

than half of the second (discordant), still less of the third, &c., so that on the whole there will be a preponderance of the concordant undulations so introduced, and P will be *more strongly* illuminated than before. When removed one step farther however, since the newly introduced half of (B) the second zone almost exactly counteracts that of (A), the effect of the change will have its character decided by the proportional magnitudes of the segments of (C), (D), &c., disclosed, among which the preponderance is evidently in favour of (C), that is, of *discordant* undulation, so that by *this* removal of the shading obstacle the illumination of P will be *diminished*; and so on alternately. Now at each stage of these removals of the shading body, the edge of the geometrical shadow retreats farther and farther from P, or (which is the same thing) P is successively farther and farther outside of the edge of the shadow, becoming alternately more and less illuminated than at the actual edge. Here then we see the origin of the bright and dark external fringes exhibited in homogeneous light; and therefore by the very same reasoning, of the coloured ones produced by the successive overlapping of those formed by several coloured rays to each of which corresponds a different breadth of fringe; that for the red being broadest and for the violet narrowest.

(117.) *The twinkling or scintillation of the stars* partakes so far of the nature of a phænomenon of diffraction, as that it depends for its origin on the mutual interference of discordant rays arriving at one instant, but *by different routes*, on the same point of the retina of the eye; and