

in a medium consisting of loosely-aggregated earth intermixed with much air, the hollow sounds which are often attributed to the reverberation of subterranean cavities, and in particular the celebrated instance of this kind of sound heard at the Solfaterra near Pozzuoli. The dull and ill-defined sound thus produced from a succession of partial echoes is there assimilated to the nebulous light which illuminates a milky medium when a strong beam is intromitted. If we suppose, now, such a mass of materials insulated from communication with the external air by some *sound-tight* envelope, these partial echoes, when they reach the surface in any direction, will be all sent back again as so many fresh impulses, till at length it will become impossible to assign a point within the mass which will not be agitated at one and the same moment by undulations traversing it in every possible phase and direction. Now the state of a molecule, under the influence of an infinite number of contradictory impulses thus superposed, is undistinguishable from a state of rest.

(8.) The only difficulty, then, which remains in the application of the undulatory theory to the absorptive phenomena, is to conceive how a medium (*i.e.*, a combination of æthereal and gross\* molecules) can be constituted so as to be transparent, or freely permeable to one ray or system of undulations, and opaque, or difficultly per-

\* By *gross* molecules, or gross bodies, I understand the *ponderable* constituents of the material world, whether solid, liquid, or gaseous; using the term in contradistinction to æthereal, which has reference to the luminiferous æther.