

conductors, and when a heated stratum is surrounded with a substance which cannot conduct heat, the temperature must be retained. We need not, therefore, be surprised, that different results should be obtained at the same relative depths in distant places, a circumstance necessarily resulting from the peculiarities of bodies in regard to the principle of heat. It may, perhaps, be supposed by some, that this variation in the temperature at equal depths may be aided, in certain places, by a local chymical action. Within certain limits, this may possibly occur, and produce casual variations in the general law ; but we do not believe that chymical action can be exerted under the enormous pressure that exists at comparatively small depths.

In this way the existence of an increasing interior heat may be deduced without adopting the supposition that the whole globe was originally in a state of fusion, and that by the radiation of heat, and the consequent cooling of the upper portion of the mass, beds of primitive rock were formed. Nor do we perceive any necessity for supposing the interior of the earth, either at a former or at the present time, to be in a state of igneous fluidity, though the reasons adduced are sufficient to prove that there is a considerable increase of heat in the interior of the earth, and possibly in some places an absolute liquidity.

M. Cordier, who admits the igneous liquidity of a large portion of the earth's body, has applied the supposition to the explanation of volcanic action, in a very ingenious manner. He supposes volcanic phenomena to result from the gradual cooling and consequent contraction of the interior of the earth. The contraction of the refrigerating crust is said to produce an enormous pressure upon the interior fluid matter, in many cases equal to 28,000 atmospheres, and to force a portion of the fused rocks through a vent already formed, or to produce a new aperture for emission, by breaking away the solid crust in those places where it has least power of resistance. In support of this opinion, he adduces the following singular calculations. From the measurement of the matter ejected by different volcanoes, he calculates that the extreme limit of the product of an eruption is less than one cubic kilometre, or 1,308,044,971 cubic yards. Now, if the mean thickness of the crust of the earth be 62.1 miles, its contraction, producing a decrease of the radius of the centre.