

their axes. The latter amount fluctuates to and fro according to laws easily calculable; but the former we have no means whatever of computing, and to what extent, or within what limits, it may be variable, we are altogether ignorant.

(11.) In what is here said, it is by no means intended to call in question the validity or to underrate the importance of those remarkable physical investigations which have resulted in exhibiting heat as one of the forms in which *vis viva* reappears in the apparent destruction of motion. That all heat *consists in* molecular tremor (or circulation), and is therefore *accompanied* with the alternate development and disappearance of *vis viva* within a limited space and quantity of matter *according to the dynamical laws of such tremulous or rotating movements*, may very readily be granted. But that there are no forms of internal molecular movement other than heat, and what we now speak of as its "correlated forces" in which *vis viva* may be temporarily stored up, to make its appearance ultimately in a form cognizable to our senses, is what can by no means be so readily admitted. Nor (while accepting with all due admiration as approximate truths these great revelations as to the mutual convertibility of these correlatives according to the measure of *vis viva* appropriate to each) shall we advance any nearer to a rational theory of any one of them, till it shall be shown with much more distinctness than at present appears, in what these molecular movements themselves consist; by what forces (in the dynamical acceptation of the term) they are controlled;