TEMPORARY ABULIC AGRAPHIA PROBABLY DUE TO PARTIAL OBSTRUCTION OF THE SUPERIOR LONGITUDINAL SINUS.

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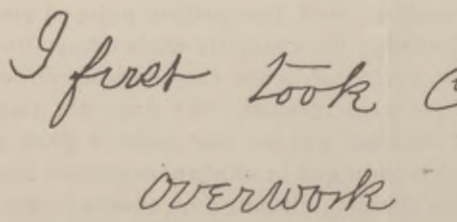
Charles O., a bright and well educated gentleman, aet. 30, single, born in Michigan, clerk and weigher for a large ore mill, living in Colorado ten years, comes January 4, 1896, complaining of headache and impairment of memory of a few days' duration.

The family history is excellent, and the patient enjoyed good health, with the exception of suffering from malaria when a boy, until five years ago, when he had an attack of acute rheumatism, during which several of the large joints were affected. He does not think that his heart was involved at the time, and he has suffered from no cardiac symptoms since. He has indulged in only an occasional drink of alcoholic liquors. He denies syphilis, although he admits repeated exposure. His hair has fallen out during the last few years, and it is now quite thin on the top of his head. He gives no history of a fall or an injury to the head. He has never had la grippe, trouble with his ears, severe nasal catarrh nor suppuration in any portion of the body.

He considered himself in almost perfect health up to Monday, December 30, 1895. The day was cold even for an altitude of 9,000 feet. He was engaged in weighing ore in an unheated room from early morning until nearly noon, when he had a severe chill which came on suddenly. He quit work immediately, went to his boarding house and

was covered warmly in bed. A high fever followed the chill, but his physician did not inform him how high his fever was. The fever was attended by slight headache. During the afternoon he noticed that he could not utter some words. He says that he could think out what he wanted to say, but when he would endeavor to pronounce certain words he was unable to do so. He does not remember what words in particular were the most difficult for him to utter. He does not know whether the headaches and defect in speech came on immediately after the chill or a few hours subsequently. He remained in bed only one day, but sat around the house, feeling dazed and suffering from a dull, heavy pain in the front of his head, until the following Saturday when his physician, Dr. Shaw, of Georgetown, sent him to Denver to consult me. I saw him at my office early during the evening of his arrival. He was very tired and on testing his power to write, it was found that he could not write a single word voluntarily. He could write at dictation, but made a few mistakes. He gave me a detailed history of his illness, talked intelligently and very connectedly. Among other things he said, "I first took cold after overwork." I then requested him to write voluntarily the cause of his sickness. He tried for a few minutes, but did not succeed in writing a single word. During this time I observed that he became very pale and began to perspire freely. He said the effort even to think of writing was very exhausting to him. He had not tried to write a word since he was taken sick. I now dictated for him to write what he had told me, namely, "I first took cold after overwork," and the following is the result:



He complained of feeling nervous and said that he had not slept much since he was taken sick. His bowels had been opened regularly every day. He was given small doses of sodium bromid to take every hour, and 20 grains of sulphonal to be taken at bedtime, and requested to report at my office the next morning.

January 5, 1896: He slept well last night, but had great difficulty in finding my office this morning, although he knows Denver well.

Examination: The gait is good, but he walks deliberately and exceedingly slowly. It is almost impossible for him to stand on one

foot and raise the other at the same time, not because he is ataxic, but for the reason that he cannot direct his attention to two things at the same time. He says that he understands perfectly what I am saying and what I desire him to do, but he cannot direct his will power so that he can stand on one foot and raise the other at the same time. As soon as he fixes one foot on the floor to throw his weight on it and attempts to raise the other foot, the last one to which he directs his attention will be fixed on the floor He makes the attempt several times before he partially succeeds. Knee jerks are about normal. Plantar reflexes, ankle clonus and tendo-Achillis absent. Cremaster, R. present; L. very slight. Abdominal reflexes absent. Deep reflexes of arms about normal. All leg muscles fairly strong. Dyn. R., 220; L. 210. He is right handed. Quick and decided muscular movements are almost impossible, as he is unable to direct his attention quickly to any subject. The patient seems exhausted by the examination. Smell and taste present nothing abnormal. Hearing good and equal in each ear. On testing with the tuning fork the power of hearing, it is found that the fork is not heard better in the closed ear than in the unclosed one. This is evidently due to his inability to concentrate his mind rapidly. A thorough examination of the eyes in regard to vision, central and peripheral, musculature, fundi and disks, reveals nothing wrong except a slight hyperemia of the retinæ and disks, more pronounced in the left eye than in the right.

Speech: There is no form of sensory aphasia. He thinks in speech, propositionizes, repeats words after another, and talks voluntarily quite well, except that he is slow in speech. He utters words distinctly, except a few. He has some difficulty in saying "truly" rural, but after repeating it a few times he pronounces it well.

