

chemistry, we may give in his own words: "The immediate cause of the phenomenon of heat is motion: and the laws of its communication are precisely the same as the laws of the communication of motion. Since all matter may be made to fill a smaller volume by cooling, it is evident that the particles of matter must have space between them; and since every body can communicate the power of expansion to a body of a lower temperature, that is, can give an expansive motion to its particles, it is a probable inference that its own particles are possessed of motion; but as there is no change in the position of its parts, as long as its temperature is uniform, the motion, if it exist, must be a vibratory or an undulatory motion, or a motion of the particles round their axes, or a motion of particles round each other.

"It seems possible to account for the phenomena of heat, if it be supposed that in solids the particles are in a constant state of vibratory motion, the particles of the hottest bodies moving with the greatest velocity, and through the greatest space: that in liquids and elastic fluids, besides the vibratory motion, which must be conceived greatest in the last, the particles have a motion round their own axes, with different velocities, the particles of elastic fluids moving with the greatest quickness; and that in ethereal substances the particles move round their own axes, and separate from each other, penetrating in right lines through space. Temperature may be conceived to depend upon the velocity of the vibrations; increase of capacity on the motion being performed in greater spaces; and the diminution of temperature, during the conversion of solids into fluids or gases, may be explained on the idea of the loss of vibratory motion in consequence of the revolution of particles round their axes, at the moment when the body becomes liquid or aeriform; or from the loss of rapidity of vibration, in consequence of the motion of the particles through greater space."

Those who maintain the materiality of caloric urge, in proof of their opinions, that substances always expand by an increase of temperature, and that their magnitude can only be increased by the actual addition of new matter, that is to say, by the particles of heat. Having no predisposition to either one or the other of the theories that have been mentioned, we may be permitted to remark that there is an immeasurable distance between the fact and the deduction; for it is equally