

portion, then, on its arrival would meet there, not the other portion of the same wave to which it originally belonged, but one in advance or in arrear of that by either a whole, a half, or any part of an undulation, or any number of such, according to the extent of the difference in the quality of the aerial contents of the column. Suppose, for instance, the light from the two halves of the column to differ in their time of arrival by 1, 3, 5, or any odd number of semi-undulations of the most luminous or the yellow rays; these then would interfere and totally extinguish each other, and the apparent light of the star would undergo a great obscuration, assuming at the same time a hue complementary to yellow; *i.e.*, dark purple: and so for other rays. Now the constitution of the air is so irregular—such a perpetual mixture of masses of it, differing in temperature and moisture, is continually going on under the influence of wind-currents, that such differences as above supposed must be almost constantly in progress, even within the narrow space of a column no wider than the pupil of the eye, much more in that corresponding to the aperture of a small telescope. The scintillations, with their accompanying changes of colour, are beautifully seen through an opera-glass (*not binocular*), especially if somewhat out of focus, in which case the colours and the darkness are seen, as it were, to run over the circular disc into which the image is dilated in a very singular and capricious manner. If a small circular motion be given to the glass, so as to make the image of the star (when in focus) describe a circle, this will be seen *as* a luminous circle (as when a