Reviews of Books and Other Media. Note to publishers: Send review copies of books, software, and other media to Respiratory Care, 9425 North MacArthur Blvd, Suite 100, Irving, TX 75063-4706. Attn: Sara J Forgy. © 2010 Daedalus Enterprises

David J Pierson MD FAARC, Section Editor

Asthma: The Biography. Mark Jackson. *Biographies of Diseases* series. William Bynum and Helen Bynum, editors. New York: Oxford University Press. 2009. Hard cover, 249 pages, $24.95.

Asthma: The Biography, by Mark Jackson, Professor of the History of Medicine at the University of Exeter, is part of a series, published by Oxford University Press, entitled *Biographies of Diseases.* Other disorders included so far are cholera, obesity, diabetes, and hysteria. The intent is to provide a cultural and historical account of a disease, including ideas of causation, evolution of treatment, and societal views of the illness and its victims. This volume on asthma achieves these goals with admirable clarity and erudition.

According to Jackson, the first recorded use of the Greek word "asthma" occurs in book 15 of Homer's *Iliad*, probably written in the 8th century BC. Zeus awakens to see the Achaeans (Greeks) routing the Trojans, whose hero, Hector, is "sprawled on the battlefield, his comrades kneeling round him as he panted, struggling hard for breath…" (Robert Fagles's translation). Later classical Greek authors, including Pindar and Aeschylus, writing in the 5th century BC, continued to use the word to signify "breathlessness," which could occur from battle, wrath, or the rattling gasps of impending death.

About the same time, Hippocrates and his followers began to use "asthma" in a more distinctive way, along with the terminology that persists in contemporary medicine: "dyspnea," meaning uncomfortable breathing; "tachypnea," indicating an increased respiratory rate; and "orthopnea," signifying labored breathing worsened by recumbency but improved in the upright position. "Asthma" was a severe form of breathlessness arising from excessive phlegm that flowed from the brain into the chest. That explanation was to be influential for centuries, but the Roman author Celsus (25 BC to 50 AD) added an important clinical observation, stating that "asthma" referred to severe respiratory distress that included gasping, cough, and a whistling noise produced because of "the narrow passage by which the breath escapes." About the same time, Seneca (4 BC to 65 AD), a Roman Stoic philosopher, wrote what Jackson suggests is the first clear personal account of the disease. His description of an asthma attack catches its abrupt and frightening quality: "Its onslaught is of very brief duration—like a squall, it is generally over within an hour. One could, after all, hardly expect anyone to keep on drawing his last breath for long, could one?"

Jackson also recounts ideas and contributions from other ancient civilizations. An Islamic physician known in Europe as Rhazes (865–925) described allergic rhinitis and its association with asthma when he noted symptoms occurring with exposure to pollinating flowers. Egyptian treatments of respiratory ailments, compiled on papyrus from about 1550 BC, included delivery of medications via inhalation. The Chinese found that ma huang (*Ephedra sinica*, which contains ephedrine) was effective in breathing disorders, and Indian physicians recommended treating asthma by smoking various forms of stramonium (also known as jimson weed or stinkweed, among other aliases), which contains anticholinergic substances.

While these treatments were probably effective, Jackson's account includes numerous remedies with more questionable benefit, such as bloodletting, purgatives, emetics, and the ingestion of fox livers, lungs, or penises. By the time of the Enlightenment during the 18th century, clinicians began to label as quackery many such treatments, especially those that claimed to eradicate the disease, because asthma seemed to be an incurable ailment. Indeed, by the end of the 18th century it was considered a chronic condition of periodic bronchial constriction that may be associated with excessive mucus production. In addition, however, many doctors, continuing a long tradition, attributed it to an underlying nervous disorder. Among these was René Laënnec (1781–1826), the inventor of the stethoscope, who recognized that some types of "asthma" arose from cardiac disease and others from periodic constriction of the bronchi, causing impaired ventilation. Nevertheless, he felt that asthma was fundamentally a "nervous" affliction, a view that continued well into the 20th century, when many psychiatrists considered it a psychosomatic disorder arising from the consequences of having an overprotective, "smothering" mother. In fact, one rationale for in-patient treatment at the Jewish National Home for Asthmatic Children in Denver was to separate children from the emotional burden of living with their parents.

