Book reviews

Dementia: a Survey of the syndrome of Dementia. by B Mahendra. (Pp 220; £20.00.) Lancaster: MTP Press Ltd, 1984.

The attempt by one writer to deal comprehensively with a large subject is always welcome. The many texts on dementia (mostly written in the last fifteen years) have had to cover the clinical phenomena, neuropathology, neurochemistry, radiology, psychology as well as the sadly shorter topic of treatment. So much new information has accrued, especially in the field of neurotransmitters, that the task is indeed a daunting one.

The blurb on the cover of Dr Mahendra's book says "it is written to fill an important gap in the literature". The number of competing texts rather suggests that this is just another publisher's sales talk. They might have done better to reveal the author's appointment and qualifications which are not apparent, and are matters of some importance to the reader and reviewer alike. In fact, the book is fairly comprehensive, covering with variable adequacy: clinical features, investigative sociological, pathological and ethical aspects of this wide spectrum of diseases. An enjoyable feature is a historical introduction about the evolution of the concepts of dementia (aided by Prof Michael Shepherd) and an enjoyable if not too profound analysis of the different dementing illnesses of Lord Randolph Churchill, his son, Nietzsche, Robert Schumann, Lord Northfield, Somerset Maugham and Guy de Maupassant.

The more serious and larger part of the book are less edifying. It may make a useful short reference monograph for the established senior psychiatrist, geriatrician or neurologist, but its lack of mature personal statements and conclusions about the major issues relating to dementia, make it unsuitable for the younger trainee or registrar in these disciplines. Almost every section is stated to be based on a review or chapter of a recognised expert; in the clinical and radiological sections, in particular, this leads to poor descriptions. Much of the text is thus a series of compilations of excerpts and quotations from an assiduously reviewed bibliography. The clinical features of the various dementing diseases are represented by factual abstracts and the frequency of various phenomena. The clinical pictures, sometimes so distinctive to the experienced observer are painted in thin washes. The same strictures apply

equally to the descriptions of neuro-radiological, pathological and neurochemical sections. Little attempt is made to express even a tentative view of contentious issues—surely the just prerogative of the single author work, whether or not the reader agrees with him.

Dr Mahendra does however express a clear view about "pseudo-dementia": he rejects the concept and believes that if the symptoms are those of dementia, the illness is dementia, irrespective of its cause or its subsequent evolution or disappearance. He regards depression as a *cause* of dementia, not as a differential diagnosis. Pseudo-dementia in this view embraces both organic and "functional" illnesses. This is dangerous territory for the trainee. By contrast, the analysis of the definition of dementia is dealt with superficially by accepting a clinical impressionistic view. The problems of summation of multifocal deficits of higher cerebral function (seen in both diffuse atrophy and in focal lesions) *versus* diffuse or global impairment—important considerations—are not seriously considered.

The book is simply but well produced, but is marred by several spelling errors. More important there are many imprecise statements and one extraordinary factual mistake: "The CT scanner, based on the linkage of the X-ray beam, the gamma camera (sic) and the computer. . ."

Despite these criticisms, there is much of interest here, and much effort has gone into its compilation. But, it is a book for the established specialist to dip into, rather too imprecise and lacking the authoritative guidance necessary for the aspiring neurologist or psychiatrist.

JMS PEARCE

From Neuron to Brain (Second Edition). A Cellular Approach to the Function of the Nervous System. By Stephen W Kuffler, John G Nicholls and A Robert Martin. (Pp 650; £14.80.) Massachusetts: Sinauer Assoc. Inc., UK: Blackwell Scientific Publications, 1984.

