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Drugs for Pain. By Howard S. Smith, M.D. Philadelphia, Hanley and Belfus, 2003. Pages: 550. ISBN: 1560535113. Price: $39.95.

Until the publication of Howard Smith's *Drugs for Pain*, pain medicine specialists have had to rely on multiple references when trying to keep up with the enormous range of pharmacologic treatment options and drug interactions involved in treating acute, chronic, and cancer pain patients. In addition to the complexity of managing patients with nonsteroidal antiinflammatory drugs, cyclooxygenase-2 inhibitors, and opioids, the practitioner must be familiar with an array of anticonvulsants, antidepressants, muscle relaxants, sodium channel blockers, calcium antagonists, glutamate receptor antagonists, adrenergic agonists and antagonists, bisphosphonates, and topical agents. This requires a reference library of multiple textbooks plus a continuously updated collection of review articles. Smith has compiled an up-to-date collection of reviews on the entire range of pain medicine covering basic pharmacology, clinical treatment options, and drug interactions.

Drugs for Pain is not organized in the typical textbook format but instead is essentially a collection of review articles. Because of this construction, there is some overlap of material between chapters, and there are some minor difficulties locating certain topics. This problem is minimized by the presence of an extensive index and is a small price to pay for the currency of the material. Unlike most textbooks, it contains very recent references on each topic, some published less than a year before the book's introduction.

I was impressed by the extensive and understandable basic science sections of the book. The basic pharmacology material is valuable to researchers who need an overview of a particular topic, for practitioners looking for more understanding of the basis for their treatment options, and, especially, for pain medicine fellows studying for subspecialty board examinations. The text includes a particularly good discussion of the arachidonic acid cascade and the influence of cyclooxygenase-1 and -2 inhibition on various components of arachidonic acid metabolism. There is an extensive and very contemporary discussion of peripheral mechanisms of pain and a good review of the current and future pharmacologic possibilities for influencing them, including discussions of both systemic and topical agents with peripheral actions. Although one chapter discusses the clinical use of N-methyl-D-aspartate antagonists, the basic science of central sensitization is not discussed in detail.

The discussion of opioid analgesics is covered fairly well. A very current discussion of receptor subtypes and mechanistic differences between weak and strong opioids, and a basic discussion of tolerance and addiction, are covered briefly in three different chapters. Opioid side effects are covered well. Spinal opioid administration is covered superficially, along with spinal administration of other drug classes, in a separate section. A good discussion of basic and clinical pharmacology of α_2 receptor agonists concentrates mainly on systemic rather than spinal administration.

The book provides both basic science and clinical discussions of the use of antidepressants and anticonvulsants for pain management. These chapters are not very extensive, but they provide the reader with a very good introduction. Both chapters provide useful information on drug interactions; plus, a separate chapter on drug interactions concentrates mainly on the cytochrome P-450 system. Other topics covered include acute pain management, headache, and bone pain.

Although *Drugs for Pain* does not answer every pharmacologic question that comes up in pain medicine practice, it serves as a good initial source for many topics. The text provides an excellent initial discussion of many pharmacologic issues as well as extensive and, at this time, current reading lists. I hope that it will be updated often.

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Cholera, Chloroform, and the Science of Medicine: A Life of John Snow. By Peter Vinten-Johansen, Ph.D., Howard Brody, M.D., Ph.D., Nigel Panath, M.D., Stephen Rachman, Ph.D., Michael Rip, Ph.D., with the assistance of David Zuck, F.R.C.A. New York, Oxford University Press, 2003. Pages: 437. ISBN: 019513544-X. Price: $49.95.

As the literature shows, interest in John Snow's place in the history of anesthesiology and epidemiology has remained unabated since his death a century and a half ago. In general, however, most of what has been written about Snow is confined to his work in one or the other of the two specialties. With few exceptions, a holistic viewpoint[1–7] has not characterized the literature, and Snow has seldom been regarded as a "compleat" physician.[8] Moreover, it is the mythic aspects of his work that are usually remembered[9]: the administration of chloroform to Queen Victoria and his advice to remove the handle of a pump during a London cholera epidemic rather than his fundamental research into anesthesia and the causation and transmission of cholera. As well, the intriguing question as to how Snow was able to make groundbreaking discoveries in two quite different specialties has remained unanswered.

