which he is engaged, the food upon which he lives, the means of protection against heat and cold which he can command, and the peculiarity of constitution which he may present. We shall therefore content ourselves, in the re­maining space allotted to this article, by pointing out the leading facts connected with the more prominent objects which it includes in reference to the frame of man. It must not however be forgotten that this branch of science is as yet in its infancy, that the history of numerous points connected with the motion of aerial fluid, is only begin­ning to be minutely investigated; and that, in a practical point of view. It is as yet so imperfectly attended to, that it is impossible to turn to any city without seeing discom­fort, disease, and even death, from time to time induced by ignorance of the laws of ventilation ; and in assemblies of every variety, the whole audience is not only too fre­quently subjected to extreme uneasiness, but the tone of the mental faculties, and the capacity for exertion and atten­tion are often affected by the state of the atmosphere.

I. Source of Air.—This cannot be too particularly examined. Many of the public buildings in this country are supplied with air from the lowest levels, principally with the view of facilitating the movement of the air through the flues. Hence at night, in clear weather espe­cially, when the cold produced by radiation from the ground is great, and more or less at all times, cold air is supplied from the surface of the ground, or the public streets, loaded with the offensive emanations which they evolve, and which become much more disagreeable when subjected to the action of heat in a warming apparatus. By taking air from the highest attainable point, avoiding mere­ly the immediate vicinity of chimneys, and any ingress of air at the same level, a much purer atmosphere is secured; and it may be conducted downwards to any required depth with a flue. In extensive public buildings situated in lo­calities noted for the inferiority of their atmosphere, the erection of air towers to draw down a comparatively whole­some atmosphere from a height of two or three hundred feet, would be an object of great importance. In large towns, such as London and Manchester, where local impurities abound, and particularly when fog and frost arc observed at the same time, special means may be adopted for re­moving those that are most offensive. Filter beds may be constructed for air on the same principle as for water; but few of the more simple arrangements of this kind that have been sustained for any length of time, have been found more desirable than filtration through any porous texture to exclude suspended blacks (soot), and in some cases also washing with water (particularly lime water), to con­dense sulphurous acid and other gases.

II. AMOUNT OF AIR NECESSARY FOR VENTILATION.—

Few subjects present a greater diversity of practice than this. From two to four cubic feet per minute for each person have usually been considered a large supply, but this is far beyond the amount usually allowed. A very slight ex­amination will however show that even this amount is too Small; for if the process of respiration be accurately ex­amined. It will be observed that a cubic foot of air or more is involved or mixed and contaminated with the air dis­charged from the lungs at each expiration, independently of that affected by the skin. Such a supply, thθrcfore, is at least desirable, were the air always at a mild and genial temperature. According to Dr D. B. Reid’s experiments, where the effects Of variable quantities of air were tried upon numbers included in an experimental apartment, not less than ten cubic feet of air per minute should always be allowed when it is at an agreeable temperature ; and to sus­tain the atmosphere in all its freshness and purity, even a much larger quantity is at times desirable. In the pre­sent Houses of Parliament, from 36,000 to 50,000 cubic feet per minute have occasionally been given in warm weather to one apartment alone, or about 60 feet per minute to each individual in a crowded house. This ques­tion, however, of the amount of air necessary for ventilation, taking the deterioration produced by the human frame alone into account, is exceedingly complicated, and is influ­enced by a vast variety of circumstances, of which tne fol­lowing are the most important. In the preceding and following remarks, a temperature of 65° may be considered as the average most generally desired when there is a steady but gentle movement in the air. It is not so much the amount of supply with which life can be sustained, which is here in­vestigated, as that which it may be desirable to afford, so as to maintain the system in its highest vigour and perfection.

1. *The purify of the air supplied.—*In general, the less pure the air, the greater the amount necessary for vertilation, especially if it be loaded with moisture, and charged with offensive exhalations from the lungs and skin. But cases do occur, when an atmosphere is so largely charged with poisonous effluviæ, that it becomes an object to use as little as possible to avoid this source of contamination, if it be not removed by special arrangements.

2. *The temperature.—*This is much the most important circumstance affecting the supply necessary for ventilation. When the air is very cold, and the moisture of the breath is condensed in hoar-frost as fast as it escapes from the lungs, a proportion of air, extremely small compared with the usual desirable allowance, will be sufficient for ventilation. Air, under ordinary circumstances, is below the tempera­ture of the body in most parts of the globe. It therefore acts as a cooling power. But. the higher its temperature, and the more nearly it approaches that of the body, the larger is the quantity required to produce an equivalent cool­ing power. Further, in warm weather the air is charged with more moisture than in the cold season, while the body is at the same time more exhalent of moisture. These and other circumstances tend to render the supply of air, desir­able in warm weather, far greater than the mere arithmetical increase in the temperature would at first sight appear to in­dicate. But here we must advert to the popular error that the temperature, as indicated by the thermometer, is a pro­per guide to the quality of air, in respect to the warmth that may be most agreeable. The temperature, as a mo­ment’s reflection will show, is no indication, unless the velo­city of movement and chemical qualities of the air, especi­ally in reference to moisture, be also taken into considera­tion. A small quantity of air stagnant, and at 32°, may not cool the body more than a larger supply at 40°, 50°, 60o, 80o, or 90o, and, indeed, at any temperature below that of the living system. A large quantity of air not so cold may be made to produce the same amount of cooling effect as a less quantity of the colder air. It is equally obvious that a large quantity of air charged with much moisture, but not saturated, may produce the same amount of evaporation from the system as a less quantity of air containing little moisture associated with it.

3. *Idiosyncracy.—*A very wide range of experiments has shewn that the constitutional peculiarities of different individuals vary as much in respect to the amount of air desired, and the temperature at which it is preferred, as in respect to food or drink, In the houses of parliament, no temperature below 52°, or above 76°, has been demanded for several years. It is often very difficult to determine, however, how much is due to absolute peculiarity of con­stitution, and what is dependent on the circumstances of the moment, more especially, the state of occupation or excitement, the time that has elapsed since any refresh­ment was taken, and the nature and quality of the repast, the clothing in use, the previous exposure, the tempera­ture, moisture, and other circumstances affecting the qua­lity of the air. The brilliancy of the illumination also affects the supply of air required by some constitutions.