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## Joseph Jules Dejerine (1849–1917)



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Dejerine was the third occupant of the world's first chair of neurology at 'La Salpêtrière', after Jean Martin Charcot and Fulgence Raymond. He is well known as a strenuous 'localizationist' of higher brain functions but should be remembered mainly for his innumerable contributions to clinical neurology as well as for his monumental anatomical and anatomo-pathological studies.

Dejerine was born in Switzerland near Geneva as a son of a Savoyard carriage-proprietor of modest income. In 1871 he arrived in Paris to study medicine. In 1875 he was appointed 'Médecin des hôpitaux' at the 'Hôpital de la Pitié', where he published his first papers on peripheral neuropathies, with Edmé Félix Alfred Vulpian (1826–1887). In 1879, after having completed a doctoral thesis on acute ascending paralysis, he became 'Chef de clinique' at the 'Hôpital Bicêtre', where in 1886 he was nominated 'professeur agrégé'. In 1887 he joined the Salpêtrière. In the following years he became professor of history of medicine and surgery (1900), internal medicine (1907), and finally neurological diseases (1910). Dejerine died of the consequences of Bright's disease in 1917, while 'La Salpêtrière' had been transformed into an army hospital during World War I.

Dejerine was in 1899 among the 17 founding members of the French

Neurological Society, of whom 13 were pupils of Charcot. He received many honours including the title of 'Chevalier' and later 'Officier' of the Legion of Honor; in 1914 he received the Moxon gold medal of the Royal College of Physicians of London, after Hughlings Jackson, Richard Gowers and David Ferrier.

Dejerine was an imposing figure who was remembered by his pupils as affectionate and loyal. In 1888 he married Auguste Marie Klumpke (1859–1927), an American-born physician, with whom he shared his passion and work for anatomical and pathological studies. The couple had one daughter, who also became a physician. The Dejerine's were described as very hard workers, they had a rather simple style of living and were fond of nature and sports. Robert Bing was among those who wrote an obituary [1] while Gauckler published the only biography to date [2].

As a pupil and soon also co-worker of both Charcot and Vulpian, Dejerine combined the anatomo-clinical approach of the former with the experimental-clinical method of the latter. The influence and the relationship with Vulpian were the strongest and most enduring in his career.

Dejerine's work focused on anatomical and anatomo-pathological studies, which were conducted mainly with his wife and which led

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to the publication of the 'Anatomie des centres nerveux' (1895–1901 [3], and the 'Sémiologie des affections du système nerveux' (1914 [4]). Essential for these studies were the discoveries of Golgi's staining, Gudden's microtome, Marchi's serial sections, and the use of the principle of secondary degeneration for the localisation of fibre tracts. These techniques enabled Dejerine to describe radicular myotomes and dermatomes, the somatotopy and connections of the pyramidal tracts, the aberrant corticobulbar bundles (explaining for example central facial palsy in medullary lesions), the ascending sensory tracts, and the connections between the thalamus and the cerebral hemispheres.

Parallel to his laboratory work, Dejerine made important clinicopathological correlations: scapulo-humeral atrophy (with Landouzy 1885 [5]), hypertrophic progressive interstitial neuritis (with Sottas 1893 [6]), olivo-ponto-cerebellar atrophy (with André-Thomas 1902 and 1912 [7]), peripheral and central ataxia (with Egger 1903), the thalamic syndrome (with Roussy 1906 [8]), sensory parietal syndromes (pseudoradicular with Chiray 1904; cortical with Crouzon 1914; pseudothalamic with Mouzon 1915), and medial medullary syndrome (1914). Dejerine also described intermittent vascular claudication of the spinal cord (1906), the phenomenon that aphasics can by a show of fingers identify the number of syllables in a word (Dejerine-Lichtheim phenomenon), the first callosal disconnection syndrome (alexia without agraphia, 1892), and tactile agnosia.

Some of these studies were revolutionary. The description of scapulo-humeral muscular atrophy

introduced a new concept of muscular atrophy in the absence of neuropathy. In his work on the thalamus, Dejerine contradicted Charcot by demonstrating the existence of sensory deficits from a brain lesion without peripheral sensory lesions or motor deficits.

In the second part of his life, Dejerine devoted an increasing amount of energy to the study of higher brain functions. He was certainly influenced by Charcot's vision on aphasia and amnesia. Dejerine was convinced there should be distinct types of aphasic disturbances according to well defined structural lesions, partly combined with other deficits of higher brain functions [9, 10]. In 1908 Pierre Marie challenged Broca's famous brain-studies and at the same time Dejerine's position as leading aphasiologist of his time by suggesting the existence of only a single type of aphasia (Wernicke type) while dismissing motor aphasia as mere anarthric phenomenon. This debate lacked a clear winner but was fundamental because it questioned the relevance of anatomical findings in understanding higher brain functions.

In the last decade of his life Dejerine developed an interest in psychiatry and psychotherapy, partly stimulated by his friendship with his later biographer Gauckler and with Paul Dubois (1848–1918), one of the founders of the Swiss Neurological Society. He claimed that the success of psychiatric treatment depends mainly on the personality of the therapist, thus stressing the emotional rather than the rational element. This empirical position reflected his own empathic behaviour towards both his patients and pupils.

Dejerine's investigations fit perfectly in the context of the neurological research of his time and reflect the main problems and issues of this 'age d'or' of Neurology. Dejerine accepted scientific arguments only when based on morphologic evidence. Nevertheless, as exemplified by his contributions on the thalamic syndrome, he was also able to extend the localization principle to a more general (and functional) vision of the nervous system. In this, Dejerine proved himself capable of linking the main themes of neurological research in the 19<sup>th</sup> and 20<sup>th</sup> centuries.

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