of left shoulder abduction.

My third concern with the study is that the authors' results differ from those I have obtained and reported elsewhere.⁴ Although the authors' work is, in many more ways, more comprehensive than my own, the two issues addressed above (correction for gravity and prevention of substitution) were controlled in my paper. The result of my study of knee extension was that relative endurance, which the authors seem also to be testing, was better in patients than in normal subjects. As the patients were weaker than the normal subjects, I suggested that force production in the patients decreased to some threshold level in less time or in fewer contractions. This, I proposed, was because the patients were closer to the threshold level to start with, not because their rate of decline in force production (Fatigue index) was any greater.

Whether the issues I have addressed are truly critical, when using hand-held dynamometers, to test fatigue, awaits verification. In the mean time the authors and other readers of their work may wish to exercise caution in inferring too much from the authors' findings.

RICHARD BOHANNON

Department of Physical Therapy,
Southeastern Regional Rehabilitation Center,
Fayetteville,
NC 28302 U.S.A.

References

- 1 Nicklin J, Karni Y, Wiles CM. Shoulder abduction fatigability. *J Neurol Neurosurg Psychiatry* 1987;**50**:423-7.

- 2 Winter DA, Wells RP, Orr GW. Errors in the use of isokinetic dynamometers. *Eur J Applied Physiol* 1981;**46**:397-408.
- 3 Bohannon RW. Test-retest reliability of hand-held dynamometry during a single session of strength assessment. *Phys Ther* 1986;**66**:206-9.
- 4 Bohannon RW. Relative dynamic muscular endurance of patients with neuromuscular disorders and of healthy matched control subjects. *Phys Ther* 1987;**67**:18-20.

Nicklin et al reply

We are grateful to Dr Bohannon for his helpful comments. We have in fact previously used the method which he illustrates to estimate the force required to maintain a limb part against gravity as a fraction of maximum voluntary force against gravity plus the effect of gravity: in seven muscle groups measured in each of two subjects the fraction varied from about 0.03 (for example, in elbow flexion) to in excess of 0.3 (for neck flexion) (unpublished data). We agree that it would be more accurate to estimate the effect of gravity particularly when different muscle groups are to be compared or when large changes in strength over time are in prospect. The results in the cases illustrated in our paper would scarcely be influenced by these considerations however.

It is true that shoulder abduction is more difficult to test with a hand held dynamometer than several other groups. The supine position with gravity eliminated seems particularly unsatisfactory in strong subjects compared with the sitting position using this technique. Shoulder abduction was chosen for our test because it is an action commonly examined clinically for

fatiguability. In addition we have an impression, notably in the myasthenias, of a selective response of certain muscle groups to treatment; hence it should not be assumed that similar results would necessarily be obtained with other (more "easily testable") groups. Further work comparing fatigability of different muscle groups in the same patient responding to treatment may be illuminating. We do not think that a minor truncal tilt would have significantly influenced our results particularly since we found no real difference in fatigue index between 90° and 60° abduction but particular attention needs to be paid by the tester to careful fixation proximal to the shoulder joint.

We have not found improved endurance in patients except in the notable case of hypothyroidism¹ provided that the initial contractions are not tentative due to lack of practice or discomfort. On the contrary we found no simple correlation between fatigue and muscle weakness in this test. Of course fatigue index depends critically on the forces of the first two contractions in the series and as may be seen from our fig 2 the pattern of these differs slightly (but significantly) for males and females. We have not as yet studied whether a similar trend occurs in patients.

J NICKLIN
Y KARNI
CM WILES

Reference

- 1 Wiles CM, Young A, Jones DA, Edwards RHT. Muscle relaxation rate, fibre type composition and energy turnover in hyper- and hypo-thyroid patients. *Clin Sci* 1979;**57**:375-84.

Book reviews

Neurological Skills: A Guide to Examination and Management in Neurology. By MJG Harrison. (Pp 132; £15.00.) Guildford: Butterworth Scientific Ltd, 1986.

The student or young postgraduate in training has today an abundant choice of textbooks and sections in textbooks devoted to history taking, examination and the appraisal of common presenting symptoms of nervous disease.

That such texts are even more important than they were a generation ago is evident in

the obvious decline in their clinical skills and diagnostic discernment, not only in neurology but in internal medicine. This reflects on their mentors and the low priority accorded to neurological teaching by certain professors of medicine who determine curricula. And yet, how often we see patients with grave, acute neurological illness in whom there is no diagnostic abnormality of EEG, CSF, evoked potentials and scanning who perforce are managed by the application of clinical techniques. How often do we see NHS funds squandered on useless "routine" tests in uncritical, ill-directed investigations of blackouts, spastic paraparesis or polyneuropathy? The failure to apply clinical

skills to narrow the investigation of organic nervous disease into the correct channel, with correspondingly richer dividends is sadly commonplace, justifying further attempts—such as Dr Michael Harrison's book—to rectify it.

This text in paperback covers is remarkably succinct (125 pages), yet is more than adequate for the undergraduate. It is divided into three sections: first, history and examination; second, common problems—which include headache, attacks of unconsciousness, memory loss, visual symptoms, vertigo, deafness, pain, muscle weakness; and third, "conditions". This section includes concise, possibly too concise

accounts of: tumours, head injury, strokes, Parkinson's disease, multiple sclerosis, peripheral neuropathy, muscle disease, infections and so forth.

