



John Hughlings Jackson (1835–1911): An adornment to the London Hospital*

Michael Swash

Abstract

John Hughlings Jackson was associated with the London Hospital as a Lecturer and Physician for nearly 40 years while also on the staff at The National Hospital, Queen Square. His experience at the two hospitals was complementary; sometimes, a patient would be exchanged between the two hospitals. At the London Hospital, he was especially revered by students, colleagues and even by the House Governor, for his knowledge and his contributions to neurology. His ideas helped to resolve the chaotic contemporary understanding of neurological phenomena into a coherent whole, determining the direction of future neurological research in the following century. His life and work was supported and strengthened by the help and friendship of his colleagues at the London Hospital, especially Sir Jonathan Hutchinson.

Keywords

John Hughlings Jackson, London Hospital, Physician, The National Hospital, Queen Square

The London Hospital was founded in 1740 at a meeting held in the Feathers tavern in the City of London.¹ It was to be a hospital funded by voluntary subscription for the benefit of the people of the City and East London, at that time encompassing several interlocked villages in what is now Tower Hamlets, Whitechapel, Stepney, Bethnal Green and Hackney, together with other outlying hamlets. The London Hospital Medical School, established by the Governors and Staff of the hospital in 1785, was the first formally established medical school in England. The hospital soon relocated from its first site to a house in Prescott Street, not far from the Tower of London, and then in 1759 to a greenfield site consisting of a farm with lands extending to the south toward the river Thames, in a purpose-designed building (Figure 1). This estate comprises the current location of the newly re-built Royal London Hospital, thus re-named in 1990. Across the frontage is the old Whitechapel Road, the principal thoroughfare from rural Essex and Hertfordshire in the north-east into the City of London, along which passed horses, carriages and coaches, traders of every description, and farmers with produce and animals for sale in the vegetable and flower market at Covent Garden and the meat market at Smithfield, as well as military traffic. The Whitechapel Bell Foundry, founded in 1570, remains in its original location, not far to the West of the hospital.

The Metropolitan Railway Company's underground railway, now part of the London Underground system, was extended to Whitechapel in 1886 with horse omnibus routes connecting to the City and to the East along the Whitechapel Road. By the early 19th century, the dockyards and loading bays of the Pool of London, close to the Tower of London and the Royal Mint, were the busiest docks in Europe. The districts around the hospital and docks became populated by workers and by successive waves of immigrants. Huguenot refugees were followed by Poles, Lithuanians, Chinese and Lascars (seamen from the Punjab) and Jews fleeing persecution in Eastern Europe and the Baltic States. This evolving and renewing population, with its intense activity in skilled and unskilled trades, many employed in the Thameside docks, provided a diverse source of medical problems, sometimes originating far away from London.

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Figure 1. The London Hospital – probably in 1900. The busy Whitechapel Road and a horse omnibus are seen against the frontage of the hospital.

The beginnings of neurology at the London Hospital

Before 1859 when John Hughlings Jackson was appointed to the staff of the London Hospital Medical School as a Lecturer in Pathology, there was already an established interest in neurological disorders. A monograph on epilepsy by Dr John Andree (c1699–1785), appointed as the first physician to the hospital at its foundation in 1740, was published in 1750, and the first more or less comprehensive text on Neurology in the English language, by another London Hospital physician, Dr John Cooke (1756–1838), appeared in 1819. Cooke's monograph represented an expansion of his Croonian Lectures given at the Royal College of Physicians. His book includes introductory chapters devoted to a history of diseases of the brain and their analysis from ancient times.

James Parkinson (1755–1824) was enrolled as a student dresser in 1776, before the formal establishment of the Medical School. Parkinson's monograph 'On the shaking palsy', derived from his clinical experience in practice in Hoxton, north of the hospital, appeared in 1817. William Little (1810–1894), himself mildly afflicted with cerebral palsy, studied the dystonic/spastic paralysis of the disorder in his surgical practice at the hospital – he became a founding figure in Orthopaedic surgery. His colleague, Dr John Langdon Down (1828–1897), with a special interest in neural developmental disorders, recognised the now well-known Down's syndrome. The latter two physicians were more or less contemporaneous with Hughlings Jackson. Warren Tay (1843–1927), another contemporary and close friend of Jackson, described the abnormality seen in the optic fundus in the hereditary disorder, Tay-Sach's disease (GM2 gangliosidosis).

