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A CASE OF ALEXIA (DYSANAGNOSIA).

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On the morning of the 23d of August, 1888, the Rev. W. A. H. aged eighty-two, came to me with a request from Dr. Busey that I examine into the condition of his eyes. His vision, it was stated, had not been satisfactory since an attack for which the doctor had attended him some weeks before. He was rather feeble-looking, though not more so than would be expected in a man of that age, but he had come to my office alone from a distant part of the city, and had had no unusual difficulty in finding my residence, the number of which was written by Dr. B. on a paper, which he held in his hand at the time he presented himself. The statement he made then was that he had not been able to read since the time mentioned, and that he feared "the nerve was injured." The history of the attack is as follows: He had gone out into his front-yard, some weeks before, to assist his servant in watering the grass. He staggered, but did not fall, and, feeling uncomfortable, went into the house. He passed a rather comfortable night, and came down stairs the next morning as usual, read the service, and had the customary family devotions. Soon afterwards, however, he complained of feeling badly, was taken up stairs, and almost directly went into strong general convulsions. Of these he had three during the afternoon and evening, and afterwards passed into a condition of stupor from which he could be roused with difficulty and for only a moment. At the end of three days he became conscious, but was very weak. On the fourth day, in the evening, he read some from the prayer-book, but was very much fatigued thereby. On the next morning he attempted to read again, but found he could not.

On examination I found that he failed to name any letter of Snellen's test-type correctly, even the largest. The refracting

media were unusually clear for a person of that age, and the fundus of the eye did not present any thing sufficiently abnormal to account for such a marked deterioration of vision as seemed to be present. A trial with lenses failed to make any change in the unsatisfactoriness of his vision. The ophthalmoscope and skiascopy showed a slight myopia, but the ophthalmometer revealed no corneal astigmatism above what might be considered normal.

Having mentioned, during the course of the examination, which was very tedious for a person of his general intelligence, that he thought the difficulty lay in the transposition of a letter or word from one line to another, I tested him for diplopia, but found none. His visual field was normal. In my despair of finding any satisfactory cause for his trouble, or even the nature of it, I tried his near vision and found it equally bad; but what struck me as being curious was that he made as many mistakes with the large type as with the small. Finally, with somewhat of impatience with myself for my inability to discover the nature of the affection, I asked him to spell some words of No. 14 Jäger. Then it was that it came to me, in a flash, what the real difficulty was. It was not that he could not see the individual letters of the word, or the word itself, but that they failed to convey to him the same ideas they had for the last seventy or seventy-five years. In other words, the fault lay, not in the globe of the eye, but in the brain. I then set about making systematic tests, and with rather curious, not to say startling, results. I found that he was unable to read any thing correctly. A word here and there might be properly called, but the sense of even the shortest sentence would be ridiculously misinterpreted.

For example: The morning paper was lying on the table, and I asked him to read aloud to me the following sentence: "Judge Thurman will formally open his campaign at Port Huron to-day." This he read to me as follows: "John, John then the hatter his hat going to be h-green." No. 12 of Jäger reads thus: "The keys and he began playing a sad and infinitely lovely movement." His interpretation of it was: "Was told to be and haying a a was to be be ing in mo on when he was crydt."

Even these attempts at reading were made slowly and hesitatingly, and often with the necessity of an effort to decipher a word by spelling, just like a child learning to read.

He was himself aware of this being the veriest nonsense, and having been a close student and constant reader all his life, the annoy-

ance had not a little tinge of humiliation added to the unavoidable ludicrousness. I have submitted him to a number of different examinations with a view of finding the exact limit of his defect. His trouble is confined entirely to an inability to interpret the meaning of printed or written words by means of the impressions they make on the retina. When any thing is read to him he understands it perfectly and can repeat it accurately, and his memory of things he has read before is unimpaired, and all other impressions made on his retina are properly interpreted. He can even read numbers correctly, and can tell the amount of a check, though unable to tell to whom it is drawn or by whom. And not only are the Arabic numerals recognized without difficulty, but he is able to interpret correctly the Roman numerals also. All the letters he can distinguish individually with ease except the letter "s." To look at this is always disagreeable. The word "the" is seldom or never misinterpreted. All kinds of pictures he understands and enjoys.

