

## THE STUDY OF A CASE OF AMNESIA OR 'DOUBLE CONSCIOUSNESS.'

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The following case of altered personality seems to me to have a special psychological interest, for the reason that it is so classical a type, and also because there are in it no disturbing elements of hysteria, epilepsy, or organic disease.

In 1884 I collected and published all the recorded cases of 'double consciousness' or 'periodical amnesia' then accessible (Wood's Reference Handbook, art. 'Disorders of Consciousness.') They numbered at that time sixteen. Since then several new cases have been reported by Guinon, Janet, James, Weir Mitchell, Baker, and others. The subject has been discussed at length by Ribot (Diseases of Memory) and by Prof. Wm. James (Psychology, vol. II.), also recently by Alfred Binet (Internat. Scient. Series, 1892), and Pierre Janet (Rev. gén. des Sc., Mar. 1893). Most of the reported cases are evidently illustrations of epilepsy, hysteria, or a peculiar form of melancholia. In epileptic cases the amnesia is associated with automatism, and the patient's mental powers are sharply limited and lessened. The same is true, so far as my experience goes, in hysteria, the altered personality being only an illustration of an automatic or trance condition. Huxley's traumatic case is one of this kind, and they are not very rare in neurological experience. I must be permitted also to express grave doubts as to the value of psychological studies made upon the trained hypnotic patients of Salpêtrière. A personal knowledge of some cases of this class and a perusal of the investigations of Mr. Ernest Hart upon the subject justifies this view and a distrust of the multiple personalities of trained Parisian subjects.

I do not wish to disparage the reports of others, but I am sure a candid student of the cases of alleged double personality will find that what may be called pure cases are few. Such are those of Dr. Mitchell, Dr. Donar (Trans. Roy. Soc. Edin., 1822), Dr. J. N. MacCormack (*Medical Record*, May 26, 1883, p. 570), of M. Azam, and the present one.

*History of the Case.*—The patient, Mr. S., age 24, was an active, intelligent, and healthy young man. Though coming of a somewhat nervous stock, there is no actual psychosis in the family. He had himself always been well. His habits were good. For a year or two before his trouble came on he had been subjected to some nervous strain, but it had not perceptibly affected his health or spirits. About two weeks before his accident he had some financial trouble, and on coming home had a 'nervous chill.' However, he seemed perfectly well next day and continued his usual duties. On Friday evening, November 18th, he retired as usual. Next morning, as he did not appear at breakfast, a member of the family entered his room and found it full of gas, and the patient lying unconscious in bed. The escaping gas was due to a leak in the pipe, as was subsequently found. The stop-cock of the gas-burner was turned off, and there was no possible reason for or suspicion of suicide. The patient was as stated unconscious, the face livid, the lips blue, the eyes open, the respirations slow and stertorous, sometimes almost ceasing. The family physician, Dr. Rodenstein, was called, and worked over him for three hours before the breathing became natural and his life seemed out of danger. He became partially conscious by 4 P.M., and to a clergyman who had called he talked rationally but not clearly. Next morning he recognized his sister and father, and said he thought he was losing his mind. In the afternoon he became somewhat delirious. He slept that night, but during the succeeding six days his mind wandered and he was apparently distressed and excited. He was oppressed with the idea that some one wanted to take him away and do him a bodily injury. He talked about a trip he had been expecting to make to Washington, and called for his time-tables. He spoke also about his business and of various plans he had been intending to carry out. On Tuesday, four

days after the accident, he was seen trying to read a newspaper upside down. On the eighth day he was taken to Dr. Granger's sanitarium. He went without trouble, though he was still somewhat excited and maniacal. That night he slept and next morning awoke free from any signs of mania. He was quiet and sane in every way. From this time the evidences of his amnesia and changed personality were apparent. He dressed himself neatly and with his usual attention to his toilet, understanding apparently the use of the various articles of dress. He showed by his conversation at once that he did not know who he was or where he was, and that his conscious memory of everything connected with his past life was gone. His vocabulary at first was very limited; he could only use familiar words, and could only understand language of the simplest character, such as that bearing on the things immediately about him. He did not know the names or uses of the things in and about the house, though he at once remembered and never forgot any name told him. Consequently his vocabulary and understanding of conversation rapidly increased. He had a German attendant, and pronounced many of the new words with a German accent. Everything had to be explained to him, such as the qualities and uses of the horse and cow and of the various articles about the house. Yet he would sit at the table and eat his meals with his former neatness, preserving also the courtesies and amenities of a gentleman, but he could not understand why he did certain things until it was explained. He did not recognize his parents or sisters, or *fiancée* though he said that he had always known the latter, and his great desire and longing was to have her with him. He did not remember the slightest detail of his former relations with her and did not know what marriage meant or the significance of the filial relation. Those persons whom he had liked very much before he seemed especially glad to see, though he could not explain why.

