

incessant radiation, the rock and the sand acquire a temperature of 70° C. (158° F.); and then they blister the wayfarer's feet, at the same time that the reverberation of the sun heats the air up to 50° C. (122° F.), and even beyond.

The dry air of the atmosphere is nearly always filled with a reddish fog, which produces on the horizon the effect of volcanic fires. In the morning the sun rises abruptly without twilight, like a glowing orb of flame. As he mounts higher in the heavens, and darts his rays direct upon the inflamed soil, the air, growing thoroughly heated, begins to vibrate so strongly that every object on the horizon seems agitated by incessant tremblings. This is the effect of the irregular refractions and reflections of the luminous rays which traverse the unequally warmed strata of the air.

Another phenomenon, whose cause must likewise be referred to anomalous atmospheric refractions, is the *Mirage*, or, as it is called by the Arabs, the "Lake of the Gazelles" (*Bahr-el-Gazal*).

Many voyagers have left on record their more or less marvellous descriptions of this optical delusion. They assert that in the heart of the desert they have seen laughing landscapes, verdurous islands, rivers flowing between fertile banks, the spires and domes of apparently opulent towns, and a crowd of other objects which an excited imagination painted for them in the picture unrolled on the distant horizon. Sometimes, say they, the caravans imagine they can discover afar a sheet of glittering water mirroring clumps of graceful palms, and groups of drinking camels. The prospect sustains the courage of the exhausted travellers; they make a last effort to reach the oasis which invites them to repose. But the further they advance, the quicker recedes the deceptive image. Too frequently the inexperienced traveller, exhausting his energies in the vain pursuit of an illusion, misses the track, and perishes of fatigue.

Such are the stories which we find in the works of too many travellers, both ancient and modern. But put aside the exaggeration, not unnatural in the disposition of mind of a traveller, spent with fatigue, tormented by thirst, and blinded by the gleam of the burning sand everywhere around him, and we shall see to what moderate limits must really be reduced the mirage as it is seen in the Desert.

In the first place, for an object to be rendered visible by the mirage, it is necessary that it should actually exist and be within range of sight—that is to say, at such a distance that refraction may weaken the image until it becomes scarcely recognizable.

Thus, all the effects of the mirage are more or less disfigured reproductions of some natural object near at hand, and most often of the celestial vault itself.

In the latter case, the atmospheric strata, unevenly warmed and lying near the soil, which reflect the tint of the sky, resemble in themselves a liquid expanse. Nevertheless, the outlines of the "Lake of the Gazelles" are, in general, far less distinct, far less sharply defined than would be those of an actual sheet of water; moreover, these outlines of the aerial mirror nearly always possess a certain mobility, produced by the tremulousness of the heated atmosphere. When the reflecting expanse appears isolated on a plain of sand, it produces, as we have said, the effect