

Michael J. Avram, Ph.D., Editor

### Consciousness, Awareness, and Anesthesia.

Edited by George A. Mashour, M.D., Ph.D. New York, Cambridge University Press, 2010. Pages: 272. Price: \$89.00.

With the development of modern investigational tools and intellectual frameworks for understanding the human brain, the time has arrived for a new attempt to formulate an integrated science of consciousness, memory, cognition, and anesthesia. A new book edited by George A. Mashour, M.D., Ph.D., *Consciousness, Awareness, and Anesthesia*, represents a timely and important contribution to the advancement of our understanding of how anesthesia offers a “second power” to probe the mind and how such a multidisciplinary scientific pursuit provides great potential to promote both theoretic and practical clinical gains and benefits. The book focuses on the clinical problem of intraoperative awareness, a theme that connects the chapters in the book, approaching the problem from the perspectives of cognitive neuroscience, clinical anesthesiology, psychology, and even philosophy. Overall, the book presents a comprehensive, up-to-date, multidisciplinary collection of results, reviews, and opinions written by international scholars and clinicians who are well known for their contributions to the field.

The book begins with two chapters that are particularly informative introductions to the current understanding of the neurobiologic substrates of sleep and consciousness and their relevance to anesthesia-induced loss of consciousness. The types of neurons, neural circuits, and neurotransmitters targeted by the actions of multiple anesthetic agents are discussed in great detail. The mechanisms of these anesthetic actions can be appreciated in the context of the search for the neural correlates of consciousness and the related theoretic frameworks of consciousness. Although the evidence collectively shows that there is no single “anesthesia center” in the brain responsible for the loss of consciousness, the hypothesis that anesthetics suppress consciousness by ultimately disrupting high-order cortical information integration is highlighted. Chapter 3 provides a wonderful review of memory and how it is modulated by general anesthesia, ranging from basic concepts to neurobiology, behavioral assessment, and evidence obtained from electrophysiologic and brain-imaging studies. The discussions on the various types of memory and anesthetic drugs’ direct effect or indirect effect (through modifying consciousness, emotion, and attention) on the functioning of memory are particularly insightful. An intriguing phenomenon, dreaming in anesthesia, is addressed in Chapter 4. Risk factors leading to intraoperative awareness and the current methodologies for monitoring anesthetic

depth are reviewed comprehensively in chapters 5 and 6. An interesting arrangement of the book is that chapters 7 and 8 are dedicated to discussion of the current controversies in studying intraoperative awareness. The inclusion of these chapters reflects the intent of the editor to have a diversity of opinions with respect to the existing debate on terminology, diagnosis, prevention, and incidence of intraoperative awareness. It also serves to provide the reader a sense of the complexity of the issues involved in tackling the problem of intraoperative awareness. The specific area of awareness during anesthesia in the pediatric population is addressed in chapter 9, with its difference from that in the adult population duly highlighted. The rest of the chapters elaborate on the potential consequences of intraoperative awareness, from both psychologic and medicolegal perspectives, including discussions of patient expectations and appropriate strategies for clinical management. The book concludes by discussing philosophical implications that are relevant to the study of awareness during general anesthesia. Although the content of the last chapter may be more philosophical than is generally favored by neuroscientists, it offers a unique window into anesthesia’s “second power” for probing the mind, and how, as a marvelous tool, it allows us to reversibly modulate awareness and thus helps us understand the fundamental nature of consciousness.

The chapters of the book are arranged to present a great deal of information in a compact and engaging style, with cited references clearly presented. A brief summary is provided at the end of each chapter to highlight and help readers review the major content. The book should be appealing to neuroscientists, anesthesiologists, psychologists, and philosophers, providing an excellent read for anyone who is interested in the mechanism, prevention, and effects of intraoperative awareness. As mentioned by the editor at the beginning of the book, “we are only just beginning to harness anesthesia’s ‘second power’ of probing the mind.” Almost every chapter leaves the reader with questions and thoughts about future directions, which emphasizes the need for continued research toward a more complete understanding of the scientific problem of consciousness and the clinical problem of awareness in general anesthesia.

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### Cancer Pain: From Molecules to Suffering.

Edited by Judith A. Pace, Ph.D., Rae F. Bell, M.D., Ph.D., Eija A. Kalso, M.D., D.Med.Sci., Olaitan A. Soyannwo, M.B.B.S., D.A., M.Med. Seattle, Washington, IASP Press, 2010. Pages: 354. Price: \$75.00.