which merely an observation was made, rather than an explanation.

We agree that the biomechanical mechanism can explain the progressive myelopathy, beginning late in the post-operative course. However, it is hard to believe that myelopathy beginning five years or more following surgery can be caused by arachnoiditis. On the other hand, the possibility of spinal cord injury during operation is unlikely. The biomechanical mechanism of postoperative myelopathy, so well described by Mr Adams, can explain that the myelopathy develops more slowly after surgery of spinal stenosis and disc disease, rather than after intramedullary surgery.

We also agree with the great importance given by Mr Adams to the careful preoperative evaluation of the candidates for cervical spine surgery by conventional radiography. In addition, we advise pre- and postoperative magnetic resonance imaging (MRI) examinations of these patients. MRI has the advantage of demonstrating the spinal cord and its relation to the bony spinal canal, and is easier to recognise the problems of the postoperative spine and spinal cord. Further experience in this field is necessary to solve these problems.

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BOOK REVIEWS

Essentials of Clinical Neurology. By CARL H GUNDERSON. (Pp 550; Price \$69.00.) New York: Raven Press. 1989.

Dr Gunderson is chief of the Neurology Service at Walter Reed Army Medical Centre in Washington DC. In the preface to his new publication the author explains how it was that "brief handouts" to help his students became expanded over a period of 20 years to become, in 1982, his first book entitled *Quick Reference to Clinical Neurology* (J B Lippincott Co). The *Essentials of Clinical Neurology* represents a further expansion and revision of that work.

Dr Gunderson's stated aim is to avoid a book that espoused "to become encyclopaedic" but he hoped, rather, to "restrict the

material" to that which he "would like every medical student to have been exposed to during a four week clinical neurology rotation". (I presume he means by this "heard about" rather than "seen" because the subject index includes reference amongst others to such things as acid maltase deficiency, barognosia and Hollenhorst plaques.) The book is designed for the use of undergraduate, junior house officer or "practising physician" alike. A tall order? I rather think so—the many lists and tables do indeed read like handouts for undergraduates and I would doubt whether this approach is either comprehensive enough or sufficiently attractive in its literary style for the post-graduate. Indeed, it is rather military—the section on "Physical Examination" begins A. Inspection—1. The patient should disrobe (1).

Other chapters cover specific complaints (eg, The Dizzy and Deaf Patient), management of specific syndromes (Neuropathies and Stroke), for example, and selected diseases (eg Infections and Tumour). Whilst there is an immense amount of valuable information, indeed encyclopaedic in undergraduate terms, unfortunately there are also important omissions and, I think, errors. For example, routine examination of the upper limb omits the testing of muscle tone (page 10) and there is no mention of the characteristic pyramidal distribution of upper motor neurone weakness, only that "hemiparesis, quadriparesis or paraparesis" form the usual pattern. Patients who trip over often have spasticity, not "foot weakness" (page 67). Does muscle biopsy (page 48) only "occasionally differentiate" muscle disease from neuropathy? It is stated (on page 255) that "about 25 per cent of patients will have status epilepticus as their first symptom of epilepsy". Surely this is not true? The chapter on epilepsy, in fact, raises another problem with the book and that is that old and new nomenclature is mixed side by side.

Chapter 26 (Disorders of Myelin) closes with a few paragraphs on "Brachial Neuritis" (page 474). Nowadays called Neuralgic Amyotrophy or Shoulder-girdle Neuritis, this disorder was never, as stated, "attributed to the design of the British rucksack". It was indeed initially described during the Second World War but the majority of patients were serving in the United Kingdom at the time. Many sufferers were soldiers, but the authors of the original papers all noted the association of the condition with incidental operations, convalescence from infective illness or prophylactic inoculations. The close similarity to "serum neuritis" was also noted. The possibility that this disorder was an immune based demyelinating disease was recognised very early on—not recently, as implied. I don't think the condition ever spreads, as stated, to a leg, although there is a complimentary form of radiculopathy of "idiopathic" variety affecting the lumbo-sacral outflow.

I doubt whether the style of this book will attract many students or junior doctors in the UK. There is too much for the undergraduate, and the book is not sufficiently comprehensive or accurate for the discerning postgraduate. I am sure the latter would be irritated by the numbering and lettering of every paragraph. I think they are more likely to be encouraged by the good selection of more attractive, compact text books of this kind already available with further reference to be made to the larger comprehensive text.

J A SPILLANE

Comprehensive Neurologic Rehabilitation Vol. 1 The Management of High Quadriplegia. Edited by: G WHITENECK, C ADLER, R E CARTER, D P LAMMERTSE, S MANLEY, R MENTER, K A WAGNER, C WILMOT. New York: Demos Publications (pp 367; Price \$69.95) 1989.

