

A Science Service Feature

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? WHY THE WEATHER ? Mailed January 7, 1935

NORMAL AND ABNORMAL REFRACTION

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The several varieties of mirage are all due to the abnormal refraction of light by the atmosphere.

Normally the atmosphere, on account of its somewhat regular decrease in density upward, bends rays of light in such a way as to cause all objects near the horizon to appear slightly elevated above their true positions, and objects are thus brought into view that, if there were no atmosphere, would be slightly below the horizon. The rising of the sun and the other heavenly bodies is a little advanced and their setting is a little retarded by this process. The effects of normal refraction are not usually classed as mirage.

Abnormal refraction depends upon unusual variations of density in the lower levels of the atmosphere, which, in turn, are due almost entirely to special conditions of temperature. I say "almost" because wind and water vapor sometimes play very minor rôles in the process, and because explosion waves sometimes produce a spectacular variety of mirage known as "flashing arcs."

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