APPENDIX.

fluids, when these molecules are in the relative positions which they are naturally inclined to assume, particularly in a state of motion. The marshalling however of the individual molecules, as those of light, supposed in this note, probably does not become apparent, till they approach, or pass through, some ponderable and transparent medium : and the passage of light and heat through such a medium, may perhaps be rendered more intelligible, by the following exposition of what appears to happen with respect to gaseous bodies. The force of diffusion, on which depends the rapidity of the motion of gaseous bodies, through any permeable medium, increases as their specific gravity diminishes. Thus the force, with which the lightest of these bodies, hydrogen, struggles to escape through any porous matter, is almost incredible; according to Mr. Graham's experiments, sufficient to raise a column of water from 20 to 30 inches. This rapidity of motion seems only explicable on the supposition, that the individual molecules of the gas, in their passage through narrow canals, are guarded from external and lateral influence; and are thus enabled to assume those positions which are natural to them, and in which their mutual self-repulsion is the greatest possible. Hence, a single row of self-repulsive molecules of a gas (or other self-repulsive fluid) passing through the minute apertures of a porous vessel into a vacuum; or what is analogous, into another gas having different self-repulsive powers; may be compared to a row of bullets urged by an elastic fluid, in quick succession through a gun barrel: but with this difference, that the gaseous molecules propel each other; instead of being, like the bullets, propelled by a foreign agency. The explanation now offered of the passage of the molecules of a gas through a narrow canal, or through any porous matter, may, as we have said, be applied, not only to the passage of light and heat through various media; but also to the passage of liquids through various bodies, by the processes which have been termed endosmose and exosmose. Do these forces operate in capillary attraction? Are the molecular motions of fluids the cause of those motions, which solid particles of matter diffused through them, sometimes exhibit?