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BOOK REVIEWS

Neurologic Rehabilitation Without Neuropsychology?

Neurologic Rehabilitation: A Guide to Diagnosis, Prognosis and Treatment Planning. Virginia M. Mills, John W. Cassidy, & Douglas I. Katz (Eds.) 1997. Blackwell Science, Malden, MA, 355 pp., $49.40.

Reviewed by ANIKO BARTFAI, *Associate Professor of Psychology, Department of Medical Rehabilitation, Neuropsychology Unit, Danderyd Hospital, 182 88 Danderyd, Sweden, and TSRI, Department of Neuropharmacology, La Jolla, CA 92037.*

The editors of this book present rehabilitation after brain injury in the context of a model labeled the "neurologic rehabilitation model". The model is based on a careful functional diagnosis in the context of neurological syndromes, on prognosis, and on treatment planning. The importance of functional diagnosis cannot be emphasized enough. It constitutes a base of treatment planning and prognosis and I was very happy to read a textbook using functional diagnosis. Unfortunately, I got somewhat confused. From my point of view as a neuropsychologist, functional descriptions are mixed with terms of localizing value. The authors have chosen an uncommon way to present focal cognitive, emotional, or executive disturbances within the context of different etiologies, e.g., Wernicke's aphasia and neglect are presented as specific stroke syndromes. They very often are, but certainly not always. Specific neurological deficits are presented with regard to prognosis and likelihood for impairment. Treatment studies are reviewed. The neurologic rehabilitation model treats deficits in an "egalitarian way," mixing sensory, motor, and cognitive problems.

The model recommends a structured evaluation of cortical functioning following Strub and Black (1988), Taylor (1981), and Folstein et al. (1975). The first chapter provides a good introduction about the brain which also includes an overview of transmitter systems. One separate chapter is devoted to assessment of impaired ADL and functional activities. Another deals with the assessment and treatment of balance disorders—an inclusion that a rehabilitation specialist should appreciate. Neuropsychological assessment is mentioned and recommended at a later stage but is criticized in several chapters for bad timing of assessment and lack of practical relevance. The authors seem not to appreciate that neuropsychological assessment might have different purposes depending on the time of evaluation. If the aim of the assessment is to serve as a base for treatment planning, then it should be carried out on patients who are obviously not yet capable of peak performance and who can anticipate improvement. In those cases, conclusions should only pertain to the actual state of the patient and purpose of assessment. Moreover, a neuropsychological assessment might contribute significantly to the clinical diagnosis advocated for by the neurologic model.

One of the strengths of this model is the emphasis on the importance of prognostic factors and the excellent description of the current knowledge base regarding outcome. The authors rightly stress that these data should be at the fingertips of rehabilitation's specialists. Data on course and outcome constitute an important base of knowledge for prognosis after brain injury. However, at the current level of knowledge about brain function, there is also a danger in relying too heavily on this bulk of data. The inexperienced reader might get the impression that the time and course of improvement after brain injury is more predictable than is presently possible.

The last chapter of the book is devoted to outliers in rehabilitation, in the sense of deviating from the predicted outcome. After a decade of work in rehabilitation, it seems I have mostly met the outliers. Rehabilitation routines and practices might vary from country to country, but from what I have heard about the financial background for rehabilitation in the USA, it might be counterproductive to emphasize the possibility of high predictability when in fact variation between cases is extremely high necessitating more individualized approaches and financing.

This book offers a large number of excellent and highly interesting case studies which are presented within the framework of the model and provide numerous examples of treatment and management. Another strength of the book is its strong medical foundation, providing very good information for nonmedical rehabilitation professionals. An excellent description of the pathophysiology of disorders is presented and a good overview is given of current pharmacological praxis and treatment guidelines after brain injury.

I have given a lot of thought about who this book is written for? Who is a rehabilitation therapist? Is there some new specialty emerging in the USA? The model presented in this book is contrasted with the traditional team model in rehabilitation based on the interaction of different specialists, such as OT's, physiotherapists, speech therapists, etc. Their professional background will always influence the way each of them describes the patient. The point that neurological diagnoses and syndromes should be more elaborated is well taken, as any other professional information given by the team. Is this book written for neuropsychologists? I am not sure; maybe it was written with some discouraging experiences in mind. For me, it is not possible to identify myself or my colleagues with the sometimes negative image given about neuropsychologists and neuropsychological assessment.