In Jackson's time, the hospital nurtured many surgical pioneers including Sir Jonathan Hutchinson (1828–1913), Sir Henry Souttar (1875–1964), Sir Frederick Treves (1853–1923) and Sir Morrell Mackenzie (1837–1892). The hospital was early in the adoption of antiseptic and then of aseptic surgical techniques – the latter especially espoused by Treves. The principles of the nursing reforms initiated at St Thomas's Hospital by Florence Nightingale (1820–1910) after her experiences in the Crimean War were instituted at the London by Miss Eva Luckes (1854–1919), appointed Matron in 1880, to modernise nursing at the hospital. Miss Nightingale was appointed a Life Governor of the London Hospital in 1856. Benjamin Franklin (1706–1790), while the American Representative to the Court of St James, was also an early Governor of the hospital.

In the 19th century, the London Hospital and its Medical School enjoyed a high reputation for clinical and educational excellence. Students arrived each year not only for the whole course, starting with basic anatomy, physiology and other sciences but, as in other London Medical Schools at that time, from Oxford and Cambridge for the three-year clinical course. Formal case demonstrations were held on a weekly basis by various specialists, including Jackson, as well as pathology sessions in the autopsy room and teaching on the wards. The students were required to be present in rotation, by day and night, in order to admit patients and help the House Physician.

Jackson's early days in London

On first arriving in London in 1855 at the age of 20, Jackson 'walked the wards' at Barts where Sir James Paget (1814–1899) was working and teaching, for a year before achieving London medical qualifications. He returned to York in 1856 and worked there with a local physician, Dr Samuel North.² Jackson was re-introduced to the busy and stimulating clinical environment in the capital in 1859 by Jonathan Hutchinson to whom he had an introduction from the York Medical School. Hutchinson had himself been appointed to the staff of the London Hospital in 1859 and as full Surgeon in 1863. The York connexion was important in these contacts, involving Thomas Laycock (1812–1878), Jackson's principal medical teacher in York, Dr Samuel North, who knew Hutchinson from the latter's time as a student in York, and also Dr Jabez Spence Ramskill (1825–1897),³ another Yorkshireman. Laycock's innovative ideas concerning the function of the nervous system were a major early influence on Jackson; Laycock left York on his appointment to the Chair of Medicine in Edinburgh in 1855. Ramskill was appointed to the London Hospital staff in 1859, in the

same year as Hutchinson. Ramskill, a graduate of Guy's Hospital, is a somewhat obscure figure but, as the first physician appointed to the staff of the National Hospital for the Paralysed and Epileptic, and a Physician on the staff at the London Hospital as well as one of the founders of the journal *Brain*, he was clearly a man of influence in 19th century London medicine.

Jackson worked at first with Hutchinson as a reporter for the medical journals of the time including *The Lancet* and the *British Medical Journal*, a role in which he visited the important hospitals in London in order to attend medical meetings and discussions. Thus he developed a wide circle of medical acquaintances and a full knowledge of contemporary practice. He was appointed Assistant to Mr Poland at Moorfields Eye Hospital with whom he had studied during his first year in London, and also had an early appointment at the Metropolitan Free Hospital, both institutions at which Hutchinson was also on the staff. During a three-year period Jackson lived with Hutchinson and his family in Finsbury Circus as later did Warren Tay and Edward Nettleship (1845–1913), Jackson was appointed as Assistant Physician in 1863, aged 28. A year earlier he had been appointed Assistant Physician at Queen Square where he was much influenced by Brown-Séguard (1817–1894)⁴ although Brown-Séguard remained in London for fewer than two years before leaving for the USA. Jackson therefore held appointments at a large general teaching hospital, the London Hospital, and at two specialist hospitals, the National Hospital for the Paralysed and Epileptic, Queen Square and Moorfields Eye Hospital, at the very beginning of the development of the specialty of neurology in Britain.

