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Rockwell (A. D.) author *Implements*

APHASIA.

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A P H A S I A .

PRELIMINARY to a few practical considerations concerning aphasic symptoms, I call attention to the following cases which serve as texts for all that I have to offer :

By invitation of Dr. E. R. Peaslee, I saw in December, 1873, a Mr. A., a gentleman somewhat advanced in years, and who was suffering from right hemiplegia with complete aphasia.

About a year previously he was taken with left hemiplegia, but there was no accompanying aphasia ; his speech was quite clear, and he rapidly progressed toward almost complete recovery.

Two months prior to the date when the patient fell under my observation, paralysis of the right side suddenly supervened, associated, as I have already remarked, with aphasia.

The intellect remained measurably quick and clear, but *da da* was the only utterance that the patient would attempt. When he essayed to write, the result of his efforts were manifested only in a meaningless combination of letters.

The diagnosis was: Lesion of the anterior lobe of the brain, probably the third frontal convolution, and the prognosis decidedly unfavorable, if not absolutely discouraging. Treatment by the galvanic current, which was for a short time carried on at the earnest solicitation of friends, resulted in no benefit.

I was consulted December 7, 1873, by a lawyer aged fifty-three. One morning, some eight months prior, he arose in

his usual health and for some hours attended closely in his office to a press of business that had accumulated during a few days' absence from the city. While thus engaged he observed that his right leg was a little numb, and that there was a disagreeable sensation of tingling in the fingers of the right hand. Almost immediately he felt that his whole right side was paralyzed, and, on attempting to speak he found that he could not co-ordinate intelligible expressions. In a few days the patient regained almost the normal power over the paralyzed members, but his speech returned more slowly, and for three months before I saw him there had been little perceptible progress.

He could speak short, disconnected sentences well enough, but when he attempted to engage in animated conversation, he not only constantly used words that utterly failed to convey his ideas, but frequently all remembrance and power of expression seemed to forsake him, so that he was unable to proceed until reminded of the proper word and the thought that he had been expressing. The patient was treated for about a month by central galvanization, and with very marked benefit. The improvement in speech, which had ceased for three months, became again manifest, so that in a few weeks he could converse with much greater readiness. To this day, however, considerable difficulty in co-ordinating words and ideas remains.

I refer lastly to a poor man who became aphasic during convalescence from a severe attack of typhoid fever.

This patient, while working as a common laborer in the city of Pittsburg, was prostrated in October, 1873, and was at once removed to a hospital.

During the first two or three weeks of a rather tedious convalescence, no change in the character of his speech was observed, but shortly before his discharge, and while feeling that strength was surely returning, he noticed a slight impairment of the co-ordinating power of expression, which day by day increased in degree until he lost almost completely the power of intelligible converse.

He came to New York in February, and on the 21st of March he was sent to my office. At this time he had been aphasic for ten weeks, with no symptoms of improvement.

The patient was anæmic, there was decided œdema of the lower extremities, and the heart's action was violently irregular, although this was not due to any organic cardiac disease.

On general principles I submitted him to general faradization daily. The immediate results of this treatment, *i. e.*, those that followed within a week, were an increased flow of urine, disappearance of the œdema, and increased regularity of the heart's action. He began to improve in his speech at the end of the second week of treatment, and in two weeks more he was able to converse with his usual fluency.

These three cases seem to me to be of interest as illustrating a number, although not all, of the various forms under which aphasia may manifest itself. In the first case both the paralysis and aphasia were complete and persistent. From the beginning there had been no change for the better, and the future offered no hope of even a partial recovery. It will be observed on referring to the case that the patient had suffered from two attacks. In the first instance the left side was affected, but, as is almost always the case, the paralysis was accompanied by no aphasia. The second attack was on the right side, and associated with complete aphasia.

These facts serve to recall the excited and interesting discussions that have arisen relative to the localization of the faculty of speech. In 1865 the subject was exhaustively considered by the Academy of Medicine of Paris, and although the discussion neither resulted in any general settled conviction in regard to the localization of the faculty of speech, nor satisfactorily decided the question whether any particular portion of the brain was the *invariable* seat of hemiplegia with aphasic symptoms, it yet served to throw much light on several disputed points, and to lead to a more correct appreciation of the therapeutical indications.

From the facts elicited at these discussions it was rendered evident that complete and persistent hemiplegia, associated with grave aphasic symptoms, similar to the case first detailed, depend on deep-seated and destructive organic lesion, situated, as a rule, in the third left frontal convolution of the cerebrum, or in its immediate neighborhood, and is not amenable to any form of treatment. Electricity, except so far as it may aid

nutrition in the affected limbs, is in such a case useless. Between such hopeless seizures as the above, and mild transitory aphasic symptoms without paralysis, there are manifestations of aphasia of various grades of severity.