So, should we read this book? There might be several answers: If you are working in rehabilitation, yes. It contains a lot of good, easily digestible medical information that is useful in treatment planning, teaching, or in contacts with the patients' relatives. If you are working in assessment, the conclusions are obvious. There is a lot to be done in the area of communication with other specialties, but we also have to do more research on the ecological validity of our assessments. Maybe this controversy around neuropsychological assessment is spurious. From my European and partly Lurian perspective, a number of seemingly simple clinical techniques presented in this book have a solid theoretical knowledge base in neuropsychology.

Psychology is the science of human behavior, investigating not only pathology but the general laws for normal behavior and its multifaceted determinants. It provides the theoretical framework for the cognitive, emotional, sensory, etc. disabilities treated in rehabilitation. Recovery and rehabilitation after brain injury is influenced in many ways by these factors and basic psychological competence should therefore always be part of this effort.

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A Psychopharmacology Tutor on CD-ROM

Essential Psychopharmacology: Neuroscientific Basis and Clinical Applications (CD-ROM). Stephen M. Stahl. 1998. New York: Cambridge University Press. $54.95.

Reviewed by L. Stephen Miller, Ph.D., *Associate Professor, Department of Psychology, University of Georgia, Athens, GA 30602-3013.*

The relatively recent advent of computer-based technologies such as information on the web and CD-ROM storage mediums have opened up a new arena for the presentation of educational materials in the sciences. While the possibilities for what can be presented are almost endless, the reality generally has been less successful. In *Essential Psychopharmacology,* the author has made a commendable effort at presenting materials from his fine textbook of the same name in a stimulating, graphic-intensive fashion.

This CD-ROM is arranged in a textbook format. It is broken into specific chapters covering introductory aspects of neural transmission, then covering specific neural mechanisms and pharmacologic actions across the major psychiatric diagnoses. What separates it from being simply a copy of the original textbook is its reliance on summary presentations of multiple captioned figures. These figures serve as the principal vehicles to elucidate the primary points made in the larger, more comprehensive traditional textbook. This reliance is both the greatest strength and greatest weakness of the format. The presentation is generally clear and relatively concise, making it particularly appropriate for students with limited exposure to psychopharmacology. Nearly all of the figures are presented with a textual explanation that is additionally presented using voiceover by the actual author. Shorter captions are also available by mouse click, as well as an overall explanation dialog-box for the many abbreviated icons used in the figures. Some of the figures include animation that is under the control of the "reader" and this gives it a somewhat interactive feel. Moving through the material is intentionally page-based, in that one can "flip" from page to page with relative ease. Additionally, the table of contents, which acts as the outline and map for access to the material, is always a single mouse click away. The technical aspects generally worked well during my manipulations, though my PC "froze" one time when I attempted to remove the caption while the audio was working.

Content is appropriately specific, giving a clear explanation of the essential elements of neural transmission and of the impact of pathology and psychopharmacological intervention on the central nervous system. There is some variability in the amount of detail presented from disorder to

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disorder, and the chapters on psychosis and schizophrenia appear relatively thin given the extent of recent advances. Nevertheless, the material is quite up-to-date and reflects the expertise of the well-respected author. The summary nature of the text information leaves the "reader" somewhat wanting for additional detail and, unlike the author's textbook of the same name, gives no alternative for acquiring that information. Similarly, there are virtually no available references, limiting the ease with which an interested student can quickly move from these materials to others.

In general, I liked the CD-ROM and found it likely to be a good supplement which will be attractive to students and be an additional tool for exploring the essential issues of psychopharmacology. Having seen quite a number of CD-ROM-based materials for student consumption, I believe this is one of the better examples.

Stroke and Its Emotional Aftermath

The Clinical Neuropsychiatry of Stroke: Cognitive, Behavioral and Emotional Disorders Following Vascular Brain Injury. Robert G. Robinson. 1998. NY: Cambridge University Press. $95.00.

