

tion to the degree to which the exhaustion of air had been carried. Those species of infusoria, which are most tenacious of life, lived in very rarefied air for above a month: others perished in fourteen, eleven, or eight days; and some in two days only. In this imperfect vacuum, they were seen still to continue their accustomed evolutions, wheeling in circles, darting to the surface, or diving to the bottom of the fluid, and producing vortices by the rapid vibration of their cilia, to catch the floating particles which serve as their food: in course of time, however, they invariably gave indications of uneasiness; their movements became languid, a general relaxation ensued, and they at length expired. But when the vacuum was rendered perfect, none of the infusions of animal or vegetable substances, which, under ordinary circumstances, soon swarm with millions of these microscopic beings, ever exhibited a single animalcule; although they soon made their appearance in great numbers, if the smallest quantity of air was admitted into the receiver.

Animals which inhabit the waters, and remain constantly under its surface, such as fishes, and the greater number of mollusca, are necessarily precluded from receiving the direct action of atmospheric air in its gaseous state. But as all water exposed to the air soon absorbs it in large quantities, it becomes the medium by which that agent is applied to the respiratory organs of aquatic animals; and the oxygen it contains may thus act upon the blood with considerable effect; though not, perhaps, to the same extent as when directly applied in a gaseous state. The air which is present in water is, accordingly, as necessary to these animals as the air of the atmosphere is to those which live on land: hence, in our inquiries into the respiration of aquatic animals, it will be sufficient to trace the means by which the surrounding water is allowed to have access to the organs appropriated to this function; and in speaking of the action of the water upon them, it will always be understood that I refer to the action of the atmospheric air which that water contains.