

in the opposite state or disposition. Having been transmitted then at the first, it will be reflected at the second, and, having in its passage back through *another equal* thickness reassumed its original state in which it first entered, it will there be *transmitted*, and so will reinforce by its light the general reflected illumination of that surface. Since the per-centage of the total light reflected at any transparent medium is but trifling, the light so sent back from the second surface will be nearly equal to that reflected from the first. Thus for these exactly intermediate thicknesses, the joint-reflected illumination is very nearly doubled, and between these and the former series of thicknesses will increase and diminish alternately and gradually.

(77.) Suppose now in the case of our soap-bubble the thickness of the film to increase uniformly outwards from its vertex (where it is nearly *nil*). Then it is evident that when exposed to dispersed light it will appear divided into equivalent circular zones alternately bright, and *comparatively* dark, the centre being also dark. And here we have a representation of our observed rings, with, however, this remarkable and most important difference, viz. : that the central spot and the dark divisions, on this explanation, ought not to appear absolutely black, but *half bright*, when compared with the brightest portions between them. In point of fact, some exceedingly slight reflexion *is* perceivable in the dark centre, but instead of half, it cannot be estimated at the fiftieth part of the illumination of the bright ring which immediately adjoins it.