

Joseph Godwin Greenfield: The father of neuropathology (1884-1958)

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Abstract

The systematic study of neuropathology was initiated by Godwin Greenfield in the early part of the 20th century. He worked at the National Hospital, Queen Square, London for the major period of his life and worked on various subjects like cerebrospinal fluid, intracranial tumours, cerebellar ataxias, dystrophia myotonica, disseminated sclerosis, subacute combined degeneration of the spinal cord, and the like. After his retirement he visited the National Institute of Neurological Diseases and Blindness in Bethesda, Maryland, USA, from time to time and there he died suddenly from myocardial infarction.

Key Words

Greenfield, neuropathology, history of neurology

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Undoubtedly, the systematic study of neuropathology as a separate and distinct entity started with Godwin Greenfield who worked for the major part of his life in the National Hospital, Queen Square, London. Quite appropriately, he can be called the *father of neuropathology*.

He was the son of a professor of pathology and clinical medicine in Edinburgh, Scotland. He received his B Sc degree in 1906 and MB Ch B, with first-class honors in 1908 and won the Freeland Barbour scholarship in pathology.^[1] He was soon appointed as house physician to Sir Byrom Bramwell, an outstanding physician of that time and later, to Alexander Bruce.^[2,3] Here, he had to arrange every Wednesday clinical demonstrations of patients with neurological diseases. Thereafter, he worked as an assistant professor of Pathology and soon, he moved to London and was appointed as house physician at East London Hospital for Children.^[1] In 1910, he proceeded to Queen Square and after working as a house physician for 18 months, went to Leeds General Infirmary in order to work with Matthew Stewart, the most

distinguished morbid anatomist in the country at that time. In the meantime, Kinnier Wilson, working as a pathologist in Queen Square, decided not to reapply for the post and this paved the way for Greenfield to enter into the hallowed place of neurology in 1912 where he worked till his retirement in 1949.^[1,4-6] He took the Membership of the Royal Colleges of Physicians (MRCP) in 1917, MD with a gold medal in 1921 and was elected Fellow of the Royal Colleges of Physicians (FRCP) in 1925.^[1]

Greenfield built his laboratory in the once-used operating theater of Sir Victor Horsley where the latter successfully removed the first spinal tumor in 1887, diagnosed accurately by Sir William Gowers. It was a large room with high ceiling and meagerly equipped with instruments. Hardly any British neurologist of repute has failed to spend some time in this small laboratory of Greenfield.

The important works of Greenfield are as follows:

- In 1925, wrote a book on cerebrospinal fluid along with EA Carmichael.
- Wrote textbooks on neuropathology, the first, comparatively simple one in 1921 with Sir Edward Farquhar Buzzard and the last in 1958, with W Blackwood, WH McMenemey, A Meyer, and R Norman. He could not see the publication of the volume and thus he resembled Kinnier Wilson, who also died before his magnum opus saw the light of the day, and his wife Florence prepared the index. These apart, his other writings include, *The Spinocerebellar Degeneration* in

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1954 and *Atlas of Muscular Pathology* in neuromuscular disorders in 1957.

- Worked on disparate subjects like, intracranial tumors, dystrophia myotonica, subacute combined degeneration of the spinal cord, disseminated sclerosis, presenile dementia, subacute sclerosing panencephalitis, postencephalitic parkinsonism, and diseases of the spinal cord.^[4]
- Was interested in encephalitis and did much to bring order into the chaos prevalent at that time concerning this subject
- Clarified the weird classification of spinocerebellar degeneration in 1952, in the First International Congress of Neuropathology at Rome. This meeting did not earn the approval of one and all and the incomparable Sir Francis Walshe, known for his acerbic and barbed remarks, commented that the separate international meetings for neuropathologists “*tore the seamless garment of neurology.*” In 1955, at the time of the second congress, when he was the President, talked on the pathology of involuntary movements and expounded particularly on James Parkinson, the social reformer.
- Devised skillful staining techniques for infantile metachromatic leucodystrophy. The disease is also known as “*Greenfield’s Disease*”.^[2,4,5-7]

Greenfield was a humble man and his lectures were devoid of rhetorical flourish; as a matter of fact, sometimes they appeared dull and insipid to the newly initiated. He tried to seek the view of the clinicians who referred the cases to him and his colleagues too, invited him to the wards for his opinion. Charles Symonds, the famous neurologist from Queen Square, wrote “*Greenfield in the midst of all his own activities was always generous of his time. Often a colleague would consult him on some problem arising from a case or in the preparation of a paper and pose what might seem to him a simple question. Greenfield would put aside his own work, look up reprints, refer to post-mortem data, bring out microscope slides, and give all he knew, frequently revealing the question to be far more complex than it had appeared.*,” while DW Northfield, his younger colleague, wrote, “*I rapidly came to regard Greenfield with warm affection, though my sense of awe remained, perhaps transmuted to a feeling of profound respect for the man and his opinions and the breadth of his knowledge. It was a period of great educational value for me, and I believe for all who worked...*”^[8-10] He was tall with snowy white hair and was endowed with impeccable manners. He was never offered a Chair at the Institute of Neurology. He lunched with his students in a long table but rarely broached any subject for conversation. He was witty as his comment “*Yorkshire apple pie without cheese is like a kiss without a squeeze*” will testify. He was opposed to the rigid classification of cerebral tumors and welcomed the integrative approach of JW Kernohan and his grading system. Like Sir Charles Bell, he never performed experimental works and for this reason declined to apply for the post of Chair of pathology at the Guy’s Hospital, where he would have been expected to carry out the same. However, he encouraged his students to carry out original research works, if they showed genuine interest. He lived and worked at a time when staining techniques for neural tissue were just beginning to be described and the biochemical basis for such disorders were hardly known and neurological disorders were often grouped together and not really identified and

classified. In his final years, he was appointed Dean of the Institute of Neurology, Queen Square and also became the President of Association of British Neurologists in 1954. In 1950, in collaboration with a group of senior colleagues, he started the *Neuropathological Club* with 28 founding members. It served two useful purposes namely, allowing members of different schools of neuropathology to discuss difficult cases and also helped to unite those who had clinical commitment with those whose interest lay fundamentally in experimental works. He delivered the Oliver Sharpey Lecture at the Royal College of Physicians on the “*Pathology of the neuron*” and 11 years later, delivered the Hughlings Jackson Lecture on *Encephalitis*. He was deeply involved in the activities of the British Medical Association and in 1927 he was appointed as the vice-president of the Section of Neurology at the annual meeting at Edinburgh. From 1928 to 1954, he was a member of the Pathologists Group Committee, and he always served a member of various committees including the Coroners Acts, Special Practice and Arrangements Committees. In 1955, the University of Edinburgh conferred on him Honorary Doctorate of Laws.^[1]

Greenfield retired from the staff of the National Hospital at the age of 65. He, however, used to visit the hospital and carry out his works in his old room four times a week. Later, painful osteoarthritis of the knee joints limited his movements though characteristically, he refused to accept any assistance from others for his illness. Later, he took up a post at the National Institute of Neurological Diseases and Blindness in Bethesda, Maryland where he used to visit from time to time and there he made an indelible impression in the minds of the American neuroscientists. Wilder Penfield and Webb Haymaker described him as the “*Dean of Neuropathologists.*”^[2] He died in 1958 from myocardial infarction in Bethesda, Maryland, USA while he was preparing to go to bed with a book in his hand.

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