Reviewed by L.D. Nelson, Ph.D., *A.B.P.N., Department of Neurology, University of California, Irvine, Orange, CA 92868.*

This book, based on over two decades of research conducted by Robinson and colleagues, is primarily about poststroke emotional sequelae. Major topics include depression, mania, and anxiety, each organized by chapter headings and similar chapter subheadings. Robinson defines each emotional problem, explains how it is diagnosed, compares it to brain–behavior relationships, and recommends treatment, all the while weaving an empirical foundation that matches interpretations and ideas with results. The fabric of this foundation consists mainly of Robinson's collective research. Case histories sprinkled throughout capture the essence of his remarks, bringing them to life for the reader. Contributions of his predecessors are reported as an historical base. As a result, Robinson brings under one cover the wealth of knowledge and information we currently have on the subject of emotional disorders following vascular brain injury.

Consistent with the present school of thought, Robinson is careful to integrate both the reactive and organic bases for emotional responses following stroke. A most compelling argument made in this context presumes that different theories of brain–behavior relationships may share a common base. One assumption offered is that recovery of function involves brain structures unrelated to the injured site. Another, competing, assumption is that recovery results from compensating related brain structures. The possibility that such assumptions are not mutually exclusive and that recovery involves more than one of these processes is a key aspect of his argument.

The basis for this thinking derives from Robinson's discussion of vascular anatomy. A picture begins to emerge of the complexity of brain–behavior relationships and the difficulty, if not impossibility, of selecting one theory over another to explain them. Robinson skillfully guides the reader through the many scenarios the etiology of stroke can take. Beginning with a basic introduction of brain anatomy, he leads into the relationship between different anatomic systems and categories of cerebrovascular disease. This discussion takes in about 10% of the book and lays the groundwork for separate discussions on each of the poststroke emotional disorders.

One of the most daunting revelations contained in the following chapters was the sheer number of factors controlling the manifestation of emotional change following stroke. Size and location of a stroke lesion, type of vascular disorder, time poststroke, family support, predisposing emotional factors, extent of physical disability, psychiatric nosology, measurement systems . . . the list is seemingly endless. Take any one or a combination thereof and we have a wealth of possibilities for examining emotional factors in stroke. The caveat is that this list of factors creates a conundrum for researchers seeking to design studies in which the relationship between emotional factors and stroke is examined. Robinson attempts to address many of these factors, for example, throughout the 19 chapters on depression. But the result has a somewhat chaotic quality. The net effect of which opens up the possibility that *all* factors need to be controlled when *one* is systematically examined. Robinson freely concedes his failure to do so in some of his studies. This concession, however, is more the reality, than the flaw, of any research design. Certainly, no one study can effectively take in all the necessary factors. Researchers select their targets based on what scientists, like Robinson, believe to be relatively important.

Nonetheless, the reader keeps looking for a bottom line: Which factors are important to study when? By failing to supply it, Robinson inadvertently creates the impression that there is no bottom line. Perhaps there isn't. But, in a compilation such as this, researchers could profit from ranking factors. Critically recapitulating the 40+ summaries presented throughout the book would capture the essence of "where to go and how" with this body of research. Table 42.1 begins this discussion. More extensive follow-through is needed to pull these findings together.

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In its title, cognitive disorders following vascular brain injury were advertised as a major aspect of this book. In the Introduction and Concluding chapter, however, descriptions of clinical syndromes, like much of the book itself, were behavioral or emotional in nature. Reference to cognitive disorders and cognitive symptoms, like memory functioning, were scant. The reader looking for in-depth discussion of studies of the cognitive correlates of depression will not find them in Robinson and colleagues' work. Not that this is a fault of their research. It just was not designed with cognitive functioning in mind. In the present review, cognitive dysfunction often emerged as a secondary correlate, then discussed as a result in almost a serendipitous sense. The reader will have to seek out other studies which focus on *cognitive* sequelae of stroke. In this sense, this book's title is misleading. Except for the excellent discussion of aphasia and its emotional concomitants, a full discussion and review of the research on cognitive disorders and stroke seemed overly ambitious and a bit out of place, given the nature of Robinson's work.

