

of which effects tend to its purification and to its remaining adapted to the respiration of animals. Nearly the whole of the carbon accumulated by vegetables is so much taken from the atmosphere, which is the primary source from which they derive that element. At the season of the year when vegetation is most active, the days are longer than the nights; so that the diurnal process of purification goes on for a greater number of hours than the nocturnal process by which the air is vitiated.

The oxygen given out by plants, and the carbonic acid resulting from animal respiration, and from the various processes of combustion which are going on in every part of the world, are quickly spread through the atmosphere, not only from the tendency of all gases to uniform diffusion, but also from the action of the winds, which are continually agitating the whole mass, and promoting the thorough mingling of its different portions, so as to render it perfectly homogeneous in every region of the globe, and at every elevation above the surface.

Thus are the two great organized kingdoms of the creation made to co-operate in the execution of the same design; each ministering to the other, and preserving that due balance in the constitution of the atmosphere, which adapts it to the welfare and activity of every order of beings, and which would soon be destroyed, were the operations of any one of them to be suspended. It is impossible to contemplate so special an adjustment of opposite effects without admiring this beautiful dispensation of Providence, extending over so vast a scale of being, and demonstrating the unity of plan on which the whole system of organized creation has been devised.

#### § 5. *Return of the Sap.*

THE sap, which, during its ascent from the roots, contains but a small proportion of nutritious particles, diluted with a