



WILLIAMINA FLEMING 1857-1911

In 1878, **Williamina Paton Stevens Fleming**, a 21 year old teacher in her native village Dundee on the east coast of Scotland, left to start a new life with her husband in Boston, Massachusetts. Two years after starting their adventure in the United States, Mr. Fleming abandoned the pregnant Williamina without any kind of support. Alone and on another continent, she found work as a housekeeper for the home of Professor **Edward Charles Pickering**.

Pickering was a professor of physics and the director of Harvard College Observatory (HCO). Pickering's wife Elizabeth recommended Williamina as having talents beyond custodial and maternal arts, and in 1879 Pickering hired Fleming to conduct part-time administrative work at the observatory. In 1881, Pickering invited Fleming to formally join the HCO and taught her how to analyze stellar spectra. She became one of the founding members of the Harvard Computers, an all-women cadre of human computers hired by Pickering to compute mathematical classifications and edit the observatory's publications.

As a result of years of work by their female computer team, the HCO published the first Henry Draper Catalog in 1890, a catalog with more than 10,000 stars classified according to their spectrum. The majority of these classifications were done by Fleming who introduced a new organizational scheme based on 16 types, assigning a letter to each star (from A to Q, skipping J) according to the amount of hydrogen in its spectrum. Fleming also made it possible to go back and compare recorded plates, by organizing thousands of photographs by telescope along with other identifying factors.

In 1898, she was appointed Curator of Astronomical Photographs at Harvard, the first woman to hold the position. Seven years later, she became the first American woman elected to honorary membership in England's Royal Astronomical Society.

During her career, she discovered 10 novae, 59 gaseous nebulae, and more than 300 variable stars, plus the iconic Horsehead Nebula in Orion. She also recognized the existence of hot, Earth-sized stars later dubbed white dwarfs.

Fleming openly promoted the hiring of female assistants in astronomy. In her 1893 article "A Field for Woman's Work in Astronomy," published in *Astronomy & Astrophysics*, she stated "While we cannot maintain that in everything woman is man's equal, yet in many things her patience, perseverance, and method make her his superior."

https://en.wikipedia.org/wiki/Williamina_Fleming

<https://www.harvardmagazine.com/2017/01/williamina-fleming>

<https://www.bbvaopenmind.com/en/science/leading-figures/williamina-fleming-from-maid-to-astronomer/>