The beginnings of a career

Jackson's career at the London Hospital and Queen Square from 1862 spanned a period of some 40 years. In York he had learnt from Laycock of the latter's concept that the brain itself, as well as the spinal cord, functioned according to the principles of reflex action,⁵ as set out by Marshall Hall (1790–1857) and Magendie (1783–1855).⁶ Jackson was said by Hutchinson, in a memoir published after Jackson's death, to have arrived in London with the idea of pursuing studies in philosophy rather than medicine (it is unclear whether or not Hutchinson meant 'Natural Philosophy'). Hutchinson states that he and Brown-Séguard dissuaded Jackson from this course.⁷ Sir Farquhar Buzzard (1871–1945), who knew Jackson at Queen Square toward the end of his career, recorded that Brown-Séguard advised Jackson that it would be 'foolish to waste your efforts in the

wider observation of disease in general',⁸ thus implying that Jackson was not considering a study of theoretical philosophy.

Hutchinson and Jackson remained close friends and professional colleagues throughout their lives, often spending weekends together in the summer walking the hills of Surrey and staying overnight at an inn. Hutchinson notes that they discussed academic problems together over many years⁷ and Hutchinson's grandson, Herbert Hutchinson, confirms in his account of his grandfather's life, as seen through his letters, that Jackson, Nettleship (1845–1913) and Warren Tay (1843–1927), all professional colleagues, were lifelong friends and that Jackson and Hutchinson were especially close, sharing personal and medical experiences, discussing politics and sharing jokes together.⁹

Jackson was capable of devastating, even combative, humour and comment. Herbert Hutchinson reprints a letter dated 22 March 1878 from Jonathan Hutchinson to his sister, Jane Pynsent Hutchinson, describing an occasion at which both he and Jackson gave expert evidence in Court at Chelmsford:⁹

Dr Jackson gave his evidence very well indeed and finally told the cross-examining Counsel: 'You're not asking me a question, you're merely making an epigram'. He had previously told him that he put abstract questions and expected matter-of-fact answers. When it came to the accusation of epigrams, the poor man blushed and sat down muttering something about: 'Epigrams! I wish I could!'

Jackson's education was relatively informal. He did not attend a major Public School or University.² Coming from a Nonconformist family in the north of England, however, this was not unusual, as attested by the increasing importance to the economic and intellectual life of Britain of manufacturing industries due to the activities of independent inventors and engineers during the late 18th century and first half of the 19th century.¹⁰ Education was available through local schools and especially through libraries, nonconformist ministers and their congregations, the Mechanics Institute and other, more political, groupings. Despite his attendance at the York Medical School and his evident respect for Laycock, Jackson regarded himself as more or less self-educated and concluded with Hutchinson that they were all the better for their lack of a university education.² It is clear, nevertheless, from the recollections of his contemporaries and from his facility in citing references to the literature in his writings that he was an avid reader with a retentive memory. He cited material in both French and German¹¹ but Hutchinson states that Jackson could not read German and that he waited avidly for translations.⁷

Jackson and modern neurology

During the period from 1860 to 1900, when Jackson was professionally most active, neurology began to be codified as shown by Gowers' (1845–1915) magisterial two-volume *Manual of Diseases of the Nervous System* published between 1886 and 1888. During this period, neurology gradually emerged from general medicine. Jackson himself was not a major contributor to the systematic categorisation of neurological diseases achieved by Gowers and his clinical colleagues, not only in Britain but also in Germany, France and the USA, but focussed his work on the clinical and behavioural phenomena developing after damage to the nervous system, using these natural experiments as an insight into the workings of the nervous system (Table 1). Jackson's writings have been characterised as those of a philosopher of emerging neurology.¹² York and Steinberg¹³ list in their catalogue raisonné many papers not included in the *Selected Writings* edited by James Taylor (1859–1946).¹⁴

