

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 motoneurone pools in the spinal cord, the influence of afferent input, and the pattern of recruitment of motor units. Respiratory muscles and motoneurone 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 motoneurones, 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 description. 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