Robinson, together with his colleagues Sergio Starkstein and Thomas Price, have long been considered the authorities on the subject of neuropsychiatric sequelae of stroke. Their oft-cited work, based on hundreds of publications, has benefited others by offering a rationale for studies and the empirical support needed for grant proposals. As he carefully documents their work, one cannot help but be impressed by the immense effort and drive expended thus far over the course of their collective careers. This work succeeds in capturing the essence of what we now know today as one of the most common consequences of stroke: emotional dysfunction. Importantly, the book effectively combines a scientific treatise with practical suggestions for treatment.

Neuropsychology and Family Therapy—Anyone for an Integration?

Family Therapy of Neurobehavioral Disorders: Integrating Neuropsychology and Family Therapy. Judith Johnson and William McCown, 1997. NY: The Haworth Press, 344 pp., $24.95.

Reviewed by Frank Larøi, cand.psychol., *Neuropsychology Unit, Department of Psychology, University of Liège, Belgium.*

Far too few books are devoted to family reactions to brain injury. At best, chapters in neuropsychological rehabilitation books have examined this area, albeit mostly from a family support perspective (e.g., counseling, education, and family training). Harder to come by, however, are books concerned with family therapy, where treatment goals include bringing about behavioral change in a disturbed family unit by essentially psychological methods. This book attempts to do just that—synthesize family therapy principles and apply them specifically to traumatic brain injury and degenerative dementia.

The book consists of ten chapters. Chapter 1 defines new terms, provides arguments for the increasing need of professionals specifically trained to treat families with a brain-injured member, and defines the purpose and direction of the book. Chapter 2 deals with fundamentals of brain–behavior function and dysfunction, including such topics as dementia and prognosis. Considering the chapter's mere 23 pages, for a neuropsychologist it is at best a review, which the authors acknowledge. In contrast, chapter 3, which overviews the principles of family therapy (in particular those that are relevant to medical disorders), contains principles which may be new for the neuropsychologist, but which are essential as a groundwork for later chapters in the book. Chapter 4 continues in a family therapy orientation by introducing common issues confronting the family and individuals with brain injury, most notably issues related to estrangement. Although some overlap may occur, authors suggest a division between traumatic brain injury patients and dementia patients in terms of the onset and course of estrangement in these patients and their families. Their differences may also result in differences in intervention strategies. Chapter 5 provides an overview of caregiver burden, another common phenomena frequently encountered in families with a brain-injured individual.

The next four chapters provide developmental models of family adjustment, each chapter containing a number of clinical vignettes and specific interventional strategies. Chapters 6 and 7 present developmental models of family adaptation to traumatic brain injury and dementia, respectively, making the point that the type and the timing of family therapy intervention depends on the stage of the family. Chapter 8 presents models of family adjustment approached from a nonlinear or chaos-theory perspective which elegantly lays the theoretical groundwork for the need for both immediate and frequent intervention. Finally, chapter 9 includes another developmental model for an important yet, due to its relatively good prognosis, oftentimes neglected brain injury population—mild head-injury patients.

There are many positive aspects of the book. The authors clearly have extensive knowledge and experience in clinical neuropsychology and family therapy. The many intensely personal and oftentimes tragic clinical cases make the book passionate reading. Here, the book opens our eyes and prepares us clinically by revealing just how powerful and wide-ranging familial reactions to brain injury may be. The book includes a wide range of patient populations, from the milder forms (mild head injury) to the more serious and perhaps more devastating forms, such as dementia. The book

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is based on an impressive pool of case studies (500 families over a period of 15 years), evidence once again of the vast clinical experience the author team has with this population.

Unfortunately, there are some weaknesses as well. Neuropsychology is described as molecular and linear in its attempts to isolate various neurological mechanisms responsible for specific brain–behavior dysfunction. Firstly, it has long been known that neuropsychology's localizational role is less important since the arrival of advanced neuroimaging technologies. Secondly, this view does not adequately acknowledge the impact that nonlinear thinking, nor dynamic approaches, has had on brain–behavior investigations. Furthermore, in their discussion of complex systems, only the family system is mentioned, even though the brain has long been considered an example of a complex system. This is unfortunate considering the author's wish to integrate the two domains.

One of the most important new terms introduced in the book is "neurobehavioral compromise". This term is based on three conditions: acquired CNS damage; chronic and permanent changes in cognition, behavior and personality; and evidence of dysfunctioning based on an integrative assessment and understanding of the patient's neurological status, specific deficits, and social, occupational, and family environments. However, it is not made clear how this term differs from other terms such as "biopsychosocial disorders", where biological, cognitive, familial, and social variables are also equally included.

