MEDICAL PHILATELY

Wilder Penfield-Cerebral Cartographer

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Wilder Penfield, Canada-1991. Note rod of Asclepius lt. lower corner

Wilder Graves Penfield (1891-1976) was born in Spokane, Washington on January 26, 1891. *He spent most of his early life in Hudson, Wisconsin* and studied *at* Princeton University, *where* he became all-round scholar athlete and graduated in 1913. Penfield was a slow plodder and accepted the challenges of his ambition; he prepared himself to shape the years to come. He went to Princeton University, New Jersey, where he decided to pursue medicine, the profession of his grandfather and estranged father because it seemed to him the most direct way to "make the world a better place in which to live." Penfield won the Rhodes scholarship and spent years training at Oxford, Spain, Germany, and New York, before becoming the first neurosurgeon in Montreal.

Although Penfield studied under **Harvey Cushing**, the father of modern neurosurgery, it was the eminent British physiologist **Sir Charles Sherrington** who inspired him to become a surgeon. Penfield enrolled in Sherrington's mammalian physiology course at Merton College, Oxford

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University in 1914. This 3 year course consisted of Sherrington "exercises", involving various procedures, like the dissection of the peripheral nerves and spinal cord of animals. Penfield learned to handle living tissues with great care while dissecting them.

Upon completing this course, Penfield finished the clinical part of his medical training at John Hopkins University, and, after graduating in 1918, was interned at Peter Bent Brigham Hospital in Boston, where he did his apprenticeship with **Harvey Cushing**. Penfield then took his position at the New York Presbyterian Hospital,

In the 1950s, Penfield was trying to treat patients with intractable epilepsy. When the patients experienced an aura, Penfield thought if he could provoke this aura with a mild electric current on the brain, then he would have located the source of the seizure activity; and could remove or destroy that bit of tissue. While patients were fully conscious, under local anesthesia he opened their skulls and tried to pinpoint the source of their epilepsy.

His technique was often successful, but his experimental surgery led him to an even more dramatic discovery. Stimulation anywhere on the cerebral cortex could bring responses of one kind or another. Thus he developed a map of the brain, often portrayed as a cartoon called the motor homunculus (miniature distorted human being). This cartoon character has features drawn according to how much brain space they take up. Therefore, lips and fingers with their high number of nerve endings are larger than arms and legs.

Most interestingly he found that only by stimulating the temporal lobes could he elicit meaningful, integrated responses such as memory, including sound movement, and color. These memories were much more distinct than usual memory, and were often about things unremembered under ordinary circumstances.

Penfield was one of the greatest neurosurgeons of the twentieth century, whose pioneering work revolutionized the discipline. His technique for treating intractable epilepsy, developed with his colleague Herbert Jasper, came to be known as the Montreal Procedure; it was ground-breaking because it applied the principles of neurophysiology to the practice of neurosurgery. Penfield amassed a large body of data, which together constituted the first detailed large scale functional map of the human cerebral cortex.

He devoted much thinking to the mystery of the mind, and continued to contemplate and question whether there is a scientific basis for the existence of the human soul. Penfield died in 1976.

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