torical, anatomical, pathophysiological and therapeutic point of view.

It was only in 1954 that the first report of successful carotid reconstruction was published, earlier attempts having been made in the previous three years. In 1983 85,000 endarterectomies were carried out in the USA, and the number predicted for 1986 was over 100,000. Like many lesions in the head and neck, carotid disease and its consequences fall within the scope of several disciplines, and the need for collaboration between them is paramount. "Medical and surgical therapy should be seen as mutually supportive and complimentary" especially in the evaluation of treatment. The burgeoning of surgical therapy means that many operations are likely to be undertaken by surgeons with limited experience of neurology, or even of vascular surgery in some cases. This book provides guidance for the investigation and treatment of patients, but selection of the surgeon is also extremely important.

After a full discussion of atheroembolic mechanisms and haemodynamic factors giving rise to cerebral lesions, the clinical aspects of strokes are summarised. More information on the natural history of untreated strokes might be helpful to those without neurological experience. Surgical therapy consists in the restoration of occluded vessels or the provision of a bypass. The many methods for demonstrating lesions are described, and thereafter there are descriptions of carotid endarterectomy and various alternative reconstructions of these and other vessels. Finally, the different forms of Extracranial/Intracranial (EC/IC) by-pass are mentioned in detail.

It is not until the final three chapters that one is able to reach a conclusion as to the present position of surgical treatment for all forms of stroke. The chapters on the treatment of asymptomatic lesions and transient ischaemic attacks (TIA) will be of most interest to neurologists. Despite the problems of providing sufficiently up-to-date information in a book, this work includes references to 1985 publications, among them the disappointing findings concerning the results of EC/IC by-pass in complete carotid occlusions, middle cerebral artery occlusions and TIA and small strokes. Excellent results in the treatment of other vascular lesions are well documented and are likely to continue to improve in the future.

Cerebrovascular disease can be looked at from several points of view. This surgical appraisal is to be welcomed, and neurologists should take the opportunity to add

it to their experience. It is to be hoped that more neurological evaluation of surgical results will be undertaken in the future as collaborative research, so that the possibility of a surgical procedure is not regarded as a qualification for its performance, unless it can be justified by the results. Neither is an operation that could be beneficial denied on account of prejudice or ignorance of the possibilities. The book will help to bring this about.

PETER H SCHURR

Multiple Sclerosis. Edited by W Ian McDonald and Donald H Silberberg. (Pp 193; £25.00.) Sevenoaks: The Butterworth Group, 1986.

This is essential reading for those responsible for the diagnosis and care of patients with multiple sclerosis. Having the advantage of a dual authorship from Queen Square and Philadelphia, we have the benefit of a very balanced approach to the problem of multiple sclerosis considering both the United Kingdom and the North American attitudes. The book assumes in the reader a considerable knowledge of neurology and of the disease itself. An excellent introductory chapter on the diagnosis of multiple sclerosis and a review of the Poser Committee's criteria for diagnosis is followed by an up to date chapter on imaging, including the recent findings on MR scanning. What we understand of the epidemiology is very clearly outlined in the fourth chapter and after Compston's careful consideration of the genetic factors involved in the aetiology of this disease, Lisak writes on the immunological abnormalities, Silberberg himself writes on the pathogenesis of demyelination, and Professor McDonald on the pathophysiology of the disease, with further chapters on psychological aspects and treatment including an excellent chapter on the symptomatic management of the patient.

This book is enjoyable to read, accurate and comprehensive. Inevitably it must be compared with the Churchill Livingstone volume on multiple sclerosis initially edited by McAlpine, and now by Lumsden and Aitchison in its third edition. I feel the aims of the larger work are different, and the authors of that volume attempt to cover a much wider research field than is addressed by the volume under review. However, the two books are complementary and I would wholly recommend that any neurologist,

whether in training or in practice, would benefit from this up to date, accurate and well produced summary of current knowledge of this enigmatic disease.

