

George Hadley

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George Hadley (February 12, 1685 – June 28, 1768) was an English lawyer and amateur meteorologist who proposed the atmospheric mechanism by which the Trade Winds are sustained. As a key factor in ensuring that European sailing vessels reached North American shores, understanding the Trade Winds was as important in Hadley's day as the understanding of the solar wind and other extraterrestrial phenomena is to contemporary scientists considering manned lunar and Martian expeditions. Hadley was intrigued by the fact that winds which should by all rights have blown straight north had a pronounced westerly flow, and it was this mystery he set out to solve.

Hadley was born in London, England to Katherine FitzJames and George Hadley. He had an unremarkable childhood, and was eclipsed in his early years by his older brother John, the inventor of the octant (a precursor to the sextant). With John and his brother, Henry, George had constructed effective Newtonian telescopes.

In 1686, Edmond Halley proposed his theory attempting to explain the Trade Winds. Halley's theory remained the most widely known internationally almost to the beginning of the 19th century. Hadley's theory, published in 1735, remained unknown, but it was rediscovered independently several times. Among the rediscoverers was John Dalton, who later learned of Hadley's priority. During the second half of the 19th century the theory gradually became known as "Hadley's principle".^[1]

In retrospect the crucial step forward was the recognition that the Earth's rotation plays a role in the direction taken by air mass that moves relative to the Earth. That element had been missing in Halley's proposal.

Later, in the second half of the 19th century, Hadley's theory was shown to be deficient in several respects. Hadley's theory is based on an assumption that when air mass travels from one latitude to another its linear momentum is conserved. However, since the air mass is at all times in a state of circumnavigating the Earth axis, it is in fact the angular momentum that is conserved. When using the correct angular momentum conservation in calculations the predicted effect is twice as large as when the erroneous conservation of linear momentum is used. The fact that Hadley's principle is a deficient theory is not known to all people who should know; it can still be found in popular books and popular websites.

Hadley was elected a Royal Fellow in 1745 and died in 1768. The Hadley Centre for Climate Prediction and Research, within the UK Met Office, is named in his honour. A crater on Mars was also named after him.

George Hadley	
Born	February 12, 1685 London, England
Died	June 28, 1768 (aged 83)
Nationality	Great Britain
Occupation	Lawyer, amateur meteorologist

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References

1. [^] Anders Persson, 'Hadley's Principle: Understanding and Misunderstanding the Trade Winds (http://www.meteohistory.org/2006historyofmeteorology3/2persson_hadley.pdf) ', History of Meteorology 3 (2006) (PDF-file 244 KB)

Bibliography

- George Hadley, “Concerning the cause of the general trade winds,” Philosophical Transactions, vol. 39 (1735).

See also

- Hadley cell

External links

- Short biography (http://dennou-k.gaia.h.kyoto-u.ac.jp/library/gfd_exp/exp_e/biodic/hadley.htm)

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