

This cause may sometimes tend to counterbalance inequalities of temperature resulting from other far more influential circumstances; but, on the other hand, it must sometimes tend to increase the extreme of deviation arising from particular combinations of causes.

But whatever may be at present the inferiority of heat in the temperate and frigid zones south of the line, it is quite evident that the cold would be far more intense if there happened, instead of open sea, to be tracts of elevated land between the 55th and 70th parallel; and, on the other hand, the cold would be moderated if there was more land between the line and the forty-fifth degree of south latitude.

*Changes in the position of land and sea may give rise to vicissitudes in climate.* — Having offered these brief remarks on the diffusion of heat over the globe in the present state of the surface, I shall now proceed to speculate on the vicissitudes of climate, which must attend those endless variations in the geographical features of our planet which are contemplated in geology. That our speculations may be confined within the strict limits of analogy, I shall assume, 1st, That the proportion of dry land to sea continues always the same: 2dly, That the volume of the land rising above the level of the sea is a constant quantity; and not only that its mean, but that its extreme height, are liable only to trifling variations. 3dly, That both the mean and extreme depth of the sea are invariable; and 4thly, It may be consistent with due caution to assume that the grouping together of the land in continents is a necessary part of the economy of nature; for it is possible that the laws which govern the subterranean forces, and which act simultaneously along certain lines, cannot but produce, at every epoch, continuous mountain-chains; so that the subdivision of the whole land into innumerable islands may be precluded.

If it be objected, that the maximum of elevation of land and depth of sea are probably not constant, nor the gathering together of all the land in certain parts, nor even perhaps the relative extent of land and water, I reply, that the arguments about to be adduced will be strengthened if, in these peculiarities of the surface, there be considerable deviations from the present type. If, for example, all other circumstances being the same, the land is at one time more divided into islands than at another, a greater uniformity of climate might be produced, the mean temperature remaining unaltered; or if, at another era, there were mountains higher than the Himalaya, these, when placed in high latitudes, would cause a greater excess of cold. Or, if we suppose that at certain periods no chain of hills in the world rose beyond the height of 10,000 feet, a greater heat might then have prevailed than is compatible with the existence of mountains thrice that elevation.

However constant may be the relative proportion of sea and land, we know that there is annually some small variation in their respective geographical positions, and that in every century the land is in some parts raised, and in others depressed in level, and so