BOOK REVIEWS

Strategies Against Tuberculosis

Disease and Class. Tuberculosis and the Shaping of Modern North American Society. GEORGINA D. FELDBERG. Rutgers University Press, New Brunswick, NJ, 1995. xviii, 275 pp., illus. $52; paper, $18.95. Health and Medicine in American Society.

Since the publication of René and Jean Dubos's *The White Plague* in 1952, tuberculosis has prompted many a scientist and historian to reflect deeply on the complex relations between disease and society. In the last decade, the history of this disease has drawn renewed interest, as scholars have pondered why a disease once considered "conquerable" has returned to prominence as a global killer. Georgina Feldberg's book represents a welcome contribution to this burgeoning literature, largely thanks to its comparative approach to the politics of 20th-century tuberculosis control.

Feldberg analyzes the response to the bacillus Calmette Guérin, or BCG, vaccine, which was developed by two French researchers in the 1920s. While public health departments in other countries, including Canada, accepted and used the vaccine, the United States Public Health Service denigrated its value and favored mass prevention programs and chemoprophylaxis instead. Feldberg suggests that this "road not taken" in the decades from 1930 to 1960 was one factor leading to the current resurgence of drug-resistant tuberculosis in the United States.

"The National Tuberculosis Association capitalized on mythical battles to rally children. Following the First World War, the symbolism of St. George and his struggle against the dragon dominated the crusade. By the Second World War, the battle against tuberculosis was compared to battles against German and Japanese enemies." [From *Disease and Class*; source, H. A. Wilmer, *The Lives and Loves of Huber the Tuber* (1942)]

Feldberg's book argues against the grain of recent histories of tuberculosis on several counts. Historians have long portrayed public health efforts to prevent the disease as a struggle over broad social versus narrow scientific interventions. Feldberg challenges this simplistic dichotomy by showing that many laboratory-based physicians and researchers were quite aware of the social determinants of the disease and that this broad viewpoint infused their supposedly "narrow" clinical and therapeutic strategies. Second, Feldberg calls into question the usual portrayal of the American public health establishment as enamored of the "quick technological fix." In the case of BCG, she shows that American physicians rejected the vaccination precisely because in their opinion, it did *not* address the social dimensions of the disease's persistence.

Feldberg places the American response to BCG in the larger context of the early-20th-century antituberculosis movement, which tied disease prevention to a sweeping middle-class agenda for social reform. As researchers in the 1920s and '30s turned to the laboratory for new ways to eradicate the white plague, this "dietetic-hygienic-educational campaign remained the template against which they judged their efforts and against which their efforts were judged" (p. 124). Moreover, scientists intent upon elevating national research standards raised countless objections to the BCG vaccine's safety and efficacy, insisting that they verify French claims in their own laboratories and clinical trials before using it on American citizens. Yet prior to World War II, they lacked the institutional support to mount such an ambitious research program, so the objections to BCG could never be laid to rest. By the time the newly formed Tuberculosis Control Division of the Public Health Service began to conduct such research in the 1940s, the promise of antibiotics provided new and comparatively inexpensive alternatives to a national program of BCG vaccination.

Feldberg deftly portrays the American medical establishment's resistance to BCG as the result of an intricate blend of scientific and institutional factors. Yet ultimately she comes back to the argument that it was the vaccination's incompatibility with the underlying precepts of the American anti-tuberculosis crusade that doomed it to rejection. As each objection to the vaccine was answered, another popped up in its place. Comparing the responses of Canada and the United States to BCG, Feldberg concludes that it was the latter's identification of tuberculosis as a disease of the poor that determined its response. "The presumed relationship between class and the disease melded with peculiarly American assumptions about poverty to constrain the administrative and legislative responses to tuberculosis control" (p. 212). Unfortunately, as Feldberg points out, the philosophical commitment of the American antituberculosis movement to broad social interventions was not accompanied by effective antipoverty programs. When social services for the poor began to be cut back in the 1970s and '80s, the stage was set for the present resurgence of the disease.

Heliotherapy for Native American children with tuberculosis. [From *Disease and Class*; source, R. I. Harris, *Am. J. Pub. Health* **16**, 689 (1926)]

Feldberg's book raises many important, interesting issues, yet the reader is left wondering how representative the BCG controversy actually was of the whole American public health movement. In the introduction, Feldberg herself suggests polio as a natural point of comparison: why did the American medical establishment prove receptive to polio vaccination in the same decades in which it gave BCG a cold shoulder? Yet she does not follow up on this

comparison, which might have strengthened the reader's confidence in her generalizations from the BCG debates.

Moreover, the title and subtitle (perhaps the work of an ambitious editor?) promise more than the book actually delivers on the subject of class, poverty, and disease. This is a sophisticated case study of the BCG controversy, not a comprehensive account of "disease and class" in 20th-century North American society. Still, it is a remarkable first book and a lively, welcome addition to the growing literature on both the history of tuberculosis and the evolution of modern biomedicine.

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Transposons

Mobile Genetic Elements. DAVID J. SHERRATT, Ed. IRL (Oxford University Press), New York, 1995. xiv, 179 pp., illus. $105 or £60; paper, $52 or £29.50. Frontiers of Molecular Biology, 8.

By its title this volume invites comparison with *Mobile DNA* edited by Berg and Howe and published by the American Society for Microbiology in 1989. In contrast to the earlier and much larger volume, which remains surprisingly useful, this book is organized according to topic rather than type of element or organism. It attempts to highlight some common themes rather than catalog the myriad subtle differences between transposable elements found in different organisms.

