

Book Reviews

much less certain precisely how the aesthetic codification occurs, or what theoretical encounters of this variety would have done for narratives already encoded in existing literary forms. For example, what would Good make of the narrative encodement of Emma Bovary's illness or the stories of the famous ailing figures in Proust and Mann? Did they not also have significant anthropological contexts, or do literary critics have nothing to learn from medical anthropologists?

G. S. Rousseau, University of California, Los Angeles

ANNE HARDY, *The epidemic streets: infectious disease and the rise of preventive medicine, 1856–1900*, Oxford, Clarendon Press, 1993, pp. xiii, 325, £40.00 (019–820377–2).

Anne Hardy re-examines Thomas McKeown's account of why mortality fell in the nineteenth century. McKeown claimed that the decline in nine major infectious diseases caused the diminution in general mortality and that improvements in the standard of living, particularly nutrition, rather than conscious human intervention must have been responsible. Hardy considers in turn eight of these nine diseases: whooping cough, measles, scarlet fever, diphtheria, smallpox, typhoid fever, typhus, and tuberculosis. The ninth, Asiatic cholera, a disease she discussed in a separate article, has unfortunately been omitted from this book because of the economic constraints in academic publishing. In place of McKeown's largely ahistorical approach, Hardy provides a close historical analysis of these diseases in London, focusing her attention on mortality patterns, on social and economic change, and on the activities of medical and public health authorities. In making her assessment she employs current biomedical knowledge of these diseases and recent historical scholarship.

Hardy follows Simon Szreter's lead in arguing that McKeown naively read the national mortality figures for pulmonary tuberculosis, and that as a result he erroneously placed the beginning of this key disease's decline before 1840. Szreter places the beginning of tuberculosis's decline in the 1860s. Hardy would place it even later, as late as 1880. The date when tuberculosis, the major contributor to the nineteenth-century mortality decline, began to recede is critical to this argument. While McKeown was willing to grant that better water supplies and improved disposal of human waste probably contributed to the decline of waterborne diseases such as typhoid fever and cholera, he argued that only improved nutrition could account for the fall in tuberculosis. By placing the decline of tuberculosis much later in the century, Hardy and Szreter open the possibility that the activities of public authorities may have had a more profound effect than McKeown realized.

By carefully considering the ecology and history of these diseases Hardy concludes that the work by public authorities was critical. "The epidemiological record clearly suggests . . . that it was not better nutrition that broke the spiral of deaths from infectious disease after 1870, but intervention by the preventive authorities, together with natural modifications in disease virulence" (p. 292). In reaching this conclusion she draws attention to factors which historians are used to considering: better public sanitation, purer water supplies, routine household inspection, smallpox vaccination, hospital isolation. More novel is the attention she pays to changes which took place in the domestic sphere: in technology, especially in plumbing practices, in household management and hygiene, in the handling and preparation of food, in the domestic nursing of the sick, in family size, in crowding, and in customs such as visiting the sick and laying out the dead. She argues that changes in social behaviour may have been more important than poverty, *per se*, and believes that the greatest contribution that local health departments may have made in the nineteenth century was encouraging private hygiene. This last set of factors opens new areas for historical research, areas in which women will figure much larger than they have in past historical discussions of public health.

The issues this book addresses are very complex. As the differences of opinion about when tuberculosis began to decline show, the mortality record is uncertain and difficult to interpret. Evidence for changes in private behaviour is spotty. Demonstrating the effect of public policy or personal behaviour on mortality and morbidity is even more difficult. To her credit, Hardy does not spare the reader discussion of these uncertainties. One need not accept all her suggestions to find this a highly informative and stimulating book. Its importance lies in the breadth of its perspective and the good sense with which the author evaluates the wide array of possible influences. Hardy wisely

Book Reviews

avoids the pitfalls of simple, unicausal explanations. She sensibly employs current biomedical knowledge while cautioning of the dangers of applying models built on current third world experience to the evidence from nineteenth-century Britain. Best of all, this book raises many new questions that will influence how the rest of us do our research in the future.

John M. Eyler, University of Minnesota

LEO HOWE and ALAN WAIN (eds), *Predicting the future*, Cambridge University Press, 1993, pp. vi, 195, illus., £18.95, \$29.95 (0-521-41323-0).

Predicting the future is a risky business and few of the authors are prepared to try it. Rather they analyse the past and present. Stephen Hawking does however consider the future of the universe. He would have liked at one stage to write a history of the future about how most predictions turn out to be very wide of the mark. Here he suggests that the behaviour of the universe on a very large scale seems to be rather simple and so one can predict whether it will expand forever or eventually recollapse. He hedges his bets by predicting both ways.

Unlike the large scale behaviour of the universe, tiny changes in the initial conditions of dynamical systems, even like a free-swinging pendulum, can make its behaviour chaotic and hence unpredictable in detail. Ian Stewart looks at how one can analyse the equations that govern such systems and how considerations of symmetry can make sense of the patterns of fluid flow which can suddenly break up into layered vortices. Symmetry and chaos, pattern and disorder, coexist within the same mathematical framework.

Simon Schaffer examines prophecy as a question of trust with an historical analysis of attitudes towards comets. He argues that the culture of the wider public has an affect on the specialist predictions. He sees the common talk of impending disasters like British economic collapse as being sustained by the image of cometary prediction.

Understanding is not the same as predicting as Frank Hahn discusses in relation to economics. One cannot expect predictions from social science but that does not mean there is no understanding. Geologists can understand earthquakes but cannot predict them. Understanding should be seen as placing restrictions on what the world can be like.

Ian Kennedy sees bioethics playing an increasingly important role in medicine. For example, as developments in human genetics advance they may bring with them a "tyranny of knowledge", which forces choices upon people for which they are not yet prepared. There is also the hard question of allocation of resources and the balancing of people's rights and duties.

The last three essays deal with religious aspects of the past and future. Problems arise from God's omniscience and plan for the world, the co-existence of good and evil, and our supposed free will. Averil Cameron examines the efforts made by the church in late antiquity to win adherence to the Christian scheme of providence in the face of both secular and non-secular explanations. In Buddhism, as Richard Gombrich points out, the emphasis is on the individual. It also draws no sharp line between humans and animals, and reincarnation can be into one of many life forms. To attain nirvana is to get rid of all desire and delusion. The future is determined but irrelevant. Finally, the idea of the Last Judgment is discussed by Don Cupitt. The idea that we must, after our death, face a moral tribunal before which we must give an account of our deeds, is found in almost every culture and is first recorded in Egypt some 2500 years ago. But the story that at the end of time everything will make sense does not itself make sense until the end of time. We will never know where it is all going and so our anxieties about the future will persist, forever.

Lewis Wolpert, University College London

HANS-JÖRG RHEINBERGER and MICHAEL HAGNER (eds), *Die Experimentalisierung des Lebens: Experimentalsysteme in den biologischen Wissenschaften, 1850/1950*, Berlin, Akademie Verlag, 1993, pp. 248, illus., DM 78.00 (3-05-002307-4).

Following the historiographical programme instigated by Bruno Latour and Steve Woolgar to study "Laboratory life" and "Science in action", this volume deals with experimentation in the life sciences in the period between the emancipation of experimental physiology from anatomy (around