Divertissement 8: On the names of thermodynamic functions
From Thermodynamics
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The word "energy $\varepsilon\nu\varepsilon\rho\gamma\varepsilon\iota\alpha$" can be seen in the works of Aristotle but "internal energy" is due to W. Thomson (1852) and R. J. E. Clausius (1876). The portion "en" means *inhalt*=capacity and "orgy", like the unit "erg", derives from $\varepsilon\rho\gamma o\nu$=work. "Entropy" is also attributed to Clausius (1865) who took it from {$\varepsilon\nu\tau\rho\varepsilon\pi\varepsilon\iota\nu$=verwandeln and means *verwandlungsinhalt*=change quantity. "Enthalpy" was introduced by H. Kamerlingh Onnes (1909) from {$\varepsilon\nu\theta\alpha\lambda\pi\varepsilon\iota\nu$=sich erwarmen which means *warmeinhalt*. J.W. Gibbs called it the heat function (for constant pressure). "Free energy" is due to H. van Helmholtz (1882), and means that part of the internal energy that can be converted into work, as seen in the equation dF=d'A for an isothermal quasi-static process. It was customary to call the remaining part, TS, of the internal energy, U = F + TS, the *gebundene energie* (bound energy), but this is not so common now. The Gibbs free energy (for constant pressure) was introduced by Gibbs, but German scientists used to call it *die freie enthalpie*. Thus the thermodynamic functions often have different names in German and in English.

Further, on the equation of state: Kamerlingh Onnes gave the names, *thermische zustandsgleichung* to $p = p(T, V)$ and the name *kalorische zustandsgleichung* to $E = E(S, V)$. M. Planck (1908) called the latter *kanonische zustandsgleichung*.