equal to about one-fifth of an inch of mercury;* hence the same given volume of aqueous vapour at 32°, will only weigh about 1-150th of what aqueous gas, or steam, ought to weigh, supposing that water could exist as a permanent gas at 32°, and under a pressure of thirty inches of mercury. The molecules of the vapour of water, consequently, will be five or six times further apart, than those of perfectly gaseous bodies, at the same temperature, and under an equal pressure.†

* The elastic force of vapours increases with their temperatures,—a phenomenon that may be represented, either by the greater or less angle imagined to exist between the axes of contiguous molecules; or by the greater or less velocity of these molecules on their axes; on which greater or less velocity, indeed, the angle formed by the axes of contiguous molecules may be supposed to depend. See Appendix.

† Supposing it were possible for steam to exist at 32°, of course at this temperature, its weight would bear to that of air, the same proportion it bears at 212°; the proportion, namely, of 5 to 8. One hundred cubic inches of steam, at 32°, ought, therefore, to weigh 20·49375 grains; or 5-8ths of 32·79 grains, which is the weight of 100 cubic inches of air at 32°. But the weight of 100 cubic inches of steam at 32° is only ·1366 grain, or 1-150th that of air. The number of molecules in steam at 32° is consequently only 1-150th of those in air at 32°.. Hence this diminution of the number of molecules of aqueous vapour, if we suppose them to be diffused equally throughout the same space of 100 cubic inches, must of course, as stated in the text, cause them to be between five and six times further apart, than those of air, or of any gas at the same temperature.