HENRIETTA LEAVITT 1868 – 1921

The daughter of a Congregational minister and a graduate of Radcliffe College, Leavitt was hired by Edward Charles Pickering as a computer at the Harvard University Observatory in the 1880s.

Pickering assigned Leavitt to the study of variable stars of the Small and Large Magellanic Clouds, as recorded on photographic plates taken at the Harvard Observatory in Arequipa, Peru. Leavitt was astonished at the number of variable stars she discovered in these clouds – 969 in the small cloud and 808 in the large cloud, making a total of 1,777. These unusual stars are classed as Cepheid variable stars, named for Delta Cephei in the constellation Cepheus. This first Cepheid variable star was discovered by John Goodricke in 1784.

Assuming that all the Cepheids in the Small Magellanic Cloud lie at the same distance from the earth, Leavitt deduced that the fundamental brightness of a Cepheid is directly related to its pulse rate. This means that if two Cepheid stars have the same pulse rate, but one is dimmer than the other, then we can tell that the dimmer one is farther from us. Since there is a precise relationship between distance and brightness – like gravity it is an inverse-square law – precise distances to all Cepheid stars were now within the grasp of astronomers. Leavitt's work was pivotal to the development of astronomy, astrophysics, and cosmology.

The *period–luminosity relationship for Cepheids*, now known as "LEAVITT'S LAW", made the stars the first "standard candle" in astronomy, allowing scientists to compute the distances to stars too remote for stellar parallax observations to be useful. One year after Leavitt reported her results, Ejnar Hertzsprung determined the distance of several Cepheids in the Milky Way and that, with this calibration, the distance to any Cepheid could be accurately determined. Next, Edwin Hubble used Leavitt's relationship between a Cepheid's pulse rate and its brightness and Hertzsprung's distance calibration to measure the distances to Cepheids located in a number of nebulae. He discovered that the Cepheids were so far distant that they were beyond the Milky Way; the nebulae were other galaxies, and the universe was much bigger than anyone had realized and expanding.

Hubble often said that Leavitt deserved the Nobel Prize for her work. Mathematician Gösta Mittag-Leffler, a member of the Swedish Academy of Sciences, tried to nominate her for that prize in 1925, only to learn that she had died of cancer three years earlier. (The Nobel Prize is not awarded posthumously.)

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

https://www.csmonitor.com/2005/0705/p15s01-bogn.html

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