elasticity proceeds in a geometric series when the temperature proceeds in an arithmetical series nearly; the differences of temperature for equal augmentations of the ratio of elasticity being somewhat greater for the higher temperatures.

The forces of the vapors of other liquids in contact with their liquids, determined by Dr. Faraday, as mentioned in Chap. ii. Sect. 1, are analogous to the elasticity of steam here spoken of.]

Sect. 5.—Consequences of the Doctrine of Evaporation.—Explanation of Rain, Dew, and Clouds.

The discoveries concerning the relations of heat and moisture which were made during the last century, were principally suggested by meteorological inquiries, and were applied to meteorology as fast as they rose. Still there remains, on many points of this subject, so much doubt and obscurity, that we cannot suppose the doctrines to have assumed their final form; and therefore we are not here called upon to trace their progress and connexion. The principles of atmology are pretty well understood; but the difficulty of observing the conditions under which they produce their effects in the atmosphere is so great, that the precise theory of most meteorological phenomena is still to be determined.

We have already considered the answers given to the question: According to what rules does transparent aqueous vapor resume its form of visible water? This question includes, not only the problems of Rain and Dew, but also of Clouds; for clouds are not vapor, but water, vapor being always invisible. An opinion which attracted much notice in its time, was that of Hutton, who, in 1784, endeavored to prove that if two masses of air saturated with transparent vapor at different temperatures are mixed together, the precipitation of water in the form either of cloud or of drops will take place. The reason he assigned for the opinion was this: that the temperature of the mixture is a mean between the two temperatures, but that the force of the vapor in the mixture, which is the mean of the forces of the two component vapors, will be greater than that which corresponds to the mean temperature, since the force increases faster than the temperature;[21] and hence some part of the vapor will be precipitated. This doctrine, it will be seen, speaks of vapor as "saturating" air, and is

[21] *Edin. Trans.* vol. i. p. 42.