be even specialized in the right hemisphere. Most of the chapters have a healthy mixture of theory and experimental data but the book is more than just a collection of articles. The editors should be commended for the selection of high level work, and for their effort to integrate it with an excellent introduction, comments on each section and summary. This is an enjoyable and current text in an important area, which can be read by the novice and expert alike. It provides useful references in addition to serving as an important educational resource.

A. Kertesz,
London, Ontario

PHYSIOLOGY OF ALS AND RELATED DISEASES. 1st Edition. 1997. By Jun Kimura and Ryuji Kaji. Published by Elsevier Science BV. 230 pages. $C138.13.

This book covers both the clinical and physiological aspects of Motor Neuron Disease and related disorders. There is a wide range of styles and the information provided for each entity varies. The book is well written, in general, and addresses issues not dealt with in current texts on the subjects. Chapters 2 and 3 emphasize the basic physiology of the peripheral nerve and motor neuron as it applies to electrodiagnostic testing. Two conditions are emphasized: multifocal motor conduction block and amyotrophic lateral sclerosis.

Chapters 4-7 as well as chapter 19 discuss multifocal motor conduction block and the potential variants in detail. Both clinical and electrophysiological aspects are well covered.

Chapters 8 and 9 discuss postpolio syndrome and acute motor axonal neuropathy, (AMAN) respectively. AMAN is approached as a clinical entity rather than a review, covering most points effectively.

The remaining chapters are devoted to ALS. Appropriately, the majority of the work emphasizes the electrophysiology found in motor neuron disease.However, clinical trial issues including motor unit estimates and natural history information are included.

The strength of this text is the breath of electrophysiology covered by different authors. This would be most useful for those who are involved in electromyography and well as for non-EMGers who have an interest in neuromuscular diseases. It is an important addition to an EMG library.

Angela Genge,
Montreal, Canada

RADIOSURGERY. 1998. Edited by D. Kondziolka. Published by Karger. 268 pages. $C292.00 approx.

This book is a collection of papers presented at the 3rd International Stereotactic Radiosurgery Society Meeting held in Madrid in June 1997. As such, it is not a definite treatise on the state of the art in this field.

The papers are grouped into 6 sections: benign tumours, malignant tumours, vascular malformations, functional disorders, radiobiology, and technology and techniques. Each section contains a variable collection of papers, some of which are large in their scope and review the area in depth, and others of which are very narrow in their scope and deal with the use of radiosurgery in very uncommon conditions in a small number of patients. The section on benign tumours contains an excellent discussion of the evolution and increasing indications for the use of radiosurgery in the primary management for acoustic neuromas, as well as the use of radiosurgery for trigeminal neurinomas. The section on malignant tumours includes an excellent paper which comprehensively reviews the role of radiosurgery in patients with brain metastases. Several subsequent papers deal with the issue of whether whole brain irradiation is required in the subset of patients with solitary brain metastases. This section is completed with a few institutional experiences with radiosurgery in the management of glioblastoma, uveal melanoma, and nasopharyngeal carcinoma.

There are 4 papers in the vascular malformation section dealing with the histopathologic changes following radiosurgery, a grading scale that might be predictive of outcome with radiosurgery, the issue of sub-clinical hemorrhage post-radiosurgery, and a large multi-institutional experience with radiosurgery. The last 3 sections have a limited number of papers on a variety of topics.

Overall, this book is a good source of information on highly specialized aspects of the current state of the art of radiosurgery. It contains several excellent review papers which would give the reader not familiar with this area some perspective on the field. However, most papers deal with some highly specialized aspect of radiosurgery, and as such would be more suitable as a reference to individuals involved in radiosurgery. The field of radiosurgery and stereotactic radiation therapy is a rapidly evolving clinical and technological enterprise, and this book represents a good collection of papers contributing to the growing body of knowledge in this area.

