

"Twinkle, twinkle little star, how I wonder—what makes you twinkle?"

The twinkling or scintillation of the stars has been noticed and noted from ancient times. Aristotle remarks that "the stars twinkle, but the planets do not." Although planets do not scintillate, or do not scintillate as much as stars, yet their twinkling has often been observed. Associated with the scintillation, the sparkling "like a diamond in the sky" is often seen, but this rapid change of color is confined to low altitudes, that is, when the star is not high above the horizon. What seems somewhat puzzling is the fact that when a twinkling star is viewed through a telescope the scintillation ceases, and instead one sees a little disk with ill-defined edge. The phenomenon of twinkling is due to refraction or bending of the rays of light coming through our atmosphere. When the air is "unsteady," this bending becomes unsteady too, with the result that the rays of light from a star are "trembling" and flit to and fro across the pupil of the eye, and make the star twinkle. As a telescope has a very big eye, the object glass, and although the trembling rays fall upon it, it gathers so many that when viewed at the eye-end, the twinkling has apparently ceased, but it makes itself apparent by the little disk of light mentioned above. for it must be remembered that the stars are mere points of light and the most powerful telescope reveals no disk. From this it is obvious why the moon does not scintillate, it has a surface that radiates light, and the individual scintillations from points thereon are drowned, so to speak, in the multitude. As to sparkling, or rapid change of colour, the light, as we ordinarily see it, is white, in reality it is composed of all the colours of the rainbow. These various colours do not bend to the same degree, when passing through our atmosphere, some bend more and some less. From any particular bundle of (white) rays we would receive say only the red rays, from another bundle only the blue and so on; so that collectively we would have the impression of white light, i.e., of all colours combined. This is generally the case when the successive layers of our atmosphere are fairly homogeneous. When, however, this is not the case, when irregular layers of varying densities traverse the air, then the dispersion of the white rays into their constituent colours becomes apparent to the eye, the blending of the colours, or rather of the particular rays which give us the sensation of colour, not taking place so continuously. Hence the star appears momentarily of that colour which is represented by the particular ray that meets the eye. When these irregular conditions prevail in our atmosphere then sparkling besides twinkling of the stars is possible. As these irregularities are mostly confined to the