

Neural Prostheses: Replacing Motor Function After Disease or Disability. Edited by R B STEN, P H PECKHAM and D P POPOVIC. (Pp 345; Price: £55.00 H/bk). 1992. Oxford University Press. ISBN 0-19-507216-2.

Technological developments take about 20 years to reach the marketplace. The first functional neuromuscular stimulator was used in 1961 so why haven't we got useable products to restore motor function after spinal cord injury or stroke? This book will inform you, not that it sets out to answer the above question, but it is a comprehensive state-of-the-art review with 15 chapters and 20 contributors.

There is a comprehensive review of models of muscle activity but muscle models do not feature much in the work of designers and engineers of functional electrical stimulation (FES) systems. Possibly this is because models are designed to predict muscle activity in limited laboratory situations and over strictly limited ranges and speeds of movement. Controlled lengthening features very little in models but is an important function of muscle in movement.

As soon as engineers realised that a contracting muscle normally feeds back information about itself and its joints, they began to implement various feedbacks into FES systems, with improved results. Feedback however means sensors. A review of mechanical sensors concludes that developments in flexible microelectronic devices made from polymers with arrays of silicon chips will perhaps provide a sensory glove to operate with hand control FES. There is, however, an alternative strategy. Quadruplegics and hemiplegics have intact skin sensors so why not try to tap into their signals in the peripheral nerves? This is technically feasible and a consideration of the practicality of it in man appears in Chapter 5.

This leads to another fundamental debate that runs through several chapters—should stimulating electrodes be implanted and what should be their design? There is no doubt that implantation is safe and reasonably reliable but will it always work? It works well enough for cardiac pacing and as root stimulation for micturition but hand function requires such a variety of different loci and degrees of stimulation that getting every aspect to function well becomes a superhuman effort.

Walking should be easier to control than the many different hand functions. Multichannel stimulation to produce stepping movements has been unkindly called "electronic puppetry". The devices that seem to work are cruder and simpler than the designs to which engineers aspire. There are hybrid devices of mixed mechanical and electrical function and the simple peroneal nerve stimulator for footdrop. Both these operate close to the limit of patient "gadget tolerance". Most other devices are well above this threshold and only used by the patient when the doctor or engineer insists.

The final chapter on the transfer of technology from laboratory to the real world gives a useful insight into how corporations develop, manufacture and market devices. Some fascinating "case histories" are given

and the legal framework within which one must operate is set out. The authors are from the North American Continent. What will strike the British reader is how few of the right conditions exist in Britain. This type of research requires very close working relationships between engineers, physiologists and clinicians. Which of our Universities or Trust Hospitals has the facility for this?

This is a very nicely produced book. The editors have done well to cover the field in breadth and depth. It seems that the really juicy prize of FES making significant advances in motor rehabilitation is almost within our grasp but, like Tantalus, we realise it is still just out of reach.

EM SEDGWICK

Alzheimer's Disease: Advances in Clinical and Basic Research. Edited by B CORAIN, K IQBAL, M NICOLINI, B WINBLAD, H WISNIEWSKI and P ZATTA. 1993. (Pp 633 Illustrated; Price: £110.00). Chichester, John Wiley & Sons Ltd. ISBN 0-471-93840-8.

This book contains brief chapters based on presentations at the Third International Conference on Alzheimer's Disease and related disorders held in Padua in July 1992. The 73 brief chapters are arranged in sections ranging from basic biochemical defects in Alzheimer's disease to care giving for the patient and family. As a report of an international meeting this book inevitably seeks to cover a large number of topics, none of them very deeply. Nevertheless, all the major researchers in the Alzheimer field have contributed in one form or another and certain sections including those on mechanisms of cell death and genetic factors are interesting and stimulating. One of these is a section by Cotman *et al* on neuronal death in Alzheimer's disease which discusses the possible contribution of apoptosis to neurodegenerative disorders. There is some evidence that β amyloid may not only enhance the susceptibility to apoptosis as well as necrosis but also enhance the cells' vulnerability to glutamate induced toxicity. This concept of multifactorial causation of cell death in Alzheimer's disease is likely to be paralleled in other neurodegenerative disorders, such as Parkinson's disease. Another valuable contribution is the review by Stanley Prusiner on prion disease.

Are published transactions of meetings useful? At best they are a fairly rapidly published series of brief chapter reviews providing relatively up-to-date information, focused usually on a high number of related topics. At worst, they are a vehicle for publication of some rather questionable data in a number of short and superficial articles. Overall, this book tends more towards the former model. It will provide a useful summary of a variety of topics, many of which will be of use to the researcher. This is not a book for those looking for a succinct and comprehensive review.

AHV SCHAPIRA

Management of the Acutely Ill Neurological Patient. Edited by JAMES C GROTTA. (Pp 192; Price: £11.95). 1993. Edinburgh, Churchill Livingstone. ISBN 0-443-08870-5.

This multi-author book is written for "emergency room physicians, non-neurologists and intensivists" who look after acutely ill neurological patients. The editor, who has written an excellent chapter on acute stroke, points out the direction the management of neurological problems is taking. More elective investigations are being undertaken on an out-patient basis so that now there is an increasing need for the provision of care often in an intensive care unit, for the acutely ill neurological patient. Perhaps in the future such patients will be managed by a multi-disciplinary team.

The book covers a number of common clinical problems: epilepsy and status, neuromuscular emergencies, brain death, head injuries, infections, intracranial pressure and cerebral resuscitation—to name some. Like many multi-author works some topics appear better covered. I found the chapters on head injuries and neuromuscular emergencies very helpful, but spinal cord problems are only discussed following acute injury. Surely an acute myelitis or vascular cord lesion deserves mention. There is no discussion of encephalitis or of acute demyelination. The last may affect the brain stem acutely with life-threatening bulbar problems. I found the section on metabolic disturbances patchy but enjoyed the chapter on difficult behaviour. Some useful charts are used but surprisingly only two diagrams and four pictures (two of apparatus and two scans showing spinal injuries). The text is written for an American reader: this is clear in the discussion on the withdrawal of life support. There are useful comments about the role of the EEG and evoked potentials to monitor patients with brain damage.

Overall this book succeeds. It is easy to read, it contains a wealth of helpful information and the price is modest so that its intended readers should benefit from its purchase. I recommend it.

T FOWLER

SHORT NOTICES

Physical Aspects of Stereotactic Radiosurgery. Edited by MARK H PHILLIPS. (Pp 286 Illustrated; Price: \$59.50). 1993. New York, Plenum Publishing Corp. ISBN 0-306-44535-2

Alzheimer's Disease and Related Disorders Series: Advances in the Biosciences Vol 87. Edited by M NICOLINI, P F ZATTA and B CORAIN. (Pp 474 Illustrated; Price: £90.00, \$144.00). 1993. Oxford, Pergamon Press Ltd. ISBN 0-08-042330-2