The main, and nearly the only, defect in speech is seen in his attempts at writing voluntarily. He does not succeed in writing anything voluntarily except the place in which he lives. When I ask him to write me an account of his illness, he mentally labors hard, but does not write a single letter. I now request him to write something and he writes his name and address, but nothing more. He writes at dictation fairly well. He makes a few mistakes in the spelling. The effort of writing, even at dictation, soon exhausts him. He copies both printing and writing into script. He converses fairly well, but talks slowly and deliberately. He is painfully conscious of his inability to write voluntarily, and it seems to annoy him. I find that it is difficult for him mentally to write a word, and almost impossible for him thus to write a sentence. He can read single figures and tell the value of five figures placed side by side, but six or more figures he can not read. He can add simple numbers, but he can not subtract, divide

or multiply. He has no difficulty in recognizing the various cards, telling their relative values and playing simple games.

He feels dazed and confused, and these sensations are increased by efforts at trying to think. He says that he has no difficulty in mentally spelling or reading, but great difficulty in mentally writing voluntarily. If a word is suggested to him he can write it mentally at once.

He is placed in St. Luke's Hospital and his case is carefully studied.

He has a good appetite, eats heartily and sleeps well.

January 6, 1896: He says that he can now trace mentally the letters, words and sentences which he wants to write, but is unable to write a single word voluntarily. He copies, writes at dictation and reads understandingly what he has written. He complains of considerable pain in the top of the head. During the latter part of the day, after he had been resting in bed nearly all day, I again tested his power to write voluntarily. He becomes agitated on trying to write and soon begins to suffer from great pain just to the right of the median line, about over the auriculo bregmatic line.

January 7, 1896: He is dressed and sits up all forenoon. Reads a great deal. He plays cards until he can not see the spots on the cards on account of headache. About 5 p. m., after he has been lying in bed several hours, I once more test his power to write voluntarily. He holds the pencil in his hand, with his eyes fixed on the pad, makes occasional movements of his fingers as if writing, without allowing the pencil to come in contact with the paper. After a few minutes his face flushes, his nose begins to bleed and he lays the pencil down, saying that he can not write, as the effort required to concentrate his mind on the act causes his head to pain and exhausts him very much. Just a few minutes before this, without experiencing any sense of fatigue, he had written at dictation and written the names of objects seen, felt, heard, smelt and tasted, and had copied and read aloud. Even after his failure to write voluntarily he writes at dictation and reads printing and his own writing aloud without apparent difficulty. He is painfully conscious of his disability and is greatly chagrined by it. He is easily fatigued by conversing long at a time. After his nose bleeds he feels better, his head aches less and his mind feels clearer.

January 8, 1896: He had slept well all night. He is up early, dresses himself and feels much better. Says he begins to be himself again, as his mind now appears clear and he no longer suffers from headache. The confused mental feeling of which he has complained since the beginning of his illness has greatly lessened. During the

forenoon he asks for pen, ink and paper. He is carefully observed by the nurse. After sitting for a while, apparently meditating, he asks the nurse the year, the month and the day. On these questions being answered he begins to write and succeeds in writing two business letters and one letter of two pages to me. The letters are well written and contain scarcely a mistake. Voluntary writing no longer causes his head to pain him. During the afternoon he writes from memory a long quotation from Kingsley.

January 9, 1896: Was restless during the night and talked in his sleep. On rising this morning he has a profuse hemorrhage from the nose. Says that he was never subject to nose bleed before this attack. He has no headache, his mind is clear, but he feels nervous and restless. He tries to write a business letter, but does not succeed.

From this time on, defect in voluntary writing was not observed, but he felt physically weak for several days and much mental effort fatigued him. He left the hospital Jan. 15, apparently well. He wisely went South and rested several weeks. On his return he was strong, and at present is in excellent health, both mentally and physically.

During his stay in the hospital, his temperature varied from normal to about one degree Fah. below normal. His pulse ranged from 64 to 82, averaging about 70, and had a good quality. His breathing was a little rapid, rarely being found below 22, and sometimes reaching 30 per minute. The thoracic and abdominal organs appeared normal.

The treatment consisted in absolute rest in bed for the first few days; in obtaining one or two free evacuations of the bowels each day; in securing abundance of sleep; in quieting headache and restlessness by an occasional dose of sodium bromid; and in giving abundance of nutritious and easily digested food.

DIAGNOSIS: During the time that the patient was under my care, indications were met as the condition of the patient seemed to require. The defect in writing, I thought at the time, pointed to a localized lesion on the left side of the anterior portion of the brain, possibly thrombotic in character. The sudden change from good health to a condition which was ushered in by a chill, followed by a fever of a few hours' duration, during which headache and disturbance in speech writing became manifest, then the two latter symptoms continuing for 8 days with a subnormal temperature and great mental and physical depression, indicated vascular disturbance of the brain which had its origin in undue exposure to cold.

Was the inability to write voluntarily, with no other speech defect, due to a vascular disturbance in any special portion of the brain?

