



Robert Barany: An Astute Clinician

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Abstract

The Russian Army supervised prisoner-of-war camps of World War I housed hundreds of thousands of captured soldiers in appalling conditions. Robert Barany, an Austrian surgeon, was buried in one of these camps in central Asia. He discovered that he had been chosen for the 1914 Nobel Prize in Physiology/Medicine when he was a prisoner of war. He went on to work for over 20 years at Uppsala University in Sweden after accepting an offer there in 1916. Shortly before turning sixty in 1936, he passed away. The paper emphasizes his vision and contributions to the discipline, highlighting his remarkable discoveries and vision in the vestibular system.

Keywords: Barany's Society; Vertigo; Vestibular System

Introduction

Milieu

The mother of Robert Barany was from the Czech portion of Austria-Hungary, while his father was from the Hungarian part [1]. Their eldest child, Robert, born in Vienna in 1876, was reputedly reserved and contemplative. Barany was an active young man even after developing bone TB, which left him with persistent knee stiffness. Later, he would credit this encounter for igniting his early interest in medicine. Throughout his early years, Barany was an excellent student, and in 1894, he graduated with honors. Robert Barany attended the University of Vienna where he earned his medical degree in 1900. He took a job in 1903 at the University of Vienna's otology clinic, working in Adam Politzer's department-the man who had founded the field in Austria. Here he started investigating the ear and brain's balance systems [2].

A Tale of an Astute Clinician

Trained as an otologist, Barany was acquainted with the groundbreaking vestibular system research conducted in the

19th century by Pierre Flourens (1794-1867), Jan Purkinje (1787-1869), Prosper Menière (1799-1862), and Friedrich Goltz (1834-1902). While these vestibular pioneers saw the effects of experimental destructions, diseases, or stimulation of the semicircular canals, they were unable to grasp the physiology of these canals and instead developed relationships between them and body position, vertigo, and dizziness. Like with many previous Nobel laureates, the most popular way to memorialize Barany is through postal stamps. Sweden created a stamp on December 10, 1974, to commemorate the 60th anniversary of Barany's Nobel Prize award (Figure Two). In the backdrop of the portrait of Barany is the main structure of the "Universitas Litterarum Vindobonensis," or the University of Vienna, where Barany was employed before to relocating to Uppsala. The Swedish engraver Arne Wallhorn and designer Lennart Forsberg created it. The portrait gathered by the Nobel Prize Foundation served as a major inspiration for the painting of Barany. Multiple medical journals have already described this stamp [2].

More advancements were achieved in the 1870s when Josef Breuer, Ernst Mach, and Alexander Crum Brown proposed

a direct connection between self-motion awareness and the liquid that filled the semicircular canals. Nevertheless, Barany was the first to realize that the physiology, operation, and disorders of the vestibular organs could be methodically studied by pumping warm and cold water into the auditory canal [3]. As a young otologist in Vienna, Barany came across the principles of the caloric test. He discovered that patients complained of vertigo and dizziness when he injected warm and cold water into the auditory canal. He wrote many publications describing, among other things, how these irrigations caused highly predictable reflexive eye movements known as nystagmus, and how the temperature of the water affected which way these “caloric nystagmus” went. Because head position altered the direction of the caloric nystagmus and water at body temperature did not cause vertigo or eye movements, Barany deduced that the water’s temperature stimulated the semicircular canals in the inner ear and proposed that “the nystagmus was the result of a reflex action of the semicircular canals” [4].

The vestibular system was radically reinterpreted by Barany’s technique, which also sparked new experimental vestibular studies into the semicircular canal’s structure, which were crucial to comprehending animal and human posture and movement. When it came to applying his caloric reactions to labyrinthine disorders, such as “benign positional vertigo,” Barany did not take long [5]. He first reported this type of episodic vertigo in 1921. The vertigo began suddenly and lasted for a few seconds. It was caused by a quick movement of the head. In 1952, Dix and Hallpike [6] provided a more thorough description and dubbed the condition “benign paroxysmal positional vertigo”.

Opening the Archive

His research significantly increased our understanding of vestibular physiology. Barany’s law, the pointing test, the caloric test, the namesake Barany’s chair, and the hypothesis of endolymphatic flow are all products of his work [5]. Barany was a prisoner of war in Russia when he was awarded the Nobel medal; it was only through the personal intervention of Prince Carl of Sweden that he was allowed to be released to accept the medal in 1916. The vestibular organs consist of two otolithic organs, the saccule and the utricle, and three semicircular canals. Antonio Scarpa and Gustav Retzius had previously provided a thorough description of the anatomy of the inner ear [7]. However, Barany’s work was crucial in illuminating the process by which head rotations are encoded by the inner ear’s sensory organs. “Excellenti auris vestibuli investigatori ordo medicorum Upsaliensis [The most excellent investigator of the vestibular part of the ear. Medical order of Uppsala]” is engraved on the reverse side of the medal, which features an original profile portrait of Barany on the face (Figure 1).



Figure 1: Barany Society Gold Medal.



Figure 2: Stamp.

This article makes it possible to show that Barany’s legacy endures in the early years of the twenty-first century, both for the public and in the medical community.

Conclusion

Robert Barany was a renowned physician and otologist as well as a tireless researcher and master of persuasion, even though he considered the vestibular system to be his primary area of study. He never stopped working hard, not even when he got sick. He made contributions to medicine, particularly to the subject of otorhinolaryngology. This article makes it possible to show that Barany’s legacy endures in the early years of the twenty-first century, both for the public and in the medical community. His discoveries are still relevant today. By means of this piece, we hope to kindly remind aspiring otorhinolaryngologists that perseverance and a strong will can work marvels. We hope that the next time they use the vestibular tests, such as the Caloric Test, they will have this prominent person in mind. By drawing lessons from the struggles faced by these remarkable pioneers, we can develop the fortitude to persist in pursuing our objectives.

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