

BOOK REVIEW

L'APHASIE — by A. Roch Lecours and F. Lhermitte, Flammarion-Médecine, Paris, 1979. 700 pages. \$59.00.

APHASIA AND ASSOCIATED DISORDERS — by A. Kertesz, Grune & Stratton, New York, 1979. 350 pages. \$39.00.

In 1979, two volumes representing important contributions to the study of aphasia were published by Canadian neuroscientists. The neuropsychological and neurolinguistic study of "higher cortical functions" is a small but active area of neuroscience, and these volumes represent the latest in a series of distinguished Canadian contributions in this field. They are different in intention and content but have certain similarities which makes it appropriate to treat them in a single review.

Lecours and Lhermitte's *L'Aphasie* is a comprehensive review of the symptomatology, pathogenesis, etiology, assessment, and treatment of aphasic disturbances. It includes interesting chapters on language in schizophrenic and neurotic conditions, "deviation" in normal linguistic behaviour, asphasia in polyglots, and the relation between language and thought. It is a long, detailed volume, written with the help of 31 collaborators.

L'Aphasie is designed as a comprehensive introduction to asphasia. The book begins with a historical review of theories of language-brain relationships from the work of Franz Joseph Gall to that of Hécaen, Geschwind, and Goodglass. The ensuing ten chapters include a useful introduction to linguistic and aphasiological terminology, descriptions of particular aphasic syndromes, language disorders seen after lesions in areas of the brain other than the classic "language zone" (such as the thalamus and the frontal lobes), discussions of etiological considerations, classificatory schema used over the years, a view of the biological basis of language and speech, cerebral dominance, and the relationship between linguistic science and aphasiology. The next two

chapters deal with language in psychoses and neuroses and abnormalities seen in normal speech, followed by chapters on examination techniques, for both language and general psychological disturbances, and rehabilitation methods and effects. The final chapters discuss bilingualism and relationships between language and thought.

The features which make the volume worthwhile are its lucidity of exposition, the accuracy with which the views of so many investigators are distilled, and the wealth of detail the reader finds regarding aphasic symptoms and their pathological determinants. It is no mean feat to summarize accurately the often conflicting views on the nature of aphasic classifications and symptoms, and the highly individualized terminology which has characterized studies of language disorders over the past 125 years. I think most readers will find Lecours and Lhermitte's accomplishments in these areas remarkable and most helpful.

The foregoing features serve to make this book valuable for any professional interested in the subject, but, in addition, the extraordinary detail of case descriptions based on many years of experience with aphasic patients certainly enhances this volume. The number of transcripts on asphasic production and detailed case studies presented is greater than in any other volume on aphasia of which I am aware. Moreover, the authors have managed to present this data in an easily assimilated format utilizing international phonetic alphabet transcriptions in conjunction with normal orthography and a variety of easily-understood signs to indicate pauses and other abnormal features of aphasic performance. Though details of intonation, contour and voice quality cannot be presented in such a volume, the patient's abnormal language comes alive in a way most helpful to those less familiar with the linguistic performance of these patients. The same is true on the neurological side: autopsy findings are described and presented in readily comprehensible detail. The authors have written a book for both the neurologist with considerable experience in aphasia

and the student of neurology or speech therapy making his first contact with the subject.

I have two reservations about this book, neither of which should serve to detract from its value. The book is atheoretical in that it presents data about the correlation between language phenomena and brain structure and function, and about the patterns of language disorders seen after brain injury, for purposes of a medically-useful taxonomy, rather than as evidence for developing particular theories of language-brain relationships. Though these are discussed, they are not emphasized, and there is no real effort to state various theoretical positions and to choose between them on the basis of particular observations. The book is "data rich and theory poor"; in fact, some theories on the relationship of language to the brain, such as the "microgenetic" theory of Jason Brown, are omitted entirely. It is clearly not the intention of the authors to provide a highly theoretic account of neurolinguistics or aphasiology, and, for most readers, this lack of theoretical pointedness will probably not be a disadvantage.