In the 19th century a British clinician, Henry Clutterbuck, and an American physician, JA Swett, separately proposed a pathogenesis very similar to our current understanding of asthma: it occurs from bronchoconstriction provoked by airway inflammation. Others subsequently suggested allergy as the underlying cause and noticed that apparently related disorders such as asthma, hay fever, and urticaria tended to occur in families. They labeled this genetic tendency "atopy," which is Greek for "out of place." Avoiding potential sources of allergens became an important preventive measure, and an asthmatic, James Murray Spangler (1848–1915), invented the electric vacuum cleaner, subsequently manufactured by William H Hoover (1849–1932), to reduce his exposure to dust at work.

Jackson delineates the emergence of effective treatments of asthma and its changing epidemiology in recent years. He enriches the story with very brief biographical information of the major figures in the history of asthma and mentions a few renowned victims, especially the reclusive French novelist Marcel Proust (1871–1922), whose first attack occurred at age 9. Dust, flowers, cold, dampness, certain foods, and weather changes could provoke violent and sometimes protracted episodes of choking, coughing, and gasping. He had a famous cork-lined bedroom constructed to protect him from pollen and perfume, but despite this and numerous other interventions, including inhalations, travel to resorts where the air was purer and putatively therapeutic, diets, and various medications, severe asthma persisted and, according to Jackson, dominated his life.

We can be thankful that contemporary therapy of asthma is much better than what Proust received, as Jackson recounts with the story of the successful treatment of his own young son's attack in 2005. Jackson's book helps us learn what our predecessors thought and did to allow us to reach our current comprehension and therapy of asthma, but the disease still remains quite mysterious and, for many patients and clinicians alike, a perplexing challenge to understand and manage.

Jan V Hirschmann MD
Department of Medicine
Puget Sound Veterans Affairs
Medical Center
Seattle, Washington

The author has disclosed no conflicts of interest.

Asthma and Infections. Richard J Martin and E Rand Sutherland, editors. *Lung Biology in Health and Disease*, volume 238, Claude Lenfant, executive editor. New York: Informa Healthcare. 2010. Hard cover, 256 pages, $249.95.

Not only has the prevalence of asthma increased over the last 50 years, but also the challenges of treating people with asthma and understanding asthma continue. Indeed, despite the strong association between early-life lower-respiratory-tract infections and childhood asthma, there continues to be difficulty predicting which children with severe lower-respiratory-tract infection will develop asthma. This clinical challenge translates into variability in care of children with wheezing illnesses and hampers the ability of researchers to route high-risk children into future treatment trials. In adult medicine there is a growing appreciation that asthma is a heterogeneous disease requiring different treatment strategies, especially for those adults with steroid-resistant asthma. No matter the age of the person with asthma, having a better understanding of the role of infections and allergy in this common disease remains central to improving our clinical care. It is in this context that the editors, Martin and Sutherland, along with internationally recognized contributors, have written a cogent and comprehensive book entitled, **Asthma and Infections**. For this review, I have divided the book into 3 main ideas: development of asthma; the interaction between viruses, bacteria, and allergens; and host defense mechanisms. Using this organizational structure, I discuss each of the 12 chapters.

