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William Whewell über

## Die Natur der Wärme und das Leuchten der Sonne

(1857)

### *The Dynamical Theory of Heat*

That the transmission of *radiant* Heat takes place by means of the vibrations of a medium, as the transmission of Sound certainly does, and the transmission of Light most probably, is a theory which [...] has strong arguments in its favour. But that Heat itself, in its essence and quantity, is Motion, is a hypothesis of quite another kind. This hypothesis has been recently asserted and maintained with great ability. The doctrine thus asserted is, that Motion may be converted into Heat, and Heat into motion; that Heat and Motion may produce each other, as we see in the rarefaction and condensation of air, in steam-engines, and the like: and that in all such cases the Motion produced and the Heat expended exactly measure each other. The foundation of this theory is conceived to have been laid by Mr. Joule of Manchester, in 1844; and it has since been prosecuted by him and by Professor Thomson of Glasgow, by experimental investigations of various kinds. It is difficult to make these experiments so as to be quite satisfactory; for it is difficult to measure *all* the heat gained or lost in any of the changes here contemplated. That friction, agitation of fluids, condensation of gases, conversion of gases into fluids and liquids into solids, produce heat, is undoubted: and that the quantity of such heat may be measured by the mechanical force which produces it, or which it produces, is a generalization which will very likely be found a fertile source of new propositions, and probably of important consequences.

As an example of the conclusions which Professor Thomson draws from his doctrine of the mutual conversion of motion and heat, I may mention his calculations concerning the cause which produces and sustains the heat of the sun. He conceives that the support of the solar heat must be meteoritic matter which is perpetually falling towards the globe of the sun, and has its motion converted into heat. He inclines to think that the meteors containing the stores of energy for future Sun-light must be principally within the earth's orbit; and that we actually see them there as the 'Zodiacal Light', an illuminated shower, or rather tornado, of stones. The inner parts of this tornado are always getting caught in the Sun's atmosphere, and drawn to his mass by gravitation.

*Aus: Supplementary Volume to the 2nd Edition of the "History of the Inductive Sciences" by William Whewell. London 1857, S. 107f. (Bibliothek der Universitätssternwarte Wien, Sign. Ha 27)*