(22.) When water is converted into invisible vapour, it occupies between sixteen and seventeen hundred times its original volume, and becomes much lighter than air—as light, indeed, as the ordinary coal gas with which balloons are filled, so that if enclosed in a similar envelope it would rise in the air like a balloon. Being free, however, it mixes with the air, and *that* not merely by a simple chance-medley confusion, but by a peculiar self-diffusive energy arising from its inherent elasticity; by which the particles of every one species of gas or vapour struggle to interpenetrate, and needle, as it were, their way among those of every other. These latter oppose to them no *elastic pressure*, but that simple resistance to jostling which an inert body of any other kind might do, —which feathers, for instance, might oppose to air, introduced and struggling to diffuse itself among them. Of course they will be pushed from their places in the struggle, both laterally and vertically, and thus arises over the whole region in which the vapour is in course of production, a pressure on the air both outwards and upwards. The former, however, cannot be effective in removing air bodily to any great distance horizontally, for the simple reason that to do so it would have to *shove aside* the whole surrounding aërial atmosphere, and to crowd it upon that which is beyond: while there is room in a vertical direction for an indefinite removal, and the upward pressure is also aided by the lightness of the up-struggling vapour, which therefore rises rapidly—*not without dragging up with it a great deal of air.* The consequence is to establish, immediately under the sun,

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