

the west of Europe compose a surface of wide and hot north tropical land, with free channels to a polar sea. The *extreme difference of these extreme climates* does not, we believe, in any two points of like elevation reach 20° , the half of which is, perhaps, more than the *extreme excess or defect of heat* beyond the average of the latitude at any one point upon the surface of the earth.

If an *average excess* of 10° of temperature be allowable according to this hypothesis, the *extreme excesses* may have been somewhat greater; but from the conditions of the hypothesis they cannot be taken to be so great as the extreme excesses now observed on the globe, but must be supposed comparatively small.

We have, therefore, only further to inquire in what manner the doctrine of *progressive refrigeration* of the globe from the earliest periods meets this case of the change of climate in regions far from the equator. Some geologists appear to have adopted, on the subject of the earth's interior heat, a singularly erroneous opinion; viz. that a cold solid crust and an incandescent nucleus are incompatible. The doctrine of "central heat" (as the Leibnitzian speculation is sometimes inaccurately termed,) is, upon this false notion of the conduction of heat, declared to be a *physical mistake*. Yet it can be easily shown, both by experiment and mathematical calculations, to be a *necessary truth*, in a body circumstanced as the earth really is. If one end of a bar of metal, a few feet long, be plunged in the fire, while the other end is wrapped in a wet cloth, the one end may be ignited to any desired degree, while the other can be kept at any required temperature above a certain point, depending on the heating and cooling powers applied to the ends of the bar, its length, and the conducting and radiating powers of the metal. Instead of the metal bar, submit to the same heat a bar of stone, or a rod of glass; in these cases, unless the bar be *very short*, no cooling power at all is needed further than that of conduction and radiation from the surface of the bar,