Henrietta SWAN LEAVITT

(1868 – 1921)

Henrietta Swan Leavitt was an American astronomer who found a way to calculate the great distances between Earth and galaxies based on the brightness of the stars and how they change over time.

As a result of Henrietta's work, scientists have been able to measure distances of objects millions of light years away.

Henrietta's Childhood

Henrietta Swan Leavitt was born on July 4th, 1868 in Lancaster, Massachusetts. She and her family moved to Cleveland, Ohio when she was still a child.

She attended Oberlin College and graduated from the Society for the Collegiate Instruction for Woman, known now as Radcliffe College in 1892. She studied classical Greek, fine arts, philosophy, analytic geometry and calculus.

It was in her fourth year that she took up an astronomy course. She then travelled around America and Europe and it was then that she lost her hearing.

Henrietta's Career

In 1893, Henrietta began work at the Harvard College Observatory as one of the women human "computers". Here, she worked to measure the brightness of stars as they appeared in the photographic plate collection. She had not been paid for her work at first, but in 1902, she eventually received $.0.30 an hour.

She was then given the position of chief of photographic photometry department and had the responsibility of taking care of the telescopes.

During her time working at Harvard College Observatory, Henrietta had been assigned to study "variable stars." These are stars that change luminosity over time. Henrietta noted many variable stars in the images of clouds called the Magellanic Clouds.

'Period-Luminosity Relationship' Discovery

In 1908, she published what she had found and showed that a few of the variables showed a pattern; that brighter ones seem to have longer periods.

She decided to continue this study further. In 1912, she confirmed that the Cepheid variables, which are a type of star, with greater luminosity did, indeed, have longer periods and the relationship was close and predictable.

This discovery is known as the "period-luminosity relationship" and is the most known discovery of Henrietta's today. It has become an important way of measuring distances in the Universe.

Annie Jump Cannon & Henrietta Swan Leavitt, 1913

Henrietta's Influence

In 1913, one year after Henrietta's discovery, Ejnar Hertzsprung discovered the distance of some Cepheids in the Milky Way and with this, the distance to any Cepheid could be determined.

Henrietta's discovery also became the basis of the work done by Edwin Hubble, who demonstrated that Cepheids exist in galaxies outside of our Milky Way. This completely changed the theory of modern astronomy.

Henrietta also developed the Harvard Standard for photographic measurements. This was accepted by the International Committee of Photographic Magnitudes in 1913.

Death and Legacy

Henrietta Swan Leavitt discovered over 2,400 variable stars – about half the known around that era.

Even though Henrietta only worked from time to time at Harvard because of health problems and family obligations, she was made head of stellar photometry in 1921.

However, by the end of the year, Henrietta passed away from cancer. She was buried in the Leavitt family plot at Cambridge Cemetery, Cambridge, Massachusetts.

Unaware of her death, a Swedish mathematician considered nominating her for the 1926 Nobel Prize in Physics. He wrote to her employer at Harvard, and he had written back, informing him of her death. She was never nominated because the Nobel Prize is not awarded posthumously.

The asteroid 5383 Leavitt and the lunar crater Leavitt are named in her honour.

Henrietta Swan Leavitt

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