

Dr. Carpenter, "that when an animal is confined in a limited quantity of air, it soon vitiates it, or renders it unwholesome; so that free ventilation by which the foul air is replaced by fresh, is one of the most important means of the preservation of health."

Now this change in the air is effected by its oxygen, which is the element that chiefly supports the life of all beings, and by the substitution of carbonic-acid gas set free from the lungs of animals. Thus the blood is purified, and is rendered more capable of maintaining the life of the system, by receiving one of an opposite character, and the change is manifested in its aspect as well as its properties, the dark purple blood of the veins being converted into the bright scarlet fluid of the arteries. It is the office of plants to decompose this carbonic-acid gas, taking the solid carbon in its tissues, setting free the oxygen, and so restoring the purity of the air.

Will you indulge me for a minute in a poetical illustration which I turned up some twenty years ago, and thought a gem: "The carbonic acid gas with which our breathing fills the air to-morrow will be speeding north and south, striving to make the tour of the world. The date trees that grow round the fountains of Nile will drink it in by their leaves; The cedars of Lebanon will take of it to add to their verdure; the cocoa-nuts of Tahiti will grow riper on it; and the palms and bananas of Japan change it into flowers. The oxygen we are breathing was distilled for us some short time ago by the magnolias of the Susquehanna, and the palm trees that skirt the Orinoko and the Amazon: the giant rhododendrons of the Himalayas contributed to it, the roses and myrtles of Cashmere, the cinnamon trees of Ceylon, and forests deeper than the Flood, buried deep in the heart of Africa, far behind the mountains of the moon. The rain which we see descending was thawed out of icebergs which have watched the stars for ages, and lotus-lilies sucked up from the Nile, and exhaled as vapor, the snows that are lying on the tops of our hills." Thus we see

"the two great kingdoms of nature are made to co-operate in the execution of the same plan, 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 one of them to be suspended. And yet man, by his ignorance and his thirst for worldly gain, has done his utmost to destroy this beautiful and harmonious plan. It was evidently the intention of the Creator that animal and vegetable life should everywhere exist together, so that the beneficial influence which the *former* is constantly exerting upon the air, whose purity is so essential to its maintenance, should be counteracted by the *latter*."

These principles involve the question of life and death to thousands every year. Take a

witness from the Registrar-General's report: "In Scotland last year, in eight of the *largest* towns, mortality was at the rate of 286 in every 10,000, in smaller towns 221, in rural districts only 170." An apartment for a prison in England (would that it were all the world over) has an allowance of 1,000 cubic feet of air; but in the confined dwellings of Glasgow closes, the average is 175 cubic feet. No wonder, then, at Mr. Edwin Chadwick's remarkable observation, that more than 200,000 deaths occur every year in Great Britain from preventable causes, or, in other words, that, were proper sanitary measures adopted, fully one-half the usual number of deaths would be spared;" and Lord Stanley tells us, in eloquent words (I have not time to quote at length), that *that* is the least part of the result. "The real and lasting injury," he says, "lies in the deterioration of race, in seeds of disease transmitted to future generations, in the degeneracy and decay which are never detected till the evil is irreparable." Begg, when speaking of the both system, styles it "a rude monachism, existing vastly to the destruction of morals, and is the opprobrium of Scotland;" and of the female bothies he says, "nothing more atrocious ever existed in rural life." I trust that practically-remedial results will follow the renewed agitation of this painfully-important subject, not only before the court of Parliament, but also before an *enlightened public opinion*, at length thoroughly aroused to the discharge of its grave responsibility in the cause of humanity, morality, and true national policy. The comparison of the process going on in the body, to a furnace with a limited supply of air, is not only an illustration, but a real truth. Messrs. Laws and Gilbert, to whom agriculture is deeply indebted for laborious research and accurately conducted, skilful experiments, give us the following curious and interesting results in relation to respiration and the feeding of animals, bringing to our view a striking instance of the mutual adaptations which are traceable in the practical operation of natural laws: "Under given circumstances, the *leguminous* crop will give a much larger yield of nitrogen than the *cereals* grain; and an increase of produce of the latter is not obtained, except at the cost of more nitrogen in the manure than is obtained in this increased produce, whilst in point of fact, in the practice of rotation in this country, the growth of the leguminous, corn or fodder crop, with its large per-centage and actual amount of nitrogen, is itself frequently either the direct or indirect source of nitrogenous manure, by which the increased cereal is obtained; and, again, this cereal, obtained at a cost of, but with its lessened produce of nitrogen, is found in practice to be of equal, or of a more highly-feeding value than the more highly nitrogenized leguminous product, which perhaps has been expended to produce it. It would thus appear, therefore, that the demands of the *respiratory function*,