

nication with the heated interior could not have existed and poured forth such a vast amount of molten rock, unless they drew their supplies from an immense internal molten nucleus. (c.) When the products of volcanic action from different and widely-separated regions are compared and analyzed, they are found to exhibit a remarkable uniformity of character. Lavas from Vesuvius, from Hecla, from the Andes, from Japan, and from New Zealand present such an agreement in essential particulars as, it is contended, can only be accounted for on the supposition that they have all emanated from one vast common source.⁵⁰ (d.) The abundant earthquake-shocks which affect large areas of the globe are maintained to be inexplicable unless on the supposition of the existence of a thin and somewhat flexible crust. These arguments, it will be observed, are only of the nature of inferences drawn from observations of the present constitution of the globe. They are based on geological data, and have been frequently urged by geologists as supporting the only view of the nature of the earth's interior, supposed by them to be compatible with geological evidence.

2. *The arguments in favor of the internal solidity of the earth* are based on physical and astronomical considerations of the greatest importance. They may be arranged as follows:

(a.) *Argument from precession and nutation.*—The problem of the internal condition of the globe was attacked as far back as the year 1839 by Hopkins, who calculated how far the planetary motions of precession and nutation would be influenced by the solidity or liquidity of the earth's inte-

⁵⁰ See D. Forbes, *Popular Science Review*, April, 1869.