So far as I can remember at present, I can not recall having met with, or seen recorded, a case entirely similar to the one reported in this paper. Numerous cases of motor and sensory agraphia have been observed by almost every clinician of much experience. In the sensory form, either auditory or visual disturbance of speech exists, with or without apraxia (loss of the memory of the use of things), and in many the other special sense memories for the use and names of objects may be similarly involved. In the patient whose case has just been recorded, none of these symptoms were found, so that any localized lesion in the parietal, occipital and temporo-sphenoidal lobes affecting speech can be excluded. In the motor variety of agraphia Broca's speech centre (the foot of the third frontal convolution on the left side in right handed persons and on the right side in left handed individuals) is usually, though not always, affected, so that the patient is unable to think in speech (propositionize) or to repeat words after another. Speech utterance, as a rule, is defective in cases in which Broca's aphasia is present. In the few cases of almost pure oro-lingual paralysis that have been reported, inability to utter speech, not to think in speech, has been the chief symptom. In these cases if writing is interfered with it is due to involvement of the cortical centre in which the muscles concerned in writing are represented, and the defect exists alike for writing at dictation and voluntarily. The oro-lingual centre and Broca's convolution were not involved in the case reported in this paper. Bastian[1] and a number of other observers have recorded cases in which the chief symptom has been so-called "motor-agraphia." In a pure case of this kind there is no paralysis of the head or oro-lingual muscles, and the patient is able to think in speech and to repeat words after another. The mortor agraphic centre is supposed by some to be in the foot of the second left frontal convolution in right-handed persons, and in the corresponding convolution on the opposite side of the brain in left-handed individuals. No clinico-pathologic observation has heretofore been placed on record fully corroborative of this centre. In a case recently observed by me, a detailed account of which is now in the hands of the publisher, the defect in writing consisted in misspelling. There seemed to be a loss of the memory for the arrangement of letters in the formation of most words. The lesion was a cyst and was found in the foot of the second frontal convolution. There was a mental weakness in connection with the inability to spell as well as he formerly could. In the case just referred to, writing at dictation and voluntarily were alike affected, but if the words were spelled for the patient he wrote them readily and correctly. On the contrary, in the case the account of which is found

1 Bastian; Paralysis from Brain Disease.

in this paper, the patient could spell correctly, wrote at dictation and copied, both printing and writing, into script; in short, the only defect in speech was an inability to write voluntarily, and for the first few days after he came under my observation, great difficulty in calling up mentally the mechanical process concerned in writing. The latter was least for words and greatest for sentences.

Since none of the cortical centers concerned in speech seemed to have been involved in this case, how then are we to explain the loss of the power to write voluntarily?

By reference to the examination on January 8, 1896, it will be found that his muscular power was good, but that he could not perform any muscular movement rapidly, especially if he were required to make much exertion at the time. This seemed to be due to defective power of mental concentration, interfering with the concentration of his mind on two things at the same time. The condition was observed in testing for ataxia in the legs. It was very difficult, and indeed, almost impossible for him to stand on one foot and raise the other from the floor. In his endeavors to do this he rocked from side to side, throwing his weight on one leg, then on the other, but not succeeding in keeping one off the floor for more than a few seconds at a time. Finally, without entirely succeeding, he gave up and said that he knew what I wanted, but he did not seem to be able to think of both feet and direct the movements of both at the same time.

In testing his speech-defect everything was found practically normal except his power to think of the mechanical process concerned in writing voluntarily and his inability to write voluntarily. If I selected a word or sentence for him to write he could think of the process concerned in writing it, or could write it without a moment's hesitation. It was when he had to think of the word himself that he found it difficult to think of writing it at the same time. At this time it was almost impossible for him mentally to trace the formation of the letters in a sentence. The next day, or January 6, he could mentally trace the formation of the letters, both for a word and in a sentence. It was not until some two days later that he could voluntarily write. This did not occur until his nose bled rather freely. On having a profuse nose bleed the next day he manifested no further trouble in writing, his headache ceased and the mental confusion passed away.

From a careful study of this case and the manner in which the power mentally to trace the formation of the letters in a sentence, and the power to write voluntarily, returned, it seems to me that we are justified in concluding that it requires a greater mental effort to write voluntarily than to trace mentally the formation of letters. And fur-

ther, that the defect in writing was due to temporary lessening of his mental capacity.

At the time this case came under my observation I was engaged in the study of some very interesting cases of aphasia, and was naturally on the alert for the slightest defect in speech. Had I not been looking for such defects, the probabilities are that the interesting condition presented by this patient would have entirely escaped me. The man conversed well and gave a connected account of his illness. He had not been aware of his inability to write voluntarily. His mental action seemed slow and this led me to investigate his power to put his thoughts on paper. If the power to write voluntarily is investigated in conditions of great depression, both mental and physical, it may be found impaired much more frequently than has been suspected.

The next question, what was the character of the morbid process? The fact that recovery was rapid after he began to suffer from free hemorrhage from the nose, points to congestion of the brain. The depressed state of the patient as shown by the subnormal temperature, and the slow mental and physical action, indicate that the congestion was passive and venous in nature.

The probabilities are that the severe depression caused by exposure to cold resulted in a temporary impediment to the circulation in the longitudinal sinus. A complete occlusion of the sinus in all probability did not take place.