

solution of the problem depends upon so many niceties, that it would be well to suspend our judgment upon the results of the calculation until all the preliminaries are satisfactorily established.

This argument for the internal heat of the earth receives strong corroboration from the fact that *not one exception to this increase of internal temperature has ever occurred, where the experiment has been made in deep excavations.*

It appears from the experiments and profound mathematical reasoning of Baron Fourier, that even admitting all the internal parts of the earth to be in a fused state, except a crust of thirty or forty miles in thickness, the effect of that internal heat might be insensible at the surface, on account of the extreme slowness with which heat passes through the oxidized crust. He has shown that the excess of temperature at the surface of the earth, in consequence of this internal heat, is not more than 1-17th of a degree (Fahr.), nor can it ever be reduced more than that amount by this cause. This amount of heat would not melt a coat of ice 10 feet thick in less than 100 years; or about one inch per annum. The temperature of the surface has not diminished on this account, during the last 2,000 years, more than the 167th part of a degree; and it would take 200,000 years for the present rate of increase in the temperature, as we descend into the earth, to increase the temperature at the surface one degree; that is, supposing the internal heat to be 500 times greater than that of boiling water. From all which it follows, that if internal heat exist, it has long since ceased to have any effect practically upon the climate of the globe.

*Proof 2.*—Until some fact can be adduced showing that the heat of the earth ceases to increase beyond a certain depth, nothing but hypothesis can be adduced to prove that it does not go on increasing, until at least the rocks are all melted; for when they are brought into a fluid state, it is not difficult to see how the temperature may become more equalized through the mass, in consequence of the motion of the fluid matter; so that the temperature of the whole may not be greatly above that of fused rock. Now, if the hypothesis of internal fluidity have other arguments (which follow below) in its favor, while no facts of importance sustain its opposite, the former should be adopted.

*Proof 3.*—This is derived from the existence of thermal springs.