He could not read, and did not even know his letters or figures. But he soon learned both to read and write simple sentences involving ordinary words.

His vocabulary was gradually increased, but even two months after his accident he could not read a newspaper un-

derstandingly, except simple accounts of every-day happenings. He was naturally slowest in understanding abstract terms. He learned figures and arithmetic very quickly and could soon do ordinary arithmetical computations easily. He had been accustomed to play billiards a little, but played the game badly. He very soon learned to play again, appreciating the value of angles, and before long he became much more skilful than he had been in his former state. He had always been clumsy with his hands and never liked mechanical work or showed the least capacity for it; he never could draw or carve. With a little instruction from another patient he soon became very skilful in carving and worked a monogram in the back of a brush in a most creditable manner. He also made a shuffleboard, doing the work very neatly. He showed in fine a much greater cleverness with the hands and finer development of muscle-sense than he had had before.

He used to play and sing a little. About six weeks after the accident he picked out a tune on the piano which he had known long before, but had not heard or played for a year. He did not know what it was, or associate it with any early memory. He sang some of his old songs and played a little on his banjo. The old musical memories were there, but dissociated from any thoughts of the past. He was very imitative and his memory for everything told him was extraordinarily retentive. He had always been careful and even fastidious about his person, and he continued to be so. His habits of courtesy and affability continued the same.

He had had some religious upheavals in the past. Two or three years before, he was distinctly and positively atheistical; later he was more inclined to theism and agnosticism. In an argument which I undertook with him to test his logical powers and knowledge of abstract ideas he showed a distinctly atheistical state of mind. His views were those held some years previously, not his later ones. In argument he showed considerable dialectic skill and logical power. But he evidently could not understand any conceptions at all abstract. His 'mind-stuff' was made up of conceptions closely related to his recently acquired practical knowledge. He had previously acquired a special repugnance to any form of

religion, and he showed this feeling of antagonism in his conversation.

He was even-tempered and obliging. He had never been demonstrably affectionate and was not in his new state, except as regards his *fiancée*, about whom his thoughts and feelings were intensely centred.

If one were to meet him, and discuss ordinary topics, he would show no evidence of being other than a normal man, except that he might betray some ignorance of the nature or uses of certain things. His conversation ran chiefly on the things he did every day and on the new things he every day learned. He was exactly like a person with an active brain set down into a new world, with everything to learn. The moon, the stars, the animals, his friends, all were mysteries which he impatiently hastened to solve. He was somewhat sensitive to his condition and did not like to meet persons whom he had known before. He cherished also a lurking suspicion that some one in some way might want to take his *fiancée* away from him. But he never was in a passion, never became incoherent or delirious, had no delusion or hallucination, and was not in the slightest degree demented.

He spoke of his own mental condition, and seemed to understand that it was not right. He was very anxious to get well.

Physically his health was perfectly good. He had no anæsthesia of the skin, no limitation of visual or aural fields, no stigmata of a trance or hysterical state. He slept well, and so far as I know had no dreams. He had a tendency to coldness and redness of the extremities, and there was evidently lack of vaso-motor tone. At times when a little excited he would move his head constantly from side to side as if working in an uncomfortable collar. This was a violent exaggeration of a habit I observed that he had when in his normal condition.

On three occasions I hypnotized him, using the methods of Braid and Bernheim combined. On the second and third trial I put him in a light degree of hypnotic sleep. During this I told him that after waking at a certain signal he would go through certain acts, such as rubbing his eyes, walking about the table, opening the door and giving a certain greeting

to his mother. Also that at a certain hour in the evening he would remember the past. He did everything that I suggested except the last. At the time named in the evening, he simply said without suggestion, "Dr. Dana told me to remember something, but I can't do it."

I saw him once or twice a week at my office. He continued in much the same state day after day. His knowledge increased so that he was able to go about alone to a considerable extent, and I had begun to advise his going to his old place of business and learning something of his old work.

At the suggestion of Prof. Josiah Royce, to whom I gave some account of the case, I told him to get some of his old love-letters and copy them, also to copy some of the prayers that he used to say daily as a boy, and finally to get some of his old business accounts and copy them off; I was in hopes that some of these things might revive old memories by appealing to his affections, his religion, and his business instincts. He did this, but with no apparent success.

