

ently great to destroy the whole velocity of the luminous particle, and to generate an equal one in the opposite direction, in the time occupied by the particle in traversing forwards and backwards the thickness of our stratum of reflecting force. Now the velocity of light, as we have seen, is 186,000 miles per second. To destroy and reproduce this velocity in a projectile shot directly upwards, by the force of gravity on the earth, supposed uniform or undiminished by distance, would require its action to be continued for 706 days, or very nearly two years, while the same effect has to be produced by the reflecting force (also supposed uniform), in that inappreciable instant of time *in which* the act of reflection is performed—a time which would be extravagantly overrated at the *billionth** part of a second. After this we need hardly trouble our readers with any estimation of the intensity of the refracting forces. The sturdiest philosophy may fairly be staggered at such a postulate as the foundation of a physical theory.

(58.) According to the “undulatory theory” light consists in an undulatory or vibratory *movement* propagated through an elastic medium pervading all space, not even excepting what is occupied, or seems to be occupied, by what we call material bodies—that is, such as have *weight*, and which, to us, constitute the visible and tangible universe of things. It therefore resembles sound, which is not a travelling entity, but a propagated motion in the air, analogous to the tremulous movement which runs from

* A billion is a million times a million. The French *milliard* is a thousand millions.