This book is the result of a Symposium held under the auspices of the Joint Committee on Continuing Education in Neurosurgery of the AANS and the CNS and the University of Minnesota. Eleven of the 14 contributors are from the host institution. The topics covered range from embryology to surgical techniques, and each author's paper stands or falls as an isolated contribution. The book is well manufactured, illustrations are clearly reproduced, and the price is reasonable.

Certain papers stand out as particularly informative. Lutter's work on the symptoms, signs and management of achondroplasia is exceptionally thorough and informative. Cole's article on the economic and social aspects of spinal cord injury and the role of centers in the management of these tragic patients is an excellent companion-piece to the surgical papers that make up the bulk of this symposium. Gillian's discussion of the blood supply of the spinal cord is lucid and complete. None of the other papers is below standard; each author has made a meaningful contribution.

In contrast to many symposium volumes, the subject matter of this book is sufficiently narrow that the area is well covered by the various contributors. Of course, the depths of treatment of individual problems vary, but this is a minor issue.

This book is of value for the neurosurgeon and orthopedist who deals with spinal and spinal cord disease. Although similar information can be gleaned by pursuing various journal articles, the collection of data in one book is an asset. The book should be a useful addition to the clinician's library.

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The series of volumes, Lung Biology in Health and Disease, published under the executive editorship of Claude Lenfant, has had notable success, and volume 6 of the series discussed here will prove no exception.

The lung holds a lasting fascination for those who become involved in the study of its function and structure. Few organs lend themselves to as many manipulations and measurements both in vivo and in vitro. Development of the Lung takes into account the trial of developmental processes, structural, biochemical and physiologic. The editor, Dr. Alan Hodson, has called up, as contributors to this volume, the combined skills of a notable group of investigators.

Part I: On structural development; considers the growth and development of the airways, the formation of the pulmonary vasculature, ultrastructural observations relating to the developing lung and finally, the development of pulmonary innervation. The chapter on development of the airways, by Edward Boyd, is an account through the intricacies of the changes from the embryonic period to term with wax reconstructions of broncho-pulmonary segments and acini, supported by diagrams and histologic sections.

The chapter by Hislop and Reid on the formation of the pulmonary vasculature condenses the results of many years of investigation. The patterns of branching and numbers and sizes of the intrapulmonary arteries and veins during fetal life, childhood, and adulthood are derived from arteriograms, venograms and serial sections of entire pathways. The changing content of muscle in the walls of arteries and veins is discussed, as well as the effect of disease on vessel growth, and the subsequent modifications and adaptations to this disturbance.

With the pattern of airway and pulmonary vasculature development laid down, the next three chapters are devoted to ultrastructural studies of airway epithelium and submucosal gland (Jeffery and Reid), the alveolar lining and its development (Mayrick and Reid), and morphometry of the developing lung (Burri and Weibel). Two tables inform us that man and the rat hold first place with respect to epithelial cell types (10 and 11, respectively); the cat, with respect to goblet cells and glands. Numerous fine electron micrographs describe the characteristics of these cells in concert with the progression of pulmonary development. It is reported that 95 per cent of the alveoli is covered by Type I pneumocytes and 5 per cent of Type II pneumocytes. The accrued data bearing on the source of pulmonary surfactant are particularly informative about the role of the Type II pneumocyte. Towards the end of the chapter, perinatal pulmonary disease is discussed, along with alveolar developmental anomalies. Chapter 5 describes the ultrastructure of the developing lung and what has become the sine qua non of lung-structure studies, the use of the stereologic approach. Few structural studies are complete without its use, and Drs. Weibel and Burri are without question the foremost experts in this field in respect to the lung. This chapter highlights the detailed results one can expect from the proper use of morphometry. Because of the difficulty in obtaining human fetal lungs adequately preserved for ultrastructural study, the development of the air-blood barrier in fetal and postnatal lungs and the associated morphometric findings have been derived from studies of lungs from the rat. Correlative information about human and other mammalian lungs is included wherever available. Of particular interest is the information relating to cell kinetics of lung growth.

The last chapter of Part I, by Looshi and Hung, concerns the development of pulmonary innervation. A singular event has been the demonstration of nerve endings in the alveolar wall interstitial tissue of the mouse and, in particular, their apparent association with Type II pneumocytes.

Part II: Chapter 7, by Farrell and Morgan, discusses lecithin biosynthesis in the developing lung. The authors review the synthesis of fatty acids and concepts of metabolic regulation and the role of enzymes and substrates in this regulation, pointing out areas where the answers are partially known or unknown as for instance, how is the synthesis of surface-active lecithin controlled? The answer may lie in the realm of isolated cell culture technology.

In the next chapter, Clements and Toole consider the kinetics of surface-active material in the fetal lung and the movement of this material following accumulation during gestation, secretion into alveolar air space, and movement out of the lung into the amniotic fluid. The pitfalls associated with the assay of pulmonary surfactant are reviewed. Some of the most intriguing aspect of pulmonary surfactant, which are not known precisely, are the mechanisms responsible for its secretion, its removal from the lung into the amniotic fluid, and the timing of these sequences. It is likely that immunologic assays of surfactant will play a greater role in these deliberations than hitherto.