Vinten-Johansen *et al.* at Michigan State University (East Lansing, Michigan) have prepared a study of Snow that fills many of the gaps in the literature and corrects some of the myths. Their book is comprehensive and well documented, covering the majority of Snow's career and achievements. Although it emphasizes Snow's work on cholera and, to a lesser extent, anesthesia, the discussion of his career before 1846 is detailed enough so that one can understand how he prepared himself, albeit unconsciously, for his real work from 1848 onward. Snow's thought and work were characterized by scientific rationalism and dissenting iconoclasm, and the authors of this book neatly point out how Snow "shaped his nascent career by allying himself with the new generation and (as politely as possible) lecturing to the older generation to insist that the hospital and laboratory approaches received a fair hearing" (page 85). They rightly show how Snow trained himself to become an investigative scientist as well as a versatile clinician. So, when anesthesia was introduced in Great Britain at the end of 1846, Snow, having already conducted research into respiration and gases, was ready to take on the study of anesthesia and to produce a monograph on ether as early as September 1847.[10] Similarly, when cholera began to appear in 1848, his earlier experience of the disease near Newcastle added to his confidence when, in the following year, he came to write that "it has always appeared, from what this writer could observe, that in cholera the alimentary canal is first affected. . . ."[11]

The chapter on Snow's research on ether is thorough and will certainly interest anesthesiologists who are not intimately familiar with ether. Chloroform is dealt with less thoroughly, and I wondered whether the word *Chloroform* was added to the title, rather than *Ether* or *Anesthesia,* for alliterative reasons. I was surprised that only a passing reference to Snow's chloroform inhaler was included and that the varying preferences for ether and chloroform in different cities and countries did not engage the authors' attention.

The discussion of cholera is, as it should be, detailed, and it provides a firm basis for an understanding of Snow's views. His hypothesis on the transmission of the cholera agent in the evacuations of the patient, and then by fecal-oral contamination of others, is presented with great clarity, as is Snow's thinking on cholera, which put him ahead of others

who thought about cholera, such as William Budd and William Farr. Equally well explained is the significance of his investigations into the water supply south of the River Thames and in the Broad Street area, which Snow described in the second edition of his monograph *On the Mode of Communication of Cholera*.[12]

The book is in part a narrative account of Snow's career, and the thorough documentation of his work on anesthesia and cholera suggests that it will remain the definitive account of his work. Although Snow is not considered to be among the leading figures of nineteenth-century medicine, he did a great deal to improve conditions for countless individuals who had to undergo anesthesia in its early days and for those, too, whose lives were made miserable by the state of public health in much of the nineteenth century. Especially remarkable is how, virtually single-handedly, he achieved all that he did in two quite different fields of medicine. This book is also an intellectual history, and in it the authors convey their understanding of how Snow thought about anesthesia and about cholera, and, indeed, about many of the medical problems of his day. The authors' dual thesis is that Snow was "an interdisciplinary thinker" (page vi) and that "Snow's accomplishments in anesthesia and epidemiology are interconnected" (page v). Here I must admit to reservations; I do not find their argument in attempting to forge a connection convincing.

The central part of the authors' thesis is focused on an oration that Snow gave before the Medical Society of London on March 8, 1853. This, they claim, is "a focal point at which the rays of Snow's thought converged and his two specialties joined. . . ." (page 372) The sentence does not end there, for the words *albeit tenuously* are added, causing one to wonder why the connection should be so tenuous if such a connection is central to their argument. Indeed, their argument seems tenuous also. For example, elsewhere in the text Vinten-Johansen *et al.* state, "[w]orking in hospitals and in private homes as a professional anesthetist must have given Snow a certain epidemiological perspective. . ." (page 130), but their basis for this statement is not clear. In contrast, I suggest a more obvious reason for such a perspective and a basis for a connection between anesthesia and epidemiology: Snow's study of the case reports of cardiac arrest associated with chloroform. By September 8, 1854—the date on which the handle of the Broad Street pump was removed—Snow had collected 45 such cases,[13] which, taken together, constituted a series of pathologic states on which he could develop his epidemiologic perspective. This study is mentioned only briefly in the book.