He can write either originally or from dictation, but is as unable to read his own writing as he is that of any one else or printed matter. It is necessary, however, that he write continuously. If interrupted, he cannot go back and begin where he left off. Yet it is possible for him to break a line in writing if he is not interrupted in his own line of thought. He can divide a word properly at the end of a line and start out on the proper letter at the beginning of the next. For instance, he wrote, at my dictation :

"Of man's first disobe-
dience and the
fruit of that forbid-
den tree."

Under my instructions, his wife has been making an effort to reëducate his reading faculty, and for that purpose procured a school primer and began as with a child learning its letters for the first time. He can call the letters of the alphabet correctly separately, and can spell a few words in succession properly, sometimes as many as five or six, but after this the brain becomes fatigued and he shuts his eyes or hands the book back. If he is fatigued in body or mind before the effort is begun he can not make out more than two or three words. It must be said, however, that the improvement under this plan has not been encouraging. His memory for what he has read before is by no means impaired, but in attempting to verify a scriptural quotation, for

example, as he did some days ago, he turned to the place where he thought the passage was, in Job, and indicated and read as the passage he was looking for, one which had not the slightest resemblance to the real one, which was in Amos. He was not aware of his mistake until it was pointed out to him by his wife.

These notes were made nearly a year ago, and the patient succumbed to an attack of pneumonia on January 20, 1890. In the meantime, however, no essential change had taken place in his condition. His general mental faculties remained unusually bright and clear to the last, and his bodily vigor was as good as it had been for many years past until seized with the prevailing influenza. His reading faculty, however, was never regained to a degree beyond that reported above.

This case seems to be one of alexia, pure and simple. No other faculty, so far as the closest scrutiny and the most careful examination could determine, was affected except that of reading. This fact would seem to demonstrate quite conclusively the existence of a "reading centre" separate and distinct from any and all other centres. Where that centre is situated, we are, unfortunately, not able to bring any pathological facts from this case to demonstrate. His death occurred whilst I was absent from the city, and a post-mortem examination would, under any circumstance, have been difficult to procure.

The literature on the subject, while not scanty, is yet too deficient in clinical and pathological details to allow of any positive deduction as to the seat of lesion. Several autopsies have been made in cases where alexia was a part of the clinical history, and the changes found will serve at least as indications for search in cases which come under observation in future. In Nieden's¹ case, Broca's third posterior left convolution was uninjured; there were apoplectic spots about the corpus striatum, extending to inferior frontal convolution; the gray matter was not destroyed.

In Berlin's cases, six in all, there were three autopsies.* In the first there was atheroma of the left arteria fossæ Sylvii, brain substances unaltered; in the second the whole

¹ These ARCHIVES, vol. xvii., p. 307 et seq.

² Ueber Dyslexia. *Baden-Baden u. med. Corresp. Bl. d. Würtm. ärztl. Landes-Versamml.*, 1883, No. 27.

brain surface was inflamed; in the third the alteration was confined to the left side—fresh hemorrhages and old morbid processes, thinning of roof of left ventricle, and thromboses of left art. front. and communicans post. and general atheroma.

These data are altogether too indefinite to base any thing like a positive opinion on, but it would seem that we can look for the lesion in cases of alexia, on the left side, and in particular in the region between Broca's frontal convolution, the facial centre and the central convolutions.

Landolt has reported a case in Donders' Jubilee-memorial volume, and there are other cases scattered in various journals of general and neurological medicine, but none that I have been able to refer to where the lesion was so isolated as in the case I have reported.

I agree with Nieden in the opinion that the term "dys-anagnosia" is etymologically more correct and scientifically preferable to either "alexia" or "dyslexia," the two latter being hybrids of Latin and Greek, whose adoption in our nomenclature should not be encouraged.

It would also seem desirable to separate clinically the graver from the lighter forms of the lesion. Berlin reports several cases where there was simply a fear or disinclination of reading, though all the words could be properly interpreted. These are certainly not the same in degree as those cases like the one whose history has just been reported, where the ability to distinguish even a few words in succession is absent.

