

are connected with and depend on more remote and general properties of this fluid, or of all fluids. But we have no reason to believe that, by whatever means they operate, they are not laws selected from among other laws which might exist, as in fact for other fluids other laws do exist. And we have all the evidence, which the most remarkable furtherance of important purposes can give us, that they *are* selected, and selected with a beneficial design.

3. As water becomes ice by cold, it becomes steam by heat. In common language, steam is the name given to the vapour of *hot* water; but in fact a vapour or steam rises from water at all temperatures, however low, and even from ice. The expansive force of this vapour increases rapidly as the heat increases; so that when we reach the heat of boiling water, it operates in a far more striking manner than when it is colder; but in all cases the surface of water is covered with an atmosphere of aqueous vapour, the pressure or *tension* of which is limited by the temperature of the water. To each degree of pressure in steam there is a *constituent temperature* corresponding. If the surface of water is not pressed by vapour with the force thus corresponding to its temperature, an immediate *evaporation* will supply the deficiency. We can compare the tension of such vapour with that of our common atmosphere; the pressure of the latter is measured by the barometrical column, about thirty inches of mercury; that of watery vapour is equal to one inch of mercury at the constituent temperature of 80 degrees, and to one-fifth of an inch, at the temperature of 32 degrees.

Hence, if that part of the atmosphere which consists of common air were annihilated, there would still remain an atmosphere of aqueous vapour, arising from the waters and moist parts of the earth; and in the existing state of things this vapour rises *in* the atmosphere of dry air. Its distribution and effects are materially influenced by the vehicle in which it is thus carried, as we shall hereafter notice;