undulation or 100,000th of an inch, the length by which the distances P A, P B, &c., differ from each other, and in that case it is very easy to show by geometry, that the successive areas (A), (B), (C), &c., are almost exactly equal. Were these areas *rigorously* equal, and were moreover the vibrations (propagated as they are from them to P *more and more obliquely* with respect to the general surface of the wave at their points of emanation) all of equal intensity, it would follow therefore that the totality of the movement propagated to P from (A) would be precisely opposed and destroyed by that from (B), that from (C) by that from (D), and so on; so that an ethereal molecule at P would in effect be agitated by no preponderating movement, one way or another, and there would be no illumination on the screen at P. Inasmuch, however, as the vibrations diminish in intensity as they are propagated more obliquely, and as the areas (A), (B), (C), (D), &c., are, though very nearly, yet not rigorously equal, this mutual destruction in the case of each consecutive pair is only partial, and the point P will be agitated by the sum of all these outstanding excesses (taken in pairs) from the centre outwards; which, though excessively small individually, in virtue of their immense number make up a finite sum. And as the same is true for each point of the screen (if spherical, and therefore everywhere equidistant from O), the whole of its surface will be equally illuminated: if plane, very nearly so, in all the region around P.

(114.) A very singular consequence follows from this reasoning, and one admirably calculated to test its

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