A systematised method of enquiry and clinical examination evolved, focussed on the individual patient's illness.¹⁵ This formalisation arose from the accretion of clinical skills derived from national and international sources, such as recognition of the reflex basis of the knee and ankle jerks, in which Gowers was prominent, and the importance of segmental weakness and segmental or peripheral nerve sensory disorder. Later, Babinski's observation regarding the plantar response in health and disease became a cardinal sign of corticospinal tract disease. Jackson himself, with an interest in neuro-ophthalmology derived from his early experience at Moorfields Eye Hospital, using the indirect technique, made fundamental deductions concerning

the organisation of ocular movement and the pupillary light and accommodation reactions. He was particularly a pioneer in the recognition of higher level brain dysfunction, especially disorders of language. His studies on focal epilepsy led to major insights into localisation of function within the cerebral cortex. Otfried Foerster (1873–1941) stated that Jackson 'was the first to point out that there is such a thing as motor cortex'.¹⁶ These ideas enormously influenced understanding of symptoms and disabilities, and the clinical examination, as can be seen in the best-selling book entitled *Clinical Methods* and prepared by Jackson's colleagues at the London Hospital, Robert Hutchison (1871–1960) and Rainy, in 1896¹⁷ and now in its 23rd edition. He thought deeply about psychiatric illness and its clinical manifestations including hallucinations, delusions and the inappropriate recall of memories in temporal lobe epilepsy. He taught that the brain was a sensorimotor machine and regarded consciousness as the product of this holistic brain activity, a view that has recently again come into prominence. He wrote on humour, joking and dreaming, considering some insanities as akin to wakeful dreaming. These ideas proved influential in European and American psychiatry although they have been less well understood in Britain.^{11,18,19}

Jackson's most influential work as viewed from our modern perspective concerns his development of a theoretical basis for understanding epilepsy and disorders of movement. Following Laycock's insight, and the notion of the brain as a sensorimotor machine, Jackson did not readily empathise with the concept of 'centres' representing separate brain functions in the sense of discrete, anatomically fixed grey and white matter units within the brain. Although he clearly recognised the lateralisation of speech in the brain, he thought of language, as distinct from speech, as a function of the brain as a whole, including the minor hemisphere. On the other hand, he understood the localisation of motor and sensory functions in the cortex anterior and posterior to the central sulcus, having encouraged Ferrier (1843–1928) and Crichton-Browne (1840–1938) to work on this topic. He also recognised lateralisation as a fundamental aspect of the organisation of the human brain. In considering Jackson's ideas on brain function, it is important to remember that he was working in an era in which the neuron theory was as yet not established, the synapse was unknown and the concept of electrical activity in the nervous system was no more than a rudimentary inference. His theoretical ideas were developed from his astute clinical observations and developed within the context of Herbert Spencer's (1820–1903) Darwinian approach to the philosophy and psychology of social interaction in human society, as set out in his influential books.²⁰

Table 1. Jackson's legacy.

1. Recognised as bringing 'order out of chaos in the understanding of neurological disease'.
2. Studied the phenomena revealed by neurological disease as a window on how the brain functions, leading to an understanding of the 'organising principles of the nervous system'.
3. Took an evolutionary approach to disordered function in disease, 'evolution and dissolution', through a concept of disturbed levels of function – highest, middle and lowest.
4. Considered that functions were represented and re-represented at different levels, in different brain components, e.g. cerebrum and cerebellum.
5. Defined the major problems of modern neuroscience, e.g. motor control, sensation, consciousness, thought and language, perception, higher level motor dysfunction, psychiatric phenomena.
6. Gowers exclaimed that Jackson was 'the Master' at the unveiling of Jackson's sculpted head at Queen Square; also known as the 'sage of Manchester Square'.

Many of Jackson's concepts, for example that of cortical motor localisation, developed from his observations on focal and generalised seizures, seen in his practice at the London Hospital and at Queen Square. His colleague at both these institutions, Ramskill, had a particularly wide practice that involved many people with epilepsy and it was he who suggested to the Chandler sisters, who founded The National Hospital for the Paralysed and Epileptic, Queen Square, that they should embrace epilepsy as part of its purpose.²¹ From this experience and his notion of evolutionary levels of function in the nervous system, he conceived of lower, middle and highest levels of function. With these ideas as a basis, he discussed the clinical phenomena of weakness and loss of fine discriminative motor function, for example in the hand, in terms of the loss of highest level function. When rigidity appeared, he described this as a released lower level function; that is, released from highest level control. These concepts, at first obscure to his contemporaries, have proved fundamental in the subsequent development of clinical neurology, especially in disorders of motor control, summarised as positive and negative consequences of brain lesions.^{22,23} They remain in daily use in clinical descriptions of the phenomenology of the upper motor neuron lesion and of released involuntary movements and rigid states.

