

## Henry Cavendish

Oct. 10, 1731 to Feb. 24, 1810

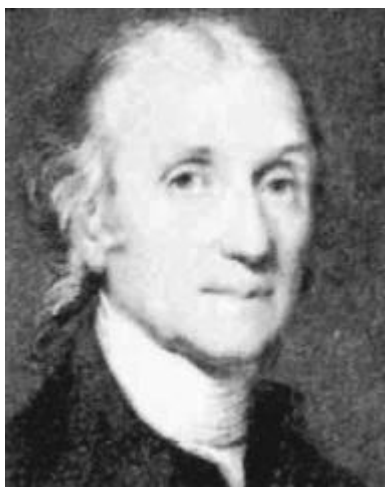
The English chemist and physicist Henry Cavendish, , was the first to recognize hydrogen gas as a distinct substance. He also described the composition of water and made the first accurate measurement of the density of the Earth.

Cavendish attended Cambridge University from 1749 to 1753, but left without a degree. After touring Europe with his brother, he lived frugally in London, even after an inheritance made him one of the wealthiest men in England. He immersed himself in scientific studies but did not bother to publish a number of his important discoveries. Exceedingly shy and retiring, Cavendish was sociable only with his scientific friends. The only existing portrait of him was sketched surreptitiously.



Cavendish approached most of his investigations through quantitative measurements. In order to establish that hydrogen gas was a substance entirely different from ordinary air, he calculated their densities as well as the densities of several other gases. He found that common air, as well as air brought by a balloon from the upper atmosphere, is made up of nitrogen in a 4:1 ratio by volume. He also showed that water is composed of oxygen and hydrogen. He measured heats of fusion and evaporation as well as specific heats and those of the mixing of solutions in water. Cavendish's measurements of the freezing points of various solutions showed the existence of compositions that yield maximum and minimum freezing points.

Cavendish compared the electrical conductivities of equivalent solutions of electrolytes and expressed a version of Ohm's law. His last major work was the first measurement of Sir Isaac Newton's gravitational constant, together with the mass and density of the Earth.



The accuracy of this experiment was not improved on for nearly a century.

Bibliography: Berry, A. J., Henry Cavendish (1960); Crowther, J. G., Scientists of the Industrial Revolution (1962).

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<http://www.chemistry.mtu.edu/~pcharles/SCIHISTORY/HenryCavendish.html>