

(1116.) Take now the case of the exterior fringes, when the shadow of a broad straight-edged body, as a ruler, is thrown on a fixed screen at a considerable distance behind it. Suppose P first placed exactly at the edge of the geometrical shadow. In that case, the view of exactly half of each of the concentric wave-zones (A), (B), (C), &c., will be intercepted, and P will therefore receive from the remaining halves just half the amount of *luminiferous* agitation it received when opposed to the whole wave, viz., half the amount of concordant and half of discordant undulation. Its intensity of *illumination* will therefore be *one-fourth* of that when the ruler is altogether removed.* Now, suppose the ruler withdrawn gradually, and *laterally*, so as to disclose to the view of P successively, 1st, the whole of the central zone (A) of the wave surface; 2dly, the whole of the two first zones (A), (B); 3dly, the three first, (A), (B), (C), and so on. It is very evident then, on merely casting our eyes on Fig. 6, (p. 295), and imagining a line drawn through the common centre of all the circles to be removed parallel to itself, step by step, so as to become in succession a tangent to the 1st, 2d, 3d, &c., circles; that in the first step of its removal it will disclose to P all the remaining half of the central area (A), which sends to it undulations *concordant* with those by which P is already illuminated, but less

* The effect on the retina is estimated, not by the simple *momentum* or *velocity* of the impulse communicated by the vibration, but by the "*vis viva*," "energy," or "work done," which is proportionate to the *square of the velocity* of movement. In this the undulatory doctrine of light agrees with the theory of sound.