Jackson's clinical practice

Early in the 1890s, a proforma was introduced at the London Hospital for recording clinical information, similar to that in use today.¹⁷ It is unclear how close to complete were Jackson's own clinical records, but the detailed descriptions of patients in his publications suggest that he made very detailed notes at least of those cases that interested him and that formed part of his thinking at the time. Case notes made by the House Staff at the hospital varied in their content from a simple diagnosis, for example, in the context of a discharge note or out-patient visit to more or less verbatim accounts of discussions at the bedside. The annual books of diagnoses of patients admitted to the wards at the London Hospital attest to the wide variety of medical problems encountered.

The final few years of Jackson's career coincided with the advent of haematological investigations, the rapid introduction of detailed bacteriological testing of bodily fluids, chemical analysis of the urine, CSF examination by lumbar puncture, the discovery of the spirochaete as the causative organism of syphilis (requiring revision of the clinical diagnosis in many patients previously assumed to suffer neurological complications of that disease) and the beginnings of clinical X-ray studies following Roentgen's (1845–1923)

discovery of November 1895. The London was an early adopter of X-ray imaging, using the new X-ray apparatus for the first time in May 1896, but in Jackson's lifetime imaging played little or no role in clinical work. Jackson's career began before any of these fundamental advances in medical diagnosis was made and ended in the full flood of their introduction. It might be said that his fundamental insights into the functioning of the nervous system facilitated their application into everyday clinical neurological practice.

Jackson's personality and work

Jackson is sometimes portrayed as a lonely, reclusive figure. Indeed in later years, having lived alone following the early death of his wife and with the advent of deafness in later life, he became more solitary. However, those who knew him and worked with him held him in great affection as well as in high regard. Kinnier-Wilson (1878–1937), Jackson's last House Physician at Queen Square, recorded fragments of some of his conversations with Jackson, including examples of discussions regarding positive and negative effects of brain lesions, stories and humour.²³ His House Physicians recorded his remarks and idiosyncrasies²⁴ and, in one example, preserved six pages of instructions on the clinical investigation of a patient with an eye movement disorder under his care at the London Hospital. This document is linked²⁵ to a report in *The Lancet* was republished after Jackson's death as one of his 'Neurological Fragments'.²⁶ It provides insight into his enthusiasm and thinking. The six pages of closely written text reveal a logical approach to a clinical problem with detailed suggestions as to further clinical investigations and an understanding of the relevant literature. Although clearly scribbled in haste, no self-respecting House Physician could possibly have ignored these instructions. A subsequent discussion of this patient at Queen Square formed the basis for Jackson's subsequent report in *The Lancet*.²⁶

As well as his appointments at the London Hospital and Queen Square, from 1859 Jackson also held staff appointments at the Metropolitan Free Hospital in Dalston and at the Dreadnought Seamen's Hospital in Greenwich. He was expected to make twice weekly visits to the wards at Queen Square and at the London. He was also required to see out-patients at both these hospitals, travelling between them in his open landau pulled by a pair of horses.⁷ Although Macdonald Critchley (1900–1997) suggested that Jackson did not attend medical meetings,⁴ Herbert Hutchison's account indicates that Jackson often attended the medical meetings regularly held in London; indeed, he was a founder and first President of the Neurological Society of London and a founder of the journal *Brain*. He was

