

problems with presently available seizure classification systems. The problems with the classifications proposed by the ILAE represent a continuous debate over the years and these are well exposed in the chapter. The limits between generalized and focal epilepsy will alter in the future and continuous changes could be expected. Section three reviews clinical and physiopathological mechanisms of absence seizures. The section is good but there are many international reviews about this topic and it is not the dominant section of the book.

I strongly recommend the book but I would like to remark that the content is highly specialized and probably is more suited for physicians who continuously evaluate patients with epilepsy or interested people working in epilepsy programs.

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**ATLAS OF NEUROSURGICAL TECHNIQUES: BRAIN.** 2006. By Laligam N. Sekhar, Richard G. Fessler. Published by Thieme. 1074 pages. Price C\$405.

This neurosurgical operative atlas is the first of a two-volume multi-authored treatise on cranial and spinal neurosurgery. Professors Sekhar and Fessler have assembled a stellar group of contributors to produce an atlas of unusual breadth and clarity. Topics in the volume on cranial surgery are grouped into sections on general microsurgical principles, aneurysms, arteriovenous malformations, tumors, cranial base lesions, surgery for epilepsy and functional disorders, craniocerebral trauma, hydrocephalus, infections, stereotactic radiosurgery, and endoscopy. All of the 91 chapters have been carefully edited and beautifully illustrated. The book is aesthetically appealing and maintains the high standards for which Thieme is known.

The chapters present contemporary techniques including intra-operative electrophysiological monitoring, sophisticated skull base approaches, endovascular therapy, endoscopy, minimally invasive surgery, and stereotactic approaches. Refreshingly, there are very few chapters that have been lifted or only slightly revised from earlier publications. Each chapter begins with an introduction, often including historical context, and progresses logically to indications, alternative approaches, anesthesia, positioning, anatomy, surgical techniques and nuances, and post-operative care. Case examples are appropriately selected and nicely illustrated. Complications and their avoidance are dealt with in practical and honest terms.

As the number of surgical texts and online publications is rapidly expanding, investment in these media should be based on quality, suitability, and value. At C \$405.00, Atlas of Neurosurgical Techniques: Brain is well worth the cost and will be a valued addition to the libraries of neurosurgical residents as well as experienced surgeons. It has been written by neurosurgical experts addressing the complex conditions and cutting edge techniques that represent the current state of the art.

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**THE PHYSIOLOGICAL BASIS AND QUANTUM VERSIONS OF MEMORY AND CONSCIOUSNESS.** 2006. By Arthur J. Hudson. Published by The Edwin Mellen Press, LTD. 220 pages. Price C\$130.

This book represents an easily read overview of central nervous system physiology as it relates to memory and consciousness written for the clinician in 13 chapters. The book is general in its concepts and well organized with good progression of the topics and references of all chapters relating back to the topic of memory and consciousness. It begins with a chapter on the evolution of the neural sciences with regard to achievements in the localization of the brain functions. The second chapter reviews the various neurons of the cerebral cortex including pyramidal cells and interneurons. The visual cortex is specifically addressed and the general cortical model reviewed. The third chapter reviews the properties of axons, dendrites and synaptic vesicles. There is specific discussion on gap junctions, glial cells and lipid rafts. The fourth chapter addresses resting and voltage-gated ion channels. Tables outlining the specific ion channels in neurons and normal ion concentrations are included. Channel subtypes are also discussed in some detail. Chapter five reviews excitatory neurotransmitters including the small molecules (acetylcholine, biogenic amines, amino acids and nucleotides), neuroactive peptides and gas molecules with a focus on glutamate receptors and gas molecules. The sixth chapter focuses on inhibitory neurotransmitters with discussion predominantly around GABA receptors. Chapter seven involves a review of the electrical behaviour of dendrites and includes discussion on the Rall Cable Theory, Hopfield-Brody Model and neural codes. The eighth chapter discusses axon targeting including neural development, Eph receptors and ligands, axonal growth and targeting and integrins. Chapter nine reviews protein signaling and networks and specifically discusses, G-proteins, second messengers (calcium, cAMP), protein complexes, Ras-MAPKs, CaM kinase II, protein-conducting channels and complex networks and network regulators. The tenth chapter discusses long-term potentiation and plasticity in neurons. Relationship to memory is discussed in some detail. Chapter eleven reviews the processing of memory. In particular the hippocampal formation, amygdala and prefrontal cortex are discussed. Basic mechanisms of memory and the consolidation and reconsolidation of memory are also reviewed. The twelfth section deals with the development of consciousness and discusses cortical/subcortical connections, sleep and wakefulness and memory as it is applied to consciousness. The final chapter discusses quantum brain models.

Overall, pages are small with fairly small print and there are several black and white illustrations. Information is generally concise and well written. Chapters end with concluding remarks and summaries.

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**EXAMINATION OF PERIPHERAL NERVE INJURIES - AN ANATOMICAL APPROACH.** 2006. By Stephen M. Russell. Published by Thieme. 178 pages. Price C\$60.

