

According to the theory of Werner, all the superficial parts of the globe were once in a state of aqueous solution, from which the materials were, at first, separated by chemical deposition in a crystalline state, and formed a thick mass of granite round the globe. Upon granite, the primary rocks were successively deposited, forming layers over each other like the coats of an onion. Over these again were laid the transition rocks; and next, the earthy stratified rocks. Each of these layers was supposed to encircle the globe, or to be an universal formation. While this process was going on, the waters were gradually retiring, and became turbid: hence the materials which they deposited, to form the upper strata, were more earthy than those of the primary rocks; they were also intermixed with fragments of the rocks previously formed. According to this system, mountains and valleys were caused by the original inequality of the nucleus of the earth. So far, the parts of Werner's theory are consistent; and we have a world ready made, in which every thing might be supposed to remain quiet; but—*non sic Fata sinunt*;—Neptune, ashamed of his late retreat, and indignant at his confinement in such narrow limits, calls the infernal deities to his assistance, and rising in his might, once more takes possession of the globe. He covers it with the depurgations of his turbid waves: but, again he is compelled slowly and reluctantly to retire from the field, leaving behind him the basaltic rocks, the monuments of his triumph and his shame. Such is, in substance, the theory of Werner respecting the origin of all the superincumbent rocks of basalt and trap. They are, also, according to this theory, universal formations. It is scarcely possible for the human mind to invent a system more repugnant to existing facts. Were basaltic rocks deposited from a solution which covered the globe after the formation of secondary strata, as Werner supposes, every part of the dry land and every valley must have been incrustated or filled with basalt,—it would be the prevailing rock of every district. On the contrary, basalt exists, only in particular situations, forming dykes, and overlying masses or beds of limited extent: nor do fragments of basalt occur, in any quantity, to warrant the belief that it was ever formed universally over the globe: and what is here said of basalt, applies equally to all unconformable rocks of porphyry, and the other trap rocks. Nothing but the obscure language in which this doctrine of Werner was advanced, could have prevented its absurdity from being instantly perceived and acknowledged.

With respect to the relative age of trap rocks, it is evident, that if they are of igneous origin, they may have been formed at any period. We have certain indications that basaltic rocks were formed at different epochs; some of the basaltic dykes which cut through the coal strata in the northern counties, do not enter the magnesian limestone that covers the coal strata. Hence it is clear, that such basaltic dykes were formed before the magnesian limestone was deposited: