

South America; where the plains, during one half the year, are burnt up, to feed the springs of the mountain; which in their turn contribute to inundate the fertile valleys and prepare them for a luxuriant vegetation.”\* The properties of water which regard heat make one vast *watering-engine* of the atmosphere.

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## CHAPTER X.

### *The Laws of Heat with respect to Air.*

WE have seen in the preceding chapter how many and how important are the offices discharged by the aqueous part of the atmosphere. The aqueous part is, however, a very small part only; it may vary, perhaps, from less than 1-100th to nearly as much as 1-20th in weight, of the whole aerial ocean. We have to offer some considerations with regard to the remainder of the mass.

1. In the first place we may observe that the aerial atmosphere is necessary as a vehicle for the aqueous vapour. Salutary as is the operation of this last element to the whole organized creation, it is a substance which would not have answered its purposes if it had been administered pure. It requires to be diluted and associated with dry air, to make it serviceable. A little consideration will show this.

We can suppose the earth with no atmosphere except the vapour which arises from its watery parts: and if we suppose also the equatorial parts of the globe to be hot, and the polar parts cold, we may easily see what would be the consequence. The waters at the equator, and near the equator, would produce steam of greater elasticity, rarity, and tem-

\* Howard on the climate of London, vol. ii. pp. 216, 217.