However, most devastating of the book's weaknesses are problems related to the authors' argument for a professional integration of neuropsychology and family therapy. Their argument is partly based on a study conducted by the authors indicating the serious dissatisfaction brain-injured families have with professionals assigned to help them (especially with neuropsychologists), and that this negative trend increases with the amount of contact family members have with brain-injury professionals. According to the authors, these results show that professionals are failing in their capacity to help such families and suggests the need for a new profession to fill this need. This professional is termed a "neurobehavioral family therapist," that is, a professional with specialized training and experience in both neurobehavioral disorders and family therapy which may include general practitioners, neurologists, neuropsychologists, nurse clinicians, pastoral counselor, psychiatrists, rehabilitation professionals, and social workers. However, according to this, any professional in contact with families disrupted by brain injury could become a neurobehavioral therapist. Also, becoming a neurobehavioral family therapist involves an already highly trained professional to acquire a specialist degree in each domain (minimum 4 years) in addition to continuing extensive training during clinical practice. In my mind, a better alternative would be the development of a fruitful collaboration between neuropsychologist and family therapist.

Family Therapy of Neurobehavioral Disorders is a much-needed text, written by authors with a lucid and wide-ranging understanding of the literature and theory within a number of domains and traditions. Most impressive perhaps is the book's readability and ability to inspire. The book should lead clinicians to realize the rich potentials inherent in a collaboration between neuropsychologist and family therapist, while leading clinicians away from the idea of an integration of these two specialties.

Geroneuropsychology: The Neuropsychological Approach to the Study of Aging

The Neuropsychology of Aging. D.S. Woodruff-Pak, 1997. Oxford, UK: Blackwell Publishers. 352 pp., $34.95.

Reviewed by Feggy Ostrosky-Solis, Ph.D., *Full Time Professor, Department of Psychophysiology, Faculty of Psychology, National University of Mexico.*

The most compelling reason for studying the neuropsychology of aging is the fact that there are so many more people who are elderly. Worldwide average life expectancy has already increased more in the past 100 years than in the previous 2000 years, due mainly to public health advances which are consequently fueling a rapid population growth of the elderly. Gerontology (the study of aging) and Geriatrics (health care for the elderly) are expanding disciplines and will continue offering career and service opportunities to the increasing number people who are interested in answering the questions and addressing the problems of aging.

This is a well-written introductory text that covers the impact of aging on brain function. The book contains 14 chapters organized into three major sections. The first section orients the reader towards the neuropsychology of aging and focuses on behavioral assessment (Chapter 2) and neuroimaging (Chapter 3). Although Chapter 2 covers the main neurobehavioral domains for neuropsychological assessment, it has the shortcoming of mentioning only a few measures without providing a review of current available neuropsychological batteries, screening instruments, or functional scales. Chapter 3 includes a description of several noninvasive techniques to assess the physiological effects of aging, including measurement of the electrical activity of the brain (Electroencephalogram and Event Related Potentials, ERPs) as well as neuroanatomical (Magnetic Res-

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onance Imaging and Computerized Axial Tomography) and neurophysiological (Positron Emission Tomography and Functional Magnetic Resonance Imaging) imaging techniques. The review of these techniques may be too concise as this chapter does not include recent findings of ERPs studies (for example N400 component related to semantic processing) or Functional Single Photon Emission Computerized Tomography (SPECT) that have been relevant for current issues of research and clinical practice such as the early and even preclinical diagnosis of dementia and for the study of progressive focal dementias. Based on the assessment techniques discussed in Chapters 2 and 3, the author describes the effects of aging on the nervous system.

