

cury, is hence the amount of moisture that must be precipitated in some way or other from the compound mass.

“To prove, moreover, that this precipitation cannot be constant for equal differences of temperature, let us farther take the example of the temperatures  $60^{\circ}$  and  $80^{\circ}$ . In this case we shall find the elastic forces to be 0.524 and 1.000; and that at the mean temperature of  $70^{\circ}$ , the force of vapour is 0.721 inches. But the mean of the two elastic forces is 0.762, thereby proving that a quantity of vapour corresponding to 0.041 inches of the mercurial column, must be discharged the moment the aerial volumes are united.

“The order of nature, however, requires that rain should not always result from the mingling together of opposite currents, and the theory before us amply confirms it. Two volumes of the temperature of  $50^{\circ}$  and  $60^{\circ}$  may be blended, one of which contains vapour denoted by 0.2 inches of mercury, and the other by 0.3, the mean being 0.25; whereas the quantity necessary for entire saturation, at the mean temperature of  $55^{\circ}$ , is 0.443. In such a case it is obvious no precipitation can take place. One volume, again, may have a temperature of  $52^{\circ}$ , and be in a state of entire saturation, its elastic force being 0.401; but the volume to be united to it, with a temperature of  $70^{\circ}$ , containing moisture equivalent only to 0.589. The mean amount of moisture will therefore be 0.495, whereas the humidity necessary to produce saturation, at the mean temperature of  $61^{\circ}$ , is 0.542, so that no precipitation can take place. It is evident, indeed, that combinations of this kind may be endless, the absence of precipitation, as well as the amount of it when it takes place, depending on circumstances so varied and uncertain, as to afford, on the one hand, a shower so gentle as hardly to bear the designation of rain, and on the other to supply the torrents which occasionally deluge the tropics. Not only the existing state of the moisture in the mingling columns must be subject to innumerable changes, but their different degrees of heat must be altered also; the elevation of their mean temperature, too, as well as the extent of combination which takes place among all the moving volumes, must impress necessarily upon the whole of the phenomena the greatest diversity.”

The quantity of rain that falls in a place seems to be in some degree affected by these circumstances:—its position