the musical part alone being competent to act upon our thermometers or to affect our nerves.

"In this case, then, the heat not only imparts actual energy to the vibrating atoms, but also accomplishes what we may call *interior work;* it performs work within the body heated, by forcing its particles to take up new positions. When the body cools, the forces which were overcome in the process of heating come into play; the heat which was consumed in the recession of the atoms being restored upon their approach."

These extracts will render the idea of conservation sufficiently plain. It may be explained that heat is communicated to a body either by the impulses of the ethereal waves, which is termed radiation, or by contact with the heating body, which is termed conduction; both these operations are combined in most cases of transference of heat.

Let us now consider the action of heating the lead from the point of view of the supporters of action at a distance.

One simple mode of conceiving the motion in this case is to suppose the particles in pairs, each pair revolving about its centre of gravity.

Since equal increments of heat produce equal increments of expansion within certain limits, the cohesive attraction between the particles of a pair must be constant between these limits, just as in raising a mass against the constant force of gravity the height to which it is raised is proportional to the energy expended. Again, while the temperature remains constant, the velocities will be constant. Hence the orbits will be circles. Since the increments of temperature and expansion are constant for equal increments of heat, they must bear a fixed relation to one another. Hence, as heat is applied, the increment of the radius must bear a fixed relation to the increment of the square of the transverse velocity corresponding to it. Thus, as the heat increases, the particles must be whipped around, as it were, in gradually widening spirals by the impulses of the ethereal waves, or of the particles of the heating body, or both; and when the temperature becomes stationary, the impulses must be so nicely adjusted as just to give the particles the velocity due to the circle in which they revolve at the final temperature, under the influence of the constant attraction. When one considers also that the planes of the revolving particles must be lying in every conceivable direction (since the dilatation is equal in all directions), which adds immensely to the chances of collision and consequent destruction