Patients with spinal injuries have only been kept alive since the development of spinal centres in 1944 at the end of the Second World War. Initially only paraplegic patients survived but with improved treatment morbidity and mortality decreased and paraplegic patients began to experience a nearly normal life expectancy. Initially few tetraplegic patients were admitted to spinal centres and those that were, died soon after injury. However, following the same principles tetraplegic patients were kept alive and since 1980 even those on ventilators have been kept alive and discharged home.

In the rehabilitation of high quadriplegics the United States is ahead of the United Kingdom and this book reports the combined experience of centres that are leading the world in this field. The Craig Hospital, Santa Clara Valley Medical Center and the Institute of Rehabilitation and Research (Houston, Texas) have information on 216 individuals who have been discharged home, many of whom were on ventilators, an extraordinary record of achievement.

The priority in patient care in the United States differs from that in the United Kingdom in that patients are admitted to neurological and neurotrauma centres initially and only some weeks later come to rehabilitation centres; thus the authors' experience of the initial treatment of spinal injury is limited—in the United Kingdom patients are admitted immediately to spinal centres.

The book is split into four sections, Acute Care, Rehabilitation, Discharge Planning and The Real World. Unfortunately the chapters on acute care do not deal with the associated complications found in some 75% of cases, the management of head injuries, the problem of hypercalcaemia and temperature regulation. In mentioning the various forms of anticoagulation they suggest that the patient should be anticoagulated at 1.5 times the control level, a view that would not gain universal acceptance.

Also, the description of a teardrop fracture being due to an extension injury is inaccurate "The Radiograph may show a posterior displacement of the superior vertebral body on the inferior one, but more often one sees a separation of the disk space at one motion segment or an avulsion fracture of the anterior superior part of the inferior vertebrae. This is called a teardrop fracture." A teardrop fracture is a crush fracture with extrusion of fragment. On the other hand the chapters by Carter on Available Respiratory Options, Anderson on Psychological Issues, the chapters on the medico-legal aspects and the whole approach to discharge home, are excellent. The chapter on the long term outlook, though short, is an extraordinary tribute to care whereby after nine years 63% of their initial group of respiratory dependent patients are still alive. This is an exceptional piece of work.

The whole book is fragmented with respiration management dotted about in different places. It does not follow conventional presentation and there is no discussion of the fundamental problems of chest wall movement, postural problems associated

with ventilation or control of the reflex activity of the intercostal muscles. Altogether this is a stimulating and controversial book. It would be of use to those versed in the management of spinal injuries but not to be recommended to the person who has only occasional dealings with high quadriplegic patients. I look forward to the second edition in which these faults can be remedied.

JR SILVER

Evoked Potentials in Clinical Medicine. 2nd Edition. Edited by K H CHIAPPA. (Pp 647; Price: \$72.50). New York: Raven Press, 1989.

The second edition of Keith Chiappa's book amply demonstrates the growth of work on evoked potentials (EP) in clinical medicine since the original publication in 1983. *Evoked potentials in Clinical Medicine* is now a large, well illustrated and extensively referenced compendium of information. It is exceptionally thorough on the areas covered, even though not all modern applications are discussed. The reader is referred to the excellent 1987 Raven Press volume by Marc Nuwer on *Evoked Potential Monitoring in the Operating Room*, for example, and there is only limited cover of electroretinography, none of flash visual or middle latency auditory evoked potentials. Mapping is, quite reasonably, virtually ignored. The sections on the main groups of investigation have all grown appreciably and the illustrations now number almost 200. Indeed, one has the feeling that almost every type of sensory response has been recorded—giving us considerable biological insight—with supportive data based upon large studies permitting statistical and intellectual satisfaction.

The sections are well organised, starting with the principles of EPs, then proceeding to cover separately the methodology, interpretation and references for pattern-shift visual, brain stem auditory and short-latency somatosensory EPs (all by Chiappa alone). This is followed by contributions on short-latency somatosensory EPs in peripheral nerve lesions, plexopathies, radiculopathies and spinal cord trauma (Con Yiannikas), somatosensory EPs in paediatrics (Susan Levy); motor EPs (Philip King and Chiappa); endogenous event-related potentials (Barry Oken); statistics for EPs (Oken); advanced techniques of EPs acquisition and processing (Joseph Sgro, Ronald Emerson and Paul Stanton).

This book is something of a concordance for EPs. There are about 2000, mostly recent, references listed (in very small print). It is a bit like browsing through Scandinavian telephone directories which give the occupation as well as the name—one is tempted to count which name gets the most citations. It is good to see a reasonably non-parochial cover of the literature even if a rather uncritical one. Under the heading of brain death many reports are mentioned but the rather bland citation means that one does not really know whether EPs have a place in the evaluation of brain death or not or, indeed, what the author thinks about it. Medical audit has encouraged us to reconsider the contribution of special investigations and in particular to appraise how various procedures benefit the individual patient. Clinical neurophysiologists are general enthusiastic about new tests which allow

demonstration of normal and abnormal physiological processes and are both specific and sensitive to particular pathologies. Thus it is encouraging to read a sharp section on cost-effectiveness of EPs, with swingeing attacks on overuse and misuse (see Chiappa and Young, *Arch Neurol* 1985;42:76–7).

