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HISTORICAL NOTE

Positive and negative cerebral symptoms: the roles of Russell Reynolds and Hughlings Jackson

Sir John Russell Reynolds (1828–1896) is often remembered for his description of eclamptic convulsions in children,¹ which at that time referred to various fits including febrile convulsions.² Reynolds also suggested electrotherapy in nervous diseases.³ Interestingly, he is widely quoted for his commendation of the “great value of *Cannabis indica*”⁴ in migraine, epileptic conditions, depression, and asthma.

Perhaps of greater import his 1861 paper² espoused⁵ the concept of positive and negative neurological symptoms as being the excess or negation of vital properties. Positive symptoms were abnormal “superimposed” behaviours that included not only clonic jerking and abnormal movements but also hallucinations and paranoid delusions. Negative symptoms included loss of sensation, paralysis, and coma. Unfortunately he failed to write further on this theme. Like Jackson, Reynolds also noted that the lesion did not directly cause the symptoms observed.¹

The origins of positive and negative symptoms are inextricably intertwined with Herbert Spencer’s dissolution and evolution of the nervous system.^{6,7} Hughlings Jackson extended Spencer’s idea to positive and negative symptomatology. Jackson believed that negative symptoms related to dissolution of neural function while positive symptoms resulted from excitation or the release of lower levels from higher inhibitory control:

“...there are degrees of loss of function of the least organized nervous arrangements with conservation of function of the more organized. There is in each reduction to a more automatic condition; in each there is dissolution, using this term as Spencer does, as the opposite of evolution.”⁸

In the same paper Jackson goes on to apply this in the post-epileptic state:

“Physically, —The negative element in the symptomatology is what the epileptic discharge produces; it is the dissolution... Pathologically it is so much exhaustion (effected by the prior epileptic discharge)... Physiologically, it is so much loss of function of so many nervous arrangements of the least organised, the continually organising centres... Anatomically, the negative elements are losses of adjustment of the organism, as a whole, to the environment in the order, according to the “depth” of the dissolution, from the most special and complex of them towards the most general and simple. Correspondingly, the positive elements are anatomically considered retentions, and often over-developments, of more general and simple adjustments of the organism as a whole to the environment...”

“...there is a negative state with each positive state; in each degree the patient’s condition is thus duplex.”

Jackson’s writings⁹ apply this fundamental principle to aphasia, hemiplegia, and clonic and other movements; it also became applied in psychiatry,¹⁰ to the symptomatology of

schizophrenia. The hierarchy of cerebral function comprised “lowest, middle, and highest—to indicate different evolutionary levels”.⁹ This effect manifested negative or positive symptoms. The concept became firmly established.

John Russell Reynolds was the son of a nonconformist minister who personally educated him. His grandfather was Henry Revell Reynolds, FRCP, a physician at the Middlesex and St Thomas’s Hospitals. He trained at University College London, graduating with a gold medal in physiology, comparative anatomy, and medicine in 1851. Impecunious, he practised in Leeds where he had relatives, but was persuaded by Marshall Hall, his former teacher, to return to London, where at modest cost Hall accommodated him in his home in Grosvenor Street. He was appointed assistant physician at the Hospital for Sick Children in 1855 and to the Westminster and then University College Hospitals where he became Holme Professor of Clinical Medicine in 1862, and in 1867 succeeded Jenner in the Chair of Medicine. From 1868 he was Dean. He edited *A system of medicine* (London: Macmillan), published in five volumes from 1866 to 1879, a major text. Of his many distinguished students at University College Hospital were Bastian and Gowers.

Reynolds achieved high professional recognition. He gave both the Lumleian and Harveian lectures at the Royal College of Physicians of London, then became Censor and finally President from 1893–1896.¹¹ He was favoured as physician to the royal household in 1879 and was created baronet in 1895. Concerned with medical politics, he was president of the BMA at the time of his death.

Generally regarded as a worthy, caring physician he was a popular and fluent lecturer, although shy and serious in manner. But, he showed a quiet sense of humour and directness¹¹ when circumstances were apt. He was well versed in literature, art, and music. Twice married, he had no children. He died at his home in London.

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