Book Reviews

RESPIRATORY MUSCLES AND THEIR NEUROMOTOR CONTROL. Edited by G.C. Sieck, S.G. Gandevia, W.E. Cameron. Published by Alan R. Liss Inc., New York, 1987.

This volume presents papers that were given in Los Angeles in July 1986 at a satellite symposium of the International Union of Physiologists. An excellent group of physiologists from several related disciplines focussed their attention on several well defined areas related to neural control of breathing. Collections of papers pointing out current controversies, give an excellent idea of the state of the art in these areas and provide useful perspectives on problems and directions. Many of the papers offer brief reviews and critiques which allow an interested outsider to gain an appreciation of the field.

Scientists have been attracted to this field for several reasons. Neurophysiologists interested in networks responsible for generating rhythmic discharges have been enabled by new techniques of intracellular recording, identification of neurones and their interconnections, and iontophoresis to take a new look at the mammalian respiratory centres. The first session includes papers on the properties of individual neurones, on interactions between various sets of medullary neurones, and on a recently described group of respiratory neurones in the upper cervical spinal cord. New information in these areas is accumulating rapidly, both clarifying old ideas about connections and mechanisms and demonstrating new complexities in a system that is already known to be complicated enough to defy complete understanding on the basis of current concepts and techniques. A set of papers on suprapontine control of respiration shows that this problem is still more complex and further from being approached with adequate tools, although obviously important.

The second major topic was the organization of respiratory motorneurone pools in the spinal cord, the influence of afferent input, and the pattern of recruitment of motor units. Respiratory muscles and motorneurone pools behave in a general way much like other motor systems, but have the advantage for investigators that they continue to function in a relatively normal way in the anesthetized or decerebrate animal. Students of motor control have gathered a great deal of evidence about the projections of supraspinal systems to respiratory motorneurones, the nature of their connections in the spinal cord and the physiology of the muscles themselves. There was new information about the coordination of various groups of intercostal muscles in the breathing cycle and the spinal interconnections that subserve this. Recruitment order was discussed in several papers which provided evidence that the size principle is preeminent, and that differential presynaptic input has much to do with observed behaviour.

The last section presented scattered observations and theories on several topics that are more in the province of respiratory physiologists and clinicians. The possibility that respiratory muscle fatigue may be a unifying mechanism for respiratory failure of many kinds has focussed attention on metabolism, blood flow, work, energy, fatigue and training of these muscles. While the general concepts are clear, their application in particular circumstances (e.g., can training of muscles really help patients with respiratory disease?) the methods for measuring respiratory muscle length and velocity in vivo, and the problems of interpreting electromyography are all major concerns. Finally, there were small groups of papers on development, muscle activity in sleep, and non-respiratory control of the diaphragm.

With very few exceptions the papers are well written and well presented. The volume will help to keep interested scientists abreast of what is happening in a very active field, and can provide an interested amateur with a recent update.

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CLINICAL ELECTROMYOGRAPHY. Edited by William F. Brown and Charles F. Bolton. Published by Butterworths. 542 pages. $107Cdn approx.

Over the past several years, a number of general textbooks of electromyography and electrodiagnosis have appeared, each with its own particular slant. Some are "hands on" guides to the various procedures grouped under the term "electromyography", while others have focused on the physiological underpinnings of electrodiagnostic interpretation. Brown and Bolton's *Clinical Electromyography* is a multi-authored text in which the emphasis is placed on the clinical features of the disorders encountered in the EMG lab. This emphasis is founded on the dictum that electromyography is nothing more than an extension of the clinical examination. Sound electrodiagnosis follows then from solid knowledge of the clinical features of peripheral nervous system disease — as well as understanding of the most appropriate electrophysiologic techniques available for the particular problem in question. This marriage of the astute informed scientific clinician with the vigorous electromyographic technician produces Brown and Bolton's ideal EMGer.

The contributors they have recruited to participate fit this discription. Each has broad experience and had contributed actively to the scientific literature with regard to the particular topic he discusses. Their reviews are complete and thoroughly referenced. Aside from excellent discussions of radiculopathies, plexopathies, entrapment neuropathies, inflammatory, toxic, metabolic and inherited polyneuropathies, disorders of neuromuscular transmission and myopathies, there are excellent reviews of "positive" and "negative" symptoms and signs as well as discussion of tremor and the clinical electrophysiology of spinal cord disorders.

This is not a "how-to" instruction manual. Instead it is predominantly intended for the clinical electromyographer who is already familiar with electromyographic techniques. The

more general neurologist will also find the book useful because of its decided clinical slant.