On February 15th, Friday evening, exactly three months from the time of his attack, he went to see his *fiancée*. She thought, after the interview, that he was rather worse, less like himself. She cried that night when he left, thinking he would never get well. While riding home with his brother he said he felt as though one half of his head was prickling and numb, then the whole head, then he felt sleepy and was very quiet, but did not fall asleep. When he got home he became drowsy and was carried to bed, where he fell asleep. At about 11 o'clock he woke up and found his memory restored. He remembered distinctly the events of three months ago: his visit to his *fiancée*, his supper at the club afterwards, his journey home, his shutting his bedroom door and getting into bed. His memory stopped there. He did not recall a thing that had occurred between times.

He knew all his family at once and was plainly just the same man as before. But the three months was an entire blank to him. Next day he came to see me, but did not know me (I had never seen him before his accident). Not a thing connected with the three months could be recalled. It was so much taken entirely out of his existence. He at once resumed

his old work and habits, and has continued perfectly well up to the present time.

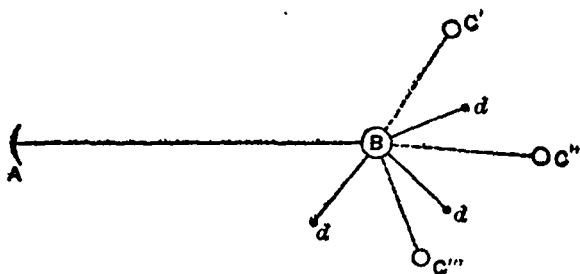
*Remarks.*—I do not pretend to psychological expertness, and my training has been such that I am obliged to formulate my psychological conceptions in physiological terms. A simple visual sensation is always represented to my mind by a nervous impulse travelling from the retina to a certain part of the occipital cortex. If this sensation is complex and arises to the dignity of the perception of, say, a man, a mass of association-fibres send out their impulses, awakening previously-stored images of man. If it is an old friend, the cortical areas for a still larger space are sent tingling into activity, and memories of old days rush into consciousness, intensifying it, awakening pleasurable feeling and suggesting new or reviving old ideas.

Now it was just this power of bringing into activity these longer association-fibres which was lost in the case of S. To him at first a man was a simple visual sensation, perhaps a little more, but not very much. Those associative tracts which formerly brought quickly into consciousness his previous visual, auditory, and tactile memories of man were paralyzed.

Yet certain shorter fibres were not altogether incapable of activity, and helped by subconscious memories they soon worked quickly and helpfully, enabling him to form again a fresh conception of the creature man. This idea of 'man,' however, was one almost entirely new and narrow. The idea of a father or teacher or old friend he did not in the least understand. The old and more complex memories lay quiescent in the mind; they could not be reached by any strands of connecting nerves that had been formerly so active. Certain memory-feelings, however, of affection, love, friendship, were associated with the new conception. He was glad to see and at once enjoyed the presence of an old friend, whom he had been intimate with, but about whom he could recall nothing. A previous special affection for mother, sisters, and others showed itself in a desire to be with them and enjoyment of their society.

I can only conclude that in this condition there was a paralysis or suspended function of those longer especially-

trained associative tracts leading to past memories. I can perhaps make my meaning clearer by a very crude diagram.



*A* = eye.

*B* = cortical centre for vision.

*C' C'' C'''* = old memories acquired in past experiences.

*ddd* = new memories in active association with *B* and acquired since accident.

*BC' BC'' BC'''* = special association-fibres connecting visual centre with memory areas.

Can neuro-pathology throw any more light on this process?

There does occur at times a destruction of certain parts of the brain cortex as a result of which all memories of a certain class are abolished, leaving the intellect otherwise clear. A patient of mine after a slight right-sided stroke lost entirely the power of reading. She did not know even the letters that she saw. She could write fluently and coherently, but could not read a word of what she had written. In her case there was a softening of the left angular gyrus extending into the white matter and involving the association-tracts. Yet her word-memories of the past were not destroyed because by making her trace the letters with a pencil she could slowly read through her muscular sense; and on reading a sentence its meaning was clear to her. But she could never be taught to read with her eyes. Now as far as a loss of word-memory is concerned she was exactly like my patient who at first held his newspaper upside down. In her case the sense-centre *B* was partly destroyed, and the association-fibres with it, while the remoter areas which had previously been stored up by her reading were intact. In Mr. S. the centre *B* was present and soon excited to activity, but the remoter memory-areas could not be brought into activity by any form of sensory stimulation or excitation of newly-acquired or subconscious memories.



