Book reviews

SPEECH DISORDERS: Aphasia, Apraxia and Agnosia. By Russell Brain. (Pp. v+184; 24 figures. 42s.). London: Butterworths. 1961.

Lord Brain's book comes aptly as a distinguished celebration for the centenary of Broca's historic pronouncement on the seat of articulate language. For he does not only retrace the steps of past investigators floundering in a mass of intriguing but obscure clinical discovery nor merely bring his great experience and critical judgment to bear on the facts as they present themselves today. These pious duties he certainly performs. But as well he takes us exploring with him in that attractive, perilous region where physiology, *faute de mieux* hypothetical, tries to link psychological fact with anatomical structure. So his book is lively, suggestive, and forward-looking, a worthy successor in the lineage of Jackson, Head, and Pick. Like Head he has sought inspiration in contemporary neurophysiology; like Pick, in psychology. His own additions to these aids to constructive thought are some of the recent developments of quantitative linguistics and communication theory. 'The task of the future,' he writes, 'is to use all the available modern methods of psychological testing, linguistics, phonetics and communication theory, to correlate psychological with physiological functions.' Such foresight and faith in regard to trends not always familiar to the clinician might be unexpected did we not already know that Lord Brain's interests in language happily extend very far beyond its pathology. That for the present not even he can explain in very much detail the potential contribution of these new disciplines to an understanding of dysphasia emphasizes rather than detracts from the author's foresight.

Faith is needed, too, when we turn to the particular concepts he uses in his interpretation of the physiological background to linguistic behaviour, especially the notion of the *schema*. This notion, since its original introduction into neurology by Henry Head, has found wide application in psychology, especially by Bartlett and his followers. But in all its varied uses the central idea has been to allow reference to types of process-organization which more elementaristic terms, such as independent reflexes or discrete images or memory traces, fail to define. It has served at least to transform merely negative propositions about the physiological concomitants of perception, bodily skill, memory, and thinking into positive, if hypothetical, terms. So, for instance, to take but one example from the field of language, we find that any single word retains its communicational efficacy despite a manifestly enormous range of variety in the physical characteristics of different utterances of it. This must mean that the physiological process corresponding to hearing and understanding the word cannot be defined in terms of any fixed set of elements, however numerous. The neural mechanisms involved must incorporate a set of criteria in accordance with which the word is identified as this one or that one, and the further processes appropriate to each initiated.

To coin the term *schema* to refer to the essential element in such situations was a brilliant stroke of Henry Head's, although he never explicitly introduced it into his discussions of aphasia. This omission has been repaired cogently and enthusiastically in this book.

The author does not, however, deceive either himself or us into thinking that a terminological convenience itself can unlock the physiological secrets of language. If the concept of *schema* is to survive and flourish, it will have to be given internal structure and articulation so that it can be applied in detail to specific empirical issues. Moreover, the terms in which this is done should derive from something of which we have understanding in other connexions. No immediate appeal to the properties of known physiological systems seems practicable. The present reviewer has tried, with particular reference to the problems of memory, to interpret the *schema* in terms of the principles which apply to the *re-coding* and *decoding* of stored information. With regard to language, Brain makes a rather different and extremely interesting suggestion, best stated in his own words. 'The rôle of the *schema* is thus the means by which a large number of variable stimuli elicit the same response, and I have suggested that the *schema* works by automatically calculating the probability that a stimulus possesses a certain set of properties. Such a suggestion, though needing further elucidation, makes it possible to conceive how a concept of *schema* might be brought directly to bear upon the statistical and other quantitative facts of actual linguistic behaviour and its disorders. It might seem possible, in fact, that by this convergence of the lines of thought of clinical neurology, psychology, and quantitative linguistics, some real progress may at last be made towards a real understanding of aphasia. This is a book which demands careful study.'

Though he strikes out into fresh territory, Brain does not neglect to provide a well-balanced treatment of the whole field of disorders of speech and of those other high level functions which, in regard to their pathology, are traditionally grouped with it. There are very serviceable, if brief, accounts of the apraxias and agnosias, and chapters on examination, prognosis, and treatment. The picture is completed by a summary of the developmental disorders of speech. The book as a whole is an enlargement of the author's article in the second edition of Kinnier Wilson's *Neurology*. There is little doubt that very many people who would be unlikely to read Wilson will have cause for gratitude to Lord Brain for making his thoughts available in independent book form.

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HENRY HEAD CENTENARY. Essays and Bibliography by K. W. Cross, R. A. Henson, M. Critchley, and Sir Russell Brain. (Pp. 41. 3s.). London: Macmillan & Co. 1961.

This modest volume reprints four of the principal papers read at the Henry Head Centenary Celebrations at the