Although several chapters in the book examine the development of asthma, the 3 chapters most clearly dedicated to this issue are Liu's chapter on the hygiene hypothesis, Gern's chapter on viral respiratory infections in infancy, and Martinez's chapter on susceptibility to viral infections. Liu's review of the hygiene hypothesis is well done and balanced. Indeed, the concluding remarks summarize and emphasize the complexity of microbial exposures (ie, dose, timing, diversity, pathogenicity, genetics) and their association with the allergic march. The virology chapter discusses human rhinovirus infections, postnatal lung development, innate immunity, and need for intervention trials. This chapter is excellent and emphasizes the importance of infant respiratory infections as well as the unmet need of preventive treatments, especially for rhinovirus. The susceptibility chapter focuses on studies examining the phenotype of asthma that begins in early childhood, is associated with aeroallergen sensitization, and generally persists into adulthood.

In these chapters the reader may be confused by the lack of unifying data about asthma pathogenesis. For example, in contrast to the content in the hygiene hypothesis chapter, the viral respiratory chapter mentions that there is no evidence that viral respiratory infections protect against either allergies or asthma. Indeed, the relative importance of early childhood wheezing and/or allergic sensitization in the development of asthma in school age children is unclear. Specifically, in the pathway from infantile wheezing illness to asthma, it is unclear if viral infections are: causal; an indication of asthma susceptibility; or trigger events that eventually lead to asthma in a genetically susceptible child. For the clinician and researcher, distinguishing those children with wheezing who will eventually develop asthma from those who will have "transient" wheezing is challenging. And once a child or adult is diagnosed as having asthma, there are multiple possible phenotypes. Despite these unanswered questions, the 3 chapters on asthma development do an outstanding job presenting the relevant data and using language that is accessible both to clinicians and researchers.

The majority of the book is devoted to the role viruses, bacteria, and allergens play in asthma exacerbations and chronic asthma. The importance of asthma exacerbations is clear; they have the greatest effect on loss of function, healthcare utilization, and morbidity (including death). And acute respiratory infections are the leading cause of exacerbations. Although viruses cause the majority of these infections, bacteria are also a cause. Indeed, in their chapter on exacerbations, Sumino and Walter provide outstanding tables detailing the studies that have examined the prevalence of viral-induced exacerbations, the individual viruses, prevalence of *Chlamydophila pneumoniae* and *Mycoplasma pneumoniae* in exacerbations, and the prevalence of these pathogens in children and adults with and without asthma. The 5 tables in this chapter are clear and comprehensive.

In people with chronic asthma there are important interactions between bacteria, viruses, and allergens. In the book, one chapter is devoted to the interaction between bacteria and allergens, and a separate chapter discusses viruses and allergens. The chapter on bacteria and allergens has a short review of the hygiene hypothesis, which focuses on the importance of the timing of allergen exposure, and a comprehensive review of the role of atypical bacteria in asthma. Furthermore, this chapter briefly discusses treatment for atypical bacteria and the existing gaps in research knowledge in this area. The subsequent chapter details the interaction between viruses and the allergic response, reviewing some of the data about the association between early-life respiratory syncytial virus, human rhinovirus, and influenza lower-respiratory-tract infection and later asthma. The text also reviews interesting data that palivizumab decreases the occurrence of later recurrent wheezing. Although, some may find the intermittent repetitiveness of the text a limitation, the studies that are discussed in more than one chapter are not only relevant to each chapter but also are presented differently and deserve the reader's attention.

The next section relates to defenses against infection: pulmonary surfactant, host immune responses, and antibiotics. The chapter by Numata and Voelker on pulmonary surfactant fits the model of translational science. The chapter begins with a basic science review of surfactant and then progresses to surfactant's functions, its dysfunction in asthma, and culminates with the somewhat disappointing surfactant clinical trials. The host-defense section, as expected, leans more toward basic science, but this information is clearly critical to understanding better the asthma and infection story and the pathophysiology of asthma. The chapter focuses on both innate and adaptive immunity and the dysfunction of these systems in people with asthma. This section complements parts of the exacerbation chapter by Sumino and Walter, since impaired host defenses may be one of the mechanisms of increased susceptibility to certain respiratory infections in people with asthma.

Of relevance to the host defense/antibiotic section are 2 intriguing retrospec-