Slight disturbances of speech unattended by paralysis disappear rapidly and without treatment, and if, as it is possible, a local change in the structure of the brain takes place, it comprises nothing more than some slight molecular disturbance. Following a somewhat graver and more deeply-seated central lesion, we have aphasia associated with paralysis, more or less persistent, but amenable to a greater or less extent to rest and treatment.

The second case is a fair illustration of such an attack, of the somewhat transitory character of the attendant paralysis, the greater persistency of the aphasia, and the benefit to this symptom that may accrue from treatment. Aphasia following convalescence from fever is illustrated in the last case. In the graver forms of aphasic hemiplegia, we clearly understand that there exist deep-seated and destructive lesions, and even in the milder forms we know that actual structural change or congestion is to some degree present. In aphasia following fevers, however, congestion as a cause is hardly possible, if we take into consideration the character of the onset and the attendant symptoms, and it is on the whole difficult to conceive of the nature of the lesion.

In 1820, Lordat, of Paris (who some years subsequently became aphasic), was the first to apprehend the true character of the affection, viz.: that it was due to a loss of the power of co-ordination, and not to actual paralysis of the tongue or muscles of the face. Bouillaud went a step farther, and located the faculty of speech in the frontal lobes. Subsequently, Dr. Marc Dax, in a paper entitled, "Lesions of the Left Half of the Brain Coinciding with the Loss of Memory of the Signs of Thought," asserted that the faculty of articulate language was exclusively located in the left hemisphere of the brain. He had never seen a case of left hemiplegia with aphasia.

Trousseau, in a most extensive hospital experience, met with but one case of left hemiplegia associated with aphasic symptoms, and which at that time he asserted to be the only one

recorded. Finally M. Broca located the faculty of articulate language in the third left frontal convolution, and claimed that organic disease of this special portion of the brain must necessarily be accompanied by aphasia. Now in regard to the ideas enunciated by the above investigators, it must be admitted that (with the exception of Lordat) they are but partial truths. That this affection which he termed "alalia" is due to an impairment of the power of co-ordination, and not to muscular paralysis, has never been doubted.

The conjecture of Bouillaud that the faculty of articulate language has its seat in the frontal lobes of the brain, of Dr. Marc Dax, that it is located in the left hemisphere of the brain, of Dr. G. Dax, the son, that not only is its invariable seat in the left hemisphere, but, more minutely, that the outer portion of the middle lobe is its true location, and, finally, the opinion of M. Broca that the posterior portion of the third left frontal convolution is the seat of the faculty of speech—all these conjectures are only so many steps to a clearer appreciation of the truth. So far as can be ascertained from physiological and pathological investigations, and from the records of clinical experience, it seems evident that no one minute portion of the brain can yet be claimed as the exclusive seat of the faculty of language, or of organic lesion in hemiplegia with aphasia. The truth briefly stated would appear to be this: 1st, Aphasia is as a rule, the result of injury to the frontal lobes; 2d, the left hemisphere is almost universally the seat of lesion; 3d, the posterior portion of the third left convolution is the most frequent seat of structural change.

The experiments of Fritsch, Hitzig and Ferrier, although yet of but little practical value to electro-therapeutics, have at least cleared up somewhat the pathology of aphasia. They not only show that the portion of the brain which presides over the faculty of the memory of words governs also the movements of articulation, but conclusively confirm the theory that in every essential point the brain is symmetrical. Its action is generally unilateral and crossed, but it is most significant that so far as it controls the movements of the mouth, its action is bilateral, which accounts for the fact that a one-sided cerebral lesion is not followed by paralysis of the muscles of

articulation. The opposite side of the brain performs the work of its fellow. How, then, it may be asked, can we explain the well-recognized fact that loss of the co-ordinating power of speech is universally associated with left cerebral lesion? In all probability it is due to this:—that as most people are right-handed so are they left-brained; and in lesion of the left hemisphere with aphasic symptoms, the memory of words is not totally destroyed, since the seat of this faculty is in the right side also, but the victim is without the power of articulate speech because the right side of the brain has been so little exercised as to be incapable of acting alone.

This theory helps to explain the occasional recoveries of speech in aphasia resulting from undoubted and serious lesion of the left hemisphere. The right side of the brain is educated in the same way that the left hand is educated when its fellow becomes disabled.