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,

Pettigrew, Rakic, Stryker). Symposium discussions are mercifully absent.

The book is divided into four sections: development of retina and optic nerve (8 chapters), development of visual connections and neuronal structure (9 chapters), reorganisation of visual system following damage or transplantation (5 chapters) and environmental modification of the visual system (9 chapters). Of the 31 chapters, a majority present or review results obtained using anatomical methods, either alone (15) or combined with some neurobiological techniques (2) or physiological data (4). Six chapters present or review physiological results, while two are behavioural, one pharmacological and one multidisciplinary.

Quite a variety of experimental animals is covered—rat, mouse, hamster and rabbit to cat, monkey and opossum. We have to take care not to become as confused as the index, as between the brushtailed possum (*Trichosurus vulpecula*) and the American opossum (*Didelphis marsupialis aurita*). Marsupials are popular; this may be because of the location of the meeting, but they are convenient for studies of the effects of embryonic manipulation on the development of the visual system. Man does not make an appearance as subject.

There are some excellent reviews of retinal development, dealing with cell transformations and death, synaptogenesis and competition (Stone *et al.*; Dreher *et al.*; Rapaport *et al.*), and of the developmental pharmacology of retinal inhibition (Ikeda and Robbins). Chapters on the monkey tend to be perfunctory (Pasik and Pasik; Blakemore and Vital-Durand), but the rabbit is well put forward (Murphy). The exciting new field of brain tissue transplants is well represented (Harvey and Lund; Cunningham and Haun). In several of the studies, evidence was given of broad patterns of early innervation contracting during maturation to the finely-tuned patterns seen in the adult.

For those in the field, this book pulls together a huge literature, and will perform an important service. The method of production means that most chapters are well-referenced up to 1983. The index is adequate (21 pages).

DN RUSHTON

Acute Non-Traumatic Intracranial Bleedings. Posterior Fossa Tumors in Infancy. (*Advances in Neurosurgery Volume 11.*) Edited by H-P Jensen, M Brock and M Klinger. (Pp 430; \$42.30.) Heidelberg: Springer-Verlag, 1983.

This volume contains 60 papers presented at the 33rd Annual Meeting of the German Neurosurgical Society held in Kiel in May 1982. As may be gathered from the title of the book (it is a pity that it contains a linguistic error) the two main themes were acute spontaneous intracranial haemorrhage and posterior fossa tumours in childhood. There were also some miscellaneous papers.

In the first part, on haemorrhage, there were reports of a cooperative study from 24 centres which confirmed a number of previous conclusions. There were interesting papers on computed tomography in these conditions, and an attempt to demonstrate the presence of arterial spasm by cerebral blood flow measurement. The question of timing of operations featured in this and several other papers. The prognosis and management of intracranial haematomas was discussed, with emphasis on the critical importance of the size of a haematoma, and the capacity of the body to deal with the condition without the aid of surgery. There is a paper warning of the dangers of intracranial haemorrhage in anti-coagulated patients, and another pointing out that haemorrhage into tumours is not particularly uncommon. This group brings no very striking new conclusion, but provides an overall view of current practice in Germany and Austria, and draws attention to a number of important subjects.

The section on posterior fossa tumours in infancy covers the whole paediatric range. Attention is particularly drawn to the paper on The Role of Radiotherapy and Chemotherapy by Dr Bloom, of the Royal Marsden Hospital, London, who draws on his own extensive experience and that of the International Society of Paediatric Oncology (SIOP). An appraisal of the present position was needed, and is clearly and unequivocally presented. It may be profitable to explore the possibilities of particle beam therapy in addition to adjuvant cytotoxic agents, and to identify high-risk cases for special treatment.

The prognosis of posterior fossa tumours in childhood is no longer such a simple matter as it used to be. However, the situation will not be clarified until neuropathologists reach a consensus of opinion on their nature. For instance, there is an 18% incidence of spongioblastoma in Essen, and apparently none in London. The problem is not confined to gliomas. Medulloblastomas, differentiated and otherwise, have poorly defined categories.

There is no easy solution to this, but until one is reached, it is almost impossible to evaluate the results of surgery or to attempt prognosis.

There are several other articles of interest, including the application of auditory evoked potentials to the localisation of tumours in children, which may be particularly helpful in the very young. The pineal region is also discussed in three papers.

Not only are the foregoing articles worth reading, but also several of those that have not been mentioned. The book is commended to neurosurgeons, especially to those with paediatric interests, and to paediatric neurologists.

PETER H SCHURR

The Muscle Testing Handbook. By Virginia Pact, Marcia Sirotkin-Roses and Joseph Beatus. (Pp 194; \$22.00.) Boston: Little, Brown & Company, UK Distrib: Quest Publishing Agency, 1984.

This slim handbook fulfils its function as "an easy reference and helpful guide to the techniques of manual muscle testing" to be used at the bedside, in the examining room or in the laboratory. It covers all the usual muscular systems plus the sometimes neglected area of facial muscles. In addition there is a particularly useful section which deals with the difficult subject of testing muscle function in young children.

The book opens with an informative section on the principles of examinations which includes definitions of three grading systems (MRC, Lovett and Kendall), some common pitfalls encountered in muscle testing and a short description of the complexities of shoulder and thumb movements. In a logical progression each muscle is examined in turn; the recommended method for testing is demonstrated through photographs coupled with a brief but useful comment on the examining technique together with the function and major and minor innervation of the muscle. One criticism is that it is not always clear from the photographs exactly where the muscle of interest lies. However, in its favour this book also illustrates alternative testing positions and, most importantly, incorrect testing positions. The book concludes with the obligatory sections on plexuses, nerves and dermatomes.

In conclusion, this book is easy to use and can be recommended to those individuals who require quick access to the well-established techniques of manual muscle testing.

BL DAY