

of all trace of annual or diurnal variation of temperature at a depth so moderate as from 60 to 100 feet, is perfectly confirmed by the well known experiments in the caves under Paris ; and is the more satisfactory, that it falls much within the limits assigned to the annual variation by Fourier in his mathematical theory of heat.

The condition of the interior of the earth below the point of invariable temperature cannot be assumed upon any ground of probability independent of geological observations, nor foretold by any mathematical theory of heat, nor determined by any experiments made at the surface ; but may be easily detected by direct thermometric experiments, even at the moderate depths already reached by human enterprise. If the earth be very cold within, the influence of the interior cold will begin to be felt below the depth of 100 feet ; if very hot within, the rate of increase of this heat may be inferred from exact and numerous observations.

The experimental inquiries for this object have been prosecuted with great success in Europe, and partially in America, to depths amounting in England to 1584 feet (at Monkwearmouth), and about 1800 feet in Mexico. They consist of three divisions. In the first case, the experiments are made in or very near to mineral veins, which, by their character of filling fissures on lines of disruption, remind us of the general geological conditions of appearance of hot springs ; the second set of experiments takes place in collieries and other excavations of like nature, among the stratified rocks, with or without dislocations. In each of these cases, either the temperature of the rock, of air, or of a constant subterranean spring may be tried. In the third case, wells or boreholes are sunk, in a country where little or no water naturally springs to the surface, to considerable depths, and till strong streams of water are let up, bringing with them the temperature of the subterranean regions at those depths.