THE DISORDERS OF SPEECH.—By John Wylie, M.D.

Oiver and Boyd, Edinburgh.

It is seldom that the opportunity of reading a book so solid of interest and instruction, so simply and lucidly expressed on a difficult subject, which has received scant attention from teachers of medicine, general practitioners, or internists generally, occurs in the Edinburgh Medical Journal. The author began the study of this subject about thirty years ago with his graduation thesis on The Physiology of the Larynx (included as a part of the index of this book for which he was awarded the gold medal from the University of Edinburgh in the year 1855. Having been one of the physicians of the Edinburgh Royal Infirmary for many years, he has made excellent use of the anecdotal clinical material at his disposal to study specially nervous diseases and the disorders of speech associated with them. The text of this memoir is a reprint of a series of articles which were published in the Edinburgh Medical Journal between the years 1891 and 1894.

The first part is devoted to the functional disorders of the vocal mechanism, and in it the author comprehensively discusses stammering, whispering, hysterical aphonia, and nervous troubles of vocal expression. He commences with a singularly happy comparison between the co-ordinate movements of a skilful violin player and the rapid actual movements concerned in the production of speech. The bow-player is the producer of sound, in like manner the larynx is the vocal mechanism. “The string hand moulds the sound into music,” so does the oral mechanism mould the sounds of the larynx, timbre, and also adduct new sounds. But, both in the case of the hands of the violin player and in the dual mechanism of speech, it is essential that there must be precise co-ordination. Failing this, discord results in the one instance, and stammering in the other. In most cases stammering is due to the delayed action of the laryngeal or vocal mechanism; but the unfortunate sufferer, being ignorant of this fact, commits the serious mistake of allowing all his energy into the oral mechanism, and thus he produces unseemly sounds and spasmodic contortions of the facial muscles. Dr. Wylie has constructed a physiological plan for a special session for those who stammer, or are affected by graver disorders of speech. The alphabet is specially arranged with a view to simplicity and so as to separate the voiced from the voiceless elements. We think, however, that he errs in stating that “no language has utilized the voiceless R,” because it is used in both of its forms of a voiced and voiceless fricative in Urdu and in other languages of the Indian peninsula. The author constantly exposes the venerable physiological fallacy that whispering is the product of the oral mechanism alone, and he insists on the cooperation of the larynx—being thus in accord with the views of Brücke, Von Meyer, and Czermak.

Hysterical aphonia is due to a bilateral partial paralysis of the adductor muscles of the arytenoids and vocal cords; it is specially common in the Indian peninsula. The closely related condition of hysterical mutism, however, occurs with equal frequency in both sexes. Rhythmic spasms of the vocal and respiratory mechanisms form another peculiar manifestation of hysteria. The patient may bark, cough, sneeze, snort, sniff, hicouc, yawn or scream rhythmically; but in all cases the spasms cease during sleep.

In discussing the variety of fatigue nerves of the larynx, Dr. Wylie adopts Frankel's analogy of the variety of writer's cramp. The latter may occur in three forms, the spasmodic, the tremulous, and the paralytic. There are three similar forms of laryngeal fatigue nerves. The spasmodic kind of writer's cramp is represented by phonic spasm of the glottis. Most writers have ascribed this to spasmodic approximation of the true cords; but Dr. Wylie disagrees with this view. He believes that the condition is caused by the failure of the cord musculature, as may occur during any effort in straining. He thinks that the construction of the true cords renders them incapable to offer any effective resistance to the exit of air, can be brought about only by co-operation of the false cords and the ventricles of Morgagni, which act in the vocal organs in such a manner as to me to be one in which the whole glottis, true and false cords alike, is seized with involuntary spasm, and is closed up, completely or incompletely, as it normally is during and after straining.

In the section on clergyman's sore-throat, stress is laid on the important part that the pharynx plays in voice production, the pharyngeal wall and the velum palati form the most important reflectors of the sound-waves which issue from the larynx.

The second part deals with the development of speech and its developmental derangements. In the chapter on the development of the language faculty the changes and writings of Mr. Darwin and Professor Preyer, on the progress of the child from day to day, are drawn upon extensively. The author has constructed a useful diagram representing the relative evolution of expressive inarticulate sounds—crying, laughing, grunting; facial expression and gesture; automatic speech babbling, crowing, mimic reading, and echolalia; and intelligent speech—comprehension of spoken words, words and meaning of the child's invention, and intelligent speech production.

The various expressions of crying, rage, disgust, sulking, guilt, grief, surprise, fear, and blushing are all dealt with. All is made to run through the child. His automatic movements associated with an expression of the relative human of all expressions, and to the fact that neither babies nor idiots can blush. Just as the child kicks and squeals to exercise his limbs, so he makes unconscious and automatic use of his vocal organs in babbling, mimic reading, and echolalia before he can acquire the power of speech. Healthy children usually walk before they can speak, and understand what is said long before they walk.

The voice serves a treble function:—(1) It exercises the lungs and muscles of respiration; (2) it is a means of expressing emotion; and (3) it aids in the conjunction with oral articulation to form words, and thus to serve as the instrument of thought.

