Book reviews

HANS BERGER ON THE ELECTROENCEPHALOGRAM OF MAN
Supplement 28: Electroencephalography and Clinical
Neurophysiology. Translated and edited by Pierre
Gloor. (Pp. xi+350; illustrated; 215s.). Elsevier:
Amsterdam. 1969.

To anyone who has studied electroencephalography exclusively in the English-speaking countries, this book fills a significant gap in the study of the history of the subject which has hitherto been, if not shrouded in mystery, at least dismissed as of no particular importance.

Not only is it refreshing to read descriptions of the EEG described from a standpoint of total naïvete ('a current exhibiting considerable oscillations is present at all times', but also it is of value to follow Berger's methods, which are very different from the traditional English approach. We note almost with a sense of shock: 'on the basis of my own investigations I must therefore resolutely disagree with the assertion made by Adrian and Mathews that the EEG is absent in the blind'. (By 'EEG' Berger here means what we should today refer to as alpha rhythm.)

For the reviewer, the main interest in these collected translations has not so much been to discover what Berger demonstrated; this is well enough known, but more to discover what he did not demonstrate. For example, 'the experiments were initially unsuccessful and only when the two clay electrodes were placed 4 cm apart in the vicinity of a scar running vertically from above downwards through the middle of the enlarged trephine opening, was it possible with large magnifications to obtain continuous oscillations of the galvanometer string'. We can sympathize with Berger when he discusses the difficulties of recording from intact skin which 'according to the studies carried out by Einthoven, and especially by Gildenmeister, creates very complicated electrical conditions which are not easily comprehended'. A sentence which remains true to this day!

The illustrations from the very first paper of some of the single channel EEGs, usually recorded together with an electrocardiogram, would not cause any particular comment if published today. Berger's scientific quality is well demonstrated in the first few papers by the very careful studies which he undertook and presents, with the aim of establishing that the phenomena are in fact arising from the brain and are not due to blood flow in the scalp or cerebral vessels, or to fine tremulous movements or other artefacts.

A recurring theme throughout the series of papers is Berger's surprise at the fact that the recorded electrical activity appears to decrease upon sensory stimulation, rather than to increase, as he would have predicted. This finding is hinted at in the first report, and is discussed in detail in the second. The very last sentence of the last report returns again to emphasize 'the decrease in the amplitude of the potential oscillations of the human

brain' which occurs in association with active conscious activity.

This book contains (as its sub-title says) the 14 original reports on the human electroencephalogram. It is well produced with excellent copies of the illustrations. The translation is always readable, although it does reflect the complexity which must have characterized the German text. There is an introduction by Pierre Gloor who is professor of clinical neurophysiology at McGill University, Montreal, Canada, which contains a fascinating brief biography of Hans Berger, and fills in a good deal of his background and the milieu in which he worked and which, more than anything else, helps to make the papers come alive.

In summary, this book is to be recommended to all serious students of electroencephalography who will find it rewarding, although to read it thoroughly is no light undertaking. It is to be recommended also to all those interested in the history of what must be almost a unique achievement in the application of scientific methods to clinical material by a clinician who was seeking, above all to further 'the proper study of mankind'.

THE FUTURE OF THE BRAIN SCIENCES Edited by Samuel
Bogoch. (Pp xxxix + 603; illustrated; \$19.50). Plenum
Press: New York. 1969.

This book is a detailed report of the proceedings of a conference held at the New York Academy of Medicine in May 1968. Dr. Bogoch in his preface expresses the view that the exploration of the 'inner space' of man is one of the most exciting pursuits. With this view there will be full and general agreement, but the contents of this book describing the progress of this pursuit will not suit everyone. The reports are highly technical and difficult to digest except in small pieces. The subjects taken for discussion are of considerable diversity. They range from the structural basis of brain circuitry, and the various possible mechanisms of memory function, through DNA function in relation to memory and learning, to neurophysiological and pharmacological aspects of behaviour. The second half of the conference was devoted to the application of these basic studies. Certain inborn errors of metabolism that disturb brain development, such as phenylketonuria and errors of lipid metabolism, were taken and discussed in the light of the basic functions earlier studied. But, in more detail, recent studies on schizophrenia were discussed at considerable length, particularly the current biochemical aspects of the problem.

There is no doubt that great strides are at present being made in our understanding of the biological substratum of mental processes. The role of hormones and of pharmacological agents in influencing behavioural functions have been perhaps one of the most outstanding bits of new information in the last decades. Our under-

standing of schizophrenia and other chronic mental disorders, while not yet greatly increased, would seem to be on the verge of being enlightened. Such enlightenment will, however, come, from basic studies on brain function, and it is against such a background that all recent information about brain disease must be measured. A book of this sort is hard work to read, but nonetheless very valuable for being made generally available. It is in addition a good source of recent work in this area.

