tion of cortical neurones is such as to make this possible. Lord Brain posits a hierarchy of schemas, reminiscent of the clinical tradition we usually call Jacksonian. However, he claims a functional independence of schemas to account for the possibility of the various disorder, the receptive or the expressive, and so on, to exist in isolation. He also describes, however, 'central word-schemas' to account for those disorders which affect both the receptive and expressive functions of language together.

The importance of this book lies in its comprehensive and critical introduction to the literature on the one hand, and on the other, the introduction of the concept of schemas, operationally defined, that link up what are otherwise discrete, unrelated facts scattered through linguistics, phonetics, communication, probability and information theory, morbid anatomy, psychiatry, psychology, and so on.

In the section 'The Nature of Words' for example, one meets terms such as 'phoneme', without their being clearly defined. Such highly technical concepts, taken from linguistics, need to be very carefully explained before they are used, as they are also steps in a very brilliant, complex argument which is otherwise obscure. At the same time, it must be accepted that the theoretical problems attaching to the nature of normal and disordered speech, as to those of vision, are fantastic. Both vision and speech are almost inextricably placed at the inter-face of body and mind, and are also intrinsically difficult subjects in themselves. The philosophers have yet to clear up the body-mind problem for us, and so we are left with some authorities tending to underrate psychology and psychopathology, and some psychologists and psychiatrists sometimes seeming to ignore that we have bodies at all. Lord Brain quotes approvingly Head's comment on the 'diagram makers' of 19th-century neurology, 'They failed to appreciate that the logical formulae of the intellect do not correspond absolutely to physical events, and that the universe does not exist as an exercise for the human mind.' Our eyes are better than cameras, for what we see is embedded in our past visual and other experiences and our present anticipations. Similarly our ears are microphones with memories and intelligence; perception and language go together to form much of what we call intelligence; language also, in a sense, extends our intelligence out into time, whether we are listening, or speaking. On one hand, we store up what we hear, as we hear it, until it makes sense to us, in units of meaning not equivalent to sentences, which are themselves indefinable. On the other hand, having an idea, which may exist entirely in our mind at a specific moment, we have to express what that idea, if we must, in words, in a serial order in time, the idea itself evoking words which are mutually modified by the laws of the language we use. The mind seems able to compute in terms of probabilities what words we are likely to hear, or need to think of next, to understand or to express meaning. Apart from the microphone task of hearing mere noise, we can keep track of a meaningful voice in a crowd which involves both a statistical analysis of all the sounds we hear, and excluding the irrelevant voices, but also, by assessing the time delay between the two ears, being able to determine the direction of, and follow, the speaker, even if he moves about. Both picking out the voice against a background of sound, and direction finding, involves storing the incoming signals for measurable amounts of time. Here lie problems for the child, deaf in one ear or hearing via a hearing aid in one ear, in a noisy classroom, unable to pick out and keep track of the teacher's voice.

Hearing and understanding seem indeed to need several layers or classes of discrimination, most of them operating unconsciously, or physiologically. We need, as Lord Brain states, 'A hypothetical principle which will explain the facts (so that) we can then ask the neurophysiologist whether the structure and the functions of the nervous system are capable of acting in accordance with the hypothetical principle and whether there is any evidence that they do.'

Stated in a very simple way, but reviewed more fully in the text, the facts established by experiment seem to indicate that we store the received sounds of a chosen voice, say, as sounds (phones) for under a second, then another discriminatory level becomes activated, which deals with the heard sounds in terms of the meaningful sounds we could potentially make ourselves (auditory phoneme-schemas); this newly activated level holds the information for a small but appreciable amount of time again, whereupon it is transferred to yet a further discriminatory level (short-term memory) in which the sounds are consciously identified and experienced as meaningful words (via word-meaning schemas, and sentence-schemas), having been matched, also unconsciously, against central word-schemas, one of the higher physiological and unconscious levels of organization in respect of words, a process which is basic to both the comprehension and expression of words. Such conscious information within 5 to 6 seconds then either fades or it can be transferred yet again to a long-term memory store.