The text is to the point and lucid. It abounds with useful tables and diagrams which the student will not find easily elsewhere, for example types of nystagmus, features of epilepsy and syncope, causes of cerebellar impairment, ophthalmoplegias, neuropsychological deficits, the mini-mental state examination and the Glasgow coma scale.

There are good quality clinical photographs of retinopathies and of clinical testing of muscles, and there are flow charts for headache, dementia and vertigo which are fashionable if of over-rated value in teaching. The book is clearly printed in two-column format and the illustrations and tables are excellent.

My only criticism apart from a few type-setting errors (for example the plantar response is described as "exterior" for extensor p.34; 'parasthesiae' Fig 2.9) is that the last section is too brief to be satisfactory; its contents are better dealt with in the short neurology or general medical textbook than in a volume dedicated to clinical skills. Expansion of the other two sections and brief descriptions of the commonly performed neurological investigations could usefully fill the space if it were omitted in future editions.

I would strongly commend this to all medical students and postgraduates. Michael Harrison is to be congratulated on producing a book stamped with a distinctive personal style; it will make a significant dent in the marketing of its competitors. I look forward to the next edition.

JMS PEARCE

Epilepsy; Electroclinical Syndromes. (*Clinical Medicine and the Nervous System series.*) Edited by Hans Luders, Ronald P Lesser. (Pp 399; £69.00.) London: Springer-Verlag, 1987.

This volume is the second in the *Clinical Medicine and the Nervous System* series, and is divided into fourteen chapters. As is almost inevitable nowadays, the first chapter is concerned with the classification of epileptic seizures and epileptic syndromes, and the remainder deal with a specific seizure type or syndrome. Thus, there are chapters on absences seizures, tonic clonic seizures, simple partial seizures, complex partial seizures, and on Lennox-Gastaut syndrome,

infantile spasms, febrile seizures, progressive myoclonic epilepsy and so on. This is a customary approach, and in the last few years there has been a plethora of books and articles covering the same general areas. This imparts to the work a strong sense of déjà vu. Nevertheless, most of the chapters are well written, authoritative and a good source of reference material, and the high quality of the text certainly makes up for a lack of originality. The editors are doyens of the epilepsy service of the Cleveland Clinic and both originally trained as electroencephalographers, and the book reflects both these biases. Cleveland Clinic thinking pervades the text, a demonstration of the important contribution of the centre to current teaching in epilepsy. The EEG is assigned a central role in each chapter, which is entirely appropriate as the current classifications of epilepsy rely heavily on EEG findings. Most chapters are in the form of orthodox general reviews, and cover their subjects comprehensively. The most unconventional and the most contentious is that on *Focal status epilepticus: modern concepts*, by Delgado Escueta and Treiman, in which a provocative classification of complex partial status is proposed. The book is well edited, and well organised, and also conspicuously well produced. The figures (mostly EEG) are well chosen. The volume is expensive, however, and I suspect most neurologists will manage without a personal copy.

SIMON SHORVON

Focal Peripheral Neuropathies. By John D Stewart. (Pp 420; \$55.00.) New York: Elsevier Science Publishers. 1987.

The disturbances of peripheral nerve, particularly the compression and entrapment syndromes, are a frequent cause for referral to neurologists and electromyographers. In this monograph the author approaches the many disorders affecting peripheral nerve from the spinal root to the terminal digital branches. The nerves and plexi are described from the accessory nerve to the sacral nerve. It would have been of value to discuss the facial nerve.

The pathological mechanisms affecting peripheral nerves are well described. There is an introductory section on electromyography but in spite of the fact that the author is a director of an EMG laboratory no values are given, either for normals or for the various pathological disorders. Although the appropriate references are

given, this deficiency obliges the reader to consult those references or another text. There is also no discussion of traumatic injuries to nerve or surgical repair.

The strong points of the book are the well presented tables and illustrations and the large number of references at the end of each chapter. In addition treatment of the individual dysfunctions is well discussed. A useful final chapter concerns the mechanism and treatment of neuropathic pain.

The book is recommended as a useful guide for the diagnosis and treatment of these disorders.

MS SCHWARTZ

Hemodynamic Aspects of Cerebral Angiomas. (*Acta Neurochirurgica* [Suppl. 37].) By Werner Hassler. (Pp 136; DM 150.00). Vienna: Springer-Verlag, 1986.

This book describes the results of Doppler flow measurements in experimental and clinical arteriovenous fistulas. Electromagnetic flow meters and the laser Doppler technique for measurement of cerebral perfusion are also used effectively to evaluate the haemodynamic changes that follow the construction of experimental fistulae of the carotid and jugular vessels. The effects of acute or delayed occlusion of these experimental fistulae on systemic blood pressure are to produce an increase in mean arterial blood pressure, but with preservation of auto-regulation. Angiographic and transcranial Doppler flow measurements are described pre- and post-operatively in a large number of patients. The intra-operative Doppler and intravascular pressure recordings in five patients are unique and revealed a 53.5% increase in proximal intravascular pressure and normal CO₂ reactivity after arteriovenous malformation excision. Post-operative hyperaemia was seldom seen (only one patient in the whole series) and the concept of normal perfusion pressure break through is therefore challenged, although staged removal of the lesion with embolisation is described, and this may limit the acute rise in proximal intravascular pressure that may occur with larger arteriovenous malformations.

There are a large number of illustrations and individual case reports which make interesting reading. The text is supplemented by an extensive and up to date bibliography which should appeal to all those who are called upon to deal surgically and radiologically with these lesions.

AD MENDELOW