cerebral blood flow but it is then hardly enough to state that it is an impression that regional blood flow and blood volume are diminished in patients with cerebrovascular insufficiency and headaches. His claim that such measurements have 'considerable clinical usefulness' is not convincingly sustained. Welch and Meyer, in a very adequate description of disordered cerebral metabolism following ischaemia are more cautious, and it is clear that both such studies, valuable though they are, will remain in the research laboratory for some time to come.

Miller Fisher's account of the anatomy and pathology of cerebrovascular disease is, as anticipated, comprehensive. No mention, however, is made of the possible role of microaneurysms in hypertensive cerebral haemorrhage, for he prefers his own view that cerebral haemorrhage occurs at a site of lipohyalinosis in a cerebral vessel. Kannel and Woolf review very adequately the risk factors in 'atherothrombotic' disease which have been recognised in the Framingham epidemiological study. Oddly enough, the 'Japanese story' of a high variation in the incidence of cerebral haemorrhage in Japanese in Japan compared with those Japanese domiciled in the United States is still retailed. Kunkle's review of the evidence for this should surely put an end to this myth.

Although containing much useful material, it is unlikely to have a wide appeal to physicians who are concerned with the practical management of cerebrovascular disease.

E. C. HUTCHINSON

DRUG TREATMENT OF EPILEPSY By A. Richens. (Pp. 176; illustrated; £3.80.) Kimpton: London. 1976.

Emphasising the social impact of epilepsy and its disruptive consequences, the 1969 official report, *People with Epilepsy*, visualised a large-scale welfare operation controlled by a multidisciplinary diagnostic team. The general practitioner would be responsible for continuing care, supported by specialist clinics. The actual therapy of epilepsy, the control by drugs of the frequency and severity of fits, was dismissed in two short paragraphs. Though warned of the folly of blind rewriting of prescriptions, practitioners were given no advice about drugs and dosage.

Dr Alan Richens is an exponent of the pharmacokinetics of anticonvulsants and has published an impressive list of studies of their 'life cycle' in patients. This important book is a summary, in clear but not always sparkling language, of his experience of therapy based on personal observations and measurements. Although much of his own work has been on phenytoin and its derivatives and adjuvants,

in this book he draws freely on the mass of relevant literature to illustrate key points in his argument. All anticonvulsants currently in use are surveyed.

To make the most of his drugs the doctor needs to know the details of their physical and chemical behaviour in human tissues: protein-binding and the fraction of 'free' drug, concentration in the various body fluids, enzyme induction and breakdown, competitive inhibition, changes in tissue response; or toxic effects on the nervous and other systems, interference with folate, electrolyte and water metabolism and with endocrine function—insight into these and similar events makes a science of the therapeutic art. Their study leads to those pharmacokinetic principles with which Dr Richens begins his book.

Chapters follow on the diagnosis and therapy of conventional types of epilepsy including the management of epileptic status. There is no dogmatism: the author is almost at fault in leaving the reader with too free a choice. He ends with two excellent chapters on the complications of therapy, drug interactions and iatrogenic disorders, and, finally, with an account of the planning and execution of a controlled clinical trial. His own trial of sodium valproate, subsequently published, was a model of its kind.

This book is a lesson in the art of scientific medicine with the measurement of drug levels playing a restrained but sometimes critical role. Perhaps Dr Richens will succeed, where *People with Epilepsy* failed, in reducing the number of fits per person per year by the simple device of measurement, and by persuading his contemporaries to measure likewise.

C. E. C. WELLS

ATLAS OF ELECTROENCEPHALOGRAPHY IN COMA AND CEREBRAL DEATH By Donald R. Bennett, John R. Hughes, Julius Korein, Jerome K. Merlis, and Cary Suter. (Pp. 254; illustrated; \$66.) Raven Press: New York. 1976.

