

ture of the atmosphere, and the lake receives streams which rise from several cold springs in the neighbouring mountains. I have to regret that, notwithstanding its small depth, I could not determine the temperature of the water at thirty or forty fathoms. I was not provided with the thermometrical sounding apparatus which I had used in the Alpine lakes of Salzburg, and in the Caribbean Sea. The experiments of Saussure prove that, on both sides of the Alps, the lakes which are from one hundred and ninety to two hundred and seventy-four toises of absolute elevation* have, in the middle of winter, at nine hundred, at six hundred, and sometimes even at one hundred and fifty feet of depth, a uniform temperature from 4·3 to 6 degrees: but these experiments have not yet been repeated in lakes situated under the torrid zone. The strata of cold water in Switzerland are of an enormous thickness. They have been found so near the surface in the lakes of Geneva and Bienne, that the decrement of heat in the water was one centesimal degree for ten or fifteen feet; that is to say, eight times more rapid than in the ocean, and forty-eight times more rapid than in the atmosphere. In the temperate zone, where the heat of the atmosphere sinks to the freezing point, and far lower, the bottom of a lake, even were it not surrounded by glaciers and mountains covered with eternal snow, must contain particles of water which, having during winter acquired at the surface the maximum of their density, between 3·4° and 4·4°, have consequently fallen to the greatest depth. Other particles, the temperature of which is + 0·5°, far from placing themselves below the stratum at 4°, can only find their hydrostatic equilibrium above that stratum. They will descend lower only when their temperature is augmented 3° or 4° by the contact of strata less cold. If water in cooling continued to condense uniformly to the freezing point, there would be found, in very deep lakes and basins having no communication with each other (whatever the latitude of the place), a stratum of water, the temperature of which would be nearly equal to the maximum of refrigeration above the freezing point, which the lower regions of the ambient atmosphere annually attain.

* This is the difference between the absolute elevations of the lakes of Geneva and Thun.