

Book Review

Questionable Diagnosis, Ineffective Treatment

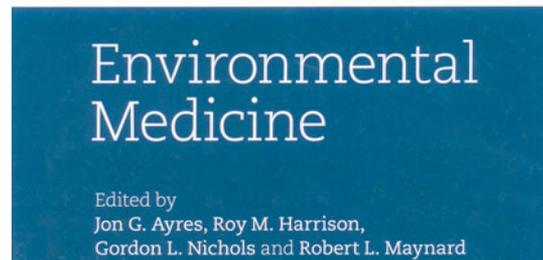
ENVIRONMENTAL MEDICINE, JON G. AYRES,
ROY M. HARRISON, GORDON L. NICHOLS,
AND ROBERT L. MAYNARD (EDITORS),
2010, LONDON: HODDER ARNOLD

“Everything is connected to everything else,” declared Barry Commoner in his First Law of Ecology. Indeed, where human health meets the environment, the web of interconnecting threads seems infinite.

Fortunately, we have a wide range of books that help both the beginning student and the experienced professional learn about the interface of the environment and human health. The book under review, *Environmental Medicine*, thus joins a somewhat crowded field. It is edited by four distinguished British scholars and practitioners. Three (Ayres, Harrison, and Maynard) are University of Birmingham faculty members, and major contributors to the U.K. Department of Health Committee on the Medical Effects of Air Pollutants. The fourth (Nichols) is a communicable disease epidemiologist at Britain’s Health Protection Agency.

The Editors were ambitious. They designed the book, they tell us, to fill “the need for a coherent approach to environmental issues and how they relate to health”—because, they observe, “there was no single volume which brought together the various threads of the subject.” The book is not offered as a textbook, and its contents would not map conveniently to a semester’s timeline; instead, it is a reference book, “a resource for anyone needing to find information, who finds the area of interest or who is training in one of the many disciplines which contribute to environmental influences on health.”

Environmental Medicine is a large-format book of nearly 700 pages, handsomely produced, dense with prose. There are relatively few illustrations, none in color. The 63



chapters were contributed by nearly 100 authors, most from the U.K., with a smattering from North America, Europe, and other nations. It is divided into four unequal parts. Part One, just one chapter, is an introductory essay. Part Two, on methodology, includes 7 chapters on epidemiology, surveillance, exposure assessment, and geographical information. Part Three, with 50 chapters, discusses health effects. It consists of 12 sections—two each on respiratory diseases and on toxic exposures, three on infectious diseases, and one each on “diseases influenced by climate” (including heat, cold, and climate change), pressure variation, contaminated land, radiant energy, and environmental carcinogens. Part Four, with five chapters, addresses clinical assessment, risk perception, law, policy, and health impact assessment.

What is this book *not*? Despite its lineage in pulmonary disease and toxic chemicals, it is *not* an occupational medicine text. Readers who want to learn about asbestosis or *n*-hexane neuropathy will need to consult such works as *Hunter's Diseases of Occupations* by Baxter, Cockcroft, Harrington and Aw (Tenth Edition, 2010) or *Textbook of Occupational Medicine Practice* (3rd Edition, 2011) by Koh and Takahashi. Nor is this book a guide to the clinical care of patients, despite the prominence of “medicine” in its title; the discussions of diagnosis and treatment are very brief. Clinically oriented readers will prefer such texts as Rosenstock, Cullen, Brodtkin and Redlich's *Textbook of Clinical Occupational and Environmental Medicine* (Second Edition, 2005) or *Environmental and Occupational Medicine* by Rom and Markowitz (Fourth Edition, 2007).

Similarly, readers who want to learn about environmental toxins will find scant satisfaction here. Pesticides and a few metals are discussed, but the book is silent or nearly so on many environmental chemicals of current concern: polychlorinated biphenyls (PCBs), dioxins, bisphenol A, and phthalates. Moreover, the approach to toxicology is dated and incomplete. The obligatory “dose makes the poison” quote from Paracelsus appears, but the story seems to end there. We now understand that genetic polymorphisms may distinguish susceptible people from non-susceptible people, that immune and endocrine mechanisms may greatly potentiate the effects of low doses, and that developmental windows of vulnerability may multiply the effects of hazardous exposures occurring at the wrong times. Little such material appears. And within the chapters on toxic exposures, the information provided is selective. The lead chapter, for instance, discusses exposure sources and pathways, exposure assessment, distribution, storage, excretion, and some health effects. But the chapter omits the differences between organic and inorganic lead, the socioeconomic gradients of childhood lead exposures, and global patterns of occupational and environmental exposures, and only briefly touches on the nature of neurological deficits in lead-exposed children. The review of evidence of health effects at low-level exposure (at blood lead levels below 10 mcg/dL) is cursory, as is the discussion of both treatment and prevention. So this book is *not* a useful source on toxic chemicals. Readers who seek thorough, balanced overviews of toxic exposures will prefer any of the standard toxicology texts.

The coverage of infectious diseases is similarly incomplete. For example, there are chapters on several vector-borne diseases...not including malaria! There are several chapters on food- and waterborne diseases. Two are

general; these overlap considerably, and omit major issues, from bacterial genetics to public health surveillance to treatment. The others address specific diseases such as cholera and enteric viruses, but these are so brief as to afford the reader little depth or perspective. This book is *not* a source on environmental microbiology.

Other material highly germane to understanding environmental medicine (or environmental health) is also absent. Remarkably, there is no in-depth discussion of prevention principles. Genetics appears only in a few perfunctory paragraphs in the epidemiology chapter (p. 31). There is little discussion of the social determinants of environmental exposures, or of the important movement called Environmental Justice. The chapter on surveillance and monitoring contains virtually nothing on biomarkers, or on recent scholarship on environmental health indicators. On environmental psychology and mental health there are only two paragraphs (p. 640). There is nothing on the built environment. There is nothing on the benefits of nature contact.

Importantly for readers of *EcoHealth*, there is little on ecological approaches to human health, little on coupled human-natural systems, and little on sustainability principles. This was a deliberate decision; the introductory chapter, “Environmental medicine in context,” specifies a “focus on hazards and risks in the public environment...on disease outcomes rather than on the very broad and laudable goal articulated by the WHO...a ‘state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity.’” (pp. 9–10) This constrained biomedical paradigm is illustrated by a linear flow diagram from emissions to exposure to health effects, with various influences acting on the arrows, but with no feedback loops (Fig. 1–1, p. 4). A later statement (p. 10) calls on the science community to move “beyond its current focus on individual risk factors to a more comprehensive view of risk factors influencing health in both a positive and a negative way.” But the book provides no conceptual model of such complexity thinking. The one excursion into such territory—two fine chapters on climate change, a framework-setting chapter by the eminent team of Kovats and McMichael and a chapter on adaptation—provides only partial relief. The first discusses two classes of health impacts (infectious disease and severe weather events) but neither chapter discusses other impacts such as worsening air pollution, threats to the food supply, or forced migration, neither discusses primary prevention, and neither discusses co-benefits. This *not* a book that introduces

ecohealth. Readers wishing to learn this approach will prefer such volumes as Patz and Aron's *Ecosystem Change and Public Health: A Global Perspective* (2001) or *Sustainability and Health: Supporting Global Ecological Integrity in Public Health* by Brown, Grootjans, Ritchie, and Townsend (2005).

The editors' initial diagnosis—"there was no single volume which brought together the various threads of the subject"—may or may not be true. (Texts by Nadakavukeren, Hilgenkamp, Friis, and—full disclosure—this

reviewer, among others, have attempted to fill that role.) But clearly this volume is not the remedy.

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