Besides, in Mr. S. what was true for vision was equally true for auditory memories. He did not at first understand any but the simplest language, nor appreciate the significance of sounds or gestures. Suppose I represent these various centres by *B*, *C*, *D*, *E*. Then if around each one I were to draw a dark circle it would represent the inactive association-tracts, which kept his centres when stimulated from arousing old memories. A further dead line would have to be assumed to exist for his muscular memories, his affections, and his automatic and subconscious activities. This necessitates, perhaps, a clumsy mechanical conception, but so far it appears to me to be absolutely correct from a physiological point of view.

Suddenly all these dead walls fall away, the associations are renewed, old memories and the normal personality are restored. It must be remembered that the dead walls are not absolutely solid, but that association-fibres, never before much used, pass through them, and that by their means new memories were quickly established, connections with older subconscious ones were in a measure made, and complex mental processes were possible.

Such a conception as I present excludes as impossible any theory of a dual brain or of one cerebrum being put to sleep except on the hypothesis that all memories are, when solidly established, located in the one cerebrum. But the facts of pathology disprove this.

I must assume, therefore, that the association-tracts which ordinarily connect sensory areas with long-stored-up memories are only put in action by a specialized and highly-differentiated power on the part of nerve-cells. And this is certainly the case. The simplest function of a receptive cell when excited is to awaken a simple sensation, next to arouse some other simple sensation-memories, so that a person sees and knows an orange. But to recall past experiences, gustatory, personal, etc., in connection with that object calls for a higher and complex function. Thus the nerve-cells have a special memory-arousing function.

This is often lost temporarily, as in states of abstraction, or trance states, excitement, epilepsy, delirium, insanity, and dementia. But to overthrow this special memory-function of

the cell for the whole brain requires a peculiar and exceptional kind of stimulus.

In fine, the hypothesis which I put forward, very tentatively, is that the nerve-cells have special and highly-developed functions which are in relation with special lines of association-fibres, and that this specialized function is suspended in such a case as that which I have described; just as special functions and memories are inhibited in hysteria.

If we come to consider this case from another point of view, viz., the strictly neurological, one could say that at the very first my patient had complete *apraxia*, including mind-blindness and word-blindness, mind-deafness and word-deafness, mind anosmia, ageusia and amimesis, in fact a total loss of memory for the significance and uses of things and of language. He gradually but with varying rapidity recovered from his word blindness and deafness so that he could read and understand spoken words. His *apraxia*, as regards the ordinary things of his daily life, soon disappeared so that he could dress, eat, and go about much as others. But a residuum of *apraxia* remained, and this bore upon abstract ideas, the facts of social and domestic relations. He did not understand the relationships of parent and child, husband and wife, the significance of business acts or the current events. In fact none of the memory-pictures stamped upon his brain by his life-experience previous to his injury could be revived.

The fact that the memory-disturbance in Mr. S. was due to some inhibitory action on a special function of the cells is supported by other clinical facts. It is not by any means rare for persons who receive a severe head injury to suffer from a temporary amnesia. In my own experience I have seen such cases. A youth was suddenly knocked down by a blow on the head. He was not made unconscious, but was slightly stunned. He was helped upon his feet and presented no marks of severe physical injury. But he did not in the least remember where he was, what his name was, where he lived, or what he had been doing. He talked coherently and understood questions, but there was a total amnesia of the past (retrograde amnesia of Charcot). His symptoms gradually improved, and in a few weeks he was entirely well.

It is an acknowledged physiological law that by a severe mechanical shock we can suspend the functions of cell-groups partly or entirely. So with regard to the brain it seems to me easy to believe that the memory-centres have special association-tracts by which they are kept in association with the cortical centres for the special sensations. These tracts must be represented by nerve-fibrils of especial tenuity and delicacy (*BC'*, etc.); it may even be that there is a special part of the cell or special cells with special lines of collaterals differentiated for this function and represented by the dotted lines in my diagram. If this associating function or process of 'revival' is indeed psychologically and physiologically a special one, then it has a definite anatomical representation. And one can understand how poisons and shocks suspend its function. The very fact, indeed, of the comparative frequency of milder forms of shock-amnesia confirms the view that there is such a unity as I suggest.

An interesting practical point exists in connection with this case. Rouillard states that carbonic-acid gas is particularly liable to cause defects in memory, and he even adds that children who are brought up in houses with open fires and insufficient draught are apt to have defective memories. (*Gazette des hôp.*, May 7, 1892.) Fallot has reported the case of a person who attempted suicide by charcoal-fumes. After recovery the memory was defective not only for events subsequent to the poisoning, but extending back to three days prior thereto (retrograde amnesia). (*La Semaine medicale*, Mar. 3, 1892.)