N.J. Laperriere,
Toronto, Ontario

NITRIC OXIDE IN HEALTH AND DISEASE. 1997. Edited by: Jill Lincoln, Charles H.V. Hoyle and Geoffrey Burnstock. Published by Cambridge University Press. 363 pages. $C51.94 approx.

It is just over 10 years that the small, unstable, rapidly diffusible nitric oxide radical (NO) was found to be synthesized by mammalian cells. It acts as a physiological messenger in the brain and vascular system, and as a cytotoxic agent of immune and inflammatory cells. Over 11,000 papers on NO have appeared since 1987, and this number is increasing rapidly. While writing this review, NO has been shown to regulate the cyclic guanosine monophosphate (cGMP) levels in the developing retinotopic connections between the photoreceptors in the optic lobe of *Drosophila melanogaster*. Furthermore, the popular magazine press has discovered NO, recently reporting the release of the new oral drug Viagra, a cGMP phosphodiesterase inhibitor, for the treatment of male impotence. NO is in fact the trigger for cGMP formation by penile erectile tissue. This book has attempted to cover complex and controversial issues of the biology and pathobiology of NO in one volume. In this the authors have been most successful. It is a clearly written account that will be most helpful to postgraduate and postdoctoral researchers just beginning research on NO, and to clinicians interested in this new subject. This book reviews the role of NO in the central and peripheral nervous system, the cardiovascular system, and the immune system, and is divided into four sections. Section 1, with six chapters, provides insightful historical background as well as covers the basic biochemistry and biology of nitric oxide. It is fascinating how the discovery of NO synthase helps to shed light on a number of issues including: the identification of endothelium relaxing factor (EDRF); how nitroglycerin and other organic nitrates work as prodrugs which are biodegraded to

NO, thereby relieving chronic angina; the identification of histochemical NADPH diaphorase reaction in brain as NO synthetase; how stimulation of excitatory pathways in brain stimulates the formation of cGMP, where NO is the intracellular messenger; and why in septic shock and chronic inflammatory disorders an excess of nitrate is excreted in the urine. The three isoforms of NO synthetase, Type I, II and III, and their genes, are clearly described. Section 2, which contains three chapters, covers the pathological implications of NO, and should be required reading for all students preparing for fellowship examinations in neurology, medicine and surgery. A unique aspect of this book is the inclusion in Sections 3 and 4 of experimental approaches, protocols, and techniques used for the measurement of nitric oxide. These are very helpful to any researcher wishing to venture into this new field.

This book, in paperback and inexpensive, is highly recommended to all graduate students, clinicians, and pharmacologists. It is by far the best introduction to this unique new field of research. The biochemistry may be somewhat densely written but is worth the added effort. The figures are clear and informative. There is a helpful glossary, and the two appendices are comprehensive tables of the distribution of constitutive NO synthase as determined by immunohistochemical study of peripheral tissues in which nitric oxide is identified as a neurotransmitter. Finally, research on the basic mechanisms and role of nitric oxide in health and disease is not static, and new discoveries are bound to appear in the future.

Leonhard S. Wolfe,
Montreal, Quebec

THE NEUROPSYCHOLOGY OF DREAMS. 1997. By Mark Solms. Published by Lawrence Erlbaum Associates. 292 pages. $C78.00

For years, neurobiological models of dreaming have been founded primarily upon animal-based research; research whose validity for this task is as uncertain as whether or how animals might dream. On the other hand, although the dreams of brain-damaged patients could provide much pertinent information about the brain's role in dream formation and recall, little systematic work has been accomplished in this area. With some exceptions[1], most of the available literature consists either of clinical descriptions of patients with diverse brain lesions or of selective reviews of these cases.[2]

Solms' *The neuropsychology of dreams* has almost single-handedly transformed this situation. The work is a masterful systematization of past and current research literature, an unveiling of a large sample of new patients, and a lucid theoretical statement on the human neurobiology of dreaming. The consequence of this work may well be to reinvigorate and reorient what has been a relatively sluggish and disorganized area of study.