This book is at its best on how to set up equipment and carry out tests, on statistics and some advanced techniques including the useful Bayesian inference methods, and for its up to date references. There are few infelicities or oddities but it was curious to find magnetic stimulation mentioned in the context of prevention of pulmonary emboli by virtue of its ability to cause rhythmic contraction of calf muscles. There are a few typographical errors—perhaps the best being Caussian for Casserian on page 434. It is welcome to note that the author generously acknowledges the help of his co-workers, particularly Kathleen Lentz, “who, from an academic background in Chinese literature became an expert on evoked potentials. She accomplished the library research, edited the manuscript scrupulously, performed all of the art work on the figures, in addition to sticking with the project 18 months longer than she originally promised.” Professor Chiappa and his colleagues have indeed laboured hard and long to give us a worthwhile book.

PAMELA PRIOR

The Motor Cortex. By HIROSHI ASANUMA. (Pp 201; Price: \$81.50), New York. Raven Press, 1989.

Understanding of the functional and anatomical processes underlying motor control has, for long, been one of the fundamental problems in neurology and neuroscience. The foundations of clinical neurology itself rest on observational and philosophical concepts of brain function derived from disorders of motor control, as observed in patients with stroke, epilepsy, and other diseases of the nervous system. In this context the observations of Hughlings Jackson and Ferrier were particularly important. One of the most striking problems, perceived by the earlier investigators, is that the anatomical structure of the brain in different living organisms is organised in seemingly different fashion. For example, the complex, highly developed, and specialised frontal cortex of primates, recognised early in the development of concepts of neuroscience as being involved especially with motor expression, is not reflected in similar development in other species, for example birds and reptiles. Indeed, other mammals such as the rat, likewise, do not show this frontal specialisation yet all these species exhibit motor control that is, in its own way, the equal of that demonstrated by the primate.

Asanuma is one of a small number of modern investigators who have developed seminal ideas in relation to these problems and in this book, published forty years after he first began to study the motor system, he sets out some of the major current problems in this field of research. The book is attractively produced, written with economy of style, consisting of 31 short chapters. The book is generally organised in the historical context so that new concepts are introduced, chapter by chapter, in temporal order and the

new hypotheses and experiments derived from each major advance thus fall naturally into context. For the enquiring reader, perhaps without a major background in motor control theory this is a format that is comfortable. Although the book is not overburdened with references most of the key studies of the last thirty years are cited and their major conclusions clearly stated. As might be expected the book is perhaps strongest in its first half when the older studies of the relation between motor cortex, muscle spindles and corticospinal systems are reviewed, and least convincing in the closing chapters where the major problem of the anatomical and physiological basis of motor learning, motor memory, and fluidity of motor programming are addressed. These matters, of course, are still controversial and this controversy is clearly to be seen in the discussion. Dr Asanuma is to be congratulated in producing such a stimulating account of current problems in this area. The book is a valuable summary and introduction for all those, and most neurologists, with an interest in motor control, both in the laboratory, and in the clinic.

M SWASH

Molecular Genetics of Muscle Disease—Duchenne and Other Dystrophies. British Medical Bulletin Vol. 45 No. 3. Edited by A J BULLER, J GOODFELLOW, J M NEWSOM-DAVIES. (Pp 300. Illustrated; Price: £22.50.) Edinburgh: Churchill Livingstone, 1989.

The days when the clinician in any medical discipline could ignore with impunity the advances in the basic sciences underpinning his or her special interest are long gone. Certainly the quite extraordinary advances in our understanding of the molecular biology of the inherited neuromuscular diseases made during the last decade impact directly on the everyday management of patients and their families. In view of this, the advent of a new British Medical Bulletin dedicated to the muscular dystrophies at the end of this decade is both timely and of practical advantage to the “jobbing” clinician, neurologist, paediatrician or clinical geneticist, even if the last-named may be the only one to appreciate the minutiae of recombinant DNA technology!

The detailed analysis of the various techniques employed in the study of the Xp 21 deletion myopathies is of particular value to those involved in genetic counselling, carrier detection and antenatal diagnosis in affected families and relatives of sporadic cases. However it has become clear that the chapter on the Xp 21 deletion is by no means closed. In particular, a number of original (peer-reviewed) contributions in the literature since the Bulletin was published have shown that dystrophin is *not* the absolute discriminator in putative cases of either DMD or BMD that its early promise suggested. Accordingly the results of ongoing studies of large patient populations are awaited with interest.

Among the many other impressive contributions in this volume, the review of the molecular genetics of myotonic dystrophy by Professor Harper and his colleague and that of Professor Emery on his own disease caught the eye. However the discussion of molecular