



January 2017 Her Story ENewsletter Astronomers

The publication of *The Glass Universe* and the release of the movie, *The Hidden Figures*, as well as the recent death of astronomer Vera Rubin reminds us to share the stories of three historical women astronomers. In this ENewsletter, we learn about Maria Mitchell, Williamina Fleming and Vera Rubin.

Encouraged by her parents, **Maria Mitchell** assisted her father with astronomical calculations by the time she was twelve. In 1847, she sighted a new comet and calculated its position. For this accomplishment, she received a gold medal from the King of Denmark and became a symbol for women of the possibilities in scientific endeavors. In 1848, she was the first woman elected to the American Academy of Arts and Sciences.

When Vassar College opened in 1865, she became its first faculty member and the director of its observatory. At Vassar for the rest of her career, Mitchell's influence on astronomy and women's education were significant; she was responsible for educating generations of scientific women. A crater on the moon has been named after her and Mitchell has been inducted into the National Women's Hall of Fame.



Maria Mitchell

When **Williamina Paton Stevens Fleming** emigrated to the U.S. with her husband in 1878,

she could not have imagined that she would have a career in astronomy. Pregnant, and deserted by her husband shortly after landing, she went to work for Edward Pickering as a domestic. Pickering, the director of the Harvard Observatory, it is said, grew frustrated with the work produced by his male assistant and proclaimed that his maid could do a better job. He hired her - and she did!

Fleming classified over 10,000 stars into 17 categories for the Draper Catalogue of Stellar Spectra published in 1890. Her new classification system, the Pickering-Fleming System, was used instead of the original system that had been devised by Pickering. Her examination of 200,000 photographic plates led to her discoveries of ten of the 24 novae that were known at the time of her death. Fleming eventually supervised the women who sorted and studied photographs of star spectra and then she was the first woman Curator of Astronomical Photographs at the Observatory.



Williamina Paton Stevens Fleming

Astronomer **Vera Rubin** died this month at 88. Like Mitchell, as a young girl she was influenced by her father who helped her build a telescope. He also took her to get-togethers of amateur astronomers. She enjoyed studying what was not of interest to others. Her focus was on galaxy rotation rates; this led to the theory of dark matter. She discovered that the stars at the edges of galaxies moved faster than expected. As she explained her observations, other scientists proposed there was matter we cannot see; they called it dark matter. This matter comprises approximately 27% of the mass and energy in the observable universe.

Read more about the 850 women profiled in our book *Her Story: A Timeline of the Women Who Changed America*. Their accomplishments inspire us; let's all continue to tell women's stories.

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