My second concern is that some recent work is not adequately represented. The linguistic theory underlying descriptions of aphasia in this volume is the structuralist theory of Martinet and there is virtually no mention of the progress made in linguistics in the last 25 years towards more detailed and partially explanatory approaches to a variety of phenomena of natural languages within the framework of transformational generative grammar. There is one chapter describing some studies of aphasia undertaken within the TG framework, but they are not clearly identified as examples of a different approach to the description of language structures and the concept of the biological determinants of language. It is true that the most interesting studies of aphasia in transformational generative terms are recent, and may not have been published when the authors began their work. Moreover, it is not yet clear how far such studies can be taken, nor what their ultimate impact on the study of aphasiology will be. Nonethe-

less, it would seem important to review some of these studies, as well as the hypotheses regarding the organic determinants of language capacities in man that come from normative linguistic studies. On the neurological side, recent studies have been directed towards the microscopic anatomy of language areas, electrophysiological events (event-related potentials) which correlate with language structures and processing, and other organic features of neural tissue which might underlie language use. The work of a few investigators in artificial intelligence (including one study of the simulation of paraphasias by Lecours himself) is not mentioned. A chapter focussing on new approaches, perhaps with speculation on the direction work in aphasia is likely to take, would be a welcome addition to this volume.

Kertesz' book is a single extended study of his own experiences in London, Ontario, with the evaluation of aphasic patients by means of the Western Aphasia Battery (WAB), classification of patients based on this quantitative assessment, observation of recovery over an extended period, and correlation of various aphasic syndromes with particular sites of lesion. It represents one of the largest and most detailed studies of this sort.

A short introduction to contemporary aphasiological thinking is provided through a description of standard types of aphasias and an informative review of a number of aphasia batteries. Kertesz then devotes two chapters to the contents and utilization of the Western Aphasia Battery which consists of assessments of spontaneous speech, comprehension, repetition, naming, reading, writing, praxis, drawing and calculation. In each area, specific items are presented for scoring and/or specific indications are provided for assigning a quantitative score to a patient's performance. The test is similar to the Boston Diagnostic Aphasia Examination, but differs in several details, and can be administered in considerably less time (and is therefore claimed to be more useful for routine assessment of patients and for evaluation of patient's whose cooperation is limited by concurrent medical illness, distractibility, etc.). If the

scoring instructions are followed, a numerical score is assigned to each test category which permits statistical comparisons between individual groups of aphasic patients. Kertesz compares the details of his test to those of several widely employed aphasia batteries and further states that the test separates normal from aphasic performance, identifies a variety of standard types of aphasia, correlates reliably with at least one other aphasia battery (the Neurosensory Centre Comprehensive Examination for Aphasia of Spreen and Benton), and passes tests of internal consistency, and intra-judge, interjudge and test-re-test reliability.

Five of the WAB sub-tests — fluency, comprehension, repetition, naming, and information — were used to study taxonomic issues. Several approaches to the problem of numerical taxonomy are employed. The first is a minimum variance clustering algorithm called the sum of squares agglomeration on the Euclidian distance matrix of dissimilarities. This procedure, applied to 142 acute infarction cases, produced 10 clusters at the 2.5% level of total variance. In addition to the clustering procedure, Kertesz presents results of a nearest network and principle component analyses. The nearest network analysis shows, again, for acute stroke cases, that there are 4 pairs of mutually close clusters, but that the clustering analysis was correct in establishing the 10 groups that it produced. Two principle component analyses were carried out. The first, a Q-type, showed that a single factor significantly accounted for 82% of the total variation, an indication of the strong correlation among the sub-tests used; the second analyzes the Q-type factors in terms of the characteristics of each of the tests and shows that the major discriminatory factor in the Q-type analysis was indeed a relatively even reflection of each of the 5 language sub-tests of the WAB. Perhaps the major new taxonomic implication of this aspect of the work is that Kertesz divides conduction aphasias into two sub-groups — afferent and efferent — depending upon whether speech is fluent or not fluent. Otherwise the analysis of the WAB scores by the

statistical means is quite in keeping with standard clinical ideas.

