## ***Maria Mitchell*** (1818-1889)

American astronomer

The first professional woman astronomer in the United States, Maria Mitchell was also the first American scientist to discover a comet, the first to enter the American Association for the Advancement of Science and she remained the only woman ever elected to the American Academy of Arts and Sciences until 1943.

Maria Mitchell was an astronomer, librarian, naturalist, and above all, educator. She was born in 1818, into a large Quaker family on the island whaling station of Nantucket, off the Massachusetts coast.

As Quakers, her parents advocated equal education for girls. Her father was a great influence on her life; Maria developed her love of astronomy from his instruction on surveying and navigation. Early on, she revealed extraordinary observational powers, natural mathematical gifts and unusual sensitivity to stellar movements and colours. At age 12, Maria helped her father calculate the position of their home by observing a solar eclipse. By 14, sailors trusted her to do vital navigational computations for their long whaling journeys.

Maria received an education at local schools and from her father's tutoring. She attended Cyrus Peirce's School for Young Ladies and completed her education at age 16. At 17, she opened her own school; a school training girls in math and science. A year later, she was appointed supervisor of the local library, the Nantucket Atheneum (1836). She and her father continued to acquire astronomical equipment and conduct observations.

Her constant companion was a notebook, carried in a capacious pocket. Her speech was direct, her ideas increasingly radical. "We cannot accept anything as granted," she wrote in her journal, "beyond the first mathematical formulae. Question everything else."

On October 1st, 1847, Maria was sweeping the sky from the roof of the Pacific National Bank and succeeded in establishing the orbit of a new comet. Maria Mitchell was the first American scientist to discover a comet.

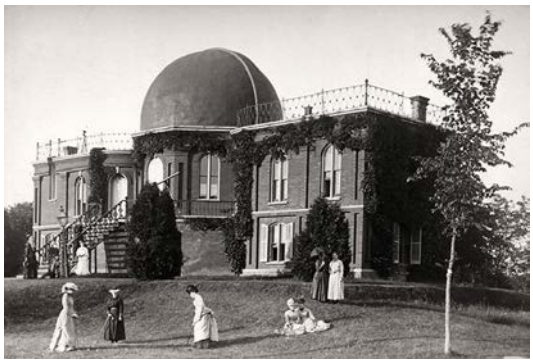
She published a preliminary notice of her finding in the journal of Britain's Royal Astronomical Society on 12 November, giving her claim to the gold medal established by the Danish King Frederick VI for the first sighting of any new comet, detectable only by telescope, anywhere in the world.

After her discovery of "Miss Mitchell's Comet" (Comet 1847 VI; now known as C/1847 T1), she gained popularity worldwide and was recognized for her contribution to astronomy. She was only the third woman worldwide to discover a comet (the others were Caroline Herschel and Maria Margarethe Kirch, both German astronomers).

The discovery gained her immediate recognition in scientific circles; the following year she was the first woman elected as a Fellow of the American Academy of Arts and Sciences. In 1849 she was appointed a "computer" for the American Ephemeris and Nautical Almanac, and the next year she became a Fellow of the American Association for the Advancement of Science.

At the U.S. Nautical Almanac Office worked as an astronomer; she was assigned the orbit of Venus. Mitchell's agile mind, pedagogic fire and salty opinions bring extraordinary animation to her varied collection of scientific papers, articles, notebooks and journals.

In 1856 started traveling throughout the US and Europe. In 1865, she was appointed professor of astronomy at the newly founded Vassar College in Poughkeepsie, New York – one of the earliest women-only US institutes of higher learning. Mitchell lived at the observatory for the next 23 years.



Maria was an inspiration to her students. It was Vassar College that Maria felt was truly her home. She believed in learning by doing, and in the capacity of women to achieve what their male counterparts could. "Miss Mitchell" was

beloved by her students whom she taught until her retirement.

As a lecturer, Mitchell became known for pithy sayings. One was: “Study as if you were going to live forever; live as if you were going to die tomorrow.”

Mitchell pioneered in the daily photography of sunspots; she was the first to find that they were whirling vertical cavities rather than clouds, as had been earlier believed. She also studied comets, nebulae, double stars, solar eclipses, and the satellites of Saturn and Jupiter. Two of Maria Mitchell’s favorite planets were Jupiter and Saturn and during her years in Vassar College, she continued with her research about the surface of these planets and also photographed the stars.

She was elected to the American Philosophical Society in 1869; she helped found the Association for the Advancement of Women (1873) and served as its president (1875–76). Being born at a time when women’s rights weren’t equal with those of men, it can be said that Maria Mitchell’s contributions to science as well as the welfare of women are to be considered as valuable contributions to both science and history.

A pioneer in establishing women in the sciences, she devoted a great deal of time to finding ways for women everywhere to gain greater freedom and have their rights recognized in society. Maria Mitchell was a force behind women’s rights and women’s education of the nineteenth century.

Mitchell retired from Vassar in failing health in 1888 and died the next year.

After her death, she was made a part of the U.S. National Women’s Hall of Fame. On the moon, a crater was named “Mitchell” after her to commemorate her importance in the field of astronomy.

***"Do not look at stars as bright spots only - try to take in the vastness of the universe."***

***“We especially need imagination in science. It is not all mathematics, nor all logic, but it is somewhat beauty and poetry.”***