extent these various properties could exist separately or were mutually dependent.[1]

In the domain of sound and light the early part of the century was thus, as we have seen, witness of a useful interpretation of these various modifications as merely different kinds of motion: both were considered to be vibrations, the frequency of which marked the position of a note or a tint in the musical or chromatic

[1] That is to say, the number of independent constants had to be fixed which would permit isotropic or anisotropic bodies (*i.e.*, bodies which are either equal in all directions, or unequal in the three directions) to be mathematically defined, and in consequence their behaviour studied, if subjected to strains and displacements. Over these definitions there arose the great controversies of those who believed in a small number of constants (one constant in isotropic and fifteen in anisotropic bodies against two and twenty-one respectively). A good account of these controversies and of their mathematical and physical significance will be found in the first volume of Todhunter's 'History of Elasticity,' by Professor Karl Pearson, p. 496 *sqq*. The former theory is termed the rari- (few) constant theory, the latter the multi- (many) constant theory. The rari-constant theory is based upon the assumption that a body consists of molecules, and that the action between two molecules . . . is in the line joining them. It is an outcome of the atomic and action-at-a-distance theory in vogue on the Continent, and is accordingly mainly represented by Naiver, Poisson, Cauchy, and others, notably Saint-Venant. The other school, mainly represented by mathematical physicists in this country, starts not from a mathematical formula (which, after all, loses its precision as the active forces are reduced to the vague statement that they act sensibly only at insensible distances) but from physical data. It is an analogue to Young's theory of capillarity as against Laplace (see above, p. 20, note). "The somewhat unsatisfactory nature of the results of those investigations produced, especially in this country, a reaction in favour of the opposite method of treating bodies as if they were, so far at least as our experiments are concerned, truly continuous. This method, in the hands of Green, Stokes, and others, has led to results the value of which does not at all depend on what theory we adopt as to the ultimate constitution of bodies" (Clerk Maxwell, 'Scientific Papers,' vol. ii. p. 253). "After the French mathematicians had attempted, with more or less ingenuity, to construct a theory of elastic solids from the hypothesis that they consist of atoms in equilibrium under the action of their mutual forces, Stokes and others showed that all the results of this hypothesis, so far at least as they agreed with facts, might be deduced from the postulate that elastic bodies exist, and from the hypothesis that the smallest portions into which we can divide them are sensibly homogeneous" (id. ibid., p. 449).