The authors also argue that Snow reached his key conclusions in anesthesia as well as cholera by means of "the multilevel systems-pattern of his thinking" (page 219). In terms of Snow's work on cholera, even if this somewhat theoretical and modernistic concept is accepted, the connection between such thinking on cholera and the thinking that enabled Snow to reach entirely different conclusions on the administration of anesthesia is not evident. They suggest that his systems thinking developed in a stepwise manner. On cholera, they argue, "He was thinking at multiple levels by collating geographic and epidemiologic data with clinical, pathologic, and chemical data." In the next sentence they hedge, stating that "[i]n somewhat similar fashion Snow took as his point of departure in ether anesthesia the realization that the inconsistent clinical effect of ether might be explained by the quantity inhaled, which depended largely on concentration of the vapor at different air temperatures" (page 219). The connection here is not clear. Their argument is stretched even further elsewhere when they attempt to base the connection between anesthesia and epidemiology on etymologic grounds, by linking the word *insensible* (in relation to the attraction of matter "at insensible distances")[14] to the word *insensibility* as used to denote anesthesia (page 375).

That is the essence of their answer to the question as to how this Yorkshire provincial achieved leadership in these two separate fields. However, the academic construct of multilevel thinking is not necessarily the answer. An alternative is the following: Snow was determined to educate himself well and to succeed as a versatile physician in London; he had an acute clinical intelligence and a broad knowledge of medicine of the day; an unusual clarity of vision enabled him to focus on important problems in medicine; and he intuitively understood how to conduct research. He also had that great talent of other nineteenth-century multiple-discoverers such as Alexander Graham Bell and Thomas Edison—the dogged, "shoe-leather" persistence that sustains investigations until the answer is found. While respecting the first author's interest in intellectual history, I suggest that such an approach obscures the central point that Snow was primarily a well-rounded doctor who succeeded precisely because of that.

Two comments concern the bibliography. First, though the authors claim to have integrated recent scholarship, some recent sources are not included. Second, sources as far back as 1958 are, however, included, while some useful ones equally old are not.

Despite these reservations, *Cholera, Chloroform, and the Science of Medicine* is an admirable and significant addition to the literature on Snow and, indeed, of medicine in the nineteenth century. It reminds us that his research remains a model currently. The book will certainly be welcomed by all anesthesiologists with an interest in the history of the specialty. An interesting inclusion is a Web site with more information about Snow, his writings, and the authors, which many potential readers may wish to consult: www.msu.edu/unit/epi./johnsnow (last accessed December 1, 2003).

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References

1. Armstrong Davison MH: John Snow and the Enlightenment. Proc Roy Soc Med 1958; 57:834–5
2. Edwards G: John Snow (1813–1858). Anaesthesia 1959; 14:113–26
3. Barton MT: The life and work of John Snow. St Bartholomew's Hospital Journal 1959; Sept/Oct:238–45, 271–6
4. Mushin WW: Craft and intellect. Br J Anaesth 1965; 37:520–7
5. Thomas KB: John Snow, 1813–1858. J Roy Coll Gen Practit 1968; 16:85–94
6. Cohen of Birkenhead. John Snow: "The autumn loiterer"? Proc Roy Soc Med 1969; 62:99–106
7. Robens of Woldingham. The fourteenth John Snow memorial lecture. Anaesthesia 1973; 28:170–5
8. Shephard DAE: John Snow: Anaesthetist to a queen and epidemiologist to a nation. A biography. Prince Edward Island, Canada, York Point Publishing, 1995, 279–94
9. McLeod KS: Our sense of Snow: The myth of John Snow in medical geography. Soc Sci Med 2000; 50:923–35
10. Snow J: On the inhalation of the vapour of ether. London, John Churchill, 1847
11. Snow J: On the mode of communication of cholera. London, John Churchill, 1849, p 7
12. Snow J: On the mode of communication of cholera, 2nd edition. London, John Churchill, 1855
13. Snow J: On chloroform and other anaesthetics: Their action and administration. London, John Churchill, 1858, pp 120–88
14. Snow J: On continuous molecular changes, more particularly in their relation to epidemic diseases. London, John Churchill, 1853, p 145

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