is now accepted as a routine form of neurosurgical treatment. In large measure this is due to the pioneering work and industrious follow through of Irving Cooper. As so often before in neurophysiology, the detailed observations of clinicians have led to a new evaluation of the concepts of motor control. Indeed the term 'extra-pyramidal system' hardly appears in the book.

There is an interesting and valuable section on the pathophysiology of hypertonus and hyperkinesis. Cooper's views on tremor are personal. They resemble that proposed by the reviewer but many will feel that the role of the cerebellum in resting tremor remains in doubt.

There is a synoptic review of the author's experience of the surgical treatment of Parkinson's disease, intention tremor, dystonia, hemiballismus, hemichorea, and the dyskinesias including valuable practical details.

A feature of the book is the use of superimposed serial tracings of cinematographic records to illustrate movement disorders before and after surgery. These drawings by Mary Lorenc provide wonderful teaching material. Macdonald Critchley has provided a concise historical foreword to a book which is a landmark in neurology.

J. A. SIMPSON

A STEREOTAXIC ATLAS OF THE HUMAN THALAMUS AND ADJACENT STRUCTURES By J. Andrew and E. S. Watkins. (Pp. ix + 257; £8.) Williams and Wilkins: Baltimore. 1969.

This volume is a very welcome addition to the atlases already available because it is a statistical approach to the variability of the thalamus and adjacent structures. It will be of practical usefulness to the surgeon and, indeed, grew from a need to determine the variability in size and position of the centro-medianum nucleus in which stereotaxic lesions were to be placed in the treatment of intractable pain. With the accumulation of considerable information, other thalamic nuclei, the borders of the thalamus, and related structures of importance in stereotaxic surgery were also included in the variability study. The method of preparation of the 38 cerebral hemispheres used for the initial studies on the reference points is described. The reasons for selecting the postero-inferior margin of the foramen of Monro and the posterior commissure in preference to other reference points are given. Twenty-six hemispheres from 14 brains were selected in the preparation of 1 mm coronal slices, from which the measurements were made for the statistical analysis of the nuclear and other structures. It is important to realize that these measurements were made of the most medial, lateral, superior, inferior, anterior, and posterior limits of each structure and not of its total outline. The first of the two main sections of the book deals with variability and probability studies of many structures including the main thalamic nuclei, the sub-thalamic nucleus, substantia nigra, red nucleus, zona incerta, the geniculate bodies, amygdala, globus pallidus, and the internal capsule. Coronal and sagittal variability profiles of each structure are given at the level of peak incidence to show the mean limits relative to the original reference points.

The second main part of the book consists of an atlas of line drawings and photographs. The line drawings are

based on the statistical analysis. However, it is not immediately clear how the continuous outline of each structure was derived, particularly for the more complex shapes. Both coronal and sagittal line drawings are constructed and are displayed along with appropriate photomicrographs. The authors point out that the line drawings provide only a general guide for the selection of coordinates for target points, and that reference to the appropriate variability studies should always be made.

The terminology used is a modified version of Hassler's classification.

The book will be of considerable value to the stereotaxic surgeon by providing statistical information concerning the limits of each structure in relation to the basic reference points. It will enable him to select the coordinates for a target with predictable accuracy. However, the precise localization of the structure in an individual patient must incorporate other methods—for example, electrophysiological techniques—but they are outside the scope of this useful book.

J. W. TURNER

NEUROLOGICAL ANATOMY IN RELATION TO CLINICAL MEDICINE 2nd edition By A. Brodal. (Pp. xx + 807; illustrated; £5.) Oxford University Press: New York, London & Toronto. 1969.

As it is 20 years since Brodal's *Neuroanatomy* first appeared, the second edition is virtually a new book (including most of the references). It does not replace standard textbooks on the gross anatomy of the CNS, but every neurologist or experimental neurophysiologist should own this one because of its unique qualities. The author has contrived to present an amazing amount of detail about the connections within the nervous system without losing the reader in detail or obscuring the functional significance. Indeed, the correlation between structure and function and the clinical implications are constantly stressed. Conclusions which are tentative or unconfirmed in the human are suitably indicated.

Naturally, the sections on the reticular formation, vestibular system, cerebellum, and cranial nerves are outstanding, but the whole book is good. Many will share Brodal's feelings about 'the limbic system'.

This is a book to buy for frequent reference. It is worth every penny of its cost.

J. A. SIMPSON

THE MECHANICAL BASIS OF RESPIRATION By Richard M. Peters (Pp. 393; illustrated; £7.10s.) J. and A. Churchill: London. 1970.

This book is written by a thoracic surgeon primarily for colleagues in the same and allied fields. He deals with problems of blood gases and acid-base balance, but one of his principal interests is in the mechanics of pulmonary function, how the lungs move, what the compliance and air-way resistance are due to and what alters them, what determines distribution of gas in the lungs, and what problems affect expiration more than inspiration. The chemical and reflex control of the respiration, the work involved in breathing and the effect of age, chest injury, and lung disease on pulmonary function are also described. There is a chapter on respirators in which the author

makes plain how much easier artificial respiration is when respiratory failure is due to neuromuscular disease than when it is due to disease of the lungs. The style is simple, almost conversational, and there are ample illustrations which serve to demonstrate graphically problems which may be difficult to describe succinctly in the text. Laplace's law governs the pressure inside a bubble which an alveolus closely resembles, and the surfactant, without which lungs will not expand, affects the working of this law in the lungs. The relationship can be difficult to explain, but the author achieves it well with a diagram of two hands squeezing two balloons. He has a similar facility for illustrating other problems. References for each chapter are limited but include most of the basic work. The book can be recommended as a valuable introduction to the subject.

