

been above stated, regarding the simple atmospheres which are its components; and will advert to two other circumstances, that are now to be noticed. These two circumstances are intimately connected with the principles previously stated, and with each other; and an exposition of them is absolutely necessary for obtaining a true knowledge of the relations of an atmosphere of vapour, with an atmosphere of air. These circumstances have not been mentioned sooner; the consideration of them having been intentionally delayed, in order that their influence might be seen, where their application is more immediately requisite. They are as follow :

When vapour and air are mixed together, the resulting volume of the mixture depends on the *amount of the elastic forces* of the vapour and of the air; not on any relation between their volumes. Thus when a cubic foot of air at the temperature of 32° , and exerting an elastic force equal to 30 inches of mercury, is mixed with a cubic foot of vapour, having the same temperature, and exerting an elastic force equal to only 1-5th of an inch of mercury; the volume of the mixture resulting, is not two cubic feet, but only 1.0066 foot. Hence, as the addition of vapour to air adds comparatively little to the bulk of the air, and consequently diminishes only in a trifling degree its specific gravity;