Book reviews

lar to clinical levels. It represents the proceedings of a Dahlem conference held in 1981. The participants considered four major problems. First, normal and abnormal development of the nervous system; second, mechanisms of axon guidance after injury; third, factors involved in the reformation of specific connections; and fourth, restoration of function. A series of papers is followed by group reports covering the four main topics.

The opening chapter by Cowan provides an excellent account of vertebrate central neurogenesis. Cowan draws attention to the fact that it is a big assumption that the processes of repair and regeneration have much in common with neurogenesis. Herschkowitz and McKhann survey human brain development and conclude that the important questions concerning the flexibility of cytoarchitecture in development, the biochemical mechanisms underlying genetically determined disorders of neuronal migration, and neurotransmitters in different pathways, are largely unanswered. The biochemistry and pathology of the demyelinating disorders such as metachromatic leucodystrophy, Krabbe's disease and adrenoleucodystrophy remain the best understood examples of hereditary disorders. Horwitz reviews nervous development in nematodes, presenting evidence that specific positional or temporal signals, or both, are essential in development.

Kreutzberg considers the acute microscopic and histochemical reactions to injury in motor neurons, and Willard and Skene review molecular events in regenerating axons, commenting on differences between quiescent and regenerating axons, the timing of RNA synthesis, the various types of transport, and some of the signals involved. This is a very clear introduction to a complex subject. Aguayo summarises the results of the experiments of his group up to that time. His work, showing that CNS neurons have the capacity to regenerate if allowed to enter a peripheral nerve Schwann cell environment shatters the previously widely held view that CNS neurons are incapable of more than token efforts at regeneration. That functional connections can result when CNS neurons regenerate along peripheral nerve grafts remains to be shown. It is a pity that Bjorklund was not present at this conference, since his work, showing that embryonic CNS cell transplants are capable of restoration of both structure and function, together with Aguayo's experiments are currently the

most exciting in the field of CNS regeneration.

Purves reviews axon guidance mechanisms, pointing out that the biggest unsolved problem is how axons sense their position within the matrix of cells through which they must grow. Sanes discusses the regeneration of synapses stressing the multiplicity of interdependent factors which regulate their formation and maintenance with reference mainly to the neuromuscular junction. Muller reviews aspects of invertebrate axon regeneration, particularly the ability to relocate and innervate old targets; it is clear that the capacity for restoring connections is greater than in vertebrates. Thoenen *et al* present evidence that nerve growth factor is important in regeneration as well as in development.

Useful papers on clinical aspects follow by Freund and Bauer, Singer and Crill and Raichle. Frank and Mendell then discuss problems of spinal cord regeneration, the former drawing a similar conclusion to Aguayo, namely that it is the glial environment which appears to be preventing spinal cord neuron regeneration, and he discusses the evidence that spinal cord regeneration does occur in lower vertebrates such as the goldfish and toad. Mendell's paper is concerned with the temporal anatomical and physiological changes after spinal cord injury. He concludes that there is no single sequence of events which occurs in all pathways. Finally, Nashold reviews the contribution of electroneuroprostheses in rehabilitation, examining those for improving limb function in paralysis or amputation, for controlling bladder function, for restoring visual perception in the blind, for diaphragmatic paralysis and for pain.

Whether the four group reports which follow really represent the shared views of members of the groups is not altogether clear, but each is longer than the individual papers and reviews further the four main topics of the conference. I found these particularly helpful, not only in presenting further evidence but in clarifying and discussing a number of the crucial issues in regeneration.

Although already out of date concerning some aspects of CNS regeneration this book is nevertheless valuable in covering major topics in a series of short readable review papers. The Dahlem conference workshop model, involving precirculation of papers, leads to less repetition and a much more readable volume than the usual multiple author symposium proceedings, and contributes to the success of this book.

Much factual information is contained in it, and at its relatively cheap price, can be highly recommended to anyone interested in the problems of repair of nervous tissue.

JW SCADDING

Antiepileptic Drugs (2nd ed). Edited by Dixon M Woodbury, J Kiffin Penry, CE Pippenger. (Pp 1040; \$88.40.) New York: Raven Press, 1982.

The first edition of this volume was published in 1972 and rapidly established itself as the classic in the field, because of its comprehensive and authoritative reviews of the pharmacokinetics, biotransformation, clinical use and toxicity of the major antiepileptic drugs. This volume is a totally revised version that is 60% longer than the first edition. It is also qualitatively better. It will prove invaluable to every neurologist treating patients with epilepsy and be of great assistance to pharmacologists and other research scientists.

Major differences from the first edition include the decline in the space allotted to phenytoin, and the substantial contributions now devoted to carbamazepine, valproate, and the benzodiazepines. Valproate did not feature in the first edition, and carbamazepine and the benzodiazepines had only one short chapter each. Forecasting the future is never easy. The last five chapters in this edition are devoted to "potential antiepileptic drugs or anticonvulsants" and already the selection looks doubtful.

Another innovation is a chapter on "Mechanisms of Action" for each major drug. Wisely no attempt of this kind was made in the first edition. Now much more is known about the effects of anticonvulsants on ionic movements and on synaptic function, and the contributions on this are most welcome, even if many of the findings discussed are likely to be rapidly outdated.

The editors and Raven Press deserve the highest praise for providing us with this superb volume.

BS MELDRUM

The Dementias. (Advances in Neurology, Vol. 38). Edited by Richard Mayeux and Wilma G Rosen. (Pp 288; \$45.00.) New York: Raven Press, 1983.

There are 31 contributors to the 18 chapters in this book. The editors point out that understanding and treatment of the dementias is far from adequate. The book