## Loss of Speech, Chronic Softening and Partial Destruction of the Anterior Left Lobe of the Brain

### Pierre Paul Broca (1861)

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Translation by Christopher D. Green [[1](http://psychclassics.yorku.ca/Broca/perte-e.htm#f1)]

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Mr. Broca, on the occasion of this report, presented the brain of a fifty-one-year-old man who died in his care at Bicêtre hospital, and who had lost the use of speech. As the specimen is to be deposited at the Dupuytren museum, and the complete report is to be published in the *Bulletin de la Société anatomique*, we restrict ourselves to giving here a short summary of the case, which is quite similar to some of those given by Mr. Auburtin at the last meeting.

When the patient was admitted to Bicêtre, at the age of 21, he had lost, for a some time, the use of speech; he could no longer pronounce more than a single syllable, which he ordinarily repeated twice at a time; whenever a question was asked of him, he [p. 236] would always reply *tan, tan,* in conjunction with quite varied expressive gestures. For this reason, throughout the hospital, he was known only by the name of *Tan*.

At the time of his admission, Tan was perfectly able-bodied and intelligent. After about 10 years, he began to lose the movement of his right arm, then the paralysis spread to the lower limb of the same side, so much so that, for six or seven years, he continually stayed in bed. For some time it has been reported that his sight was weakening. Finally, those who have had a particularly close relationship with him have remarked that his intelligence has dropped off a lot in recent years.

April 12, 1861, he was transferred to the care of hospital surgery for an immense, widespread gangrenous inflammation [phlegmon], which affected the full extent of the right lower limb (the paralysed side), from the heel up to the buttock. It was then that Mr. Broca saw him for the first time. The study of this unfortunate, who could not speak and who, being paralysed in the right hand, could not write, presented some difficulty. It was noted, however, that general sensation was maintained; that the left arm and leg obeyed the will; that the muscles of the face and of the tongue were at no point paralysed, and that the movements of this last organ were perfectly free.

The state of intelligence could not be exactly determined, but there is evidence that *Tan* understood almost everything that was said to him. Not able to express his ideas or his desires other than by the movement of his left hand, he often made incomprehensible gestures. The numerical responses were the ones he made best, by opening or closing his fingers. He would indicate, without error, the time on a watch to the second. He knew exactly how many years he had been in Bicêtre, etc. [p. 237] However, many questions to which a man of normal intelligence would have found the means to respond by gesture, remained without intelligible response; other time the response was clear, but did not answer the question. Undoubtedly, then, the intelligence of the patient had been affected to a great degree [atteinte profonde], but he maintained certainly more of it than was needed for talking.

The patient died April 17, 1861. At the autopsy, the dura mater was found to be thickened and vascularised, covered on the inside with a thick pseudo-membranous layer; the pia mater thick, opaque, and adherent to the anterior lobes particularly the left lobe. The frontal lobe of the *left* hemisphere was soft over a great part of its extent; the convolutions of the orbital region, although atrophied, preserved their shape; most of the other frontal convolutions were entirely destroyed. The result of this destruction of the cerebral substance was a large cavity, capable of holding a chicken egg, and filled with serous fluid. The softness had spread up to the ascending fold of the parietal lobe, and down to the marginal fold of the temporal-sphenoidal lobe; finally, in the depths, [it spread to] the region of the insula and the extraventricular nucleus of the striate body; it was the lesion of this last organ which was responsible for the paralysis of the movement of the two limbs of the *right* side. However, it suffices to cast a glance at this paper to recall that the principal home and the original [primitif] seat of the softness, is the middle part of the frontal lobe of the left hemisphere; it is there than one find the most extensive lesions -- the most advanced and the oldest. The softness progressed very slowly to the adjoining parts and one can regard it as certain that it was there for a very long period. [p. 238] during which the illness did not affect the convolutions of the frontal lobe. This period probably corresponds to the eleven years that preceded the paralysis of the right arm, and during which the patient had maintained his intelligence, having lost nothing other than speech.

All this permits, however, the belief that, in the present case, the lesion of the frontal lobe was the cause of the loss of speech.