alone would utter, the resonance of its tone is feeble, and beyond a certain interval becomes inaudible.

(15.) The dynamical principle on which these and similar phænomena depend is that of "forced vibrations." as it is stated in the Essay on Sound above referred to, or, more generally, in a more recent publication (Cab. Cyclop., volume on Astronomy), in terms as follow: "If one part of any system, connected either by material ties or by the mutual attractions of its members, be continually maintained by any cause, whether inherent in the constitution of the system or external to it, in a state of regular periodic motion, that motion will be propagated throughout the whole system, and will give rise in every member of it, and in every part of each member. to periodic movements, executed in equal periods with that to which they owe their origin, though not necessarily synchronous with them in their maxima and minima." The general demonstration of this as a dynamical theorem is given in the Essay on Sound already referred to, and its applicability to the transmission of light through material bodies is indicated in a note thereto appended.

(16.) The mode, then, in which we may conceive the transmission of light through gross media to be performed, so as to bring the absorptive phænomena within the wording of this principle, is, to regard such media as consisting of innumerable distinct vibrating parcels of molecules, each of which parcels, with the portion of the luminiferous æther included within it (with which it is connected, perhæps, by some ties of a more intimate

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