

important facts thus established, it is convenient to direct attention to the conditions of the experiments ; for thus the truth and applicability of the inferences drawn from them will more clearly appear.

No truth is more firmly established in meteorology, than the *primary* dependence of the temperature of each point on the earth's surface upon the calorific influence radiated from the sun. The evidence is found in the conformity of the diurnal and monthly changes of temperature, at each place, to the changing position of the sun, and the proportionality of the annual mean temperatures at different places to the quantity of solar rays received.

Neither of these satisfactory parts of evidence can, however, be completely gathered, except by long averages of years, which neutralise the irregularities of particular years ; nor properly understood, without attending to many secondary influences.

The heating influence of the sun, though continually acting, has not been found to have any cumulative effect on the globe ; which, *upon the whole*, has perhaps undergone no perceptible change in this respect since the reach of history ; but many parts of its surface have experienced real alterations of climate from drainage, inclosures, destruction of forests, and other causes. There is a cooling as well as a heating power constantly at work. The earth is a warm body plunged in a relatively cold medium, for the planetary spaces are cold compared to our globe, and the incessant radiation from the surface of the earth into the vast spaces around is uncompensated by any counteracting influence, though diminished in the cold regions of the world by peculiar provisions of a beneficent Providence.

The temperature of the ethereal spaces around is supposed to be pretty well represented by the minimum of observation on the earth's surface, during the long absence of the sun. It is therefore generally taken at about  $50^{\circ}$  centigrade, below the freezing point,