Ever since I attended Hodgkin's lectures on the Hodgkin-Huxley equations while I was an undergraduate at Cambridge, I experience the cold thrill of excitement when I read about the experiments, now made 30-40 years ago, which proved the basis for our understanding of the nerve action potential. It wasn't Hodgkin who made it thrilling. He was far too self-effacing a man to do that. It was the idea that a set of equations developed 30 years

ago, using equipment that would now be thought hideously unstable, could survive unchanged for so long. The results and the mathematical description of them were so perfect that they form the standard basis for electrophysiological calculations even now. When asked why it took 3-4 years to write up the results in final form, Hodgkin made the excuse that he and Huxley really were rather disappointed by their findings. They were expecting to discover something about the molecular basis of the ion channels and not just provide a description of some experimental results. In any case, there was teaching to be done, and the Cambridge computer had broken down so that Huxley had had to solve all the differential equations using a mechanical hand calculator. It was a rather different attitude to that which fired JC Eccles, with whom they shared the Nobel prize a few years later. After only the first initial successful experiments impaling neurons with a microelectrode, Eccles was already enthusing about the possibility of his eventual prize.

The major part of this new, expanded edition of "*From Neuron to Brain*" is devoted to the description of the electrophysiology of nerve and synapse. It is a superb summary from voltage clamp to patch clamp and from ACh to LHRH. Difficult sections are not shirked: cable equations and noise analysis are covered, and both are good reading even for the uninitiated. A feeling of excitement is communicated throughout and there are some telling descriptions of original experiments. My favourite is Otto Loewi's comment on his remarkable experiment which established the chemical nature of transmission from the vagus nerve to the heart. After it had occurred to him in a dream, he performed the experiment in the middle of the night. On considering it later he wrote " . . . in the cold light of morning, I would not have done it. After all, it was an unlikely enough assumption that the vagus should secrete an inhibitory substance; it was still more unlikely that a chemical substance that was supposed to be effective at a very close range between nerve terminal and muscle be secreted in such large amounts that it would spill over and, after being diluted by the perfusion fluid, still be able to inhibit another heart." If only more of us could have the misfortune to dream up such unlikely experiments!

The other sections of the book are on the electrophysiology of the visual pathway (excluding the retinal receptors), neuroglia and CSF, sensory transduction and simple nervous systems, and the development of

nerve connexions. A feature of the text is the use of "boxes", which have some advantage when not used too frequently. They separate discussion of certain ideas (like the classification of mammalian nerve fibres or the constant field equation) so that the main flow of text is not interrupted.

The section on vision is again of very high quality. Hierarchical and parallel processing in the visual pathway is discussed, with much attention paid, as is proper, to the work of Hubel and Wiesel. It is difficult now to understand what a step forward it was to be able to describe the receptive field properties of visual cortical cells. However, it was only the chance observation that the best stimulus for cortical cells was the edge of a glass slide as it was inserted into a slide projector, rather than the figure drawn on it, that led Hubel and Wiesel to discover the orientational, edge-detecting properties of these neurons.

These two sections make up the bulk of the book. Some of the remaining chapters are equally good, although others fall short of the generally high standard. There is, for example, a rather poor chapter on CSF, which seems a limp accompaniment to a much finer chapter on the physiology of neuroglial cells. The chapters on muscle spindles, spinal motoneurons and the control of movement illustrate integrating mechanisms within the CNS. But these again are upstaged by the chapter on the nervous system of the leech and Aplysia. The work of Kandel's group on the simple memory systems of Aplysia comes nearer to living up to the book's title than anything else that is covered. The study of simple, invertebrate, nervous systems, in which single neurons can be identified and their individual functions studied, gives remarkable insights into how phenomena at neuronal and synaptic level can produce complex behavioural actions. The book ends with a section on neural development. It takes innervation of muscle and plasticity of the mammalian visual system as its main examples, omitting, except for a few paragraphs, some of the best examples of the specificity of neural connexions discovered in work on the optic tectum of amphibia.

