

distributed somewhat equally throughout the year little dust is formed; but where dry and wet seasons alternate, as in Central Asia, vast quantities of dust may be moved during the months of dry weather. When the dust falls on bare ground, it is eventually swept away by the wind; but where it settles down on ground covered with vegetation it is in great measure protected from further transport, and thus heightens the soil.²³

For atmospheric accumulations of this nature, Trautschold has proposed the name *eluvium*. They originate *in situ*, or at least only by wind-drift, whereas *alluvium* requires the operation of water, and consists of materials brought from a greater or less distance.²⁴ For wind-formed deposits the term "æolian" is sometimes used.

Sand hills or Dunes.—Winds blowing continuously upon sand drive it onward, and pile it into irregular heaps and ridges, called "dunes." This takes place more especially on windward coasts either of the sea or of large inland lakes, where sandy shores are exposed to the drying influence of solar heat and wind; but similar effects may be seen even in the heart of a continent, as in the sandy deserts of the Sahara,²⁴ Arabia, and in the arid lands of Utah, Arizona, etc. The dunes travel in parallel, irregular,

²³ Richthofen, *Geol. Mag.* 1882, p. 297. For some of the more important contributions to this subject, see Richthofen's "China," vols. i. and ii.; also *Verh. Geol. Reichs.* 1878, p. 289; E. Tietze, *Verh. Geol. Reichs.* 1878, p. 113; 1881, p. 37; *Jahrb. Geol. Reichs.* 1881, p. 80; 1882, p. 11; 1883, p. 279; R. Pumpelly, *Amer. Journ. Sci.* xvii. (1879); E. W. Hilgard, *op. cit.* xviii. (1879), p. 106 (p. 427); I. C. Russell, *Geol. Mag.* 1889, pp. 288, 342; F. Wahuschaffe, *Z. Deutsch. Geol. Ges.* 1886. *Jahrb. Preuss. Landesanst.* 1889, p. 328. A. Sauer, *Zeitsch. für Naturwissensch.* lxii. (1889); and postea, *Book VI. Part V. Sect. i.* On the loess of Alsace, see E. Schumacher, *Commiss. Landesuntersuch. Elsass-Lothringen*, vol. ii. Part I. (1889), p. 79; on the loess of the Pampas, S. Roth, *Zeitsch. Deutsch. Geol. Gesell.* xl. (1888), p. 422.

²⁴ *Z. Deutsch. Geol. Ges.* xxxi. p. 578.

²⁴ For an account of the sand-dunes of the Sahara see "Documents relatifs à la Mission dirigée au Sud de l'Algérie," A. Choisy, 1890, p. 323.