JB FOSTER

The Thalamus. By Edward G Jones. (Pp 655; \$135.00.) New York: Plenum Publishing Corp, 1986.

In 1932 Wilfrid Le Gros Clark needed only 64 pages of *Brain* to review almost everything that was known at the time about the organisation, development and comparative anatomy of the thalamus. Today, we need a monumental book of 2 kg weight to review the same topic, but are we any closer to knowing what the thalamus actually does? Concluding his classic book on the primate thalamus 50 years ago, the 31 year old A Earl Walker stated his case quite clearly. "The thalamus . . . holds the secret of much that goes on within the cerebral cortex." After more than 800 pages, Dr Jones is rather more sceptical, and confides that it "would almost be possible to study the cortex without considering the thalamus as anything more than a direct relay that neither added to nor subtracted from the information flowing through it."

Such an attitude is, of course, extreme and Dr Jones goes on to attack it with vigour. However, it is an attitude that I have heard several neuroscientists espouse in the past. Indeed, surveying much of the information in this book, one might be tempted to agree with them. Segregation of information flow appears to be a general rule of thalamic organisation. The thalamic nuclei are quite separate, with no interconnections between them. Within the principal sensory nuclei not only is there a spatially ordered projection of afferent fibre terminals, but in many cases, different types of afferent fibre from the same body part or area of retina remain separate. Such segregation, however, does not mean that the thalamic nuclei only relay input to the cortex. This was made clear in the classic studies by Hubel and Wiesel of receptive field properties in the lateral geniculate nucleus (LGN). The contrast sensitivity of LGN cells is greater than in retinal ganglion cells, indicating that the incoming signal is transformed in, as well as transmitted through, the LGN. Similar experiments also suggested a second important thalamic function: transmission through the LGN was highly dependent on the overall state of the animal. That is, as

general rule, a thalamic relay neuron is a more efficient transmitter of sensory impulses to the cortex in an awake than in a drowsy animal.

How these transformations occur, and how they are controlled during wake and sleep, remains one of the challenges for investigators of thalamic function. One candidate is the thalamic interneuron. These neurons are quite unlike the "typical" neurons of medical textbooks, which are no more than thinly-disguised versions of the spinal motoneurons studied by Eccles and colleagues. At the synaptic aggregations between a single afferent axon and the dendrite of a thalamo-cortical fibre, the interneurons receive synaptic input from the terminal of the afferent axon. This input is reciprocated by both dendritic and conventional axonal synapses onto the presynaptic afferent terminal. In addition, there may also be synapses between the interneuronal axon and thalamo-cortical dendrite. The function of these interneurons, which are GABAergic and inhibitory, presents, as Dr Jones says, "a challenge that surely cannot be ignored any longer."

One of the pleasures of this book is that it provides enough physiological detail to allow comment on *function*. It is not "a desert of detail without a living functional watercourse, only a mirage away from unverified speculation" (WAH Rushton, 1977). This approach is best illustrated by the 100 pages devoted to discussion of fundamental principles in chapters 3, 4 and 5. To my mind, these, with the historical introduction, are the most useful parts of the book, and should be required reading for anyone with a passing interest in thalamic function. Other useful sections are the discussion of terminology in each chapter on individual thalamic nuclei. Nowhere else have I found such a clear description of the different nomenclatures for each nucleus and its subdivisions. Even better, the subdivisions that Dr Jones describes are always illustrated with his own ample photomicrographs, rather than with outline drawings, so that we can decide for ourselves where (or if) the boundaries lie and can see how clear they are likely to be. Only the figure legends gave me cause for concern: in some cases the legends are divided into two columns per page width whilst on others the legends span the whole page.