Chapter 4 reviews changes occurring in the peripheral nervous system. Chapter 5 examines the differential patterns of aging in the neural systems of the brain, and emphasizes the important point that although some cell loss happens during normal aging, this loss does not occur at random, but in selected regions of the brain and in specific type of cells. Moreover, the author notes that it is not accurate to associate all cell loss with inevitable age-related behavioral capacity loss, since plasticity in the aging brain is retained throughout adulthood and old age. This is especially relevant in the light of the recent and startling news that the mature brain of humans does spawn neurons as a routine in the hippocampus and in the neocortex (Eriksson & Gage, 1998; Gould et al., 1999), thus raising some tantalizing prospects for medicine. In Chapter 6, discussion of neuropathological states is limited to a brief review of Alzheimer's disease (AD). There are many other major dementia syndromes which may be confused with AD, and clinicians need to know clinical, neuropsychological, and epidemiological information pertinent to differential diagnosis. Chapter 7 includes a good summary of physiological, psychological, and social factors leading to age-related mood disorders. Here it is emphasized that the emotional state of the older adult—in particular depression—affects neuropsychological performance. The role of prefrontal cortex in the modulation of emotion and affection is presented in Chapter 8. Chapter 9 contains a review of empirical research on older persons including ERPs (CNV, P300), which suggests that slowing constitutes the most pervasive and apparent behavioral change in aging. Neuropsychological analysis of age-related changes in intelligence (Chapter 10), learning and memory (Chapter 11), and language (Chapter 12), emphasizes that these domains are neither unitary or global phenomena and that they involve different cognitive processes as well as differences in the neural structures that support them. Some changes that come with aging are positive and some are negative. For example, regarding intelligence, it is important to contrast wisdom which may increase and intelligence which may decline in some aspects: while intelligence focuses on how tasks are accomplished, wisdom considers whether a particular course of action should be pursued. Wisdom also involves an integration of affection and cognition and it is precisely the integration between cognition and affection which characterizes adult development.

The final chapter considers how progress in the neuropsychology of aging may help older adults maintain intact cognitive function until the very end of their lives. It includes a short discussion of current issues such as advances in molecular genetics for the early identification of AD, tissue transplant, pharmacological and neurotrophic agents as cognition enhancing agents, and the role of physical exercise to facilitate response speed. Unfortunately, a review of cognitive training programs was not included.

In brief, the field of adult development and aging is an exciting one, and this book is a well-written introduction to the field integrating research and theory. Nevertheless, as stated by the author, neuropsychology of aging is the intersection of two of the most rapidly growing areas of science: neuroscience and gerontology. The field is growing rapidly, and the results of new research have not been incorporated in this book. The book is suitable for students taking an introductory course in adult development and aging and related fields. However, the advanced reader must look for other sources in order to complement the information.

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A Dialog Between Genetics, Neuropathology, and Neuropsychology

Handbook of the Aging Brain. E. Wang and S. Snyder (Eds.) 1998. NY: Academic Press, 263 pp., $79.95.

Reviewed by Feggy Ostrosky-Solis, Ph.D., *Full Time Professor, Department of Psychophysiology, Faculty of Psychology, National University of Mexico.*

The *Handbook of the Aging Brain* is a broad and encompassing handbook resource that contains research findings on how brain substrate changes with age and how these molecular and biochemical changes affect behavior and cognition in the elderly. The book contains 16 independent chapters that attempt to integrate an impressive growing

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knowledge on normal, abnormal, and even successful neural aging. It includes a broad spectrum of research encompassing molecular, morphological, neuropathological, and neuropsychological patterns in later life. Each chapter is written by acknowledged experts who are currently engaged as active researchers in their respective topic areas. Although the chapters have an informative nature and their readability is outstanding, the editorial work is fairly poor. No unifying themes between the chapters were orchestrated. The editors could have organized the book into sections and could have made comments as an attempt to tie together the various chapters or topics, and build chapters based upon the information provided in the preceding one. Instead, the reader is left to do this exercise on his own, and I have attempted to do so in this review.

The book sets forth important theoretical and research questions. For example, thinking about the aging process, the explanation of *why* we age is independent from the *how* we age mechanisms. In relation to the *how aspects,* variability in neuropsychological functions is identified as one of the most prominent features of human aging. In Chapter 2, S. Lupien and M. Meaney examine whether individual differences in the hypothalamic-pituitary adrenal activity might contribute to this variability in elderly humans. Research data obtained from rats and humans suggest that the basis of these differences could be related to the extent of exposure to high cortisol levels, the principal glucocorticoid in humans that compromises hippocampal integrity and thus can lead to impairments in cognitive functions that depend upon hippocampal integrity. One difficult issue is defining "normal" aging: from the neuropsychological perspective deficits in memory caused by age may be normal but memory deficits are also the earliest cognitive change seen in Alzheimer's disease (AD). In Chapter 1, M. Albert reviews the changes in memory seen in healthy individuals across the age range and those that appear to characterize the early stages of AD and suggests their neurobiological correlates, concluding that memory changes that occur with age differ in important and significant ways from those seen in the early stages of AD and that selected, and differing alterations in brain substance are responsible for them. Related to this issue, in Chapter 5, B. Hyman and T. Gómez-Isla review neuropsychological data that support a model in which AD and normal aging are not part of a continuum, and can be differentiated both anatomically and clinically.

