

homeostasis. Thus, the book describes the neurobiology of fundamental behaviours which are a combination of drives (a need state indicative of the presence of a regulatory imbalance) and emotions (raw feeling states).

Panksepp reviews the animal data for each of these emotional and drive systems starting with the relevant neuroanatomy and neurochemistry. Behavioral correlations are intermeshed. These descriptions are followed by attempts to link disturbances in each system to clinical psychiatric conditions. For the clinician, some of Panksepp's clinical inferences, although plausible, will simply not ring true. Each chapter concludes with an afterthought containing speculative leaps as well as philosophical and sociopolitical musings. These afterthoughts and clinical correlations are provocative and are stimulating grist for the intellectual mill.

Panksepp concludes his book by taking a stab at consciousness. In the end what he describes is not subjective self-awareness (the ultimate mystery) but rather a primitive and primordial site of behavioural coherence and body awareness centered around the periaqueductal gray matter in the brainstem. This localized region serves as a central polysynaptic multimodal multi-option reflex center that integrates sensory and affective input to initiate coherent goal directed complex motor programs so as to achieve the goals of resource acquisition, reproduction and avoidance of harm in a competitive interorganismic world. Swimming upstream against contemporary intellectual trends, Panksepp believes in the presence of a central processor that must underpin any description of consciousness. Panksepp does not suggest that the brainstem region has the capacity to observe itself, only that such a region must be incorporated into any higher form of consciousness. Self-awareness, the highest level of consciousness remains unexplained, reasserting its claim to be one of the most, if not the most, perplexing, challenging and irresistible questions in neuroscience.

Affective Neuroscience is not an easy read. Nonetheless it synthesizes the most important animal work relating to the basic building blocks of behaviour. Mastering the information is worth the intellectual effort. It is an invaluable reference for any neuroscientist interested in understanding the neurobiological basis of drives and emotions where the best information is contained in the animal literature. This is the strength of Panksepp's book which summarises and references these data around clinically recognizable concepts making the information highly relevant to practising clinicians.

*Trevor A. Hurwitz
Vancouver, British Columbia*

MOLECULAR AND CELLULAR NEUROBIOLOGY; CORTICAL PLASTICITY LTP AND LTD. 1998. Edited by M.S. Fazeli and G.L. Collingridge, Ontario: Oxford University Press Canada. 253 pages. ill. C\$108.00

This book includes 25 contributors, the majority of which are from the United Kingdom. The book reviews the current concepts of molecular biology in cortical plasticity in 11 chapters. The emphasis is on studies in long term potentiation (LTP) and long term depression (LTD). These processes are believed to modify synaptic properties in the cerebral cortex and contribute to learning of new patterns of behavior.

The reader needs to be equipped with background knowledge on

the mechanisms of various neurotransmitters at a synaptic level, as well as secondary messengers and gene expression. Chapter 2 lists the amino acid receptors of interest for LTP and LTD, including glutamate and GABA receptors. There is no summary at the end of the chapter to help readers develop a clearer concept, and it is likely that they will be left with a platter of loose data with no conclusions drawn as to the relative significance of these receptors. A similar comment may be applied to the chapter on secondary messengers. A conclusion similar to that in Chapter 4, would be much appreciated. Chapters 5 and 6 are somewhat repetitive and would have been better combined into one chapter. The clinical applications of such knowledge has been linked to epileptogenesis. There is, however, no direct implications for human learning processes and behavioral modeling despite the abundant data on synaptic plasticity in the hippocampus, visual cortex, and neocortical areas. Chapter 11 attempts to propose models of learning and association with mathematical expressions. These models are embryonic in their development and are far from being validated.

In summary, this book is well written with helpful illustrations. It contains valuable information on research carried out over the past 25 years and is very focused in the subjects of LTP and LTD. It is an important source of references for basic neuroscientists interested in studying the mechanisms of learning and behavior.

*Joseph Tsui
Vancouver, British Columbia.*

THE CNS IN ACTION THE GUSTATORY SYSTEM #4. 1999 By Dr. Louise Charron, Dr. Jean-Marie Peyronnard. Published by SSB Multimedia Health Sciences. CD ROM media C\$133.00 approx.

This is an excellent learning aid to the study of the anatomy, gross and detailed, as well as the neurobiology of taste. Although the anatomy is supposed to be "functional" it is presented in sufficient detail to more than satisfy the basic needs of most neuroanatomy professors. In fact, for practicing neurologists, the detail provided here is more than would ever be desired or needed. It would be a great learning resource for housestaff in neurology, neurosurgery or ENT specialties. Skull based surgeons may find parts of it useful as a good review although this is not surgical anatomy. The neuroanatomy of gustation is complex and difficult to learn but can be rewarding if understood, and this multimedia presentation makes it easy to follow and learn.

The neurobiology is well presented, from cellular events to a detailed analysis of receptor cell types and their functions, along with the local and central connections for gustation. Our gustatory systems are very interesting and highly evolved and this is an ongoing area of study for biomedical research. It is informative to learn how "unique sensory receptors" turn "feeding activities" into "gastronomical feasts!", as the authors point out in the booklet that accompanies the CD.

It is an easy CD to use, it boots up quickly on computers with the newer faster processors, and it has an intuitive interface, a good index and help section. It presents the topics in small "video movies" which is accompanied by a verbal commentary. The voice can be shut off as it simply reiterates the text. Some of the movies could be shorter or there should be an advance

feature, however you can always return to the index for the next topic, so it is easy to get around. You can “pause” the “videos”.