The same is not true for the analysis of aphasic patients with neoplasm. The clustering analysis yields only 6 groups at a 6% level of variance, and each of the groups is considerably more mixed with respect to diagnostic classification than in the acute aphasic group. There is no global aphasic group at all and only small numbers of Broca's and Wernicke's aphasics. Twenty-five cases of aphasia following closed-head injury (16% with surgically removed sub-dural hematomas) were subject to the same procedure and 8 well-defined groups appeared. This finding differs from some results in the literature which suggest that a smaller number of aphasic syndromes occur after closed-head injury.

Chapter 7 presents the interesting comparison of taxonomies seen in acute and chronic stroke populations. The principle findings were that there was a large acute cluster consisting of Wernicke's aphasics with only a small cluster of this diagnostic type in the chronic population.

Both the importance and the limitations of the study must be appreciated. The former lies in the objective demonstration of the existence of standard aphasic categories in vascular populations; the demonstration that, when measured over the same parameters, the populations with other etiologies for aphasia, such as closed-head injury and tumor, do not show the same diagnostic groupings; and the demonstration of particular patterns of recovery in vascular cases. Since existing nosology is based upon individual case studies (often with autopsy or radiological material for anatomical correlation) and is heavily influenced by particular theoretical biases, the demonstration that the standard taxonomic distinctions are reflected in objective cluster analyses of grouped data is an important source of confirmation of our clinical concepts of aphasia.

A second important aspect of Kertesz' book is his analysis of the localization of lesions causing aphasia. The largest series are the result of technetium brain scanning (65 patients) and CT scanning (85 patients). The

results, by and large, are in keeping with our expectations regarding the locus of lesion, producing particular aphasic syndromes, in stroke cases. It should be noted that Kertesz' correlations are between the CT or technetium scan results and the diagnostic category into which the patient fell. They are not correlations between the radiologically determined location of a lesion and the groups of patients which emerge from the cluster analysis.

The limitations stem from the parameters which enter into the description of aphasic symptomatology. Although Kertesz calls five of the subtests of the WAB the "language subtests", the actual language structures tested are, linguistically speaking, limited, heterogenous, and arbitrary. They utilize many pre-theoretic linguistic notions and do not systematically test for levels of linguistic structure or aspects of those psycholinguistic performances pertaining to the use of particular levels of language structure.

The remaining chapters of the book deal with a variety of topics — alexia, the Gerstmann syndrome, apraxia, non-verbal intelligence, recovery from aphasia, and recovery from other intellectual disorders. I will not review these topics, except to say that the analysis of each is marked by the same highly objective methods of observation and analysis that characterize the work on aphasias proper.

I began by indicating that, though quite different in scope, the books by Lecours & Lhermitte and Kertesz were similar in certain respects. Both represent highly significant contributions to aphasiology literature. Lecours and Lhermitte's book can be predicted to achieve the status of a classic synopsis in this field. Kertesz' book is one of the most important applications of objective assessment measures and analysis of aphasic symptomatology for verifying and extending our current notions of the taxonomy and pathogenesis of these conditions. Both

books reflect the current state of the art in aphasiology and both represent current approaches to aphasia linked to clinical tradition: Lecours and Lhermitte present these approaches explicitly; Kertesz incorporates them into objective measures of his patients' performances. It is interesting to speculate as to how these authors would address the same issues, were they in a position of writing a second edition or a sequel 10-15 years in the future. Will the new linguistic and neuroscientific approaches have made their mark, both by introducing new techniques of analysis and observation, and by creating a new theoretical perspective within which data from aphasia will be brought to bear upon the question of the relationship between language and the brain.

David Caplan, M.D.
Division of Neurology
Ottawa Civic Hospital
Ottawa, Ontario