

BOOK REVIEWS

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Respiratory Physiology: An Analytical Approach. EDITED BY: H. K. CHANG AND MANUEL PIAVA. New York, Marcel Dekker, 1989. Pages: 896. Price: \$150.00.

This volume is an excellent reference in the field of quantitative pulmonary physiology. It is a multiauthored work with 18 chapters written by well-recognized authorities. The book, while not organized in this way, covers 8 broad categories of knowledge.

1) *Lung Morphometry and Structure/Function Relationships.* Chapter 1 by E. R. Weibel reviews important concepts of morphometry as they relate to gas exchange in man and other animals. Particularly valuable are the concepts, developed in some detail, that relate morphometry to gas exchange performance of the lung in terms of diffusing capacity and maximal oxygen consumption. Chapter 13 by K. Horsfield complements Chapter 1 by examining the functional morphometry of the pulmonary vasculature, and relating it to some hemodynamic properties.

2) *Gas Transport in the Conducting Airways.* Chapters 2-4 review the analytical approaches to gas flow in the lung. Flow dynamics (H. K. Chang) is approached from the view that it underpins the understanding of airway resistance, ventilation distribution, particle distribution, heat transfer, and humidification in the conducting airways. Wave speed (T. A. Wilson) concepts are developed and are shown to limit expiratory flow in the lung. Airway dynamics (J. J. Fredburg) is approached from the perspective of what can be learned from the frequency dependence of the lung with regard to measuring airways caliber and their spatial distribution.

3) *Pulmonary Gas Distribution and Mixing.* Modelling approaches to the distribution of ventilation (G. M. Saidel and S. M. Lewis), pulmonary gas mixing (M. Paiva and L. A. Engel), and the interpretation of single- and multibreath gas washout data, include all the common modelling approaches to this subject.

4) *Alveolar/Capillary Gas Exchange.* Chapter 10 by A. Bidoni and E. Crandall reviews in detail the transport of CO₂ from the blood and the role of carbonic anhydrase. Alveolar blood gas equilibration and diffusing capacity for O₂, CO, and CO₂ are reviewed by P. Scheid and J. Piiper (Chapter 12). Inert gas capillary exchange and the modelling of ventilation perfusion inequality is covered in Chapter 11 by M. P. Hlastala and H. T. Robertson. Finally, the transport of soluble gases and vapors is reviewed in Chapter 7 by L. M. Hanna and P. W. Scherer with specific emphasis on uptake of atmospheric pollutants.

5) *Pulmonary Mechanics.* The mechanics of the lung parenchyma (Chapter 8 by T. A. Wilson), and the mechanics of the interstitium (Chapter 9 by S. J. Lai-Fook) detail the physical properties of lung tissue, surface tension, pressure, and structure as they relate to pressure volume characteristics. This work is complemented by Chapter 14 (M. R. T. Yen) on the elastic properties of pulmonary blood vessels that yield insight into hemodynamic properties.

6) *Pulmonary Hemodynamics.* Pulmonary hemodynamics are comprehensively reviewed by W. Mitzner and H. K. Chang in Chapter 15. These authors review the classic pressure flow relationships, Starling resistors, and sheet flow models. They subsequently review resistance compliance models of the entire pulmonary vasculature and the more elegant models relating morphologic structure and elasticity to hemodynamic performance. Pulsatile blood flow and vascular impedance concepts are also covered.

7) *Lung Fluid Balance.* Two chapters (16 and 17) by T. R. Harris and R. J. Roselli cover this topic. The first focuses on macromolecular transport, the second on exchange of small molecules. These two

chapters are long with comprehensive reviews of the literature, existing models, and experimental data. They form an excellent starting point for young investigators interested in developing a basic research interest in pulmonary edema.

8) *Control of Breathing.* M. C. K. Khoo and Y. M. Yamashiro review this topic in the final chapter (Chapter 18) of the book. This is a brief review with a good reference list to the literature.

Overall, this is a comprehensive volume of analytic approaches to the understanding of lung function and pathologic behavior. It is not a book for the clinical practitioner unless he or she has a particular background in mathematics or engineering and a deep avocational interest in pulmonary physiology. It is an excellent source book for the basic researcher, student, or fellow to delve into the fundamentals of pulmonary structure/function relationships. It also presents a refreshing overview of quantitative approaches to the understanding of difficult problems and complex processes.

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Regional Anesthesia: An Illustrated Procedural Guide. BY MICHAEL F. MULROY. Boston, Little, Brown and Company, 1989. Pages: 289. Price: \$40.00.

Regional Anesthesia: An Illustrated Guide is a 289-page spiral-bound manual designed as a practical guide to performing common regional anesthetic techniques. Background information about the techniques as well as physiologic and pharmacologic data, drug choices, and complications are provided.

The first three chapters of the manual cover the physical properties, the mechanisms of action, and the toxicities of local anesthetics. These are concise and clear and distill the results of numerous recent studies. These chapters are a brief review of the present state of our knowledge of local anesthetics. The information on local anesthetics is adequate with the understanding that reference sources are available.

The author also includes a chapter on preanesthetic medication and intraoperative sedation. His stated objectives are decreased apprehension and increased patient cooperation, analgesia to reduce the discomfort associated with the procedure especially elicitation of paresthesias, and to produce amnesia of perioperative events. All of these objectives are important to enhanced patient acceptance and facilitation of regional anesthetic techniques. A short chapter on equipment is included but is not particularly helpful.

Specific techniques are organized into sections on central neuroaxial blockade and techniques involving the trunk, upper extremity, head, and lower extremity. The chapters on the more commonly performed regional procedures: spinal, epidural, and brachial plexus, are covered at greater length. The number of approaches to the techniques described are limited and enhance the clarity and utility of this manual. The final chapters describe applications of regional techniques to the subspecialty areas of pediatrics, obstetrics, and pain management. These areas are touched on briefly and only a few techniques in each subspecialty are covered.

The information in each chapter is clearly organized and presented. The anatomy involved is reviewed and indications for the regional