

Book Reviews

THE CEREBELLUM AND NEURAL CONTROL. First Edition. By Masao Ito. Published by Raven Press, New York. 580 pages. \$75.00

This monumental work by Masao Ito is a thoughtful state-of-the-art review of what is known about the cerebellum and its function. The volume is well referenced with a seventy-four page bibliography following the main text.

In his introduction, Dr. Ito proposes three questions: how is the cerebellum constructed, how does the cerebellar neuronal circuitry operate, and what does the cerebellum do? The remainder of the book attempts to answer these questions.

The book is divided into four parts. Part 1 deals with the anatomy and physiology of the cerebellar cortical network. Individual chapters are dedicated to mossy fibres, climbing fibres, granule cells, and other features of the cerebellum. Part 1 then ends with a chapter on the neuronal network model, including a discussion of long term depression in parallel fibre-Purkinje cell synaptic transmission in response to simultaneous climbing fibre inputs.

Part 2 of the book builds up to a discussion of cerebellar microzones and corticonuclear microcomplexes. A cerebellar microzone is defined as a set of Purkinje cells which projects to a distinct group of target neurons, and receives input from a small group of neurons in the inferior olive, in addition to mossy fibre inputs. A corticonuclear microcomplex is defined as a cortical microzone and an associated small group of cerebellar nuclear neurons which are dedicated to a single function (autonomic or somatic).

Part 3 discusses cerebellar control systems, with detailed discussions of the major afferent and efferent connections of the cerebellum, and ends with a long chapter on control system models of the cerebellum. The frequent use of excellent diagrams makes this chapter clear and understandable.

Part 4 deals with cerebellar functions, and includes detailed chapters on the vestibulo-ocular reflex, saccade and smooth pursuit eye movements, posture, voluntary limb movements and behavior, and a final chapter on neurological symptoms. A particular strength of Dr. Ito's book is the frequent use of precise definitions. Hence, dysmetria is defined as inaccuracy of a goal directed movement to be performed in a predictive manner without feedback correction. It therefore represents a failure of an open loop motor control system. Incoordination is defined as an inability to integrate multiple component movements into a purposeful compound movement. It may therefore represent a disturbance in multivariable control systems which handle multiple input-output relations.

In the epilogue, Dr. Ito states that he has attempted to generalize the idea that the cerebellum acts as the central calibrator for various reflexes and central controls. His book has achieved this objective well, and it is a major reference work. Its excellent bibliography will prove invaluable to those who wish to search the literature further for themselves. At the same time, however, Dr. Ito's book is a large volume and the casual reader without a special interest in motor control physiology will likely soon turn to shorter and less detailed texts.

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NEURO-OPHTHALMOLOGY: CLINICAL SIGNS AND SYMPTOMS. By T.J. Walsh. Published by Lea & Febiger, 1985. 499 pages.

This book is intended to fill a gap between encyclopaedic reference texts and introductory texts in Neuro-ophthalmology. Unfortunately, *Neuro-ophthalmology: Clinical Signs and Symptoms* falls into this gap rather than filling it. It is directed at residents and practicing physicians, but does not provide enough information for beginners and it does not satisfy the requirements of readers who, having some familiarity with the field, wish to expand their knowledge.

The text is organized into seventeen chapters according to symptoms and signs. Pathophysiology is generally ignored, so that understanding of the rationale for diagnosis and management cannot be gleaned. Despite the efforts of nine other contributors, whose chapters are well written (the sections on retinal disease and neuro-radiology are particularly lucid and didactic) the bulk of the book is written in an anecdotal and disorganized style. There is little reference to the current literature; again and again the author gives his opinions without discussion of major controversies or alternative views. Worse, misinformation pervades the work. For example, the author states that the Riddoch phenomenon occurs only in occipital lobe field defects; that slow patient responses cause arcuate visual field defects; that one can see the optic nerves via a transphenoidal approach to pituitary adenomas; that optic atrophy does not occur in Friedreich's ataxia; that hydroxycobalamin is readily absorbed from the gut in pernicious anaemia; that partial ophthalmoplegia has the same diagnostic implications as total third nerve palsy; that vascular disease causes the Foster Kennedy Syndrome; that digital venous angiography gives as much information about the internal carotid as does the direct carotid angiography; and so on. The chapter on diplopia is not accompanied by explanatory illustrations, making it comprehensible only to those who are fully conversant with strabismus. A chapter on the facial nerve addresses only facial palsy, with no reference to hemifacial spasm, facial dystonia or other facial dyskinesias. A chapter is devoted to unusual chromosomal disorders; although the section is informative, the book lacks any discussion of neurogenetics or immunogenetics in ophthalmology.

Among the clinical neurological sciences, Neuro-ophthalmology is unsurpassed in the precision whereby principles of anatomy and physiology are applied to diagnosis and management. This book does not convey that message. Although the sections on radiology and retinal disease are among the best concise reviews I have encountered, overall, this book cannot be recommended to neurologists, neurosurgeons, ophthalmologists, or their residents, either as a primary or reference textbook.

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LA SURVEILLANCE NEUROLOGIQUE AU COURS DE LA PREMIÈRE ANNÉE DE LA VIE. Par Claudine Amiel-Tison et Albert Grenier. Publié par Masson Éditeur, Paris, France. (Disponible au Canada chez Somabec Ltée, Case postale 295, St-Hyacinthe, Québec J3S 5T5.) 175 pages. 108 figures. Prix 16 \$ can.