The exposition of Helmholtz, however, does not seem to have been understood or accepted. The general recognition of the relation of active and latent forces dates rather from Thomson's and Rankine's writings in 1851 and the following years. Thomson uses the term "mechanical energy" (later, from 1851, intrinsic energy, or simply energy), and considers this quantity to be a measure of the store of power to do work which a material system possesses;[1] and Rankine,[2] early in 1853, introduces and defines the terms actual (or sensible) energy and potential (or latent) energy, which are at once adopted by Thomson[3] in the place of the terms dynamical and statical energy, which he

29. "Potential" and "actual" energy.

[1] The memoir of Thomson in which he introduces the physical conception of the quantity "energy" in the place of a merely mathematical symbol used by Clausius, and inaugurates the terminology of modern physics, is contained in the 'Transactions of the Royal Society of Edinburgh,' vol. xx., Part 3 (read December 15, 1851, and reprinted in 'Math. and Phys. Papers,' vol. i. p. 222), as an appendix to the great paper "On the Dynamical Theory of Heat, with Numerical Results deduced from Mr Joule's Equivalent of a Thermal Unit, and M. Regnault's Observations on Steam" (Trans. Edinb. Soc., March 1851: reprinted in 'Phil. Mag.,' 1852, and 'Math. and Phys. Papers,' vol. i. p. 174 *sqq.*; see especially p. 186, note). The term energy had indeed been used by Thomson already in 1849 as a synonym for mechanical effect, but he had not then accepted the dynamical theory. He merely puts the question in a footnote to his exposition of Carnot's theory: "When thermal agency is . . . spent, what becomes of the mechanical effect which it might produce? Nothing can be lost in the operations of nature—no energy can be destroyed" ('Papers,' vol. i. p. 118, 1849).

[2] In a paper read before the Philosophical Society of Glasgow, January 5, 1853, reprinted in 'Miscellaneous Scientific Papers,' ed. Millar, p. 203 *sqq.* See also Rankine's note, dated 1864, in the 28th vol. of the 4th series of the 'Phil. Mag.,' p. 404.

[3] See the Proceedings of the Glasgow Philos. Soc., January 1853, reprinted with additions from Nichol's 'Cyclopædia' (1860) in 'Math. and Phys. Papers,' vol. i. p. 521. In this paper Thomson also introduces the term "electrical capacity" of a conductor. Thomson subsequently introduced the word "kinetic" in place of "actual" energy. See also Thomson's Lecture before the Royal Institution, February 29, 1856, reprinted in 'Math. and Phys. Papers,' vol. ii. p. 182, and 'Popular Lectures,' vol. ii. p. 418, especially the note to p.