It is fascinating to see the links revealed in this text between neurology and psychiatry. Janet and Freud are among the illustrious figures who are quoted and who have contributed to both the fields of neurology and psychiatry. Indeed, it was Freud who introduced the term agnosia. It is language that makes us essentially human. It is in particular in the anatomy, psychopathology and morbid anatomy of speech that one sees clearly how any simple mechanistic explanatory system pertaining to speech must fail to be satisfactory. The neurologist of genius is led to posit unconscious mental and physiological mechanisms, just as the psychiatrist has had to. We must regret that there will not be a third edition under this author's hand.


This book is the second volume on Assessment of Cerebral Palsy by Kenneth Holt. In writing it, he is
joined by Joan Reynell, the psychologist, who has worked with him, both in Sheffield and at the Wolfson Centre for Developmental Paediatrics attached to The Hospital for Sick Children, Great Ormond Street. The book concentrates on the handicaps, other than defects of movement, found in children suffering from cerebral palsy, and it will be of value to trained personnel, physiotherapists, occupational and speech therapists, teachers, and other specialists, such as audiologists and orthoptists. It also makes the total problem of assessment clear to physicians especially concerned with the care of these children.

In the first section on eye defects, an account is given of normal development of vision and oculomotor control. The defects likely to be encountered in children with cerebral palsy are listed. The visuo-motor and visuo-perceptual and allied difficulties are discussed, and the various means of analysing these problems. A chapter is devoted to the interpretation of these observations, and to the educational and emotional implications. The defects of hearing, speech, language, and communication are dealt with in the same way. The section on psychological testing gives an account of the problems of assessment, and the many and varied scales used. The techniques which help in the testing at each age-group are simply discussed, as well as the psychological assessment of specific disabilities.

Numerous references are given, and many explanatory case histories. There are illustrations of test situations and children's drawings. This book tackles the problem of the additional handicaps more fully, perhaps, than any previous similar publication. It may be of even more value to the specialist than Volume I.


This small book should find a valued place on the bookshelves of teachers, paediatricians, and parents of the physically handicapped, the mentally retarded, and the educationally subnormal children. Although it was written 30 years ago this, its first edition in English, proves that the assumptions and findings of the authors have stood the test of time. Time during which a better and wider concept of the needs of handicapped children has been steadily spreading through the civilized world. The fact that the text can be usefully read by such a large selection of interested persons, teachers, doctors, and parents might make the wary reader dubious of its value. The very fact, however, of its appeal to such a wide professional public indicates how well the authors understood the need for such a book. They set out to explain how perceptual and motor difficulties can be helped and trained towards individual improvement. The aids described are practical and illustrated clearly.

Speech and language developmental defects, too, are shown to react to 'the appropriate material at the right moment' depending on the teacher's or therapist's alert recognition of the needs of the child at the time.

The apparatus described has a familiar face to modern therapists, but its value lies principally in its appeal to the imagination, stimulating new material and activity for individual needs. The teacher can gain as much as the child from this book.


A marked feature of recent years has been the publication of many textbooks of readings in professional subjects. Usually the authors select several previously published articles and put these together with a linking commentary. The critics of this technique suggest that it is an easy way to produce a book, but this is unjustified, for with increasingly large university classes there is a real need for a careful abstraction from the vast amount of professional literature of those articles that are pertinent to the students' courses and will form a basis for their studies and subsequent reading.

This book of nearly 700 closely printed pages is arranged in eight sections each containing seven or eight selected readings. The eight sections are as follows: psychophysiological dimensions of early development; motor development and physical growth; sensory and perceptual development; conditioning and learning; from vocalization to functional language; intellectual growth; socialization and the development of social behaviour; and emotional responses and the developing personality.

Clearly, this book covers a very wide range and any selection is inevitably affected by personal bias, as shown by the fact that the selections on psychological studies are the better chosen and presented ones. Not only is there a wide range of subjects, but the readings cover a wide span of time, some being selected from writings over 50 years ago, and they represent many countries. Several of them are translations from the Russian literature, and it is particularly pleasing to have these included and made more widely available.

Most help will be obtained from this book if it is used in the way the authors intend, namely as a book for students beginning to learn about child development. During their course of instruction selected items could be referred to and reinforced by discussion and reference to other works. This latter point is particularly important because it would be unfortunate if students thought that these readings always represented the complete view on any particular subject, or even the most up-to-date work on that subject, and in this respect the short lists of selected readings at the end of each article are not always as complete and representative as one would desire.

This book should be available in every paediatric library where it will be most useful to the registrars who are emerging from the confusion of preoccupation