ABSTRACTS

Neurology.

PHYSIOLOGY.

[82] Do internal or preformed speech centres exist in the human brain? (Existe-t-il dans le cerveau humain des centres innés ou préformés de langage ?)—Pierre Marie. Presse méd., 1922, xxx, 177.

The question of speech centres, during the past sixty years, has been very much to the fore as a result of the study of aphasia. The author states that it is not to anatomy, to pathological anatomy, to physiology, or even to clinical medicine that we must look for enlightenment on the subject. What we need is common sense (simple bon sens) when asking ourselves the question, "Does the brain of the newly-born contain special parts, definitely localized, possessing a pre-established function of presiding over spoken and written speech?" The most valuable answer is provided by the study of the evolution of language—both spoken and written—all down the ages.

1. The Evolution of Written Speech.—Writing originated as graphic representations of whatever it was desired to communicate. Such graphic writing might consist simply of animals or might be sufficiently elaborate to depict events.

But written speech is of a much higher order—it is the reproducing of spoken speech by means of written characters, and the ability to perform this took thousands of years to develop after graphic writing was well established.

Ancient Egypt, by means of the writing on its monuments, furnishes us with the following stages in the development of writing:—

a. First period of simple graphic representation, e.g., signs for the sun, an eye, a mountain, etc., which were used to represent certain abstract ideas, to indicate movement, and so on;

b. Second period of phonetic representation, in which writing was used to reproduce spoken sounds, this leading on naturally to the identifying of the graphic signs with the spoken sound.

The alphabet then arose by only the initial portion of the graphic sign—which constituted a letter—being used for the particular spoken sound. These fundamental periods were the work of the ages. It is time which has slowly but surely shaped language as it is known to-day, rather than
the presence of innate centres in the brain of man. Written language, Marie holds, is an acquired function, and this accounts for its slow development over thousands of years. Ability to write, too, in the middle ages was confined to a very few, who acquired it slowly and painfully rather than by possessing inherited innate centres in the brain.

2. The Evolution of Spoken Language.—Marie attacked the dogma of the third frontal convolution as far back as 1906, and stated his belief that it had nothing to do with the speech function. His belief now extends to the statement that "in the human brain there do not exist innate centres for spoken speech any more than for written speech". Lesions of Broca's area occur without aphasia. In soldiers whom he has examined, it is from wounds of the parieto-occipital cortex that aphasia results. Follows an exposé of the early teachers of the Broca's area dogma (Gall, Bouillaud, Broca). Broca's first case was one in which softening involved most of the cortex round the fissure of Sylvius as well as the third frontal convolution.

Marie believes there is "no preformed innate centre even for spoken speech in the human brain". Pathological anatomy has failed to show a degeneration of a tract concerned with speech in aphasic persons. The paths drawn in the text-books are products of the imagination. If an innate centre existed, it should possess a path of its own for the innervation of the organs of speech. The site of the lesion in aphasia is in the association fibres and not the projection system, and thus aphasia is a disorder of association, i.e., a psychic disturbance. Again, the other recognized innate centres are bilateral and symmetrical, and this is a further argument against the present theory of localized aphasias. Deaf-mutes, everyone is agreed, are unable to speak solely because they are deaf. If innate centres were present, some efforts at speech, however grotesque, would occur. In the child of twelve months, all the functions resulting from innate centres (walking, feeding, crying, etc.) are being exercised. Speech alone is undeveloped. Where such a child has a right hemiplegia, speech development is not interfered with; there is no innate centre to be destroyed. The undamaged portion of the brain is able to acquire the speech function.

Speech is normally developed by the adaptation of the cortex constituting the aphasic zone (left Sylvian cortex), the process being exactly similar to the cortical adaptation effected when we learn games of skill. The level is psychic, not psycho-motor.

It is with some surprise that one finds no reference to the work on aphasia of Dr. Henry Head, who has stated that "a unilateral lesion of the brain affecting the use of language disturbs a number of psychic processes which cannot be grouped under such headings as speech, reading, writing, etc." He applies to these processes the term 'symbolic thinking and expression', because they consist mainly of the use of symbols in language and thought—which statements seem to summarize the substance of this lecture.

W. JOHNSON.