J. B. CAVANAGH

CRITERIA OF BRAIN DEATH By Palle Juul-Jensen. (Pp. 57; Dan. Kr. 22.00). Munksgaard: Copenhagen, 1970.

This is a short monograph from Aarhus, Denmark, in which the experience from 72 cases with 'isoelectric EEGs' is reviewed and eight of the cases are presented in detail. In the context of the organ donor problem, the author's criteria of brain death are probably the best that can be devised in the present state of knowledge. In summary they are: (1) that the nature of the brain damage must be fully documented; (2) the patient must be in deep coma—that is, fixed dilated pupils, completely unresponsive to all stimuli, no spontaneous respiration; (3) there should be no response to the caloric test; and (4) the EEG (recorded at 5u V per cm 1 sec time constant) should be isoelectric. Points, 2, 3, and 4 must be constant in two sets of observations with an interval of at least 24 hours. These criteria cover the fact that rare cases of barbiturate poisoning, anoxia, encephalitis, and hypothermia are now recorded in which quite unexpected degrees of recovery have occurred after periods of isoelectric EEG, and they thus virtually limit potential donors to cases of cerebral trauma and other known neurosurgical disorders. This publication provides a useful addition to the literature on an important problem.

THE RESULTS OF TREATMENT IN CEREBRAL PALSY Edited by James M. Wolf. (Pp. xiv+327; illustrated; \$20.50). Thomas: Springfield.

The satisfactory management of a child with cerebral palsy presents a formidable challenge to skill and resources. There are almost as many theories of treatment as there are therapists and it is sometimes difficult for the clinician to distinguish between them. *The Results of Treatment in Cerebral Palsy* presents a series of essays devoted to the currently fashionable regimes, and the methods available for measuring their effectiveness. All the authors stress the importance of a full clinical and functional assessment before embarking upon treatment, and describe methods for quantifying the results. In general, these are expressed as a developmental quotient. Repeated examinations throughout the course of treatment reflect any improvements by an increasing quotient.

Some broad guide lines about the likely outcome of treatment are given but even here there is disagreement. It is generally accepted that children with a high IQ and those who are strongly motivated get most benefit from treatment and that spasticity usually responds better than athetosis. Consideration is given to the 'economic practicability' of treatment. This is an important concept for those who are responsible for the selection of patients and for the deployment of the limited numbers of trained personnel.

This book is to be welcomed as a stimulus to more effective therapy, for the standardization of the test material, and for the development of a reliable predictive index.

I. T. DRAPER

A STUDY OF THE EARLY DEVELOPMENT OF MONGOLS By Valerie A. Cowie. (Pp. xiii+110; illustrated; 60s.). Pergamon Press: Oxford, 1970.

This slim monograph documents a detailed research into the early neurological and psychomotor development of a sample of mongols in an area south of London.

Although the book is clearly written, its presentation still bears the style of the thesis of which it forms the substance. The fragmenting of the book into 22 sub-chapters is irritating. The book really falls into three areas—a precise methodology; a description of the developmental examination of the subjects at four periods in the first 10 months of life; and an analysis of the results by comparison with standards in the literature (scattered throughout the book), and by computer.

The methodology is impeccably delineated and the sample of mongols is carefully demonstrated as being representative, displaying, by choice of reference, an authoritative knowledge of the syndrome. The items of the neurological examination of the subjects are clearly, necessarily, defined and the sources of the norms adequately stated. The photographs, tables, and histograms are correctly illustrative and appropriately placed.

The book presumes that the reader is familiar, not only with developmental paediatrics, but also with psychology and statistics. A considerable part of the book is concerned with statistics and comprehension requires a knowledge of analysis of variance. The psychological instruments are vital to the thesis; yet terms like DIQ, DMQ, and 'low Piaget score' creep into the text undefined and unreferenced. It cannot be assumed that the clinician will be versed in the sensori-motor patterns described by Piaget. Although the Nancy Bayley scale is repeatedly mentioned, one cannot find its reference, either in the book, or even in the sixth (current) *Mental Measurements Year Book*. Is this a revision of the Bayley California Scales? The psychological measures ought to have been fully explained in the appendix, which might have been composed in a more illustrative and imaginative manner to balance the text.

Wollman's *'Down's Syndrome: a reference bibliography'* cites 692 references but does not even index development. This monograph, therefore, is a valuable addition to the literature of mongolism, and furthers our knowledge of developmental paediatrics. Its results show that neurological and psychological tests become more stabilized and definitive as the mongol infant grows, and confirm the value of these tests in the developmental assessment, especially around the tenth month of life. Such scholarly research contributes to consolidating and integrating developmental paediatrics and developmental psychology. Dr. Cowie does not maintain (wisely) that the early developmental tests which she describes have predictive validity, but she does show that marked deviation from the norms on these neurological and