In Chapter 8, G. Martin includes a thought-provoking discussion on the discovery of the genetic basis of unusually well-preserved neural function during aging. Assuming we have around 100,000 genes, an estimate of some 2350 genes have the potential to modulate our propensity to develop various types of dementia and associated neuropathologies; and for each deleterious mutation or polymorphism at such a loci, there may exist good alleles that provide exceptional protection against precipitous decline in particular domains of cognitive functions. G. Martin suggests that in order to answer what type of gene actions promote higher cognitive functions and which ones control the differential rates of decline in the aging population, a dialogue between geneticists and neuropsychologists would be highly desirable.

Neuropathological data in AD and other dementing syndromes are thoroughly reviewed. Chapters 9, 11, 12, and 13 provide specialized reviews of the molecular mechanisms of the etiological and neuropathological events underlying AD. In Chapter 10, J. Trojanowski et al. review research on the molecular composition of Lewy bodies (LBs) and elucidates the role these lesions play in neurodegenerative disease of the elderly. Efforts to understand the pathobiology of LBs can lead to strategies for improvement of antemortem diagnosis as well as to the development of therapeutic interventions for the treatment of LB disorders, including Parkinson's disease (PD), LB variants of AD or subgroups of patients with AD who exhibit parkinsonian features, and patients with dementia with LB (DLB). DLB may be the second most common dementing neurodegenerative disorder in the elderly after AD. H. Scipper (Chapter 16) addresses the issue of the basic mechanisms responsible for the cascade of biological and chemical abnormalities that characterized PD. An interesting issue is the possibility that astrocyte hypertrophy (glyosis) might contribute to the degenerative process. An experimental model of astroglial senescence is presented, which may bring to light an important cause-and-effect relationship among various features of PD and other aging-related neurodegenerative conditions. A. LeBlanc (Chapter 14) presents a review of human prion protein diseases. These rare neurodegenerative diseases occur at a rate of 0.1 to 1 person per million per year. Prion diseases are characterized clinically by motor and cognitive abnormalities that progressively lead to dementia and provoke death within months to 15 years. Three main forms of prion disease that are easily recognized are Crutzfeldt-Jakob, Gerstmann-Staussler-Scheinker disease, and fatal familiar insomnia. Prion protein disease can be contracted by inheritance, iatrogenic transmission, and by sporadic manifestation. A. LeBlanc discusses the clinical and pathological manifestation of the classic and newly discovered forms of protein disease and presents recent molecular discoveries, including biochemical and structural features of normal and mutant prion proteins.

Molecular, biochemical, and cellular changes are the focus of Chapters 3, 6, 7, and 15. In Chapter 3, C. Barnes analyses spatial cognition alterations of aged rat hippocampus; J.P. Julien (Chapter 6) introduces the reader to the transgenic and gene-targeting technique that has been used in the study of learning and memory, and P. Wong et al. (Chapter 7) presents transgenic models of amyotrophic lateral sclerosis and AD, providing an understanding of the molecular and cellular mechanisms responsible for the pathophysiology of these conditions. E. Wang (Chapter 15) addresses a very basic issue on how neurons function in their host tissue, the brain, for the entire life span of the animal. How these cells maintain their long-lived (sometimes more than 100 years, in the case of humans) terminally differentiated state, and avoid both replicating and dying, is the greatest mystery of molecular programming. The suggested mech-

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anisms are very specialized and may be difficult to grasp for people who only have a neuropsychological background.