This atlas is, in the words of the authors, an attempt to share their experience of a total of over 2000 EEGs recorded in patients admitted to a collaborative study of cerebral death by the National Institute of Neurological Diseases and Strokes. They hope it will be a useful reference for electroencephalographers, technologists, and other professional personnel dedicated to the care of critically ill patients, and an aid to surmounting difficulties encountered when recording EEGs outside the laboratory—that is, in the Intensive Care Unit. Of the 244 pages in this book, all but 20 contain full page illustrations of the EEGs in comatose patients, and those who are designated as showing electrocerebral silence. The book is divided into six chapters with a short introduction outlining the aims of the book,

and these I have already mentioned. The second chapter contains electroencephalographic criteria for electrocerebral silence which is largely a restatement of the minimal technical standards for EEG recording in cerebral death as outlined by the American EEG societies' ad hoc committee in 1969. In chapter 4 a total of 81 pages is devoted to full page illustrations of various types of artefact which may occur in an EEG recording, and more specifically where electrocerebral silence is being investigated. With a few exceptions, these are artefacts with which any trained electroencephalographer will be familiar, and the vast amount of space and paper devoted to that section is for the most part, unnecessary. Chapter 5 is headed 'The significance of electrocerebral silence' (ECS) to which one page of discussion is allotted, and the other 56 pages contain EEG recordings from a variety of individual cases showing this condition. The authors state in this chapter that if drug intoxication and hypothermia are excluded the presence of ECS usually indicates that death is imminent and occurs within one week of the first ECS record. This seems definite enough, but the authors go on to conclude that the significance of the ECS as indicative of the irreversibility of brain dysfunction must be evaluated by the clinician in relation to the patient's entire clinical picture, a statement with which I agree but which seems to contradict the previous one. Chapter 6 is devoted to the electroencephalogram in coma, and illustrates a number of EEG abnormalities occurring in various types of coma. The authors point out that the EEG abnormalities do not correlate with the depth of coma or with the neurological abnormalities, which is somewhat at odds with the statement in the preceding paragraph that once the limitations are recognised the EEG can be a useful aid in this condition. Sixty-six pages of EEGs are then presented from patients in coma. If, as I understand it, the message in this chapter is that the authors have found no correlation between their EEG findings and the depth of coma and neurological abnormalities in these patients, then I feel that the illustration of this negative correlation could have been shown much more briefly.

This book is exceptionally well bound, and the illustrations are clear and easily assimilable. The use of the EEG in coma and related state is, of course, a controversial and difficult subject. However, I find the conclusions in this book at the best, vague, and at times contradictory. The copious illustration of EEG abnormalities that do not correlate with the clinical condition and page after page of EEG artefact that should not be unfamiliar to the competent electroencephalographer is not what I would expect in a book retailing at this price.

J. P. BALLANTYNE

REVIEWS OF NEUROSCIENCE VOL. 1 Edited by Seymour Ehrenpreis and Irwin J. Kopin. (Pp. 351; illustrated; Dfl. 76.00, \$25.00.) North-Holland: Amsterdam. 1974.

The most elementary concept of anatomy used to suffice for the neurophysiologist and the anatomist could manage with the modicum of physiology he learned for 2nd MB. All this has changed since the second world war, with the rapid growth of electronmicroscopy, neurochemistry, and neuropharmacology. Psychology has become more of a science with recognition of a need for anatomical precision. Interdisciplinary collaboration is only fruitful if one scientist has a good grasp of the other disciplines. The result has been the growth in the USA of a new breed of investigators who regard themselves as neuroscientists rather than anatomists and physiologists, with their science founded on mathematics and physics rather than on medicine. Clinical neurologists and psychiatrists may therefore be chagrined to find how little of this volume will be familiar to them. Conversely, the chapters reward careful study by all interested in the biology of the nervous system, but will not make any contribution to the diagnosis or treatment of disease of the nervous system. However, this is only the first volume of a series and the reviewer has no doubt that the subjects covered will in course of time be necessary for the understanding of neuropathology. For instance, an interesting chapter on 'the making of a synapse' includes a good account of current concepts on the stimulus for axon growth, and the determinants for its highly specific synaptic connections. Another chapter on the synapse discusses the evidence for synapse-specific proteins and their possible role in synaptic connection and transmission.

Neurochemistry is well represented by chapters on deoxyribonucleotide synthesis and DNA in brain (with brief reference to the influence of nutritional factors, hormones, viruses, and tumours). The chapters on lipids and specific brain proteins will be difficult reading for most clinicians but these and a chapter on neurotransmitter-sensitive adenylate cyclase systems in the brain point the way to the neuropharmacology of the future.

The authors of all seven reviews are well known in their fields, and the editors are to be congratulated on making a good start in what promises to be a first class series. They will need to guard against the possibility that few neuroscientists will be in a position to read all the reviews critically.

J. A. SIMPSON