augmenting temperature below the surface would be explained.*

Geologists will probably be pardoned for not attaching importance to this remarkable speculation, except for the proof it affords that men of enlarged conceptions, and the highest mathematical endowments, regard the facts already known by observation of the heat now present within, and the climate which anciently overspread the earth, as inexplicable, except by general variation of heat through a considerable part of the mass of the earth, or even a great range of the cosmical regions. Local sources of heat are deemed inadequate, and left unnoticed by Poisson, Fourier, Arago, and Herschel.

We have therefore finally to compare the account of the changes of ancient climate, proposed by the distinguished advocate of "modern causes," for comparison with that furnished by "refrigeration of the globe."

The principle of Mr. Lyell's hypothesis of changes of climate, in different geological periods, is the change of position of the land. We have already stated as a main cause of the differences of the mean annual heat at places which lie in the same zone of latitude, and consequently receive the same quantity of solar radiation, the *influence of oceanic currents*. The tides raised in the equatorial seas circulate round the globe, and, by spreading up the North Atlantic and North Pacific communicate warmth to the western shores of Europe and America. Oceanic currents, arising from other causes, mix the temperature of different latitudes, and moderate the extremes of heat and cold. Nor is this all. The higher that land is raised into the atmosphere the colder does it become, and the larger the mass of this elevated land the more powerful is its cooling influence on the vicinity. For this reason, the mean temperature of North America and Northern Asia is generally much lower than that of Europe in the same latitudes.

* See Mr. Whewell's Report and Communications to the British Association, 1835.