In conclusion, the book is a collection of reviews that offers the most recent advances in the field, and the chapters are well-written, well-organized, and well-referenced. The book is a very good source for both clinicians and research workers. With better editing, it could also be an integrated text providing the most needed dialogue between geneticists, neuropathologists, and neuropsychologists. As Marilyn Albert states: In the field of normal and abnormal aging "understanding the nature of cognitive changes and the brain alterations associated with them is the first step in developing methods of changing them" (Chapter 1, p. 13).

Neuroscience History in Words and Pictures

Discoveries in the Human Brain: Neuroscience Prehistory, Brain Structure, and Function. L.H. Marshall and H.W. Magoun. 1998. Totowa, NJ: Humana Press, 323 pp., $59.50.

Reviewed by Muriel D. Lezak, Ph.D. *Book Review Editor, JINS, Department of Neurology, Oregon Health Sciences University, Portland, OR 97201-3098.*

Yes, that is *the* Horace Magoun who, with the distinguished neurophysiologist Louise Marshall, has produced a treasure trove of stories about the founders, foundations, and development of contemporary brain science. While large enough ($8\frac{1}{2}'' \times 11\frac{1}{2}''$) and with enough interesting pictures that it can serve as a coffee table conversation piece, this book brings research and investigators to life in a lively, conversational text that should be fully accessible to entering college students and fully interesting to mature neuroscientists. This is the kind of book which, if available to young people interested in a scientific or science-based career, could easily attract them to the neurosciences. This is not to say that the book is simplistic; rather it is rich in the truly interesting stories, studies, and pictorial stuff of neuroscience that reminds those of us in the field why we were drawn to brain studies in the first place.

Twelve chapters cover the following topics: *The Basic Postulates* (mostly evolutionary); Evolution of the Mammalian Brain; Ventricles and Their Functions; Surface Contours: *Order or Chaos*; Lobes and Functional Localization; Cerebral Asymmetry and Behavioral Laterality; Anatomic Substrate: *Cerebral Fine Structure*; Landmarks in Cerebral Neurochemistry; Cerebellum; Thalamocortical Pathways and Consciousness; Pituitary-Hypothalamic Axis; and Three Major Integrative Systems—which puts all the pieces together. Each chapter begins with the early history of thinking and discoveries for that part or function of the brain and shows how knowledge about it developed. There are as many pictures of the scientists who made major contributions and where they worked as there are of brain structures, illustrative pictures, graphs, and diagrams. If one has the time this book can be a stimulating and entertaining read from start to finish. Yet it has the rare virtue of being able to double as a coffee table book which the reader can leaf through with pleasure, or as a reference text for the reader who wishes to dip more deeply into any single topic. If college classrooms had coffee tables, I would like to see this book on the coffee table of every undergraduate science classroom.

Other Books of Interest

Feinstein, A. (1999). *The clinical neuropsychiatry of multiple sclerosis.* NY: Cambridge University Press. 204 pp., $69.95 (hc).

Pagliaro, L.A. & Pagliaro, A.M. (1999). *PDNR: Psychologists' neuropsychotropic drug reference.* Brunner/Mazel. 456 pp., $64.95.

Percival, R. & Hobson, P. (Eds.) (1999). *Parkinson's disease.* Leicester, UK: British Psychological Society. 320 pp., £12.95 (pb).

Redish, A.D. (1999). *Beyond the cognitive map. From place cells to episodic memory.* Cambridge, MA: The MIT Press. 420 pp., $45.00 (hc).

Schacter, D.L. (Ed.) (1999). *The cognitive neuropsychology of false memories: A special issue of cognitive neuropsychology.* Hove, UK: Psychology Press. 512 pp., $59.95.

Siegel, D.J. (1999). *The developing mind. Toward a neurobiology of interpersonal experience.* NY: Guilford. 394 pp., $37.95 (hc).

Sillanpää, M., Gram, L., Johannessen, S.I., & Tomson, T. (Eds.) (1999). *Epilepsy and mental retardation.* Petersfield, UK & Philadelphia: Wrightson Biomedical (Taylor & Francis). 212 pp., $79.00 (hc).

Taylor, J.G. (1999). *The race for consciousness.* Cambridge, MA: The MIT Press. 380 pp., $39.95 (pb).

Wilkinson, I.M.S. (1999). *Essential neurology* (3rd ed.). Oxford, UK: Blackwell Science. 248 pp., $33.95 (pb).

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