This pocketbook begins with the Foreword: "There are few things in medicine and surgery that give as much personal satisfaction as a well-done physical examination, which can localize a lesion and often identify its nature." This is absolutely true, as a

well performed neurological examination is a thing of beauty and is the key to a proper diagnosis. Nowhere in Neurology is that more true than in the realm of Neuromuscular Diseases. This is the theme of his work and the important aspects of examining the peripheral nervous system are highlighted throughout the eight chapters.

Dr. Russell highlights the importance of anatomy throughout each chapter, and he also helps to ease the understanding of anatomical variants in the peripheral nervous system. For example, multiple variants of Martin-Gruber anastomoses are described. He provides a very thorough review of the examination of each muscle supplied by peripheral nerves of the upper and lower limbs. Accompanying each description are colour glossy photos of the muscle being tested. Several pictures of the anatomy itself are included from the studies of Dr. Russell – many of these are actually from his own study notes as the shading of pencil crayons can be discerned. This combination of photos, drawings, and detailed text affords a beautiful appearance to each chapter.

There are a number of important examination tips emphasized, such as the significance of having the forearm fully flexed and pronated during the assessment of pronator quadratus. There are descriptions of hypotheses as to why the peroneal branch of the sciatic nerve is more susceptible to injury than the tibial branch. Thorough descriptions are provided for sites of nerve entrapments and syndromes affecting each of the portions of the peripheral nerves, including the brachial and lumbar plexi. There are no individual muscles or nerves neglected.

My complaints with the book are minimal and related to my own tendencies in examination of the peripheral nervous system. For example, he advises that the testing of opponens pollicis should be performed with both thumb and fifth digit placed in opposition together; this maneuver also tests opponens digiti minimi, and a more pure test of opponens pollicis may be to place the thumb, held in extension at the 1st distal phalangeal joint, in opposition to the metacarpophalangeal joint of the fifth digit instead where opposition of only the thumb is tested. Testing of the quadriceps muscle group should typically be performed without full knee extension, which may provide a mechanical advantage and prevent detection of weakness for this powerful muscle. Further comments about the limited sensitivities and specificities of Tinell's and Phalen's sign for median nerve entrapment at the wrist would be useful for the students reading the book. Overall, my comments about the negative aspects of this fine handbook are minimal.

Dr. Russell's book is a highly recommended resource for Residents in Neurology, Neurosurgery, and Psychiatry, and is also a useful tool for the Neurologist's office. At a recommended sale price of \$60, this is a colourful, insightful book into the art of the peripheral nerve examination. Personally, I am thankful that it is now part of my library.

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**THE EMBRYONIC HUMAN BRAIN: AN ATLAS OF DEVELOPMENTAL STAGES. THIRD EDITION.** 2006. By Ronan O'Rahilly, Fabiola Müller. Published by John Wiley & Sons. 358 pages. Price C\$450.

This book contains a unique collection of drawings, photographs and photomicrographs of the human brain at all embryonic stages,

based on the authors' extensive personal work using the Carnegie Embryological Collection of serially sectioned human embryos. Its focus is on the embryonic period which comprises the first eight postfertilization weeks, when rapid morphological changes are occurring, and during which the vast majority of congenital anomalies appear.

The first six chapters provide important basic information on techniques, terminology and embryology needed to comprehend the remainder of the book. The Terminologies chapter emphasizes the importance of using clear nomenclature and has a particularly helpful table which lists the undesirable vs. preferable terms and outlines how the preferable terms improve descriptive accuracy. The main planes used in anatomy are defined and shown in drawings.

The authors use the Carnegie system for embryonic staging, which divides the embryonic period into 23 stages, based on internal and external morphologic criteria, rather than age or length. Emphasis is placed on the description of neuromeres (subdivisions of the developing brain transverse to the longitudinal axis) and the concept of segmentation. Stages 1-7, which occur before the first morphologic indication of the Nervous System are summarized in Chapter 7. Chapters 8-23 provide very detailed reviews of embryology of the nervous system at each stage. Chapters begin with a clear summary of the important morphologic features and a drawing of the embryo at each stage. For each 2-dimensional photomicrograph section shown, the authors clearly indicate how that section relates to the embryo, allowing understanding of the embryology in a 3-dimensional aspect. Diagrams are of high quality and are well-labeled with clear legends. Colour coding for each derivative - telencephalon, diencephalon and mesencephalon to enhance this information. Most chapters end with a Neuroteratology discussion, in which clinical malformations that result from failure in normal development of that embryonic stage are explained.

A much briefer review of the fetal period, which the authors note is "characterized more by the elaboration of specific structures" and is resistant to a morphologically based staging system, is provided in Chapters 24-26.

The readability of this book is greatly enhanced by summary boxes, highlighted in green, which list important points and also summarize key areas. Summary tables are well-organized, listing crucial information in point form. However, while several genes implicated in development of the human nervous system are summarized in Table 23-1, there is relatively little emphasis on genetic causes of cerebral malformations or the potential mechanisms of these.

This book accomplishes its objective of providing a detailed review of the morphology of the human brain by succinct, descriptive summaries of each embryonic stage of human brain development and detailed, vibrant photomicrographs and drawings. This clarity in comprehension of the embryonic stages of the human brain will greatly enhance the clinician's understanding of brain malformations, their imaging characteristics and clinical relevance, and will be essential to students of neuroembryology and neuroanatomy.

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