

are no doubt to be traced in some degree to electrical changes, but also in part to the alteration of atmospheric pressure; and when we consider that in the course of a few hours it may vary, upon a human body, as much as half a ton, we shall not be surprised at the results which follow.

Vegetable structures are of course as much indebted to the external pressure of the air as animal bodies; for, if it were removed, their vessels would be unable to contain the fluids which circulate in them. If we place a withered apple under the receiver of an airpump, and abstract the air, it will first of all swell out to its natural bulk, as when newly gathered from the tree, and its exterior covering will then burst, and its juices escape. The same result would follow the withdrawing of that conservative principle of nature, atmospheric pressure.

The pressure of the air serves another important purpose, in preventing liquids from boiling at very low temperatures. It is a well known fact, that water boils on high mountains when its sensible heat is lower than that required to produce ebullition at the level of the sea; and it does so, because it sustains a less pressure. Water must be raised to a temperature of 212° before it will boil, if the experiment be made at ordinary elevations, but at the top of Mont Blanc it was found to boil at 189° . Dr. Franklin invented a very pretty instrument, called a pulse-glass, to show that liquids boil at very inferior temperatures when deprived of atmospheric pressure. It consists of an exhausted glass tube, with a bulb at each end, and contains a small quantity of spirits of wine. If one of the bulbs containing the fluid be held in the palm of the hand, the instrument having a rather sloping position, the heat of the hand will be sufficient to make the spirit boil, and the vapour thrown off will be condensed at the opposite end. Now if there were no atmospheric pressure, many fluids which are now liquids would be vaporized at common temperatures, and the boiling points of others would be so much reduced, that a very slight increase of sensible heat would cause them to assume the vaporous state.

EXTENT OF THE ATMOSPHERE.

Having explained the chymical constitution, and illustrated the physical properties of atmospheric air, as well as its influence in the mass upon the general constitution of matter,