



Book Review

Principles of Neural Science 4/e

Edited by Kandel, Schwartz, & Jessel

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Having quite often used as a reference the third edition (1991) of this book I was curious to be able to review this 'new millennial' version. It is not an easy task: 1414 pages in one hefty volume. The previous edition was already a great success among students, postgraduates, and specialists. Although one has witnessed fantastic progress in the domain of neurosciences, especially in the past five years, I was wondering what this one would bring to us. This is really an updated reference book, as reasonably extensive and comprehensive as one could expect it to be on such a vast subject. As with the previous edition it is very easy to use, whatever you are looking for especially in neurobiology, including genetics, basic neuroanatomy, and neurophysiology. Forty-two specialists, including the editors have participated in this 2000 edition. Each part, nine in all, is subdivided in chapters (with a short overall view and selected readings at the end). These range from 'Neurobiology of Behavior' to that of the 'Language, Thought, Mood and Learning and Memory', plus the appendices. All have a short basic, some would say propaedeutic, introduction. This methodology will, very briefly, guide the reader through the contents of the parts and subsequent chapters he or she is particularly interested in. The index is also a good guide. I appreciated this already in the past edition. Personally interested in the spinal cord I was not only thrilled by the updated contents of each chapter but also by the really superb didactic color iconography in all sections. Referring to part V on 'Perception', and especially on the chapters on 'Touch and Pain', one can easily find the updated fundamentals. These will help the clinician and the researcher but nevertheless will not go into too many details. The chapter on 'Pain' is interesting and will remind the reader of the essentials. It will not go into the neuropathological aspects of the problems, at least in detail, as for instance in the part on 'Movement' (chapter on the spinal reflexes), with a short reminder on spinal cord

pathologies at the end. This is not really what the book is intended for. Several chapters do, nevertheless, explain the pathophysiology of certain neurogenic or myopathic diseases (and their genetics) as well as disorders afflicting the brain and midbrain functions. In these respects the neuropathology is very well illustrated with the latest imaging methods, including functional magnetic resonance.

The part on the 'Synaptic Transmission' is a pleasure to read as well as the chapter on 'Locomotion'. I enjoyed the short reflection on the 'Spinal Pattern Generators in the Human'. One is very often referring nowadays to the Autonomic Nervous System. This section is very well illustrated (as all chapters). For some it will be too short as far as some visceral functions are concerned, but the main biochemical principles are there. The appendices concern the 'Current Flow in Neurons, the Ventricular organisation of CSF, the Blood-Brain Barrier, Brain Edema, and Hydrocephalus'. The 'Circulation of the Brain' (includes pathological disorders) as well as a short anatomical aspect of vascularization of the spinal cord. Finally an essay by James Schwartz on 'Consciousness and the Neurobiology of the Twenty First Century' where he concludes that: 'We are optimistic that future cognitive neural scientists will identify the neurons involved and characterize the mechanisms by which consciousness is produced'. In fact there is still some research to keep us busy ahead of us on the study of the software and the hardware of our nervous system!

This product has certainly fulfilled the purpose of the authors. This book can be useful as a teaching tool for undergraduates, trainees in different allied medical professions (physiotherapists, speech therapists, psychologists, etc.). It is a must for all clinicians, or researchers, who have to deal with all aspects concerning the Central Nervous System, mainly as an updated reference book. The illustrations, as said above, are really outstanding. The quality of production is as the previous edition of high quality. It is rather heavy to manipulate all the time but once within reach you will often be tempted to open it. Compared with many other books of the same quality the price is more than affordable. In conclusion: one can always be tempted to be critical. It is very difficult to be so with this edition.

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