noted that animal tests of anxiety have not detected anxiolytic activity of antidepressants. The screening of other compounds such as drugs acting at 5-HT receptors is then very difficult. I would have appreciated more of this educational/critical discussion from some of the other authors; otherwise the writing in complete, coherent and authoritative. There is repetition but this adds to our understanding as we see how each researcher takes similar data and points out different relationships relevant to their special field of interest.

The book demonstrates a vibrant and comprehensive research effort. I recommend it.

David G. Johnston
Calgary, Alberta

AMYOTROPHIC LATERAL SCLEROSIS: CONCEPTS IN PATHOGENESIS AND ETIOLOGY. 1990. Edited by Arthur J. Hudson. Published by University of Toronto Press. 370 pages. $75 Cdn.

This book consists of 15 chapters by 40 authors and is a report of a symposium held in Vancouver, British Columbia, as part of the 22nd Annual Meeting of the Canadian Congress of Neurological Sciences. It is edited by Arthur J. Hudson, Professor, Departments of Medicine and Clinical Neurological Sciences, University of Western Ontario, and Director of Research, University Hospital, London, Ontario. He founded the Amyotrophic Lateral Sclerosis Society of Canada in 1976 and has had a major interest in this disease for years.

The chapter by Kim presents evidence that cultured human fetal spinal cord neurons are probably the most promising model for study of the disease. The fact that the addition of skeletal muscle to spinal cord culture enhances long term survival of neurons and promotes axonal growth and increased choline acetyltransferase activity is clearly important and alluded to in several other chapters. The neurite growth enhancing properties of human fetal skeletal muscle protein is exciting and possibly a promising aspect of neuron biology.

The second chapter appropriately deals with the neurotrophic interactions of anterior horn cells and their targets and presents good evidence that spinal cord neurons are sensitive to and influenced by, target derived factors. Dawson, Hancock, and McCabe describe 40 patients with early onset prolonged amyotrophic lateral sclerosis-like symptoms shown to have a partial deficiency of the lysosomal hydrolase N-acetyl-B-D-hexosaminidase.

The difference between classical ALS and this disorder is clear but here is a hint as to abnormal metabolism in neurons which suffer a similar fate to those of ALS.

Another possible model is the retrovirus-induced lower motor neuron disease of mice and the similarities between the cord disease and spongioform encephalopathy are thought provoking.

The immunologic aspects of motor neuron disease are well reviewed and an excellent chapter by the Editor of the book is included on the differences in pathogenesis and etiology of ALS and similar syndromes. Of the two dozen types of ALS or diseases resembling ALS, all are compared to the common benchmark, sporadic, form of the disease. Every clinical neurologist should read this chapter.

Haverkamp and Oppenheim also point out that the integrity of the target organ (skeletal muscle) has a positive effect on the survival of embryonic chick motor neurons. Thus, both Kim and Haverkamp and Oppenheim have suggested that a specific muscle protein promotes neural growth when tested in quail and mouse spinal cord neuron cultures. Here are two significant although separate contributions suggesting that the neuron may be as dependent on the integrity and function of the target organ as the reverse.

The section on epidemiology by Armon and Kurland compares classic and western pacific ALS from several points of view. It also deals with the cycad seed, a major food source for the Chamorros, and held by some to be a toxic agent etiologically significant in pacific ALS. This chapter is interesting and easy to read and the epidemiological similarities of the three apparently primary nerve cell diseases (classic, familial, and western pacific amyotrophic lateral sclerosis) are compared. The pathological variations and locations of the disease process in ALS is well reviewed by Hirano et al. This includes a discussion of the various types of ALS including the animal models plus parkinsonism-dementia complex and Alzheimer's disease. Evidence is presented that an assortment of etiological agents may result in anterior horn cell damage and loss.

The chapter by Steele et al relating to nutritional factors in amyotrophic lateral sclerosis on Guam includes an interesting history of the Mariana Islands and the indigenous Chamorros. The historical background about amyotrophic lateral sclerosis and parkinsonism-dementia complex in these islands is well written. The evidence that the seeds of Cycas circinalis are etiologically important in the ALS/PD of the Micronesian Islands is strong and the following chapter is an even more detailed account of environmental factors in the etiopathogenesis of ALS/parkinsonism-dementia complex of Guam. The affirmative evidence is presented by Spencer, Ross, Kisby, and Roy. The negative aspect of cycad toxicity is presented in three pages by Carleton Gajdusek.

The post-poliomyelitis motor neuron disease controversy is well covered.

In general, this book is an excellent review of the current state of knowledge on amyotrophic lateral sclerosis with some information on parkinsonism-dementia complex and a good deal of information on the concentration of both diseases in the Southwestern Pacific Islands. It is well written, beautifully printed, and easy to read. This is a significant and worthwhile contribution to the current neurological literature and Arthur J. Hudson and his fellow authors are to be congratulated. The book is indexed.

R.T. Ross
Winnipeg, Manitoba

SPINAL DISORDERS IN THE CHILD AND ADOLESCENT: STATE OF THE ART REVIEWS. 1990. Edited by John D. Hsu. Published by Hanley & Befus, Inc. 257 pages. $40.00 Cdn. approx.

This is a multi-authored volume providing a review of the "state of the art" in paediatric spinal problems. The emphasis of the editor and publisher is the incorporation of recent published and presented data within the clinical framework of authoritative