circumstances that leads to an outbreak of plague, all the major participants in the drama are sick. This includes the humans, the rats, the fleas, and the very bacteria themselves.' Wills attributes the low mortality associated with the Indian plague epidemic to the instantaneous and widespread use of insecticides and tetracycline. The author refers to these as 'Band-aids' that were successful in the short term but which do not address the underlying reasons that provoked the epidemic in the first instance.

I can fault the author on only one count in this book, which is that he repeatedly falls prey to the trap of anthropomorphic word play in describing the properties of the infectious agents. Witness, for example, 'The plague bacillus... is so fragile that it must be cautious. If it behaves with wild abandon and causes the plague, then most of the time it will die as well.' Or at another place, 'Like the strains of typhoid that

have managed to leave the tropics, the malaria species that have done so are more sophisticated than the one that was left behind. Temperate-zone malarias can conceal themselves... and they seem far more adept at surviving in their mosquito hosts.' To be sure, Wills himself is aware that these properties of the pathogens have not been actively acquired but passively selected in the course of biological evolution, and he uses these statements only to make the treatment of his subject less drab. But in these days of publicity for flesh-eating bacteria and machines that think, his presentation is bound to reinforce the pre-existing prejudice.

In the same vein, he addresses the question of the likelihood that a new disease will arise which is associated with both high mortality and rapid spread, and very reassuringly states: 'I am confident that no terrible disease will appear that slaughters us by the billion. The reason is that we can now respond very quickly to such a visible enemy.' I concur that the scenario of a new plague is extremely improbable, but for a different reason. The environmental niches occupied by humans today are not vastly different from those that existed at various times in the past (on an evolutionary time scale), and should a disease of the dreaded kind be waiting to occur, why has it not done so already? This is just another version of the anthropic principle, familiar to (but not necessarily agreed upon by) all physicists – that the very fact we exist today imposes constraints on the properties of the universe in which we live.

For whom is the book intended? Although it is charmingly written, I think it will still be heavy reading for the layman. But to any student (and I do not use the word in its strict pedagogic sense) of science, in particular of biological science – inclusive of medicine and agriculture – I believe that the book has plenty to offer. Wills educates even as he entertains. As is usual, however, the book is priced out of reach for the average Indian, but all libraries may be encouraged to obtain a copy.

I end this review on a personal note. Wills discusses, in a balanced manner, the controversy surrounding the nature



of the etiologic agent responsible for the Indian epidemic in September–October 1994, and records the views of Jacob John from Vellore that it was not *Yersinia pestis*. On 1 October of that year, my wife and I travelled with our sons, then aged six and two, by train from Hyderabad to New Delhi; and then onward to Ludhiana on 4 October by another train that was on its way from Bombay to Amritsar, and that had indeed passed through Surat enroute. This was the time of the Dussehra school holidays, and yet both trains were running near empty. On a platform at the New Delhi railway station, one saw a set of tables that represented a makeshift plague surveillance unit, and many among the general population were moving around with surgical masks or

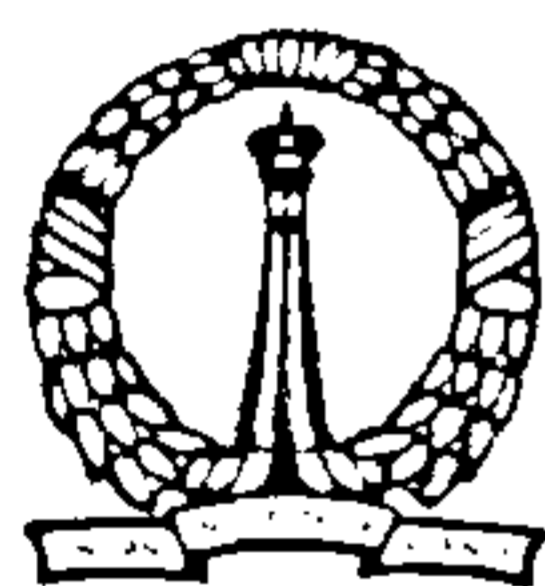
handkerchiefs tied across their faces. As Wills notes in his book, almost all international air carriers decided to overfly Delhi during those panic-filled days.

So were we being foolish to risk our lives and those of our children in undertaking this journey? Both of us had been students of Jacob John in Vellore and were certainly influenced by his statements, then widely reported in the press, that the Surat epidemic was not the plague. Now that the official report has proved him wrong, does ours become a foolhardy decision in retrospect? I still do not believe so. It was then already the third week since the start of the epidemic, and at least going by the press reports, the disease was not spreading as rapidly as the pneumonic plague is feared to do. Wills would attribute its

mildness to the large-scale consumption of tetracycline, but he was not there at the time. The antibiotic had simply disappeared from the market even in Hyderabad, where the scare was minimal; the increased consumption could not have occurred in the initial two weeks of the epidemic. My own hypothesis is that either the Indian epidemic was caused by a less virulent strain of *Yersinia pestis*, or the population enjoyed a certain degree of immunity to infection, perhaps because of cross-reacting antibodies. The Surat strains of *Y. pestis* demand further study.

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