The biochemical conception of connective tissue development (Chapter 9, Frangblau, Hayes, and Snider) primarily describes the current state of the art since much of the previous work in this area has been dealt with in Volume 2, The Biochemical Basics of Pulmonary Function.

The regulation of pulmonary alveolar development in late gestation and the perinatal period is discussed by Taesch and Avery in Chapter 10. In the next chapter, Ballard discusses glucocorticoid receptors in the fetal lung, the affinity of steroids...
for these receptors, and the role of receptors and glucocorticoid binding in respect to hyaline membrane disease.

Part III: Concerning physiological development, this chapter is introduced by studies of the development of the mechanical properties of the respiratory system, by Bryan, Mansell, and Severson. It is pointed out that pulmonary function data for infants between 1 and 6 years are almost nonexistent, which is unfortunate, because this is a critical period in lung growth; lung volume increases about threecold from birth to age 6, but only threecfold from 6 to adulthood. Of particular interest are the data on closing volumes in children.

Hodson, Alden and Woodrum discuss gas exchange in the developing lung and focus on the clinical and physiologic aspects of carbon dioxide and oxygen exchange. They point out that, in spite of certain difficulties in a small percentage of infants, it is remarkable that the lung of the newborn is so well prepared without prior rehearsal to carry out the necessary O₂ and CO₂ exchange within seconds of demand. Difficulties that arise are, for the most part, related to a compromised gas-exchange system. Although there is much yet to be known about hyaline membrane disease, the major anomaly appears to be an anatomic shunt due to perfusion of nonalveolarized vessels.

The physiology and pharmacology of the pulmonary circulation in the fetus and newborn are discussed by Rudolph, Heyman, and Lewis. Pulmonary blood flow adequate for gas exchange is clearly as important as alveolar respiration and, in this regard, the inclusion in this chapter of a review of methods and their limitations in studying pulmonary circulation is particularly rewarding. Much of this work has been carried out in fetal lambs.

Solute and water transfer in fetal and newborn lungs, well covered by Olver, has hitherto received scant attention. The manner and speed by which pulmonary liquid present in the potential airspaces at birth is removed is a significant puzzle that has yet to be resolved.

Appropriately, the concluding chapter by Tooley deals with four clinical conditions that can affect the lung at birth. They are: delayed absorption of lung fluid, hyaline membrane disease, pulmonary insufficiency, and apnea. The description of the characteristics of these conditions should provide a useful start for the uninitiated.

Overall, this book gives a balanced appraisal of current knowledge about the development of the lung. To the seasoned worker in the field and to the beginner alike, it is essential reading, particularly at the rather modest price of $25.00.

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Pain—New Perspectives in Measurement and Management.

This book is a compendium of presentations from a symposium held in May 1977 in England, the ostensible purpose of which was to provide a forum for the exchange of ideas by clinical, research, and pharmacology specialists on the topic pain. It also introduces a new narcotic, buprenorphine, as “a potent antagonist analgesic.” The point is made that recent discoveries in analgesic pharmacology provided a scientific basis for current hypotheses about pain mechanisms and their inhibition, thus setting the scene for the emphasis on buprenorphine. At least a quarter of the book is devoted to discussing the pharmacologic aspects of this drug in man, and then relates a few, mostly anecdotal, experiences of its use, primarily in treating postoperative pain. These studies, while limited in scope, appear to confirm that buprenorphine produces little cardiovascular or respiratory depression and has no psychotomimetic effect, but does produce sedation and analgesia that lasts at least four to six hours. In further studies mentioned elsewhere, the drug also appears to have a low physical dependence liability and extremely mild withdrawal symptoms.

On the subject of pain, the book deals mostly with acute pain and makes mention of current approaches to the treatment of postoperative pain, the pain of myocardial infarction, the pain of acute trauma, and renal colic. There are two good chapters dealing with the abuse and dependence problems incurred with narcotic medications. Superficial coverage is given to the endogenous opiates. The book does not elucidate the subject of chronic pain at all. The one brief chapter devoted to this topic deals with the different approaches in the management of patients with chronic pain. Further insight into the problems of these patients can be gained from two chapters dealing with patients with pain due to cancer, but the principles involved may not be obvious to the unsophisticated reader.

The title of the book leads one to anticipate some new information about the management of pain. This expectation is enhanced by comments in the Foreword. The two chapters that deal with this, however, are disappointing in not offering any new ideas except the suggestion that measurement of the endogenous opiate substances may be useful. Lack of direction is usual when vaguely related papers prepared for conference presentation are loosely integrated.

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Cooper, Bloom and Roth survey the current state of science in neuropharmacology with depth and accuracy. The authors discuss how neuropharmacology arrived at its current status, and detail that current status by transmitter systems as only those at the forefront of research and teaching could do. Their book is appropriate for the beginner as well as the expert—it will stimulate thought in the clinician and research ideas for the scientific academian.

Each chapter discusses the historical development of a particular field, and brings the reader quickly to the present state of knowledge, stressing current areas of research and their limitations. The new edition adds chapters on receptors and polypeptide transmitters and updates other rapidly changing fields of neuropharmacology. The weakest points of this book are its skinny referencing and indexing, but it is still the best neuropharmacology book available at any price, and best reading for both clinician and scientist.

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