



The contribution of women Astronomers to a better understanding of the Sun

Annie Russell Maunder (1868-1947)

Shooting the Sun



- At the ROG, she was daily taking solar photographs, and was recording the position of the sunspots on the Sun's surface.
- Thus, she became the first to find evidence of the movement of sunspots from the poles to the equator.
- She also joined five eclipse expeditions. In one of them, she managed to capture "the longest ray", that is the longest coronal streamer ever imaged at that time.



image courtesy (National Portrait Gallery, London)

Education



- Annie was an Irish woman who studied mathematics at the University of Cambridge without getting a degree, since at that time it was not possible for women to graduate.
- After finishing studies in 1891, she got a position at Royal Observatory Greenwich (ROG), in the Solar Department.

Acknowledgment

Annie got married to Edward Walter Maunder, her academic supervisor in ROG, in 1895. Her marriage did not affect her interest in science. Moreover, she became a useful partner to her husband and his research. During that period, she contributed to the creation of the famous Maunder's Butterfly Diagram, which highlights the position of the sunspots over the Sun's surface. By 1916, the Royal Astronomical Society had decided to accept women members and Annie Maunder was one of the first Fellows.

Cecilia Payne-Gaposchkin (1900- 1979)

Great Discovery



- In her PhD thesis "Stellar Atmospheres: A Contribution to the Observational Study of High Temperature in the Reversing Layers of Stars" she associated the linear patterns in the observed stellar spectra to their physical conditions.
- She also discovered that hydrogen is the main component of stars, followed by helium



image courtesy PICRYL

Education



- Cecilia was born in England and studied physics at Cambridge University, after getting a scholarship. Like Annie Maunder, she was not awarded a degree after the completion of her studies, due to her gender.
- In 1923, she moved to the United States and became a research scientist at the Harvard College Observatory in Massachusetts.
- After two years, Payne was the first person to be awarded a PhD in astronomy from Radcliffe College of Harvard University.

Acknowledgment

She made an enormous number of observations studying various stars, even variable stars. Her observations contributed to a better understanding of stellar evolution. In 1938, she was given the title of "Astronomer" and finally in 1956, she became the first female professor in Harvard University.