

The Joule....

- J.P. Joule has given his name to the unit now used across the world for measuring energy.
- The energy required to move an object with a force of one newton over a distance of one metre is called a joule.
- One newton (named after Sir Isaac Newton) is the force required to cause a mass of one kilogram to accelerate at the rate of one metre per second squared,

Nowadays we can usually see Joule mentioned on the labels on our food which tell us about its nutrition value.

For example, one typical slice of bread contains energy equal to 486 thousand joules. That is enough energy to power a one-bar electric fire for about 8 minutes.



Typical Values	Per 100g of product	Per average slice (47.4g)	Reference I
ENERGY	1025kJ 244kcal	486kJ 116kcal	84 200

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James Prescott Joule

A COMMEMORATION OF HIS BIRTH

24th December 1818



Who was James Prescott Joule?

The establishment of the energy concept in the mid-19th century was the greatest advance in physical sciences since Sir Isaac Newton. Probably the most important contributor to this huge step forward was James Prescott Joule, born in 1818, the son of a Manchester brewing family.

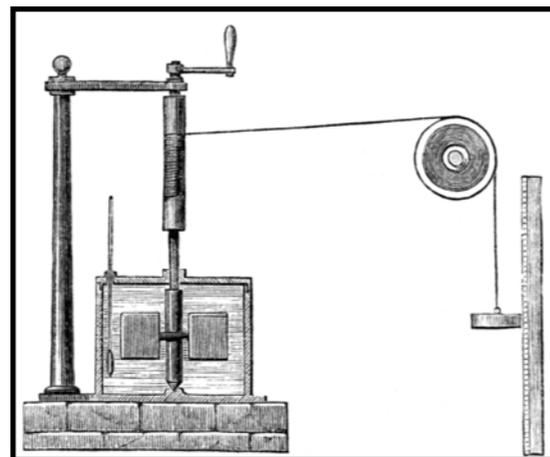
He studied arithmetic and geometry under John Dalton. At the age of fifteen he started working in the brewery in addition to his studies. James enjoyed experimenting with electricity and a servant girl became unconscious as he inadvertently gave her electric shocks!

His first experiments concerned electric motors with a view to replacing the steam engines in the brewery with electric ones. This led him to discovering “Joules Law” in 1840. He established a relationship between the flow of current through a resistance and the heat generated. Joule’s law states that the amount of heat per second that develops in a wire carrying a current is proportional to the electrical resistance of the wire and the square of the current.

Joule then carried out experiments using a paddlewheel and calorimeter and in 1843 Joule announced his determination of the amount of work required to produce a unit of heat (the mechanical equivalent of heat). He established that heat and mechanical work are both forms of energy. His efforts became the cornerstone of the theory of conservation of energy (the First Law of Thermodynamics).

In 1852 he worked with Lord Kelvin to discover the Joule-Thomson effect. This concept was later used in refrigeration. He continued to experiment with electrical effects.

The derived unit of energy or work, the Joule, (J) is named after him.



Joule's Paddlewheel Apparatus

Joule in Sale.....

From the 1870s Joule lived in semi-retirement with his family at their home on Wardle Road in Sale. However, he was still experimenting and was visited by several famous scientists.

He attended St. Paul's Church and, on his death in 1889, was buried in Brooklands Cemetery. The number “772.55” engraved on his gravestone acknowledges the final figure that he calculated in foot-pound units for the mechanical equivalent of heat.



In Worthington Park there is a memorial to him which was funded by scientists from across the world.

To commemorate the 200th anniversary of Joule's birth, a ceramic pavement plaque by local ceramicist Gordon Cooke will be installed in front of the existing memorial statue. This plaque has been financed in part by the Friends of Worthington Park with generous sponsorship from The Heritage Lottery Fund, the Manchester Airport Community Trust Fund, Sale Mayoral Fund, and a local resident. The Friends would also like to recognise the help and support from officers of Trafford Council, and from Mike Drain and John Kennedy.