Irving Cooper once concluded a lecture he gave at the National Hospital, Queen Square, with a review of the derivation of the word thalamus. "The word thalamus comes from the Greek, and its meaning was conubial couch. Undoubtedly it was apparent

to the early investigators that this structure deep within the brain was a hot-bed of sensory-motor activity ... The word thalamus is also found in the archaeological literature, where it signifies a secret chamber. Thus whether one explores the thalamus in the original Greek sense as a hot-bed of sensory-motor activity, or in the archaeological sense as a secret chamber, one is following a long line of investigators who found this structure intriguing and mystifying." I have no doubt that this book will become a standard text and fuel further intrigues in the thalamic hot-bed.

JOHN ROTHWELL

Colour Atlas of Microneurosurgery. By Werner T Koos, R Spetzler, G Pendl, A Perneckzy, J Lang. (Pp 420; DM 680.00) Stuttgart: Georg Thieme Verlag, 1985.

This is by far the best operative atlas I have ever seen in neurosurgery. The major drawback is the price. The authors have obviously collaborated and provided photomicrographs of the highest quality. The line diagrams are excellent and provide the right amount of information for the surgeon. The topics covered include intracranial tumours, spinal tumours, cerebral vascular lesions of the brain and spine, a section on the vascular compression syndromes and another section on devascularisation of the cerebral vessels.

The book is essentially one on the microneurosurgery of these lesions and demonstrates not only the highest photographic detail, but illustrates the extreme technical competence of the surgeons. The anatomical preparations are what we have come to expect from Professor Lang and are masterly demonstrations of normal anatomy. The line diagrams illustrating different approaches, positioning of the patient and sites for retraction are excellent. I liked particularly the small summary diagrams at the beginning of each section which showed the area of the brain covered by surgical exposure. There is just enough printed text for the experienced surgeon to use the book. It might not be so useful for those about to embark on a surgical career or for the undergraduate, but then there are plenty of books aimed at this audience. The topics covered demonstrate the interests of the surgeons involved; the publishers might do well to consider a second colour atlas of neurosurgery; this time demonstrating with the same clarity spinal surgery, particularly

anterior approaches, peripheral nerve surgery, and the brachial plexus.

H. ALAN CROCKARD

Basic Mechanisms of the Epilepsies: Molecular and Cellular Approaches. (*Advances in Neurology Vol 44.*) Edited by Antonio V Delgado-Escueta, Arthur A Ward Jr, Dixon M Woodbury, Roger J Porter. Foreword by Herbert H Jasper. (Pp 960; \$108.50.) New York: Raven Press. Japanese distributor: Igaku-Shoin Ltd, 1986.

This is in every sense an ambitious book. It represents the outcome of a number of closed workshops held in 1982 and 1983 and an international symposium held in 1983. The authors state that "its major aim is to serve as a textbook in basic mechanism of the epilepsies for students in biomedical sciences and for physicians desirous of entering epilepsy research." As such it is seen as a successor to the "Basic Mechanisms of the Epilepsies" published in 1969. The length and diversity of the book serve to illustrate that during this time research into epilepsy has become less empirical and more closely related to increasing knowledge and understanding of the basic mechanism of neuronal excitability and its control.

It is in every sense a heavyweight volume. It comprises of over a thousand pages and is divided into seven major sections. Perhaps one of the most useful and interesting is the introductory section where the editors review new areas of research into the epilepsies and define those areas where they see exciting expansions in the future. Further sections include molecular approaches to the genetics of epilepsy, the molecular basis of neuronal excitability, the role of neurotransmitters and neuromodulators and receptors in cell to cell communication, the spread and arrest of seizures, the anatomy of epileptic cell damage and the concluding section on mechanisms of human epilepsy focussing particularly on PET studies, neuropathology and neurotransmitter investigations.

Each chapter provides both a review of past work in the field and new material. In some cases chapters do overlap quite considerably and one or two, as is inevitable in this kind of publication, differ little from previous publications of the authors concerned. Neurologists without a specific interest in epilepsy are likely to find many of the chapters thin on direct clinical relevance and somewhat hard reading. However, it would