

stratable that the total amount of *vis viva* in any moving system abandoned to the mutual reaction of its particles, while depending at every instant of time, solely for its magnitude, on the then relative situation of those particles (or being, in algebraical phrase, a function of their mutual distances), has a maximum value which it cannot exceed, and a minimum below which it cannot descend. Let its state then be what it will, there is sure to be a certain amount of *vis viva* by which its *actual* falls short of its *extreme possible* value ; and to say that the amount of this deficiency added to the actual present amount will make up the maximum, is neither more nor less than a truism : whether expressed in so many words, or by saying that the potential together with the actual energy of the system is invariable ; or, again, in other words, that when certain changes have taken place in the relative situations of the parts of the system, what it has lost in actual it has gained in potential energy. When in speaking of a mechanical combination we say that what is lost in time is gained in power, though equally a translation in ordinary language of a dynamical equation, the terms used refer to different modes of viewing the expenditure of force. But in the case before us they stand in their nakedness of similar meaning and convey to the mind no equivalence available for any purpose of reasoning. If, indeed, we could be assured, *à priori*, that the system is one of simple or compound periodicity in which a certain lapse of time will restore every molecule to identically the same relative situation with respect to all the rest ; we should then be sure that in the nature of