

(Leslie Sue Lieberman), and Diarrhea (Herbert DuPont). Evading a common enough mistake in this sort of work in the past, the preparers make no attempt to retain current or presentist (and hence necessarily ephemeral) categories. Thus, throughout the approximately 550 large-format pages of this section, one will find “Dyspepsia” next to “Ebola Virus Disease,” and “Gangrene” next to “Giardiasis”. A salubrious eclecticism prevails.

It is always possible in a reference work to expound one’s “druthers” in terms of areas receiving less emphasis. There is little here on poisons and poisoning (though environmental toxins get good play in Frank Innes’s chapter [VII. 8] on ‘Disease ecologies of North America’). One would have liked to see a modicum of attention given to the important area of iatrogenic illness. Certainly more tables and illustrations, most particularly in part VIII, would have been welcome. If these are areas where the coverage is thin, however, it seems the editors have performed admirably in tailoring their range to the historical talent available. Further offsetting these gaps are equally admirable production qualities. In a return to its glory days, Cambridge has seen to it that we get a nicely turned out oversize volume, with superb, exhaustive indices to names and subjects. I agree with other reviewers of the *Cambridge world history of human disease*: it moves quickly onto the “indispensable” shelf of every personal and institutional library.

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Andrew Cliff, Peter Haggett, and Matthew Smallman-Raynor, *Measles: an historical geography of a major human viral disease from global expansion to local retreat, 1840–1990*, Oxford and Cambridge, Mass., Blackwell, 1993, pp. xx, 462, £90.00 (0–631–16235–6).

This monograph brings together earlier work by Cliff, Haggett and assorted co-authors on measles in south-west England, Iceland,

Fiji and the United States. Their principal concern has been to develop spatial-epidemiological models which would have some predictive value and thus be used in public health management. This alone would have been worthwhile, but the book goes much further than that in providing a narrative sweep through the entire recorded history of human experience with measles. Of course, much of the additional material consists of a review of secondary sources but these are comprehensively surveyed and enhanced by a beautiful set of maps and diagrams. This geographical work of disease biography makes a powerful case for the importance of measles in history and as a central concern of public health strategies in poor countries today.

The story of measles diffusion from an Old World reservoir to the Americas and into the Pacific is acknowledged as one of the tragic unintended consequences of the Age of Exploration. Apart from smallpox, measles may have been the major killer of native Americans in the Great Dying which followed the arrival of the Europeans (pp. 65, 112). While works of historical demography may establish this claim with greater reliability, its significance is not so easily determined. The severe plague pandemic of 1348–9 swept away between a third and a half of the European population, yet the following two centuries saw demographic recovery. The first two centuries of European presence in America saw no such recovery among the native peoples. There is a danger in attributing too much significance to viruses and not enough to people.

In describing the spatial dynamics of measles, the authors refer to M S Bartlett’s finding of 1957 that for English cities with a population over a quarter of a million, measles was endemic rather than epidemic in those pre-vaccination years (p. 7). Here, the authors show that as the separate provinces of Australia passed Bartlett’s population threshold their measles episodes became increasingly out-of-phase with one another showing the transition from imported

epidemics to an endemic pattern (p. 170). There are many such illustrations of the spatial dynamics of the disease and of the value of advanced statistical methods in teasing out those dynamics. There are also some puzzles. The most striking to the authors is the case of Japan where a large population fails to pass into an endemic pattern as the threshold population is crossed by many cities. Instead, throughout the nineteenth century measles remained a periodic visitor to the islands. They point to the contrast with Britain with a similar population and endemic measles outbreaks every two or three years at this time (p. 94). One possible explanation that would need further theoretical and empirical exploration, might lie in the contrast between an open and a closed population system. Bartlett's empirical generalization applies to a set of cities within an open European population system. Japan had a number of large cities within a relatively closed demographic system. Thus measles went through the country but found no permanent purchase. Large cities have more intense contacts with adjacent populations. In Britain's case those intense contacts extended well beyond its own shores.

A second puzzle concerns the relative importance of contact patterns and nutrition. At various points in reconstructing the patterns of measles early in this century, the authors note concentrations of cases among people living in poor housing or in poor-law institutions. In a discussion of Glasgow (p. 81) they attribute this association to the effect of diet, as they do in the case of Sydney (p. 127). At other points they ascribe the peak in measles deaths in winter to the effect of the greater crowding of people indoors against the cold (p. 196). It must remain an open question whether overcrowding in the houses of the poor and in the institutions of the poor law might better explain patterns of infection than does nutrition. This possibility is underlined by the repeated references in this work to the importance of patterns of contact in accounting for the timing and location of measles outbreaks.

The authors provide many examples of the importance of medical care in accounting for measles case-fatality rates; including culturally-specific differences of several orders of magnitude in modern India (pp. 282–3). It must be suspected that this explains the gradual decline in measles mortality in the richer countries over the first half of this century. The onset of mass vaccination campaigns in the United States from the late 1960s heralded a new phase in the history of measles; the story of a dramatic drop in morbidity rates and of the potential elimination of the disease worldwide. The authors are sanguine on this last point. They note that whereas the transmission of smallpox can be interrupted with only 50 to 60 per cent immunity in a population, 94 per cent may be needed in the case of measles (p. 420). Given the geography of transmission and of poor vaccination, rich countries should probably concentrate their vaccination efforts among the poor living in their largest cities. For poor countries, the authors note the many competing claims on medical funds and accept that universal measles vaccination campaigns may not be cost-effective. They follow the WHO in urging comprehensive campaigns of combined vaccinations against a range of diseases. Certainly vaccination to prevent disease may be more sustainable in the long run than the use of antibiotics to cure it.

This is a valuable work and a significant extension of the authors' earlier studies. It raises many puzzles. Not the least of these is the applicability of the models the authors have developed to practical contexts. They show a keen awareness of the need for reliable, cheap, and robust predictions. There is, therefore, much work remaining to be done before their models can leave the safe haven of the excellent Icelandic statistical series and walk about among the much patchier epidemiological reporting of today's poor countries.

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