It is comforting to be assured that the wailing of a plaintive infant, and the noise of a hungry child, is due to the increasing air-pressure put upon the lungs by the strain of crying must, immediately after birth, play a very important part in opening the air vesicles for the entrance of air. At the same time, there can be no doubt that the act of crying affords a means of exercising, in a beneficial way, all the muscles of the respiratory system. It exercises the larynx, timbre, laughing, singing, shouting and talking, practised freely by young children, are generally believed to be good tonics for the lungs; and it is entirely in harmony with this belief to find that deaf mutes, who cannot talk, and who use their voices much less than normal children, are believed by many to have weak chests, and to be specially prone to chest affections. The author illustrates the defects in speech among idiots and imbeciles by an interesting series of cases culled from the Morningside Asylum, in Edinburgh, and from the National Institution for Idiotic and Insane Children at Larbert. These cases are selected and arranged so as to represent the stages in the speech development of a normal child, from the absence of speech in a baby to a condition not much inferior to that of an adult of ordinary intelligence.

Associated with dumbness there is usually a certain degree of defective intelligence or weakness of mind. Under the section on the language of deaf mutes there is a description of various methods by which they are taught to communicate their thoughts by means of the sign language, manual alphabet, writing, oral articulation and lip-reading.

The last chapter of this part contains much of general interest, for it treats of the development of speech in the human race and the classification of languages. The two sections also on the origin of written language, the invention of printing, and printing for the blind.

The third part forms the largest and most important portion of the book, for it deals with speech in its relations to diseases of the nervous system, and is mostly concerned with the various forms of aphasia.

The author first considers the relations of speech to insanity, and goes on to distinguish clearly between the faculty of thought and that of language, the latter being merely the instrument of thought. In dementia the function of thought decays more rapidly than that of articulate speech. Nevertheless the functions of thought and language are so closely and intimately associated that it is difficult to draw a dividing line between them. So we find that, in the majority of cases of mental disease, the function of language evinces scarcely any independent activity, yet on the other hand the acquired loss of the state of the mind, be that of melancholia, mania, or monomania.

Chapter IX contains a good physiological preface on aphasia, together with much material for the student, and a short history of the subject. Aphasia occurs in four elementary forms, which are each the result of a particular centre in the brain being disabled. These conditions are classified into four varieties are located in one and the same hemisphere. The two primary forms of motor aphasia are aphemia and agraphia, while the two primary sensory varieties are auditory and visual aphasia. Wernicke's conduction aphasia,
results from a lesion that cuts across the fibres which connect the chief motor and the chief sensory speech centres in the third inferior frontal and first temporal convolutions, e.g., in leucoælastus, the Sylvian fissure and the island of Reil. In this form paraphasia is very marked, especially as regards nouns.

Nouns form the class of words most easily obliterated in all aphasia, and the memories of the more specialized and concrete nouns are less deep and permanently implanted than are those of abstract nouns and general terms. Nouns are very numerous, whereas adjectives, verbs, and adverbial dispositions are comparatively much fewer, and are frequently used with special emphasis; hence they come to be repeated more frequently, and consequently make a deeper impression than nouns do.

Auditory aphasia is the result of the destruction or disablement of the auditory speech-centre in the posterior half of the left first temporal convolution, in which are stored the auditory word-images. Although the words are still formed by means of the corresponding centre in the right half of the brain, yet they are heard merely as sounds and convey no intelligible meaning to the patient. He also suffers from word-blindness, and from logagnosia, especially of nouns.

Motor aphasia, or aphemia, is commoner than the preceding. It is due to a lesion in Broca's convolution which paralyzes the centre for the movements of the lips and tongue, and renders the production of speech impossible. The author suggests that the executive motor cells for the oral articulatory mechanism are situated in the ascending frontal and parietal portions of Broca's convolution, and that the foot of the frontal convolution is the storehouse of auditory logamnesia (amnesia verbalis), word-blindness, and word-deafness.

The author thinks that aynnergia aphasia is a less misleading term. It should not be confused with amnesia verbalis, though this also is frequently present in motor aphasia. Paraphasia never occurs in motor aphasia.

Visual aphasia results from a lesion in the angular and supra-marginal convolutions, which are in apposition, and which severally control the occipital and parietal portions of the first tempo-sphenoidal and Sylvian fissures. Destruction of this visual word-centre causes both alexia and agraphia. If the lesion penetrates deeper than the grey matter, so as to cut across the radiation of Grawitz in the white matter, then hemianopsia also results. If, however, this visual word-centre in the parietal lobe be not destroyed, but if its connections with the primary visual centres in the occipital lobes be cut off by a lesion in the white matter of the occipital lobe, then simple word-blindness without agraphia is the consequence. The distinction is between the lesions causing motor aphasia and word-blindness, and agraphia is due to the work of Dejerine and Sèricus.

Graphic motor aphasia results from morbid change in that part of the posterior end of the second left frontal convolution which is directly in front of the motor centre of the hand. There is no space to refer to the other simple forms of aphasia recognised by Lichtheim and Wernicke, nor to discuss the much more commonly occurring compound varieties of aphasia.

The author gives some useful hints on the method of case-taking in the study of aphasia, and he suggests a new terminology to do away with the confusion that exists from the inappropriate terms now in use. There is much word-blindness, word-deafness, and word-deafness. Thus, he suggests, logagnosia as a general term for the power of recognising words, audible or visible. This is capable of differentiation into visual logagnosia (word-blindness), auditory logagnosia (word-deafness), and motor logagnosia. Extending the same process to amnesia, he gets the terms visual logamnesia (word-blindness), auditory logamnesia (auditory amnesia verbalis), and motor logagnosia.

In Chapter XV the relations of aphasia to functional disorders are discussed. The last chapter is one of the best in the book; it deals with the anatomy, physiology, and pathology of the chief motor tracts.

This treatise on Disorders of Speech cannot fail to be of use and interest to the teacher and practitioner of medicine, and to specialists in nervous and mental diseases. The work deals with the latest and most valuable results of scientific research. It is a work of reference, and is thoroughly familiar with his theme by teaching and practice.