J. M. K. SPALDING

NEURAL REGULATION OF FOOD AND WATER INTAKE *Annals of the New York Academy of Sciences* (1969), 157, 531-1216. Edited by Marc Krauss.

This volume is the result of a conference held by the New York Academy of Sciences in February 1967. There was therefore a delay of over two years in its production, which means that the volume starts by being somewhat out-of-date. The *Annals of the New York Academy of Sciences* have become recognized as important volumes as they bring together original contributions from very many authors in the field of the conference they report: this volume is no exception. It is a valuable collection of nearly 40 articles from workers in the field of animal neurophysiology related to food and water intake and their regulation, and will be an important source of reference for laboratory research workers with this interest. It is a pity that there is no author or subject index.

RALPH H. JOHNSON

OPERATIVE NEUROSURGERY Vol. 2. Posterior Fossa, Spinal Cord and Peripheral Nerve Disease. By Ludwig G. Kempe. (Pp. viii + 281; 290 figures; \$48.40.) Springer: Berlin. 1970.

Tradition decrees that textbooks of operative surgery should show idealized exposures with a complete absence of blood, fat, and fascia, and this is an impeccably produced book of that kind. The pictures are very clear with a liberal use of colour where necessary. The text is less happy both in arrangement and content. It comes as a continuous narrative before each set of pictures—many words could have been spared, and pages too, if the commentary had been fitted around the plates in place of legends. As to content, its dogmatism must limit the book's appeal beyond the immediate sphere of influence of the author, for we are offered no alternatives and no references to the literature. Moreover, the author has not been able to resist diversions into diagnosis, and in places even includes anecdotal references to individual cases. These are out of place in such a book, in which text should be kept to an absolute minimum. At its price, it is difficult to see it having a wide market, the more so as a third of this volume is taken up with surgery of peripheral nerves and the sympathetic chain—procedures not commonly regarded as neurosurgical, at least in Britain.

BRYAN JENNETT

SPINAL CORD INJURIES Edited by Daniel Ruge. (Pp. x + 226; 56 figures.) Thomas: Springfield. 1969.

This is a well-produced book covering most aspects of the multidisciplinary field of spinal cord trauma. However, it is not, as is mentioned in the Preface, 'a complete medical-surgical approach'.

Anatomy, physiology, and pathology of the spine in relation to trauma are discussed in a simple, brief way, and there are line drawings, but no radiographs or photographs. There is a balanced account of the main surgical aspects of therapy, although this reviewer feels that there are even fewer indications for laminectomy. The opinions of the 13 authors are not illustrated by statistics.

There are important chapters on some of the medical aspects of spinal cord injury, and on pain and spasticity. Rehabilitation receives the emphasis it deserves, and there is an excellent section on the management of the paralysed hand.

The book can be recommended as a suitable primer for all doctors involved in the field of spinal cord trauma, and indeed of spinal paralysis.

PHILLIP HARRIS

STUDIES IN NEUROLOGY By Sir Charles Symonds. (Pp. vi + 344; illustrated; £4.) Oxford University Press: London. 1970.

It is not clear whether it was just a happy coincidence that the publication of this remarkable volume of selected reprinted papers appeared just before the 80th birthday of Sir Charles Symonds. In any case, the Oxford University Press are to be congratulated on a most felicitous and appropriate accomplishment that compares well with the more ambitious volumes produced under the same title by Sir Henry Head in 1920. The book begins with a 23-page autobiographical introduction in which Sir Charles relates his early training in neurology, his stimulus from a meeting with Adrian in the first world war, his experiences in Guy's Hospital, his visits to Baltimore and Boston as travelling Fellow, early days on the staff of the National Hospital, his later interlude as consultant to the Royal Air Force, and his part in setting up the St. Hugh's Hospital for Head Injuries. There are lively reminiscences of Arthur Hurst, Adolf Meyer, Cushing, Holmes, Wilson, Cairns, Greenfield, and others. There is much of historical interest in this memoir of one who played a leading part in the development of neurological medicine as an independent speciality.

Sir Charles has chosen 21 papers and two memorial addresses (Greenfield, Russell Brain) to be reprinted. The choice is excellent, grouped under the several headings of vascular accidents, epileptic phenomena, head injury, venous thrombosis, headache, psychological disorder; with single papers on high spinal compression, vertigo and recurrent cranial nerve palsies. There is also a complete bibliography.

All the reprints are essays in the best style of English clinical investigation. A close analysis of symptomatology is pursued when possible to clinicopathological correlation. From an enormous clinical experience, well-edited case histories of evolving symptoms are selected to illuminate new aspects of pathogenesis. The classic papers on subarachnoid haemorrhage well illustrate the principle.