The book is generally clearly written and well illustrated, although the chapter on retrons in bacteria is poorly put together, with both conflicting and repeated sections. There is considerable variation in style among chapters and a small amount of duplicated material that might have been better placed in an introductory chapter to define basic terms and conventions. I especially enjoyed, and recommend to all those interested in the history of modern biology, the opening chapter, by James Shapiro. Shapiro presents a personal account of the discovery and significance of transposable elements, concluding with some observations on Barbara McClintock, her work and her role in the development of the field. He points out that the parallels between genetic rearrangements associated with controlling elements in maize and episomes in bacteria were not originally appreciated. As research and researchers become ever narrower and more tightly focused, this can be read as a plea for a more open and broad approach to current problems.

Perhaps the chapters of most general appeal will be those that describe the applications of mobile elements as genetic tools. Claire and Douglas Berg describe their use in prokaryotes and demonstrate the elegance of rearranging bacterial genomes in vivo rather than by in vitro recombinant DNA techniques. They also discuss using mobile elements in bacteria to assist mapping and sequencing cloned eukaryotic DNA. As this is precisely the sort of area that is of interest to many nonspecialists and is one that is rapidly evolving, a separate chapter might have been more useful. The chapter by Kim Kaiser, John Sentry, and David Finnegan on using mobile elements in eukaryotes is inevitably mostly about *Drosophila*, and mostly about P elements. This is the best-exploited eukaryotic transposable element, and many P element tricks seem to be applicable in other systems such as Tc1 in the nematode worm, so focusing on P elements is appropriate. However, there is no discussion of the uses of mobile elements to study the genome of organisms, such as humans, where genetic experimentation is not possible. The application of L1 elements in fingerprinting yeast artificial chromosomes, and the uses of Alu-polymerase chain reaction are surprisingly omitted.

This book is aimed at those who do not currently work with transposable elements but have an academic interest in them or are thinking about using them. Such readers will find much of interest, although the specialist will find few new insights.

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Also Noteworthy

Methods in Nitric Oxide Research. MARTIN FEELISCH and JONATHAN S. STAMLER, Eds. Wiley, New York, 1996. xx, 712 pp., illus. $130 or £80.

Noting that the recent growth of research concerned with nitric oxide "has resulted in a lack of methodological uniformity which has limited the interpretation of data," the editors of this volume have undertaken to provide a "comprehensive text" that would alleviate this problem. Further, "In recognition of the confusion that surrounds the state of the art," they enlisted the collaboration of two authors for each chapter "in order to generate a consensus statement." In all, the book contains 46 chapters grouped under nine headings. An opening group of five chapters on the chemistry, biochemistry, kinetics, and metabolism of nitrogen oxides is followed by a pair on the preparation and handling of NO and related compounds. The remaining groups are devoted to enzymatic formation and targets of nitrogen oxides (seven chapters), detection and distribution of NO synthase activity (three), metabolism of substrates and cofactors (two), detection of nitrogen oxides (thirteen), detection of adducts and reaction products of NO (five), bioassay techniques (six), and clinical assessment (three). In general, the chapters follow a format of beginning with a review of the subject at hand, then presenting the methodology "in a cookbook-like fashion with ready-to-use recipes," and concluding with a reference list. In producing the work the editors report having exercised a firm editorial hand but having given preference to quality over matters of style. The book includes a 42-page subject index.

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Books Received

Analysis of Biological Development. Klaus Kalthoff. McGraw-Hill, New York, 1995. xviii, 814 pp., illus. $66.34.

Behavioral Archaeology. First Principles. Michael Brian Schiffer. University of Utah Press, Salt Lake City, 1995. x, 289 pp., illus. Paper, $24.95. Frontiers of Archaeological Inquiry. Reprinted papers, 1972–1987, with an autobiographical introduction.

The Collected Papers of Albert Einstein. Vol. 4, The Swiss Years: Writings, 1912–1914. Martin J. Klein *et al.*, Eds. Princeton University Press, Princeton, NJ, 1995. xxii, 715 pp., illus. $85 or £66.50.

DNA-Protein. Structural Interactions. David M. J. Lilley, Ed. IRL (Oxford University Press), New York, 1995. xii, 202 pp., illus. $105. Frontiers in Molecular Biology, 7.

Feral Pigeons. Richard F. Johnston and Marián Janiga. Oxford University Press, New York, 1995. xvi, 320 pp., illus. $95.

Guide Archeologiche. Preistoria e Protostoria in Italia. Vol. 1, Il Paleolitico dell'Italia Centro-Meridionale. Paolo Gambassini *et al.* A.B.A.C.O. Edizioni, Forlì, Italy, 1995. 176 pp., illus. Paper, £20.

High Frequency Processes in Magnetic Materials. G. Srinivasan and A. N. Slavin, Eds. World Scientific, River Edge, NJ, 1995. x, 468 pp., illus. $90.

The Interpretation of Quantum Mechanics. Dublin Seminars (1949–1955) and Other Unpublished Essays. Erwin Schrödinger. Edited and with introduction by Michel Bitbol. Ox Bow, Woodbridge, CT, 1995. vi, 151 pp., illus. $55; paper, $30.

Journeys in Microspace. The Art of the Scanning Electron Microscope. Dee Berger. Columbia University Press, New York, 1995. viii, 203 pp., illus. $39.50.

Kangaroos. Biology of the Largest Marsupials. Terence J. Dawson. Comstock (Cornell University Press), Ithaca, NY, 1995. vi, 162 pp., illus., + plates. Paper, $25 or £19.50.

Luck. The Brilliant Randomness of Everyday Life. Nicholas Rescher. Farrar, Straus and Giroux, New York, 1995. xii, 237 pp. $19.