BOOK REVIEWS

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The Pulmonary Circulation and Gas Exchange. By Wiltz W. Wagner, Jr., and E. Kenneth Weir. Armonk, Futura Publishing Company, Inc., 1994. Pages: 424. Price: $75.00.

From the title of this book, one might anticipate another of the many books describing state-of-the-art research, or at least what each of the many authors consider that to be. However, this is decidedly not the case. *The Pulmonary Circulation and Gas Exchange* is more of an autobiographical history book than a scientific compilation of current research. As such, it provides unique and fascinating accounts by 21 pioneers in the fields of gas exchange and pulmonary circulation. The format is clearly laid out in the book's preface, "Instead of the usual dry science, they [the authors] were requested to write about how they got started, who influenced them, and what troubles they had; in other words to tell it like it was."

Each of the authors chose their own format, creating a wide variety of styles among the chapters. Several include some relevant current work, many provide a concise overview of their own scientific careers, others simply detail the facts and acquaintances of their illustrious careers without showing data, and most emphasized personal events in their lives that led to major career events. The reader can appreciate the authors' personalities in these formats and writing styles far more than in their scientific papers. Often the authors are quite frank in their writings. For example, Ewald Weibel describes two incidents of scientific misconduct that were personally very distressing to him as a young investigator. Fortunately for the rest of us, he was able to transcend this nastiness and continue to pursue his scholarly activities. The book is replete with pictures of individuals, including all of the authors: turning through the pages and looking at all the pictures is itself educational and illuminating.

One thing pervasive in most of the stories is the workings of serendipity, not only in directing the authors into specific research areas but also in determining the successful outcomes of experiments. This point is highlighted in the chapter by Grant de J. Lee. Here we learn that Horace Walpole coined the term "Serendipity" in 1754 based on the fairy tale, "The Three Princes of Serendip," the heroes of which were always making happy discoveries by accident. Even more interesting is the fact that Serendip was an island in the Indian Ocean whose name was subsequently changed to Ceylon and, more recently, Sri Lanka. Lee was born on that island and thus considers himself a true Child of Serendip.

Other common threads among the stories are the authors' intense curiosity about and interest in their respective fields and the spirit of congeniality and helpfulness among their mentors and colleagues. This is succinctly summed up by Y. C. Fung: regarding why he entered the field, he wrote, "I found the subject more interesting than others and the people in the field nice." One wonders in how many fields such a statement can honestly be made.

Just two things temper my general enthusiasm for this book. The first is the absence of an index. Given the historical nature of the book—its scientific history and its many referrals to other senior and junior scientists—an index would have allowed this book to be used more easily as reference. Given the ease with which indexes can be generated in modern publishing, this seems a curious but serious omission. The other concern is more psychological in that the book has a certain obituarial feeling, not with regard to the still very active authors but rather for the field. The authors describe an almost idyllic period in physiologic research. The structure/function work on which the authors spent their lives is currently overshadowed by cellular and molecular investigations. It remains to be seen how well the creative and productive approaches to physiology described in this book sustain themselves over the next 40 yr. In the meantime, the book will serve as a reminder, and it is highly recommended reading to all current investigators with interests in pulmonary circulation and gas exchange.

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Mechanisms of Drugs in Anaesthesia. Second Edition. Edited by Stanley A. Feldman, William Paton, and Cyril Scurr. London, Hodder & Stoughton, 1993. Pages: 444. Price: $125.00.

The second edition of *Mechanisms of Drugs in Anaesthesia* is comprised of two sections. The first covers basic principles of clinical pharmacology and drug action, and the second reviews mechanisms of actions of various classes of anesthetic drugs and other drugs used in anesthesia and critical care. Most of the contributing authors are from the United Kingdom; the rest are from either Australia or the United States.

The first two chapters comprise an excellent overview of receptors and how they alter cellular function *via* effects on membrane ion channels and transmembrane signalling. The molecular structure of receptors that are linked to intracellular guanine nucleotide-binding proteins, so called G-proteins, is reviewed. The new concept of a receptor superfamily is presented: although adrenoceptors and muscarinic cholinocepters produce different, and often opposite, effects, these receptors have many similarities in structure and in how they bring about changes in cellular function. Although the chapter on the pharmacokinetics of inhaled anesthetics presents few principles not discussed in Eger's classic monograph, it is written in an unusually clear and concise fashion. The chapter on drug biotransformation and elimination contains an excellent brief review of the current understanding of the cytochrome P450 superfamily of drug-metabolizing enzymes. Other topics covered in the first section include pharmacokinetic principles for drugs administered intravenously, drug interactions, and toxicity.

The second section covers anesthetic agents and adjuvants such as neuromuscular blocking drugs. Other classes of drugs encountered in anesthesia also are discussed: calcium antagonists, antihypertensive drugs, inotropes, adrenoceptor agonists and antagonists, and histamine and its antagonists. The chapters in this section vary widely in scope. Only the mechanisms of action of inhalational anesthetics and

sedative-hypnotics are presented, not other aspects of clinical pharmacology. Other chapters—those covering calcium antagonists and drugs binding to adrenoceptors—are comprehensive and discuss applicable physiology, pharmacokinetics, and clinical use of these drugs in addition to mechanisms of action. Because the mechanism of action of local anesthetics has been well understood for some time, little new information is presented on this topic. The chapter on opioid analgesics contains little information that is not available in recently published anesthesia textbooks.

The last chapter, new to this edition, reviews the pathophysiology and pharmacology of septic shock. Given the frequency with which septic patients present for surgery, every anesthesiologist should be familiar with this syndrome and its management. This chapter concisely summarizes newer studies of the peripheral vascular effects of sepsis and of myocardial depressant substances in sepsis. The mediators of septic shock and the recently described roles of cytokines such as tumor necrosis factor and interleukins are reviewed. Potential treatment strategies based on improved understanding of these mediators of septic shock are outlined.

In keeping with the growing interest in "stress-free anesthesia," this edition incorporated a new chapter on the pharmacology of stress. However, this review was very disappointing, consisting almost entirely of descriptions of experimental murine stress. With the exception of mentioning *en passant* that morphine reduces ACTH and cortisol, there is no information regarding stress due to surgical trauma or the effects of various anesthetic techniques on stress responses. Consequently, this chapter is of little or no use to clinical anesthesiologists.

As is almost inevitable with multi-authored text, there are some redundancies. This is most evident in the chapters on calcium antagonists, antihypertensives, and inotropic agents. In all of these chapters, the role of calcium in the cellular physiology of the cardiovascular system is discussed. However, this has the advantage of making each of these chapters more complete if read alone. This text would benefit from greater editorial control. Some chapters (those mentioned above) are excellent, whereas others, particularly the one on stress, need extensive revision to make reading them worthwhile.

The editors state in the preface to the second edition that their aim was not to produce a complete pharmacopoeia but to concentrate on the current understanding of the mechanisms underlying common pharmacologic effects. Because of this specific focus, this text cannot be used as one's sole reference for clinical pharmacology as it applies to anesthesia. However, the better chapters complement the material in standard pharmacology texts and in the recent editions of comprehensive, multi-author anesthesia texts. Because of this strength, *Mechanisms of Drugs in Anaesthesia* will be of particular interest to anesthesiologists interested in mechanisms of drug action, and it should be available in the libraries of academic anesthesia departments.

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