The labeling of the detailed anatomy is sometimes intrusive and when “relationships” are shown, the number of structures, arrows and labeling can be intrusive and excessive. As well, some of the brainstem videos are very detailed and could be simplified, although I like the trick of coloring and highlighting the tract under discussion. Nevertheless, it is accurate and with time and patience, a lot can be learned quickly. I would advise scanning the contents at first and returning to selected parts of the CD for more intense review and study.

On balance, I would suspect that most training programs would be well served by having this program available as a resource, as would any other persons or groups with an interest in this area. Most medical students would find it interesting but too advanced. I suspect most practicing neurologists and neurosurgeons would not purchase this volume on first glance, but neurologists and neurosurgeons are sometimes a peculiar group, in that their love for “all things neurological” sometimes cannot be overcome, especially when the “neurology” is presented with such elegant learning technologies. I liked this product and learned a lot, all in “good taste” so to speak!

R. Allan Purdy
Halifax, NS

CELL NEUROBIOLOGY TECHNIQUES. NEUROMETHODS, VOLUME 33 and IN VITRO NEUROCHEMICAL TECHNIQUES: NEUROMETHODS, VOLUME 34. 1999. Edited by Alan A. Boulton, Glen B. Baker and Alan N. Bateson. Humana Press, Totowa, New Jersey. 391 pages, and 296 pages respectively. C\$129.35 each – approx.

These contributions to the large series of “Neuromethods” volumes, focus on methods used widely in cellular neuroscience, describing both long-established approaches such as autoradiography and receptor binding assays, and newer methods such as differential display PCR. With distinguished Canadian editors, and a large number of Canadian contributors, these volumes attest to the strength of Canadian research in cellular neuroscience.

Volume 33 “Cell Neurobiology Techniques” describes a variety of approaches, such as cell culture techniques, the use of c-fos immunocytochemistry as a marker of neuronal activity, and the analysis of post-mortem brain tissue. Volume 34 “In vitro Neurochemical Techniques” covers ligand-binding techniques, electrophysiological approaches to receptors, and a number of contemporary molecular biological approaches, signal transduction, and protein phosphorylation methods.

In the highly specialized field of scientific publishing, “methods” books can be best sellers. Most laboratories where any kind of molecular biology is done have dog-eared volumes of “Maniatis” (Sambrook, J., E. F. Fritsch, and T. Maniatis. 1989. *Molecular Cloning: A Laboratory Manual*, Second Edition, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York.) standing on a convenient shelf. The ideal methods book should have general information about the range of applications of a particular technique, preferably with some successful examples. This should be accompanied by a sufficiently detailed

description of the underlying principles and theories to enable novice users to appreciate the pitfalls and limitations of the technique so that they can avoid over-interpretation of the results obtained, and do some trouble-shooting when things go wrong. Finally, of course, there has to be a detailed “cook book” description of the procedure, presented in sufficient detail for it to be followed, step by step, at the laboratory bench, without reference to any other source.

This ideal is achieved in some chapters, but overall the editors could have exerted a firmer hand on the contributors to ensure uniformity of content. Some chapters are heavy on theory, but light on detailed procedures. Others launch fairly quickly into the cook book section without adequate discussion of the applications or principles involved. The least helpful chapters, fortunately few, are those which are a review of the author’s own research using the method supposed to be the topic of the chapter.

Together, the two volumes cover a remarkable range of techniques, but paradoxically this is likely to diminish their appeal. Methods books are usually purchased when an investigator wishes to introduce a new technique into the laboratory: a patch-clamp who wishes to do some *in situ* hybridization on the cell population of interest, for example. It’s rather unlikely that they will also want to know about methods for studying signal transduction. For this reason, I recommend these helpful volumes as a purchase for an institutional library, where many individual investigators will be able to select those one or two chapters which will be useful to them.

M. Bisby
Ottawa, ON

ADVANCES IN NEUROLOGY VOLUME 77: CONSCIOUSNESS: AT THE FRONTIERS OF NEUROSCIENCE 1998. Edited by Herbert H. Jasper, Laurent Descarries, Vincent F. Castellucci, Serge Rossignol. Published by Lippincott-Raven. 299 pages. C\$217.21 approx.

As neurologists, we tend to think more about the presence of unconsciousness, rather than consciousness. As well, our thinking is very concrete: What is the patient’s Glasgow Coma Scale score? Are brainstem reflexes present? In this book, philosophers, psychologists, physiologists and neuroscientists explore the meaning of consciousness. *Consciousness: at the Frontiers of Neuroscience* is the result of a symposium on consciousness held by the Université de Montréal. The list of 19 contributing authors reads like an international Who’s Who of researchers in this field, including Herbert Jasper.

The book is organized into eighteen chapters, each written by a different author. The chapters are roughly grouped into six sections: historical perspectives, consciousness as a study object (philosophical discussions), consciousness as a function (neuroanatomy and neurophysiology), contents of consciousness (neuropathology and neuropsychology), models of conscious experience (electrophysiology) and a general discussion. At the end of each chapter is a discussion, in question-and-answer format, by the attendees at the symposium.

The book is a scholarly and scientific review which undertakes, through our knowledge of neuroanatomy,