I can find little to fault with the conception of execution of *Clinical Electromyography* and can recommend it as the best available text in its field.

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COLOR ATLAS OF NEUROPATHOLOGY. By R.O. Weller. Published by Oxford University Press, New York, 1986. 207 pages. $112.50Cdn approx.

This first edition is but one of a planned series of Oxford Color Atlases of Pathology under the general editorship of R.C. Curran. It is written as a practical guide to the understanding and diagnosis of nervous system pathology and is directed to medical students, pathologists, neurologists and basic scientists. Though it does not plan to supplant existing texts, it does include background information on the various disease processes. After an introductory chapter on normal histology, the general field of neuromuscular disorders is supported by a series of six appendices covering histological techniques, disease classifications with some statistics and a bibliography of selected references. In reality this is a "histological" color atlas as indicated by the author in the preface and therefore the title is somewhat misleading. It is intended to illustrate through its color reproductions the tinctorial properties of stained cells and specifically directs the reader to other texts for gross pathology or ultrastructural pathology of the nervous system. Despite this focusing, some gross photographs are included as is the occasional supporting electron micrograph. The layout is attractive on durable, glossy paper and color reproduction is by and large excellent. The text is generally clear and concise and the use of clinical examples gives more meaning to the biology of described disorders. Subtle blending of standard light microscopic appearances with the more modern techniques of smears, touch preparations, cell markers, stained plastic sections, and teased fibre preparations whett the appetite.

Approximately half the space in this atlas is devoted to text. Though the author states that he does not wish to supplant existing texts, this is in actual fact a self-contained volume with a great deal of information. The use of arrows depicting specifics in photographs would greatly assist a novice reader and save on descriptive locations that expand the text. On too many occasions are cells described in detail but the photo is an overview and the magnification too low for identification.

Though duplication of photographic material and narrative does occur, this does not detract from the overall treatment of the subject. This volume is more than an atlas and should be considered as an illustrated text directed to and for use by the student, pathologist, neurologist and basic scientist. However, confining it to illustrating tinctorial properties of cells detracts from its overall scientific impact. Presumably if ultrastructure was in color, it would more liberally have been included rather than being covered in most instances in the narrative. This is more than a useful companion, and is to be recommended for students of neuropathology at the formative stage of their careers.

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THE WAY WE DIE. By Leslie Ivan and Maureen Melrose. Published by Angel Press, Chichester, 1986. 106 pages.

This small paperback volume, written by a neurosurgeon and a nurse, both with considerable experience, is a thoughtful and comprehensive treatment on issues of death. The book is clearly written in lay language, complete with a glossary of medical terms.

Topics covered include: an historical background to the concept of brain death; simple, physiological explanations of consciousness, coma and death as biological processes; the dignity and indignity of dying; the patient's rights and the doctor's obligations from a medico-legal point of view; statistical summary of modes of death; an explanation of "near-death experiences"; and, finally, a review of life after death as contained in various religions along with the personal views of the authors.

The book offers a unique Canadian perspective to death issues. The clinical basis of the book, drawn from experience as well as the literature, is its main strength. The legal implications and suggested responsibilities of physicians, the suggestions for dealing with families, and the insights of the authors on the dynamics of terminal illness from the perspectives of the patient and the family, I found to be its most valuable aspects.

There are weaknesses which detract from the suitability of this volume for neurologists and neurosurgeons: it is too brief, incomplete and superficial on the criteria for brain death; it implies that EEG is necessary for the diagnosis of brain death, which it definitely is not; it does not sufficiently emphasize the importance of the brainstem death as the core of brain death, and does not comment on the allowance of preserved spinal cord reflexes (an aspect for which Dr. Ivan has made valuable original contributions). The chapters on consciousness and coma are overly simplified and of little value to clinicians. There are some inaccuracies: cerebral cortical death is said to produce persistent coma, while it typically leads to a persistent vegetative state, if the patient survives more than 2 weeks; it states that blood pH must be maintained within narrow limits or brain functions and level of consciousness are affected, while homeostatic mechanisms allow considerable resistance to the effects of metabolic alkalosis or chronic metabolic acidosis.

The authors should have more clearly specified the intended readership. I think the book is worthwhile reading for paramedical professionals, particularly those involved in intensive care units, cancer clinics, hospices or wards in tertiary hospitals. Having said this, I feel that physicians who read the book in an eclectic manner will find considerable food for thought as well.

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