

Jonathan M. Silver, M.D.
Book Review Editor

Contemporary Behavioral Neurology (Blue Books of Practical Neurology, Vol. 16)

**Edited by Michael R. Trimble and
 Jeffrey L. Cummings**
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 Heinemann, 1997, 348 pages,
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Reviewed by Jane Epstein, M.D.

The Blue Books is a series of monographs on clinical neurologic topics in which research has given rise to new concepts of patient management. The volume under review is thus intended not to provide comprehensive coverage, but to focus on newer concepts that have entered the field and their practical ramifications. Although it succeeds admirably in realizing this intention, it is also somewhat constrained by it, in that it lacks the depth and breadth of a more comprehensive work and focuses on the practical aspects of a field whose strength lies in its theoretical clarity and elegance.

The editors' introduction sets the stage for the chapters to follow by outlining the history of neurobehavior and sketching its recent growth through the incorporation of perspectives from related fields. Particular emphasis is placed on evolutionary, hierarchic models of neural functioning first championed by such figures as Papez, MacLean, and Yakovlev. These hierarchic models move beyond the cortical focus of traditional behavioral neu-

rology to include basal ganglia and limbic structures that mediate motor, social, and emotional functions. The editors highlight the concepts of cortical-subcortical circuitry and circuit-specific syndromes and link them with developments in the field of information processing. Trimble and Cummings also stress the importance of interdisciplinary integration, particularly between the fields of neuropsychiatry and behavioral neurology, while acknowledging the limited progress that has been made in integrating neurochemical and neuroanatomical models of behavioral dysfunction.

In keeping with this emphasis on interdisciplinary integration, the first chapter focuses on the difficulties of understanding behavior across multiple levels of brain organization and the usefulness of models that attempt to bridge these levels. The potential for computational neuroscience—a field that has emerged at the intersection of computer science, cognitive science, and neuroscience—to provide such models is thoughtfully explored.

The second chapter provides an excellent review of the current state of knowledge concerning the basal ganglia and their connections. The parallel, functionally segregated basal ganglia-thalamocortical circuits are precisely characterized, as are the relationships of limbic brain structures with the prefrontal cortex-ventral striatal system. Possible clinical ramifications of the information presented are discussed.

Paulesu, Bottini, and Frackowiak explore the role of functional neuroimaging in the development of cognitive neurology, address important issues in the design of experiments employing functional neuroimaging, and clearly describe its

techniques. Their major points, although illuminating, are sometimes difficult to extract from the dense illustrative detail in which they are embedded.

The subsequent chapter presents a concise overview of the classic disconnection syndromes and highlights Norman Geschwind's seminal role in the development of contemporary neurobehavior. The nineteenth-century rivalry between equipotential and localized models of cortical functioning and the importance of Carl Wernicke's contribution to the latter are also discussed.

Ross's chapter on the cortical representation of emotions is particularly strong in its discussion of the affective aspects of language and communication and its update of the debate over right-hemisphere versus valence models of emotional processing. It is followed by concise, well-organized reviews of the neural substrates and disorders of two potentially confusing cognitive domains, attention and memory.

The chapter on aggression is impressive in both its discussion of the theoretical complexities surrounding aggressive behavior and its practical approach to the understanding and management of aggression in various settings. Its only weakness is Moriarty's tendency to imply that experiential contributions to aggressive behavior are not mediated by the brain.

An excellent update on the frontal lobes is provided by Stuss, Alexander, and Benson, who focus on long-standing and more recent theories of frontal lobe functions, commonly encountered clinical syndromes involving frontal dysfunction, and the limitations of current neuropsychological proce-

dures for the assessment of frontal lobe functioning.

The chapter by Mega and Cummings superbly illustrates the recent trends in behavioral neurology highlighted in the introduction. Specifically, the authors discuss the extension of neurobehavioral approaches to subcortical processes, an evolutionary approach to neural functioning, and the integration of data from a variety of disciplines. Focusing on the connectivity and functions of three anterior cingulate effector regions and one posterior cingulate processing region, the authors precisely demonstrate how the cingulate functions to link the motivating drives of the limbic system with attentional networks, visceral and skeletal motor output, and memory function.

Trimble argues for the value of a heuristic approach to temporal-subcortical circuits similar to that used to elucidate the circuit-specific behaviors mediated by frontal-subcortical-thalamic circuits. He describes a variety of syndromes involving prominent temporal lobe dysfunction. He also provides, in collaboration with Varma, a review of neurologic syndromes in which subcortical lesions of the white matter, basal ganglia, thalamus, or brain stem lead to neurobehavioral syndromes, including disturbances of "higher functions."

The subsequent chapter expertly guides the reader through the terminological thicket surrounding frontotemporal and other lobar dementias. The author suggests a multileveled approach to the description of frontotemporal degeneration according to clinical syndrome, anatomic distribution of

atrophy, and nature of histologic change. In one of the few instances of overlap in the volume, this chapter is followed by a review of the subtypes of dementia that includes specific recommendations for the management of associated affective and behavioral symptoms. The definition of dementia provided by Mendez and Cummings differs from that given in DSM-IV, reflecting an increased focus on frontal-subcortical circuits.

Current knowledge on the neurobiology of depression is reviewed by Duffy and Coffey in a manner reflecting the increased integration of neuropsychiatry and behavioral neurology. They combine the approach favored by biological psychiatrists (defining a clinical syndrome and searching for neurobiological abnormalities associated with it) with that employed by behavioral neurologists (defining a brain lesion and characterizing its associated behavioral disturbances) in order to develop an overarching hypothesis of the neural substrates of depressive phenomena. Although this approach has great potential, its impact is weakened by the authors' decision not to elaborate on the specific connectivity and functions of the regions implicated in their review of the data.

Fink presents an interesting view of catatonia as a state phenomenon—representing dysfunction of motor regulation centers not secondary to structural change—that occurs in a wide range of clinical settings and resolves quickly with appropriate treatment. Although one might take issue with some of the author's decisions on which clinical syndromes to include under

the umbrella of catatonia, his discussion of the treatment implications of such a unified approach is compelling. The subsequent chapter is impressive for its thoughtful examination of conversion disorders from a variety of perspectives and its useful discussion of treatment strategies.

The volume's final chapter presents an overview of behavioral therapies and a discussion of their role in the treatment of neurologic disorders. Although the discussion can be difficult to follow, Mostofsky's major point is an important one often overlooked by behavioral neurologists: diseases of the mind/brain can often be ameliorated by treatments operating at either neural, behavioral, or mental levels of organization.

In sum, *Contemporary Behavioral Neurology* provides a clear, concise, and highly informative guide to recent developments in neurobehavior, presenting an impressive amount of information in a relatively limited space. Its only notable deficiency, to this reader, is the absence of a chapter providing an overview of motivational/emotional processing. The volume should serve as a valuable resource for neurologists, psychiatrists, and neuropsychologists, although readers will need to bear in mind that some of its chapters present an emerging perspective yet to be fully validated.

Dr. Epstein is Assistant Professor of Psychiatry, Cornell University Medical College, and Coordinator of Clinical Neuropsychiatric Services, The New York Hospital, New York, NY.