It would be a carping reviewer who would criticise this book. For the price, I cannot recall a better produced volume. The illustrations in two colours, have almost all been redrawn and are excellent. The paper is high quality and the lay-out is so attractive that even my medical students, who are not well-known for their enthusiasm for new textbooks, were grudgingly obliged to accept that at least it looks

nice, even if it does mean more work for them! The problem is who is this book directed at? It is not a book that can be used throughout a physiology course—the authors never intended that. The selection of material is more along the lines of a reader, to be dipped into for more information on a favourite topic. For this purpose I cannot recommend it too highly, it is a book that can fire the enthusiasm.

J ROTHWELL

Epilepsy, Sleep and Sleep Deprivation. Edited by R Degan, E Niedermeyer. (Pp 368; \$88.50.) Amsterdam: Elsevier, 1984.

This book examines the connection between epilepsy and sleep. Why does epilepsy occur during sleep in some patients but not in others? And why does sleep deprivation produce epilepsy? More than 500 papers have appeared on the use of sleep deprivation as a tool to investigate epilepsy. Do the results (the promotion of epilepsy) merely depend on the fact that sleep deprivation promotes sleep? The book is a record of a 1982 German symposium proceedings and a tribute to the memory of Pierre Passouant, the director of the Laboratory of Experimental Medicine in Montpellier, France who for 25 years studied the relationship between epilepsy and sleep. Many of the 57 contributors to this book were Passouant's students; unhappily, none from the UK.

The most important section of this book for clinicians is probably the final summary by Roger Broughton, in which Penfield's comments are recalled on learning that hippocampal seizures recorded stereotactically in man could be selectively activated in REM sleep. "How fascinating. Just think, those seizures which produce the 'epileptic dreamy state' in wakefulness are facilitated during sleep periods associated with dreaming". However, the relationship between mental activity and epileptic phenomena during sleep and waking has received only slight attention. Other important sections of this book for clinicians include those on driving and epilepsy. The State of Michigan appears to be the most liberal with a one-year-period of freedom from seizures and possible introduction of a limited licence for driving to and from work and the supermarket: in contrast in Germany the EEG after sleep deprivation is used as a critical factor in determining whether epilepsy is present or not, and the ability to drive. There are useful chapters on sleep and benign partial

epilepsies in childhood, on the effects of sleep deprivation, and on paroxysmal dystonia during sleep (Lugaresi and Cirignotta) although the cause of dyskinetic attacks during sleep is often obscure. Strangely, chronopharmacology is neglected and the possibility that antiepileptic drug pharmacokinetics may vary several fold over a 24 hour period dependant on the time of drug administration with variation in absorption and metabolism is not considered. The remainder of the book is mainly of electroencephalographic and experimental interest. Post-chapter discussion in symposium proceedings forms one of my bêtes noires and is particularly tiresome here. "This is very important but I feel a topic for the general discussion". "Dr X has kindly agreed to postpone the discussion of his paper". "To stay on time, we have to transfer further discussion". Well illustrated, referenced, and full of facts. Recommended; or as an alternative; Sleep and Epilepsy. Sterman G, Shouse MN, Passouant P (eds) Academic Press New York 1983.

JD PARKES

Development of Visual Pathways in Mammals

Neurology & Neurobiology Series Vol 9

Edited by Jonathan Stone, Bogdan Dreher, David H Rapaport. (Pp 508; £52.00.) New York: Alan R Liss Inc, 1984.

This book is the result of a satellite symposium to the 29th International Congress of the Union of Physiological Sciences, held in Sydney, Australia in August, 1983.

Publication was achieved within a year, evidently by means of requiring authors to submit "camera-ready" typescripts. This has the advantage of saving editorial, typesetting and proofreading time, but the effect of having each chapter set in a different typewriter or word-processor face is disconcerting in a glossy and expensive book. Figure legends are easily confused with main text, being in the same face.

The visual system is an experimentally amenable and therefore relatively well worked-out part of the brain, so its development is therefore often taken as a model for the development of the brain as a whole. This may account for the popularity of what would at first seem to be a highly-specialised field, and for the large number of eminent investigators, many of whom are represented here. Some indeed are in the list of contributors without being in the book (Hoffmann, Kulikowski,