find the book fascinating; the reviewer read it with great interest and benefit. Many letters enliven the text.

There are some misprints – for example, Hughlings Jackson died in 1911 and not in 1941.

J. SCHORSTEIN

COMPARATIVE AND EVOLUTIONARY ASPECTS OF THE VERTEBRATE CENTRAL NERVOUS SYSTEM *Ann. N.Y. Acad. Sci.*, 167, pp. 1-513. 1969.

From an anthropocentric point of view almost all experimental studies of the nervous system are comparative—they are carried out on non-human animals. The term 'comparative neurology', however, carries certain implications, so that many would in practice exclude from its purview investigations using mammals, and non-human primates in particular: few workers in these circumstances would describe themselves as comparative neurologists. They investigate 'the nervous system' in search of general principles applicable right across the board. But even to them, as to the self-declared comparative neurologist, the human nervous system occupies a unique position only with respect to its complexity and its recent evolution. It is not otherwise of especial interest in itself: the aim of experimental neurology is not primarily the understanding of the human brain. Thus, the introduction to this issue of the *Annals of the New York Academy of Sciences*, devoted entirely to papers on comparative vertebrate neurology, ends: 'Certainly we seek to understand better the capabilities possessed by man and his brain, but as biologists, we also seek to transcend that effort to include an understanding of the nervous system in all of animal life.' This statement can sound hollow only to a diehard pragmatist—although one might sympathize with the view that understanding phenomena presents no automatic guide to controlling them.

As this book witnesses, there has been a recent resurgence of interest in comparative investigations. Does this collection indicate that major changes are to be expected in the understanding of brain evolution? In one aspect at least, and a fundamental one at that, the answer is predictably, 'No'. The unavoidable difficulty is the absence of fossil evidence: the scheme derived from a comparison of the nervous systems of living forms must be forced into some sort of congruence with that derived from palaeontological studies of skeletal evolution. In the present symposium this latter scheme is, with the best intentions, provided by professional palaeontologists. One suspects that most professional neurologists will be as baffled by its complex jargon as, no doubt, a palaeontologist would be by neurological jargon.

There are, however, other more promising features. These arise from the abandoning of the almost total reliance on cytoarchitecture and general morphology to establish homologies. The use of *accurate* information about interconnections is now a practical proposition. This has already produced a potentially major revision of our understanding of the vertebrate forebrain. The larger part of the telencephalic masses labelled 'striatum' in non-mammals is almost certainly better compared with the mammalian pallidum than striatum. Such a revision serves to underline the difficulties faced by those who

would discover 'palaeo-' and 'archi-' systems lying side by side with the 'new' in the fabric of the mammalian nervous system. Another trend of enormous potential interest is the study of differences between species of the same class, not merely in terms of the relative sizes of lobes and lumps, but from the point of view of connectivity.

The worst feature of this book is its lack of cohesion; any general formulations are buried in the mass of the particular and there is no index. The presentation, subdivided into groups of papers relating to particular classes, does nothing to overcome this fragmentation. Any attempt to read the volume as a whole will result in mental indigestion rather than intoxication. Nevertheless, it demands serious attention from all who are interested in the general issues relating to the study of the nervous system.

K. E. WEBSTER

STEROID BIOCHEMISTRY AND PHARMACOLOGY By M. H. Briggs and J. Brotherton. (Pp. xii + 424; illustrated; £7.00.) Academic Press: London. 1970.

In the 1930s, although the gonadal steroids and their metabolites were the subject of intensive and competitive research, the adrenal steroids were of little more than academic interest. Few clinicians had heard of these substances, and 'the man in the street' had no reason to be interested. In the 1940s, it was rumoured that enemy aircraft pilots were given adrenocortical steroids to enable them to fly at ease at great altitudes. This rumour proved to be false, but gave great impetus to the synthesis of these substances and, in September 1948, a young American woman, severely crippled with rheumatoid arthritis, was treated with cortisone with dramatic effect. Having been bedridden, she was able to go on a three-hour shopping tour. Thus began a boom for steroids in medicine, which has shown no signs of abating. Indeed, a further great boost was given to medical and lay interests in these substances with the development and widespread use of the contraceptive pill. This birth control pill was followed rapidly by the anti-sex pill containing anti-androgens which seemed to hold promise of cure or alleviation of disorders ranging from cancer of the prostate to a spotty face. New uses for steroids appear almost daily. The androgens themselves may revolutionize treatment of problems of physical and mental health in old age, and of behaviour in youth. Medical and lay interest in steroids is now very great. The term steroid is almost a household word, yet how much is known about these substances outside specialist laboratories? In most British medical schools, students are given one or two lectures on steroids. An eminent surgeon, intrigued but baffled by the ring structures of steroids, dismissed them facetiously as '3-hydroxy chicken wire'. Others, who wish seriously to find out more about steroids, are at a loss to know where to look. There is an abundance of specialist journals and reviews dealing with steroids, but the coverage of steroid biochemistry and pharmacology in standard textbooks is too slight. The authors of this book have endeavoured to fill this gap with a volume which is reasonably priced and not too large. The book is aimed at 'graduates in biochemistry, medicine or pharmacology either taking postgraduate courses or beginning research

