

kind should, in the case of light, be carried still farther when we consider that the aërial impulses by which sound is propagated, take place *in the direction* of the sound-ray, so that in passing (for instance) through an aperture in a screen, a quantity of air is *pushed bodily through it*, and issuing on the other side, causes an increase of *local* density due to the actual introduction of additional air at a given spot, which of course tends to *expand laterally* as well as to *push forward*, and is not restrained from so doing by the lateral pressure of the rest of the wave, which is suppressed. Light, as we have already intimated, is propagated through an elastic medium more in analogy with a solid than a fluid, (which Newton's objection implies,) and by vibrational movements not in the direction of the ray, but transverse to it, so that in its passage through an aperture, or beside the edge of an obstacle, *this* cause of lateral spreading, at least, is absent; whatever other this peculiar mode of propagation may call into action. Lastly, however, the phænomena of diffraction with which we are now concerned rely for their explanation on this very principle—that shadows are *not* strictly definite, and that there really *is* a certain, and not very small amount of lateral spreading of the light into the space occupied by what may be called the geometrical shadow.

(103.) If a room be darkened and the sun allowed to shine into it only through a very small aperture, as a pin-hole, the rays which emanate from different points of its apparent disc, passing straight through and cross-