

Henrietta Swan Leavitt

(1868- 1971)

Measured the Universe



Main image: Henrietta Swan Leavitt. [American Institute of Physics, Emilio Segrè Visual Archives, Public Domain].
Background: Galaxy [Public Domain].

Henrietta Swan Leavitt was educated at Oberlin College and the Harvard-affiliated Radcliffe College before volunteering as an assistant at the Harvard College Observatory. She was employed at the observatory in 1907 by astronomer Edward Charles Pickering as one of the “human computers”, measuring the brightness of stars in the observatory’s photographic collection. At that time, women were not permitted to operate the observatory’s telescopes.

Leavitt was given the task of studying “variable stars” which vary in brightness over time. She recorded thousands of such stars in images of the Magellanic clouds and published the results, noting a recurring pattern in some of the stars, called Cepheid variables. In these stars, the luminosity of the star (the total amount of energy emitted) was strongly associated with the length of the pulsation period. The discovery had enormous implications. By observing the pulsation period, the luminosity of the star could be determined. In turn, the distance from the Earth to the star could be calculated by comparing its luminosity to its observed brightness.

Leavitt’s discovery was published by her supervisor, Edward Pickering, with Leavitt mentioned only as the person who prepared the information. She died an unknown astronomer, but after her death, her data was used by Edwin Hubble to understand the distance to Earth’s nearest large galaxy, and to determine that the universe is expanding.

