

# **James Samuel Risien Russell (1863–1939)**

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“Today, Risien Russell is forgotten. In his time, he was one of the most important and colourful figures within the medical profession of Great Britain” [1]. Thus wrote in 1990 the British neurologist Macdonald Critchley (1900–1997), former President of the World Federation of Neurology. A decade earlier, James Purdon Martin (1893–1984), the discoverer of fragile X (or Martin–Bell) syndrome, had affirmed: “Russell probably had the highest IQ of anyone I have ever known and with it a kind and lively personality” [2].

Obituaries and dictionary entries for James Samuel Risien Russell (1863–1939) were published in the *British Medical Journal* [3] and the *Oxford Dictionary of National Biography* [4], but it was not until 2014 that his neurological studies resurfaced, in a scholarly scientific article authored by Edward J. Fine and colleagues at the State University of New York at Buffalo [5].

Russell (Fig. 1) is eponymously remembered in neuroanatomy by the “bundle of Russell,” a group of fibers in the uncinate fasciculus [2, 5, 6]. Being the phylogenetically oldest of the cerebellar nuclei (archicerebellum), the fastigial nucleus receives afferents from Purkinje cells in the flocculonodular lobe and vermis. In turn, it sends efferents via the inferior cerebellar peduncle (or restiform body) to the ipsilateral vestibular nucleus, while some fibers cross to the contralateral cerebellum, loop around the contralateral superior cerebellar peduncle (*brachium conjunctivum*), and synapse on the contralateral vestibular nucleus and reticular formation of the pons and medulla via the bundle of Russell. This entire circuit controls antigravity and other proximal muscle synergies in standing and walking.

Russell was born on 17 September 1863 in Demerara, British Guiana (today, the Republic of Guyana, South America). His father, a sugar planter, was of Scottish origin, and his mother of African origin [4].

After attending the Dollar Academy in Clackmannanshire, Scotland, Russell earned his Bachelor of Medicine, Master of Surgery (M.B., C.M.) degree in 1886 from the University of Edinburgh and his Doctor of Medicine (M.D.) degree in 1893, having completed a thesis on the nerve roots of the brachial plexus of the dog and the lumbosacral plexus of the macaque, for which he won a gold medal [4, 5]. Supported by a scholarship from the British Medical Association, he next trained in psychiatry, neurology, neurophysiology, and neuropathology under Hermann Oppenheim (1858–1919), Friedrich Jolly (1844–1904), Emanuel Mendel (1839–1907), Johannes Gad (1842–1926), and Rudolf Virchow (1821–1902) at Friedrich Wilhelm University in Berlin, and in neurology under Jean-Martin Charcot (1825–1893) at La Salpêtrière in Paris [1, 5].

In 1898, Russell was appointed Resident Medical Officer at Queen Square, where he subsequently became Assistant and Consulting Physician and a member of the Board of Management. At the same time, he received a joint faculty appointment at University College London, where he rose to the rank of Professor of Clinical and Forensic Medicine [3]. He came under

the influence of Sir Victor Horsley (1857–1916), the pioneer of neurosurgery in England, and also got to know John Hughlings Jackson (1835–1911), Henry Charlton Bastian (1837–1915), Sir David Ferrier (1843–1928), Sir William Gowers (1845–1915), Charles Edward Beevor (1854–1908), and James Taylor (1859–1946), among others [1].

In 1893–1894, Russell carried out pioneering experiments that provided new knowledge regarding the functions of the cerebellum and its connections with the cerebrum, the spinal cord, and the labyrinth. He reviewed his findings from a historical and a contemporaneous perspective in a Lettsomian Lecture which he delivered in 1912 before the Medical Society of London [7]. After carrying out unilateral cerebellectomies on dogs, he noted a temporary paresis of the hindlimb and forelimb ipsilaterally to the lesion. The occasional spasticity correlated with the hyperexcitability of the tendon reflexes that Russell had described for the first time [8]. In particular, the knee-jerk was exaggerated on the side of the lesion; on the contralateral side, the reflex was initially depressed, but also became exaggerated within a couple of days. In the forelimbs, the ipsilateral tendon reflexes increased, while the contralateral remained almost normal. It became apparent that the spastic signs after the cerebellectomies were mainly related to the ablation of the vermis. Russell also concluded that the excitability of the motor cerebral cortex upon electrical stimulation increased contralaterally to the ablated cerebellar hemisphere and suggested a compensatory functional mechanism for the phenomenon [7, 8]. He thus lent support to the role of the cerebellum in movement coordination and posture balance [5].

