**Cecilia Payne-Gaposchkin**

**Born 1900 - Died 1979**

Born in England in 1900, Cecilia Payne-Gaposchkin always had a passion for learning and science. She attended Cambridge University and was inspired by a lecture on how solar **eclipses** relate to Einstein’s Theory of General Relativity, which got her hooked on physics and astronomy.

Cambridge did not have a lot of opportunities for women and did not offer them advanced degrees. Cecilia moved from Cambridge, England to Cambridge, Massachusetts, and started a fellowship at Harvard College Observatory, figuring out what the sun and stars are made of.

The stars could be viewed in a different way by attaching a **spectroscope** to a **telescope**. This tool allowed scientists to see a rainbow of colors - the **stellar spectra** coming from the star. Reading the gaps in the rainbow, also known as absorption lines, revealed what types of elements were in a star.

Scientists at the time thought that stars were built like the Earth, but Cecilia proved them wrong. Her background in quantum physics gave her new insight into reading stellar spectra. She already knew that the extremely hot sun would cause atoms to ionize. Different ionization states would show up as different absorption lines on the stellar spectra. With her fresh perspective, it was now Cecilia’s job to figure out the elements to which these ions could belong.

She discovered that the sun is made mostly of hydrogen and helium gas. This was so controversial that the respected astronomer Henry Russell told her it was “impossible”. She completed her thesis paper with a side note saying that she was probably wrong. She turned her paper into a book, Stellar Atmospheres, published in 1925. Many other astronomers read the book, and in a few years the scientific community realized how right she was! Her work changed astronomy and taught scientists how to properly read stellar spectra.

Despite Cecilia’s accomplishments, being a woman meant she was only recognized as a technical assistant at Harvard. Finally, in 1956, she became Harvard’s first female **astronomy professor**. Her work has given us a better understanding of the life cycle of stars and our universe.

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| **Vocabulary Word Bank**  **Eclipse:** The blocking of the sun’s light by either the moon or the Earth.  **Spectroscope:** Scientific instrument used to detect, measure, and record light.  **Telescope**: Scientific instrument used for studying objects in space.  **Stellar Spectra**: LIght coming from space.  **Astronomy**: the study of stars, planets, and space.  **Professor**: A teacher at a college or university. |

