BOOK REVIEWS

Carol A. Hirshman, M.D., Editor

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 compliments 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 dependance 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 CO_2 from the blood and the role of carbonic anhydrase. Alveolar blood gas equilibration and diffusing capacity for O_2, CO, and CO_2 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

technique are discussed. The drugs of choice, their concentrations, and volumes are all considered before each specific technique is described. Common complications and a list of references conclude each chapter. The actual description of each technique is presented clearly in a step-by-step manner and is easily followed. Illustrations are used to facilitate the descriptions. The illustrations are not overly detailed and contain the pertinent anatomy with the nerves delineated in yellow to highlight their precise locations. The quality of the illustrations is very good but more illustration would be appreciated.

Dr. Mulroy has written an excellent book well worth the price. He has met his objectives of producing an excellent regional technique manual for use in the operating room. And the spiral binding allows the book to be left open to a specific page. This procedural guide will be extremely helpful and easy to use for the resident or the experienced practitioner who infrequently uses regional anesthetic techniques.

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Problems in Anaesthesia: Analysis and Management. BY S. FELDMAN, W. HARROP-GRIFFITHS, N. HIRSCH. London, Heinemann Medical Books, 1989. Pages: 190. Price: $40.

Problems in Anesthesia is written for medical students and anesthesiology residents. It is intended to guide them in the evaluation of physiologic changes that occur during anesthesia and to indicate appropriate responses if these changes deviate significantly from normal. The four sections are organized into: 1) hemodynamic changes; 2) airway and respiratory changes; 3) renal and temperature changes and muscle relaxants; and 4) miscellaneous intraoperative and postoperative complications. The handbook encourages its readers to respond to changes during anesthesia only after first assessing their physiologic importance rather than presenting rote algorithms for an exhaustive list of possible perturbations. This objective of the handbook is accomplished. Chapters are brief and attempt to cover only salient points of each topic. Occasionally coverage is too brief, especially in the opening chapters on heart rate and hemodynamic changes. The chapter on dysrhythmias is especially brief and may benefit from additional information on the com non supraventricular arrhythmias and perhaps better tracings. Brief nention of common antiarrhythmic drugs may also be helpful. The chapter on embolism deals only with air embolism. The discussion of central venous pressure (CVP) monitoring is concise and covers common factors giving spurious CVP readings. The chapters on airway problems are more comprehensive and offer numerous "pearls" to evaluate and treat airway difficulties. The evaluation of laryngospasm and bronchospasm is quite concise and complete. However, within the section on bronchospasm, the authors state that "sympathomimetic agents cannot be easily aerosolized to the anesthetized patient" when, in fact, this practice is quite common. Moreover, it appears effective although aerosol delivery *via* endotracheal tubes has not been not well studied. The discussion of oxygen therapy in the recovery room increases our awareness of an issue often taken for granted.

The third section of the handbook covers renal changes, convulsions, muscle relaxation, and body temperature changes. Adequate attention is given to hematuria, oliguria, and anuria. The coverage of convulsions is succinct but may be enhanced by discussions of local anesthetic-induced neurotoxicity. The final chapters review failure to recover from anesthesia and neuromuscular blockade, postoperative restlessness, vomiting and aspiration, inadvertent arterial and subcutaneous injections, and drug reactions. These chapters are concise and well written.

We must assume, with so brief a format, that the authors are forced to curtail their discussions of the topics covered. This at times leads to statements that appear rather dogmatic. Overall though this handbook provides a concise review of pertinent perioperative complications. It is useful for the student and resident anesthesiologist and it also offers some hints useful to more experienced practitioners.

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General Anaesthesia, Fifth Edition. Edited by J. F. NUNN, J. E. UTTING, and BURNELL R. BROWN, JR. Boston, Butterworths, 1989. Pages: 1,434. Price: $150.00.

This encyclopedic text of anesthesia continues a long tradition of excellent writing in the United Kingdom begun in 1959 by Frankis Evans and T. Cecil Gray. They now attempt to cover everything one should know about anesthesiology. Also, the editors include the rest of the world in their intellectual approach to our specialty. They expressly define the text as international, their authors coming from all around the world, 52 from the United Kingdom, 53 from the United States, seven each from Sweden and West Germany, four from Canada, and authors from South Africa, New Zealand, The Netherlands, and the United Arab Emirates. The authors are well chosen. Thirteen of them also wrote chapters for Miller's **Anesthesia**. My question is: Why should an American read **General Anaesthesia** instead of, or perhaps in addition to, Miller's **Anesthesia**? Their cost is about the same, but Miller has a thousand more pages of text.

General Anaesthesia is truly an encyclopedia of anesthetic information, well written and precise. It presents a broad definition of our specialty including a solid discussion of our work in the ICU and pain clinic. The editors have made sure that each chapter is well referenced and thorough. The order of the text is straightforward beginning with fundamentals and moving on to preoperative evaluation of the patient, operative care, and complications.

Graphs and tables are easy to follow and handy but I wish editors would add the page number when a table or graph is referred to from a different page. Similarly, my bias is against spelling out an entire reference, *e.g.*, "Nunn, Utting and Brown, 1989." Why not simplify referencing with a superscripted number?

A crucial question many residents ask is, How will this book help me through my schedule tomorrow? **General Anaesthesia** will assist residents quite as well as Miller's **Anesthesia** and in a very readable format. In addition, a potential researcher or teacher will find considerable detail that might bore the clinician worried only about making a correct decision for a particular patient. The marvelous detail on cardiac contractility made me thirst to study more about this complex subject. Anesthesiology is a fascinating specialty full of exciting challenges for our minds and **General Anaesthesia** makes this abundantly clear. The beginner may be overwhelmed. If you doubt this, read the details of the latent heat of vaporization related to the percent of anesthetic delivered. One might question whether most beginners will profit from the challenge. I hope so.

The international atmosphere of **General Anaesthesia** is excellent, including a chapter on anesthetic problems in the Third World. However, internationalization leads to some real problems. An amusing dilemma is that "Mc-" is indexed before "Mac-" contrary to our Webster's. Not so easy is trying to locate "meperidine." This is alphabetized in the drug equivalent section under the letter "p". Similarly, acetaminophen is also alphabetized under "p" (as paracetamol).