


Editorial

Penfield and the National Institute of Neurological Diseases and Blindness: A Unique Training and Institutional Model Coupled with Mentorship

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Richard Leblanc's article¹ traces the history of the establishment of the medical and surgical neurology branches of the National Institute of Neurological Diseases and Blindness (NINDB). The story of this successful endeavor is really a reflection of Wilder Penfield's original professional goals.^{2,3} The vision for this structure can be traced to academic principles laid out in a 1917 McGill University proposal, while the operational history of a neurosurgical department and the beginnings of the Montreal Neurological Institute (MNI) owe to the efforts of famed thoracic surgeon Edward Archibald, who enticed Penfield to move to Montreal.³

After World War II, there was a clear need for improved neurological and neurosurgical training in North America and Europe, which provided the impetus for the idea of the NINDB branches. Highly motivated and expert medical personnel with military service played a central role within the US Veterans Administration in rebuilding American neurology after the war. Although various well-known figures in neurosurgery and neurology had formed departments at prominent university medical centers in the United States and Canada, there was a dearth of structured neurological and neurosurgical training that also incorporated formal scientific programs.⁴

Leblanc described the first decade of training and research performed by neurosurgical residents under Penfield at the MNI, which had a structure that allowed residents to train in neurosurgery, neurology, and basic science under one roof.^{5,6} The training basis begun by Penfield and William Cone in 1928, developed through the founding of the MNI in 1933 and its opening in 1934, was a recipe for producing many of the world's greatest neurologists, neurosurgeons, and scientists for decades thereafter.⁴

Penfield's approach to the nervous system was an intellectual one that was founded on his neurophysiological and histological studies with Charles Sherrington, Gordon Holmes, Santiago Ramón y Cajal, and Pío del Río Hortega. Equally broad and influential was Penfield's eclectic approach to neurosurgery, derived from the work of William Halsted, Walter Dandy, Victor Horsley, Percy Sargent, Harvey Cushing, Charles Frazier, Allen Whipple, René Leriche, and Otfried Foerster.^{2,7}

Penfield, determined to be a neurosurgeon, began that journey in a crucible of influence under Whipple at New York's Presbyterian Hospital. This training would affect Penfield's whole professional life and create the foundation for his approach to scientific neurological and neurosurgical training. Penfield would continually elaborate upon this experience to form a structure that would likewise produce influential and highly trained personnel from the MNI. In 1921, Penfield returned to the United States from Oxford, where he had been exposed to neurosurgeons at the National Hospital for Nervous Diseases at Queen Square, and accepted an offer from Whipple, who had been recently appointed Professor of Surgery at Columbia University. Penfield recorded that Whipple was a visionary mentor: scholarly, skillful, thoughtful, and a follower of Halsted's advanced surgical technique. Whipple valued a scientific approach to surgery, seeking Penfield for his background in neurophysiology, neuropathology, and neurology. Penfield accomplished expert surgical training over the next 2 years with Whipple, and in 1923, Whipple made Penfield the first neurosurgeon at Presbyterian Hospital. There, Penfield produced his first study of brain injury healing in the laboratory, and in 1924, he met Cone, who would become a colleague and companion to Penfield's Montreal vision.^{2,8}

In 1927, Penfield was recruited to Montreal by Archibald, who was a Professor of Surgery at McGill, one of the most influential surgeons of the 20th century, and a founding figure of modern neurosurgery. Archibald had recommended that the Royal Victoria Hospital and McGill establish a subdepartment of neurosurgery and recruit a full-time neurosurgeon. Archibald presciently forecasted Penfield's success: "I expect that ten years from now the hub of surgical neurology, in this continent, will be transferred from Boston [i.e., Cushing] to Montreal . . . [and] you will dispute the honours with Dandy . . . [Nobody] is doing any fundamental work in histology, scarcely anybody in physiology of experimental surgery. With your training, along those lines you will repeat Cushing's career, and do better than he did along the experimental lines."⁹ Penfield accepted Archibald's offer and came to Montreal in 1928, bringing along Cone.^{3,10} A great mentor,

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Archibald gave Penfield his time, support, friendship, and objective guidance. Archibald conferred his own laboratory space, raised money to support Penfield's laboratory, enlisted the support of the dean of medicine, and transferred his own secretary to Penfield. Over the next 6 years, Archibald saw Penfield's vision of the MNI to fruition.^{3,11}

Penfield and Cone's program attracted those wishing to combine mastery of neurosurgery and neurology with scientific training that would yield a prominent academic career. It is no surprise that former Penfield-Cone trainees Maitland Baldwin, who was 33 years old, and Milton Shy, who was 31, were recruited by Pearce Bailey, Jr., to head the NINDB's Surgical and Medical Neurology Branches, respectively, in 1953. Bailey's MNI recruitments were solidly founded in the clinic and science, allowing the NINDB immediate credibility in a unique American setting, modeled almost exactly on the MNI.

There was more to these trainees than their mere close integration of clinical and research training. Penfield came to the MNI with a unique exposure to superlative examples of mentorship, especially from Sherrington, Whipple, and Archibald.¹² Baldwin and Shy were not strangers to incredible challenges: Baldwin witnessed the horror of the battle for Iwo Jima and invasion of Okinawa, and Shy was gravely wounded in Italy during World War II. Others mentioned by Leblanc likewise had serious challenges: Cosimo Ajmone-Marsan had experienced war and invasion as a young doctor, and Choh-Luh Li and Anatole Dekaban fled the oppression of communist China and Eastern Europe, respectively. Penfield must have had some special unspoken pride in his personnel who were recruited south to Washington, DC, to take on pioneering leadership positions of what would become a behemoth international medical research institute.

Penfield and Cone were successful in mentoring the highest caliber of neurosurgeons, neurologists, and scientists, who in turn appreciated the unique impact of the MNI and continued such training traditions.¹³ Their history certainly provides lessons for today's training of physicians and surgeons.

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