Solms anchors his work in a 3-chapter review of the Charcot-Wilbrand Syndrome, of the research that was provoked by this syndrome, and of the necessity for distinguishing in this literature between (a) cessation or restriction of visual dream imagery and (b) global cessation or reduction of dreaming per se. He follows up this introduction with chapters reviewing the "neglected psychosurgical literature" and other abnormalities of dreaming previously discussed in the literature. This prepares the way for presentation of the "18 hypotheses" tested with his sample of 361 neuropsychological cases. These hypotheses are relatively specific in nature, e.g., Hyp #2: *Cessation or restriction of visual dream-imagery indicates a bilateral lesion in the medial occipito-temporal region*, or Hyp #14: *Increased vivacity and frequency of dreaming indicates a lesion (usually but not exclusively bilateral) in the anterior parts of the limbic system,* or Hyp #17: *Recurring nightmares indicate a discharging lesion in the region of the right temporal lobe,* etc.

Solms' 361 cases were assessed during "routine clinical work" over a span of 4 years. They consisted primarily of patients with cerebrovascular disease (N = 83), neoplasms (N = 79) and trauma (N = 108) and included the entire spectrum of neurobehavioral symptoms (but primarily anosognosia, disinhibition, disturbed problem-solving, perseveration, adynamia and apraxia) and brain lesions (all major lobes are represented in the sample). All patients were administered a structured interview about changes in dreaming as a result of their neurological illness, including questions concerning sleep, dream recall, narrative complexity, emotional intensity, recurring nightmares, visual imagery, dream vivacity, and reality confusion, among others. Responses were also compared with a matched control group of 29 patients tested for suspected cerebral illnesses that were ultimately ruled out. Anatomical findings were available in the form of CT and MRI scans projected onto standardized templates; these allowed statistical assessments with chi-square and discriminant analyses.

The bulk of the remainder of the book consists of detailed descriptions of results. Although too numerous to summarize in this short review, Solms marshals substantial evidence that the recall and formation of dreaming is affected by neurological damage. In general, 337 of the patients (or 93.4%) reported having undergone a change in some aspect of their dream experience as a function of their neurological condition. Of these patients, 321 responded to a question concerning global cessation of dreaming (GCD) with 112 (or 34.9%) reporting that they had ceased dreaming since the onset of their neurological illness. This global change could be traced to parietal lobe involvement in almost half of the cases with equal distributions of right- and left-side lesions in 45 of 47 cases. Such results challenge the current notion that dreaming is lateralized to the left-hemisphere (e.g., left-infero-mesial occipitotemporal cortex).[1]

This section of the book is also rich in descriptions of more specific, sometimes highly fascinating, dream disturbances. For example, the phenomenon of dream-reality confusions was identified in 5.3% of patients. Here, dreams become much more vivid and intense than even the most vivid of patient's normal dreams and can produce great distress. Solms discusses the hypothesis that such confusions are due to localized anterior limbic lesions, however, no one specific pattern of lesions has yet emerged. Other interesting abnormalities discussed are reduced frequency of dreaming, reduced narrative complexity and emotional intensity of dreaming, and increased frequency and vivacity of dreaming.

In a final chapter, Solms offers readers insights into the dreaming process based on human subjects. He proposes a model of normal dreaming that depends upon activation of an appetitive program (curiosity – interest – expectation) formulated by mediobasal-frontal mechanisms. This appetitive program is transformed into the hallucination of dreaming via a 3-stage process: (a) it is represented symbolically by left parietal mechanisms, (b) it is re-represented concretely (spatially) by right parietal mechanisms, and (c) it is converted into a "complex kinematic visual perception" by bilateral occipito-temporal mechanisms. Bizarreness of the experience is caused by a lack of external stimulation (implicating noninvolvement of primary visual cortex)