active in his correspondence with other physicians and corresponded with Herbert Spencer and, for a time, with Charles Darwin (1839–1882) in connexion with facial expression. He also corresponded with Weir Mitchell (1829–1914) in Philadelphia and with James Jackson Putnam (1846–1918) in Boston, both of whom had visited him at the London Hospital. Mitchell dedicated his *Lectures on Diseases of the Nervous System, especially in women*, published in 1885, to ‘J Hughlings-Jackson with warm personal regard, and in grateful acknowledgement of his services to the science of medicine’. Putnam described attending one of Jackson’s lectures at the London Hospital at which he represented his concept of ascending levels of function by a triangle drawn in chalk on the blackboard, with the highest level at the apex. There were other visitors to the London Hospital and to Queen Square from centres at home and abroad, and international meetings in England, although Hutchinson comments that Jackson did not like travelling abroad.⁷ As a Fellow of the Royal Society, to which he was elected in 1878, he would have attended meetings at the Society’s premises in Burlington House. This was a busy and all-enveloping life that continued following the sudden death of his wife, Elizabeth, in 1876 after only 11 years of marriage. Sir Jonathan Hutchinson, Jackson’s great friend, describes this personal tragedy in his Memoir⁷ and correspondence.⁹

In Jackson’s time, The London Hospital was the largest hospital in the country, located in one of the poorest parts and financed entirely by voluntary subscription. Its practice was large and immensely varied. It had many strengths; its nurses were recognised nationally for their excellence and were in demand for private nursing duties by wealthy patients. They were also called upon by the Royal family, including Queen Victoria herself, and were on duty on royal and State occasions, royal birthdays and Jubilees, state funerals and the annual opening session of the Houses of Parliament. These activities were organised by the Matron, Miss Eva Luckes. Its medical staff were leaders in their specialties. The Hospital had also developed a profitable business in the manufacture of sterile catgut for use in surgical procedures. Nonetheless, the Hospital was kept afloat only by the Herculean efforts of its House Governor, the Honourable John Scarlett, who tirelessly exploited his contacts in Society to raise money for the hospital so that famously it ‘never closed its doors’. Queen Victoria herself was Patron – Royal patronage that continues to this day. She not only visited on ceremonial occasions but also took a close personal interest in the hospital and was not averse from suddenly arriving, apparently without warning, and demanding to be shown round the hospital. In spring-time violets would arrive from the Royal gardens at

Windsor for the nurses. This was an institution with a certain spirit about it. Formal occasions such as these, however, were probably not to Jackson’s nonconformist Yorkshire taste. Indeed, he is recorded as failing to attend the Queen’s Silver Jubilee visit at which he was supposed, as Senior Consultant, to present the Staff to Her Majesty. The House Governor hurriedly filled the breach! Nonetheless, Jackson’s genius was recognised by all and at his retirement from the London Hospital under the 20 year rule in 1894 he was described by the House Governor as having been ‘an adornment to the Hospital; a description that few if any modern physicians can expect at their own retirement ceremony’. Mercier, formerly his House Physician, remarked that Jackson was known to students at the London Hospital as ‘the Sage’.²⁴

Because of the wide-ranging nature of practice at the hospital and his association with active colleagues, Jackson’s diverse clinical experience at the London Hospital was a major influence on his thinking. This experience complemented his work at Queen Square and his House Physicians worked back and forth between the two institutions.²⁴ The influence of a stimulating academic and clinical environment remains as important today as it was then.

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Roy Lee Moodie (1880–1934) and the beginnings of palaeopathology

Tony Waldron

Abstract

Roy Lee Moodie was a geologist whose interest in ancient disease was stimulated by his finding of pathological change in some of the fossils that he studied, including many from the Rancho La Brea site in California. He occupied teaching positions in Chicago, Dallas and Santa Monica and in 1928 began an acquaintance and a correspondence with Henry Wellcome who was then in the United States and appearing before the Senate Committee on Foreign Affairs. Moodie persuaded Wellcome to sponsor his palaeopathological work and the following year he was appointed palaeopathologist to the Wellcome Historical Medical Museum (WHMM) at a salary of six thousand dollars a year, the first person to hold such a title and the first and only occupant of the title at the WHMM or its successor organisations. He published extensively from 1915 until his death in 1934, including his great compendium *Paleopathology; an Introduction to the Study of Ancient Evidences of Disease*, and the collected papers of Sir Marc Armand Ruffer. He is perhaps best remembered or,

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