

ments of speech. Simultaneously the discovery by Broca, in 1861, of the speech centre in the brain marked an epoch on the physiological side.<sup>1</sup> A new science, called Phonetics or Phonology, has sprung up, and is now universally admitted to have created the modern science of language.<sup>2</sup> In addition to this physiological and physical basis, the superstructure of the science of

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<sup>1</sup> This localisation places the speech centre in "a very circumscribed portion of the cerebral hemispheres, and more especially of the left. This portion is situated on the upper edge of the Sylvian Fissure, opposite the island of Reil, and occupies the posterior half, probably only the posterior third, of the third frontal convolution" (Broca, 'Bulletins de la Société anatomique,' 1861). The discovery resulted from the examination of the brain of patients who had been afflicted with "aphasia," which is accompanied with "a lesion of the posterior half of the third, left or right, frontal convolution, nearly always—nineteen times out of twenty—of the left convolution." The phenomenon of aphasia has ever since been one of the great psycho-physical problems bringing together the most refined and intricate physiological, psychological, and linguistic analyses. To begin with, we have to distinguish *motor* aphasia and *sensory* aphasia. "Our knowledge of this disease has had three stages: we may talk of the period of Broca, the period of Wernicke, and the period of Charcot. Wernicke (1874) was the first to discriminate those cases in which the patient *cannot even understand* speech from those in which he can understand, only not talk; and to ascribe the former condition to lesion of the temporal lobe. The

condition in question is *word-deafness*, and the disease is *auditory aphasia*. . . . The minuter analysis of the facts in the light of individual differences constitute Charcot's contribution towards clearing up the subject" (James, 'Principles of Psychology,' vol. i. p. 54).

<sup>2</sup> In the modern science of language we have one among the many cases where a historical or philosophical science is becoming an exact science by attaching itself to physics and physiology. On the other side we have the great movement initiated by Darwin in the purely natural sciences, which, as was shown above, relies on the historical collection of facts and the judicious critical sifting of evidence. "It is phonology," says Prof. Sayce ('Introduction to the Science of Language,' 2 vols., 1880, chap. iv.), "which has created the modern science of language, and phonology may therefore be forgiven if it has claimed more than rightfully belongs to it or forgotten that it is but one side and one branch of the master science itself. . . . It is when we pass from the outward vesture of speech to the meaning which it clothes, that the science of language becomes a historical one. The inner meaning of speech is the reflection of the human mind, and the development of the human mind must be studied historically."