

local causes, vary; but they are never entirely absent, and they participate in the affairs of nature with an influence equal to that of the former. There are a few other substances, viz: Sulphureted, Carbureted, Phosphoreted Hydrogen, Miasma, &c., also diffused through the atmosphere in minute quantities, but they do not seem to exercise a particular influence on vegetable life, and may therefore be here disregarded.

*Oxygen*, indisputably the most important constituent of the atmosphere, is characterized by its affinity for combustible substances, in consequence of which it produces those phenomena which in common language are termed combustion, eremacausis, fermentation, &c. The metals e. g. are combustible substances, and it is owing to this circumstance, that we so seldom find them on the surface of our globe in the metallic state. We find them already burnt or oxydized, viz: in their combination with oxygen, as earthy substances, called Oxyds. Substances of organic nature and origin also become exposed to the influence of the atmospheric oxygen, as soon as the vital powers have ceased to exist in them. Under this influence they are decomposed and converted into new substances, which contain Oxygen as a constituent part.

In all these cases, Oxygen is consumed, and as it is furnished by the atmosphere, the quantity contained in it should become less and less; a conclusion, however, not confirmed by practical experience. Philosophers have by direct experiment, succeeded in discovering the source from which Oxygen is replaced in the atmosphere, in the same proportion as it is furnished by it to support the processes just mentioned. Their observations have shown, that whilst dead bodies of organic origin absorb Oxygen from the atmosphere, and consequently decay; living plants, on the contrary, separate Oxygen from its combinations, retain and assimilate the substance which was united with Oxygen, and consequently grow and develop themselves. For Carbonic Acid, a product of the combustion of organic matter, consisting of Carbon and Oxygen, becomes decomposed when brought in contact with green leaves in such a manner that its carbon is assimilated by them as food, whilst its Oxygen liberated assumes the gaseous form and is diffused through the atmosphere.

*Nitrogen* is also a fundamental constituent of the atmosphere, and must likewise be considered as a highly important substance, though it takes no active part in the processes of life. Nitrogen is, as to its properties, the opposite of Oxygen. Whilst the latter has a strong affinity to combine with other substances producing phenomena which have been mentioned before, the former manifests in this respect, such a degree of indifference, that only in rare and local cases, e. g. by the action of electricity, is a direct union of Nitrogen with other substances effected. But to this inactivity which characterizes Nitrogen, its high importance as a constituent of the atmosphere must be attributed. The quantitative proportion