William Ferrel Biography

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Biography

William Ferrel was an important contributor to the understanding of oceanic and atmospheric circulation. He was able to show the interrelation of the various forces upon the Earth 's surface, such as gravity, rotation and friction.

Ferrel was born in southern Pennsylvania. His family moved to West Virginia in 1829, where he spent his formative years. Because of his shyness, Ferrel spent much of his time supplementing his meager early education with independent reading. After graduating from Bethany College in West Virginia in 1844, he went on to teach school in Missouri, Kentucky and Tennessee. While in Nashville during the 1850s, he began writing articles on tidal theory. His interest in this and related subjects can be attributed to his readings on Isaac Newton, Pierre Laplace and Matthew Maury.

Ferrel was the first person to mathematically demonstrate the influence of the Earth's rotation on the presence of high and low pressure belts encircling the Earth, and on the deflection of air and water currents. The latter was a derivative of the effect theorized by Gustave de Coriolis in 1835 and became known as Ferrel's law.

Ferrel also contemplated the effect that the gravitational pull of the Sun and Moon might have on the Earth's rotation. Without physical proof, he was able to conclude correctly that the Earth's axis wobbles a bit.

Ferrel wrote for navigational almanacs. His tidal calculations were useful to mariners. Later, while employed by the Coast Survey, he invented a machine, considered a computer-prototype, which could be used to predict ocean tides.

During the 1870s, one of Ferrel's final contributions was to refine the observations of fellow Pennsylvanian James Pollard Espy (1785-1860), who demonstrated the role that atmospheric heating and cooling have in producing precipitation.