Around the turn of the century, Russell gave complete neuropathological accounts of Tay–Sachs disease, syringomyelia, and “disseminated” (multiple) sclerosis [1, 5]. A contribution of great consequence for neurology was his classic description and definitive clinical analysis—in collaboration with Frederick E. Batten (1865–1918) and James S. Collier (1870–1935)—of subacute combined degeneration of the spinal cord, which is associated in some cases with pernicious anemia [9].

From 1908 until 1918, Russell served as a Captain in the Royal Army Medical Corps [4]. In that capacity, he treated 52 of the 1,212 soldiers who were admitted for functional symptoms to the National Hospital between 1914 and 1919 [10].

Russell, who was also known as an inspiring teacher, was actively involved in the campaign for the deinstitutionalization of mental diseases and became Chairman of the National Society for Lunacy Law Reform. He was the first physician at Queen Square to apply Julius Wagner-Jauregg’s (1857–1940) malariotherapy to patients with general paralysis [2, 10]. Russell maintained a highly successful private practice, largely owing to his acumen in the diagnosis and management of nervous diseases [3], and his “spell-binding clinical sense” [1].

James Samuel Risien Russell died suddenly of a heart attack on 20 March 1939 while seeing

patients at his consulting rooms in Wimpole Street [1, 3]. He was interred at Highgate Cemetery in north London [4]. He was a Fellow of the Royal College of Physicians, a corresponding member of the Society of Neurology of Paris, and an honorary member of the Canadian Medical Association [3].

#### **Compliance with ethical standards**

**Conflicts of interest** The authors declare no conflict of interest.

**Ethical standards** This study was performed in accordance with ethical standards.

#### **References**

1. Critchley M (1990) James S. Risien Russell. In: The ventricle of memory—Personal recollections of some neurologists. Raven Press, New York, p 173–181
2. Martin JP (1981) Reminiscences of Queen Square. *Br Med J (Clin Res Ed)* 283(6307):1640–1642. <https://doi.org/10.1136/bmj.283.6307.1640>
3. Obituary (1939) J. S. Risien Russell, M.D., F.R.C.P. *Br Med J* 1(4081):645. <https://doi.org/10.1136/bmj.1.4081.645-b>
4. Green J (2010) Russell, James Samuel Risien (1863–1939), neurologist. *Oxford Dictionary of National Biography*. <https://doi.org/10.1093/ref:odnb/96832>. Accessed 21 Jun 2021
5. Fine EJ, Salins S, Shahdad N, Lohr L (2014) An English neurologist, neurophysiologist and neuroanatomist who discovered a bundle in the brainstem. *J Hist Neurosci* 23:424–430. <https://doi.org/10.1080/0964704X.2014.935657>
6. Elsen GE, Juric-Sekhar G, Daza RAM, Hevner RF (2013) Development of cerebellar nuclei. In: Manto M, Gruol DL, Schmähmann JD, Koibuchi N, Rossi F (eds) *Handbook of the cerebellum and cerebellar disorders*. Springer Science, Dordrecht, p 179–205. [https://doi.org/10.1007/978-94-007-1333-8\\_10](https://doi.org/10.1007/978-94-007-1333-8_10)
7. Russell JSR (1910) The Lettsomian Lectures: On the cerebellum and its affections. *Br Med J* 1(2564):425–430. <https://doi.org/10.1136/bmj.1.2564.425>
8. Dow RS, Moruzzi G (1958) *The physiology and pathology of the cerebellum*. University of Minnesota Press, Minneapolis
9. Russell JSR, Batten FE, Collier J (1900) Subacute combined degeneration of the spinal cord. *Brain* 23:39–110. <https://doi.org/10.1093/brain/23.1.39>
10. Linden SC, Jones E (2014) ‘Shell shock’ revisited: an examination of the case records of the National Hospital in London. *Med Hist* 58:519–545. <https://doi.org/10.1017/mdh.2014.51>

**Fig. 1** Dr J. S. Risien Russell. Detail from a group photo of National Hospital Consultants, circa 1904.  
Image source: Queen Square Archives, Historical Records of the National Hospital of Neurology and Neurosurgery, London