involving steroids'. Those whose biochemistry is limited to that given in medical courses may find parts of the book hard going. The very large number of steroids, closely related in chemical structure but widely diverging in biological activity, is at the same time the main fascination and difficulty of the subject. As the authors point out, the difference between masculinity and femininity is only four hydrogen and one carbon atoms. The first chapter grasps this prickly problem of names and structures. It is difficult, and requires application and careful study. Then one proceeds to an easier, clear and useful account of the neuroendocrinology and sites of steroid biosynthesis. There are numerous helpful line drawings and photomicrographs of tissue sections. More chemistry follows. The pathways of biosynthesis and metabolism are dealt with in great detail. Structural formulae, trivial and systematic names are all given, although these names are repeated in Appendix I. Indeed, there is so much detail that in some tables the print is too small for comfortable reading. Despite this, one looks for more information about alternative pathways and factors deciding the route followed, matters of great importance in pathology. Work in recent years which has shown that cortisol is produced in man by pathway(s) not involving progesterone is not mentioned. This omission may be due to the long time taken to produce the book. There are only a few references to work published in 1969. The various enzyme defects, found in steroid hormone biosynthesis, which are of such great clinical interest, are very clearly dealt with in an excellent chapter on clinical aspects of the pituitary-adrenocortical axis. Indeed, this and the next chapter on the pituitary-gonadal axis are the best in the book. Finally, 58 pages are devoted to recent work. Here one finds *inter alia* information on the feedback of gonadotrophins, the comparison of menstrual and oestrous cycles, steroid muscle relaxants and the protein binding of steroids, including competitive protein binding analysis. It is disappointing that much more space has not been devoted to this very important subject of protein-steroid interaction.

In summary, this book contains a wealth of interesting and useful information. The medical reader will find the biochemistry difficult, but if he can persevere he will be well rewarded. It is certainly a book which should be owned and constantly referred to by those beginning to work on steroids in the biochemical, pharmacological or clinical field. Many others will wish to refer to it when they occasionally have to deal with steroids. There is a good index of 14 pages, and it is easy to find one's way about the book. The authors are to be congratulated on having undertaken and successfully completed the very difficult task of reducing the vast knowledge of steroids to manageable dimensions.

J. K. GRANT

CLINICAL NEUROSURGERY Proceedings of the Congress of Neurological Surgeons (Pp. xxiii, 420; illustrated; £7.50.) Williams and Wilkins: Baltimore. 1970.

This is the 17th volume in the series *Clinical Neurosurgery* and reports the proceedings of the Congress of Neurological Surgeons held in September 1969.

The book contains 14 papers on various aspects of neurosurgery as well as some matters personal to the congress. The papers are on topics so varied that it is difficult to evaluate the book as a whole, and in any case the interval of time has outdated the conclusions of some of them.

Seven of the papers deal with various aspects of peripheral nerve injury and repair. These give sound practical advice on the treatment of such injuries, the paper on nerve grafting is especially good, but little in the way of new principles or ideas emerges from them.

A paper on the treatment of spasmodic torticollis by cervical rhizotomy has almost an old-world flavour and the author's statement that 'evaluation of the effects of surgery is difficult' and the fact that only four patients from a series of 50 considered themselves to be cured indicate the value of this treatment. There is no mention of the results of stereotactic surgery nor of the hypothesis that most, if not all, cases of torticollis are manifestations of a more widespread dystonia.

Four papers deal with pituitary or parasellar lesions and include an excellent account by W. F. Hoyt of the anatomy of the optic chiasm.

Dr. Yasargil deals with intracranial and spinal microsurgery in his usual authoritative manner and there is an excellent paper on concomitant craniocerebral and spinal trauma by Richard C. Schneider.

With such a pot-pourri of papers on widely differing aspects of neurosurgery it is difficult to assess the usefulness of printing a permanent and expensive (£7.50) record of the congress. No doubt it will remind those who attended it of the many wise words spoken. For those who did not, the passage of time will have lessened the value of some of these papers and they will probably prefer to acquire their information from more recent papers in the specialist journals.

BRODIE HUGHES

SEPTIC COMPLICATIONS OF NEUROSURGICAL SPINAL PROCEDURES By R. Lewis Wright. (Pp. viii + 107; illustrated; \$9.50.) Thomas: Springfield. 1970.

This well-produced monograph is based on a study of 2,085 'clean' operations performed by several neurosurgeons in the Massachusetts General Hospital during the period 1952-65, with a post-operative infection rate of 4.1%; and a further 579 operations from 1966-68 when it fell to 0.3%. The reason given for the reduction in infections was the introduction of ultraviolet radiation in the operating theatre at an intensity of 35 micro-watts/sq cm, at the operating site: in addition, more intensive maskings and gowning, and less activity of theatre personnel was instituted. Ultraviolet theatre radiation was described by Wells and Wells in 1936, and in the same year by Hart, but has never gained popularity. There must be bacteriological and technical reasons for this.

The book is a sequel to the author's previous work on 'post-operative craniotomy infections' (1966), and similar significant factors concerning post-operative infection are noted, including operations of long duration, re-operations, excess activity of theatre personnel and the drainage of wounds. On the other hand the age of the